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The National Inventory of Selected Biological Monitoring Programs

**Summary Report of Current or
Recently Completed Projects, 1976**

H. T. Kemp

MASTER

ENVIRONMENTAL SCIENCES DIVISION
Publication No. 1005

OAK RIDGE NATIONAL LABORATORY

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ABSTRACT

KEMP, H. T. 1977. National Inventory of Selected Biological Monitoring Programs. Summary Report of Current or Recently Completed Projects, 1976. ORNL/TM-5792. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 716 pp.

The Inventory has resulted in establishment of a series of data bases containing biological monitoring information of varying types, namely, directory of investigators, record of projects received from mail questionnaire, detailed description of selected biomonitoring projects, and bibliographic citations supporting the projects received. This report contains detailed descriptions of selected biomonitoring projects organized on a state-by-state basis and with appropriate indices.

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PART A
REPORT TEXT AND APPENDICES

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Introduction

Biological information, or the lack thereof, is an important factor in shaping the planning and implementation of environmental research. To the administrator, investigator, and others involved (e.g., information systems specialists, librarians, and students), the process of identification and acquisition of biological information is a complex and difficult problem for the following reasons:

1. Sources of information (i.e., journal articles, localized in-house reports, varied referral and abstracting services, and local, state, and federal information and numerical data repositories) are virtually innumerable and often widely scattered.
2. Varied information formats make assembling and evaluating printed information a formidable chore.
3. Delays in the availability of information can occur due to prolonged publication procedures, administrative approval requirements, and abstract service processing.
4. Inadequacy of language in current literature and keywords in abstracting and referral services used in characterizing technical literature is evident. If an information need or interest centers on a special or obscure topic, i.e., one that is not uniformly keyworded or indexed, then that information cannot be identified easily, much less acquired with speed and efficiency.

Monitoring of naturally occurring biota provides the necessary data to conserve and manage the Nation's living resources, as well as serving as an indication of environmental quality affecting human health now and

in the future. The lack of a centralized and coordinated source of biological information nation-wide led to initiation of the Inventory described here.

"Biological monitoring" or "biomonitoring" (used interchangeably in this discussion) are not keywords consistently used throughout abstract or referral services. The inclusion of alternative words, such as "survey", "census", "check-list", and related terms is required to search hard-copy abstracts and journals and to search computerized information files for biomonitoring data. Varying degrees of success result from attempts to search for biomonitoring projects in these sources, and often the information obtained (sometimes including an abstract) is insufficient to permit determination of applicability to biomonitoring.

Alternative approaches to solving these problems include more intensive manual searching of libraries, personal interview of researchers for the desired information, and mailed information requests (inventories) to pertinent researchers. The mailed request approach was employed for the National Biological Monitoring Inventory as we believed it had the highest probability of success within a reasonable time. The mailed inventory, coupled with systematic and objective arrangement of received information in a computerized file (data base), is the simplest description of the activities involved in developing "A National Inventory of Selected Biological Monitoring Programs."

The extent of information requested (and acquired) and the manner in which it is entered into the computer file allow tabulation of state-by-state, agency-by-agency, technical category, and other types of information summaries. Within the limits of our current coverage, we can determine

quickly who is doing what, where, when, how, and the intensity level of the biomonitoring activity in terms of funding.

In addition, we are also attempting to identify gaps in biomonitoring coverage throughout the U.S., identify duplications in biomonitoring efforts, and provide program planners and decision makers with objective, ordered, and succinct summaries of trend information in critical areas of local, regional, and national concern. Hopefully, improved coordination of biomonitoring efforts will result from this report, especially for projects planned in the future.

Although perhaps difficult to assess at this time, the Inventory appears to be reasonably successful as judged by the percentage of returns and the informational content of these responses.

This summary report of selected responses to the Inventory represents only one-third of the responses to date. The accounting data base, MINI-BIOMON, is now accessible for on-line searching locally at Oak Ridge National Laboratory on the ORLOOK program of the ORCHIS system (Singletary 1976). The main data base consisting of all responses published herein, is being made available nationally for on-line searching by means of ERDA/RECON (Gilchrist 1974) as well as ORLOOK. Search printouts are available upon request.

The Inventory is an evolving effort in which principal investigators will be continuously identified and queried, and in which project information will be updated periodically. Personnel on this project have chosen NBIP (National Biomonitoring Inventory Program) as an identifying acronym.

Objectives

The primary objectives of the Inventory are:

1. To comprehensively identify and collect information throughout the U.S., including continental shelf waters, on biological monitoring studies at the principal investigator/project level. We ask for information only on current and recently completed projects.
2. To systematically organize the information in computerized files for on-line, interactive searching; for computer production of reports on technical subject categories; including organisms, study types, management focus, and geographical sites or regions; and for providing complete information retrieval and response/referral services.
3. To specifically identify and fully characterize those projects that establish changes, i.e., time trends, of populations or communities of naturally occurring flora and fauna.

Although the objectives are to identify time trends indicated only by biological monitoring studies, the utility of the program lies both in the actual monitoring projects selected, and in the additional baseline studies currently in our response files. Studies presently characterized as "baseline" are either one-time surveys (where questionnaires were returned despite definitions and instructions), or bona fide monitoring projects which have started only recently, and consequently have data only at one point in time. Of these, we believe many are viable, well-funded studies that will continue (and thus achieve "biomonitoring" status), while some others, of course, will cease to function. It is almost impossible to determine which of these projects will continue, so at present, all are

categorized as "baseline" studies. Information from both types of projects, however, is of potential value in planning and implementing biomonitoring research.

Methodology

The National Inventory of Selected Biological Monitoring Programs was initiated in June, 1975 to identify current or recently completed biological monitoring projects throughout the U.S.

Key administrators were identified through a variety of sources, mainly from a series of environmental directories (see References, p.30). Identification of principal investigators was accomplished by telephone and direct communication with key administrators in all states and natural resource agencies of local and federal governments. The key administrators were asked for the names and addresses of principal investigators working on specific projects.

From this effort, a total of more than 6000 names and addresses of principal investigators was compiled. Computer-generated mailing labels were utilized to send project documentation packages to these investigators, including questionnaire-type forms.

For the purposes of the Inventory, we developed a one-page definition of terms that began with a series of word equivalents (Table 1). Projects that monitor natural biota and demonstrate quantitative change through time for a particular population or community are the kinds of projects for which we seek information. Excluded from the biomonitoring inventory are projects concerned with human population attributes, agriculture, monoculture forestry, domestic animals, economics, ERTS-type and other remote

TABLE 1. HEADING AND FIRST FEW ENTRIES ON THE DEFINITION SHEET FOR THE BIOMONITORING INVENTORY. SOME ITEMS ARE DEFINED BY EQUIVALENT TERMS.

"A NATIONAL INVENTORY OF BIOLOGICAL MONITORING PROGRAMS"

DEFINITIONS

BIOLOGICAL MONITORING – BIOMONITORING – MONITORING NATURAL BIOTA

ANALYSIS OF CHANGES WITH TIME – CHANGES – CHANGES WITH TIME

NATURAL BIOTA – ALL NATURALLY OCCURRING PLANT AND ANIMAL SPECIES EXCLUDING HUMANS AND DOMESTIC ANIMALS AND CROP PLANTS

PROJECT – LOWEST LEVEL ORGANIZATIONAL FIELD UNIT, I.E., JOB, TASK, OR SUB-PROJECT IN SOME ESTABLISHMENTS

PROGRAM – ORGANIZATIONAL GROUPING OF PROJECTS FOR ADMINISTRATIVE OR CO-ORDINATING PURPOSES AT NATIONAL, INTERSTATE, REGIONAL, OR LOCAL LEVELS

sensing studies, and those in which only hydrological, meteorological, or physico-chemical water quality data are obtained.

The first page of the documentation form (Appendix I) shows our sponsors, our address, and the information requested from participants. Many of the questions are posed in a "circle-the-item" system that provides a systematic set of code words which are further enhanced with additional keywords provided by responders or NBIP staff. On subsequent pages, additional information also requested for each project includes an abstract, geographical location, statistical treatment, computerization, and availability of data.

The biological monitoring inventory documentation package consists of:

1. A covering letter explaining the project and soliciting response from the principal investigator.
2. A definition sheet.
3. Three copies of the documentation form in the event the principal investigators can report more than one project. We encourage distribution of extra forms to colleagues.
4. A franked, self-addressed envelope for convenience in returning the response.

Form design, package contents, timing of mailings (including reminder letters), and other procedures were based on a literature review of questionnaire campaigns (Ross and Kemp, 1975). Form design was based on experience with the US/IBP Abstracts Journal (Kemp 1975), and study of a number of previously employed questionnaires. The form was finalized after review by ORNL coworkers, cosponsor agencies, and nation-wide pretesting through The Institute of Ecology.

The main biological monitoring data base and supporting data bases are interrelated (Fig. 1). The DIRECTORY data base contains the names and addresses of principal investigators and key administrators to whom the documentation package was mailed. The MINI-BIOMON data base briefly records all responses to the Inventory. The BIBLIOGRAPHIC data base contains citations to published documents received with the responses. The main biological monitoring or BIOMONITORING data base contains only selected project responses judged to be the most pertinent and containing the most complete information. The project listing (Part B) presented in this report was printed from the main BIOMONITORING data base.

Responses by individual researchers were entirely voluntary, but interest apparently was stimulated by recognition of the need for this type of effort.

Procedures for developing the remaining data bases (TAXA, GEOGRAPHIC DESCRIPTION, and TABULAR DISPLAY) are established and these will be initiated as time and funds permit. Each will contain more complete project information in selected fields than is contained in the main BIOLOGICAL MONITORING data base. For example, the GEOGRAPHIC DESCRIPTION data base will contain a number of geographically oriented schemes. These data will need to be acquired, since much of the desired information is not contained in many of the responses received to date.

In the interest of conserving space, acronyms have been used throughout this report as follows:

ARS	Agricultural Research Service
BLM	Bureau of Land Management
BR	Bureau of Reclamation

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FIGURE 1. INTERRELATIONS OF THE MAIN AND SUPPORTING BIOLOGICAL MONITORING DATA BASES

CEQ	Council on Environmental Quality
COE	Corps of Engineers
CSRS	Cooperative State Research Service
DOC	Department of Commerce
DOD	Department of Defense
DOI	Department of the Interior
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Administration
FS	Forest Service
FWS	Fish and Wildlife Service
HEW	Department of Health, Education, and Welfare
IBP	International Biological Program (NSF)
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NBIP	National Biomonitoring Inventory Program
NIH	National Institutes of Health
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPS	National Park Service
NSF	National Science Foundation
ONR	Office of Naval Research
ORNL	Oak Ridge National Laboratory
OWRT	Office of Water Research and Technology
PHS	Public Health Service
RANN	Research Applied to National Needs (NSF)
RAPC	Regional Action Planning Commission

SCS	Soil Conservation Service
TIE	The Institute of Ecology
TVA	Tennessee Valley Authority
USAF	Department of the Air Force
U.S. Army	Department of the Army
USDA	Department of Agriculture
USGS	Geological Survey
USN	Department of the Navy

Two-letter postal service abbreviations for the states and standard abbreviations (St., Dept., etc.) were also uniformly employed.

The procedure used in selecting projects for inclusion in this summary project listing (Part B) involved selecting those projects that were biomonitoring by our definition (Table 1). Further selection was made based on completeness of information received, i.e., some responses contained very limited amounts of the information requested.

Although biomonitoring staff edited responses for conformity to a considerable extent, the reader should be aware that most information supplied by responders was generally accepted with minimal verification. Gross errors, however, were corrected without changing the sense of an abstract, for example.

Results

Through September 1976, the biomonitoring inventory responses totaled 3192, from all states of the Union, some U.S. territories, Canada, Mexico, and several countries in the Caribbean. To date, about 50 percent of the persons contacted have responded. Another documentation package mailing

is planned for the near future, principally addressing referrals from returned forms.

A conservative estimate of the annual funding for all 3192 projects currently in the files is \$163 million per year. This figure is based on the median of the funding level information supplied in the responses (<\$10,000; \$10-50,000; \$50-100,000; and >\$100,000), and takes no cognizance of project responses which contained no funding information. Although the actual total must be considerably higher, an annual budget of \$163 million is impressive and indicative of the magnitude of the current national effort in biological monitoring.

The projects are sponsored by a diversity of state and federal agencies, teaching institutions, private concerns, and others (Table 2). The federal government sponsors most of the projects, while the private sector is poorly represented. This may reflect an appropriate division of responsibilities, but the latter group has been the most difficult to identify and inventory.

The information received can also be characterized by management focus (Table 3). By far, the focus most frequently indicated by principal investigators is environmental impact. A paper was presented at a recent symposium in which the utility of the NBIP effort to environmental impact planning and assessment was described (Kemp and Burgess 1976).

The small number of air pollution projects indicated is due to the inclusion of only those projects in which natural biota are studied. For the entire U.S., there are only 36 currently identified air pollution projects that qualify, and this is reflected in information shown in subsequent tables.

TABLE 2. NUMBER OF PROJECTS IN CATEGORIES OF FUNDING SPONSORS, BASED ON RESPONSES TO THE INVENTORY (A) AND CONTENT OF SUMMARY (B)

CATEGORY	NUMBER OF PROJECTS	
	A*	B*
FEDERAL GOVERNMENT	1629	508
STATE GOVERNMENTS	788	312
TEACHING INSTITUTIONS	496	142
PRIVATE CONCERNS	275	98
SOCIETIES, TRADE ASSOCIATIONS, ETC.	81	35
LOCAL GOVERNMENTS	42	19
UNKNOWN OR NO FUNDING	350	108
MULTIPLE SPONSORS	399	162

*A — DERIVED FROM *MINI-BIOMON* DATA BASE (3192 PROJECTS)

*B. — DERIVED FROM *MAIN BIOMONITORING* DATA BASE (1021 SELECTED PROJECTS IN PART B).

NOTE: NUMBERS IN COLUMNS ARE NOT ADDITIVE BECAUSE OF MULTIPLE SPONSORS.

**TABLE 3. NUMBER OF RESPONSES TO "A NATIONAL INVENTORY OF
BIOLOGICAL MONITORING PROGRAMS" BY MANAGEMENT
FOCUS CATEGORIES**

MANAGEMENT FOCUS	NUMBER OF PROJECTS	
	A [#]	B [*]
AIR POLLUTION	36	34
ENDANGERED SPECIES	504	159
ENVIRONMENTAL IMPACT	1675	566
FISHERIES	862	298
FORESTRY	404	154
INDICATOR SPECIES	922	367
POLLUTION CONTROL	875	266
POWER GENERATION	319	105
RADIOLOGICAL	123	36
RANGE	387	147
RESOURCE PLANNING	694	247
RIGHTS-OF-WAY	65	27
WATER QUALITY	1049	316
WILDLIFE	828	344

*SEE FOOTNOTES ON TABLE 2.

NOTE: NUMBERS IN COLUMNS ARE NOT ADDITIVE BECAUSE OF
MULTIPLE ASSIGNMENT OF PROJECTS TO VARIED CATEGORIES.

Figure 2 is a cartographic display of responses to the Inventory by the study site indicated by the principal investigators. California investigators provided the largest number of projects (responses to the Inventory). This is probably a reflection of California's population, its ecological diversity, the magnitude of environmental concern, and state-level environmental policy legislation. There is also excellent response from Alaska, Florida, Louisiana, Michigan, North Carolina, New York, Texas, and the State of Washington. At present, we are checking the number of responses for completeness on a state-by-state and agency-by-agency basis. Initial results indicate excellent coverage in some instances and low coverage in others.

The following summaries (Tables 4 and 5) are intended to show the flexibility with which the information can be manipulated and organized. Examples selected are Atlantic Coastal wetland studies, and projects in the Four Corners of the southwest. Environmental impact is again the most frequent management focus indicated.

In the Atlantic Coastal wetlands (Table 4) there are no entries under Air Pollution. As mentioned above, nation-wide there were relatively few air pollution studies in which biological monitoring is involved. Several air pollution studies in wetlands are in progress in the U.S., but these are located on the west coast (California and Washington) or in the mid-west (Wisconsin). Considering the severe air pollution problems in the northeastern U.S. and the loss of wetlands due to construction, the apparent lack of wetland/air pollution studies on the Atlantic Coast bears investigation.

FIGURE 2. NUMBERS AND DISTRIBUTION OF SELECTED PROJECTS IN BIOMONITORING SUMMARY REPORT AND RESPONSES RECEIVED TO INVENTORY (IN PARENTHESES) THROUGH SEPTEMBER 30, 1976

TABLE 4. NUMBER OF PROJECTS IN SUMMARY LISTING (PART B) OF "A NATIONAL INVENTORY OF BIOLOGICAL MONITORING PROGRAMS" FOR ATLANTIC COASTAL WETLANDS (61 TOTAL), ARRANGED BY SUBJECT AND MANAGEMENT FOCUS. NUMBERS IN COLUMNS ARE NOT ADDITIVE SINCE PROJECTS WERE CHARACTERIZED BY MULTIPLE USAGE OF KEYWORDS AND CODEWORDS

MANAGEMENT FOCUS	SUBJECT CATEGORY							
	REGIONAL	SITE SPECIFIC	PLANTS	ANIMALS	MICRO- ORGANISMS	FISHERIES	WILDLIFE	FORESTRY
AIR POLLUTION	0	0	0	0	0	0	0	0
ENDANGERED SPECIES	5	11	9	9	3	2	6	1
ENVIRONMENTAL IMPACT	12	29	28	27	13	5	11	4
INDICATOR SPECIES	7	18	16	15	9	3	5	0
POWER/ENERGY	3	5	6	6	4	3	3	0
POLLUTION CONTROL	2	11	8	8	7	3	2	1
RECREATION	3	10	7	11	5	4	9	0
RESOURCE PLANNING	6	16	18	16	7	2	10	3
WATER QUALITY	4	16	15	12	10	4	5	2
TOTAL	(14)	(47)	(33)	(45)	(15)	(7)	(23)	(5)

TABLE 5. NUMBER OF PROJECTS IN SUMMARY LISTING (PART B) OF "A NATIONAL INVENTORY OF BIOLOGICAL MONITORING PROGRAMS" FOR THE FOUR CORNERS REGION (AZ, CO, NM, AND UT, 91 TOTAL), ARRANGED BY SUBJECT AND MANAGEMENT FOCUS. NUMBERS IN COLUMNS ARE NOT ADDITIVE (SEE TABLE 4).

MANAGEMENT FOCUS	SUBJECT CATEGORY							
	REGIONAL	SITE SPECIFIC	PLANTS	ANIMALS	MICRO- ORGANISMS	AQUATIC	TERRESTRIAL	COMPUTERIZED DATA
AIR POLLUTION	3	2	4	1	0	0	5	4
ENDANGERED SPECIES	2	10	10	11	3	5	17	7
ENVIRONMENTAL IMPACT	4	53	37	37	11	17	49	18
INDICATOR SPECIES	3	27	19	16	6	9	25	13
POWER/ENERGY	0	13	7	11	2	2	11	6
COAL	0	6	5	7	0	0	6	4
NUCLEAR	0	1	0	0	0	0	1	0
OIL	0	1	0	0	0	0	1	0
RIGHT-OF-WAY	0	0	0	0	0	0	0	0
OTHER	0	6	2	4	2	2	4	2
POLLUTION CONTROL	0	15	6	17	6	3	10	6
RECREATION	1	12	5	8	5	3	9	1
RESOURCE PLANNING	4	24	21	7	3	7	26	12
WATER QUALITY	0	14	3	7	10	12	6	6
TOTAL	(7)	(84)	(52)	(62)	(16)	(27)	(79)	(29)

The Four Corners region includes segments of Arizona, Colorado, New Mexico, and Utah. The combined project responses from these states are shown in Table 5. Clearly, this region is significantly covered from a biological monitoring viewpoint. The numbers of air pollution and coal project responses from the region lend credence to this conclusion.

The matrix format used in Tables 4 and 5 can serve as a means of making judgments regarding the adequacy of biological monitoring coverage throughout the U.S. Care must be exercised in making interpretations of this type, however, due to limitations imposed by our biomonitoring definition and to the degree of coverage achieved. The matrices can be enlarged to dozens of subject categories along each axis, but this is impractical for tabular display purposes in this report. The computer can be used to prepare alternate matrices that may be required by any potential requestor for any of the individual states of the U.S. and for any U.S. regions that can be defined by state boundaries. Further refinement of geographic descriptions (longitude/latitude, county name or code, etc.) will allow more precise summaries. These can be used to precisely locate projects that can then be described in considerable detail from additional information in NBIP files. Innumerable summary, regional, trend analysis, and other reports are possible from the NBIP files and data bases. A biomonitoring trend analysis report has recently been prepared for CEQ (Suffern *et al.* 1976) from our files. Other report possibilities can be envisioned from the project tallies, codeword, keyword, and taxa indices in Appendices I through VII.

In recent months we have provided summarized information to all of our sponsors (CEQ, ERDA, FWS, and NMFS) and also to several offices or

laboratories of the Environmental Protection Agency, the Corps of Engineers, the U.S. Geological Survey, the National Oceanographic and Atmospheric Administration, the National Park Service, the Nuclear Regulatory Commission, and the National Science Foundation. We are exchanging information with these and other organizations such as the Arctic Environmental Information and Data Center, Texas System of Natural Laboratories, The Nature Conservancy, Oceanographic Institute of Washington, Cornell University Bird Observatory, Battelle-Columbus Laboratory, and the Florida Sea Grant Program.

How to Use Appendices and Project Listing

The Listing of Current or Recently Completed Biomonitoring Projects (Part B) is simply organized in an alphabetical arrangement by state of the 1021 projects selected. Within each state, projects are alphabetically arrayed by the last name of the investigator or lead investigator. Many projects are conducted in more than one state. In this situation, the project is listed only under one state (usually the state from which the response originated) and referred to in a "See Also" feature prior to the first project entry for other states involved. Unneeded duplication in printing, i.e., listing the same project under each applicable state, is thus avoided.

Each project is referred to as a record and the first entry for each project is the record number enclosed in angle brackets. The Part B listing thus consists of the 1021 projects designated <1> through <1021>, entered alphabetically by state followed by entries concerning U.S. programs and ones from Guam, Puerto Rico, Canada, and Mexico. These record numbers are the key to utilizing Appendices II through VII. Numbers following keywords, for example, refer to the project record number as given in the Part B listing.

Readers should note that there are 13 projects pertaining to nationwide U.S. biomonitoring projects. These should be consulted when considering any individual state. Additionally, there are other projects in progress in large sections of the U.S. (eastern, western, etc.) that should be consulted. Some northeastern states may have as many as 19 U.S. projects applicable to them. These projects are listed on pages 511-521 of the Part B project listing.

Subcategories (also referred to as fields labelled with field identifiers) within each project are shown in the documentation form in the listing of projects in Part B. For data base records (including computer codes for report organization purposes), a total of fifty-nine fields were potentially available for describing each project. When information was not provided by responders, no entry was made in those fields and therefore these do not appear in the listing. A minimum number of fields (44) was required for selection and entry into the listing.

In addition to simple referral from one appendix to given records, a user may identify projects listed in varied appendices and develop groupings of projects in special technical areas. Although self-evident from the simplified record referral, some patience and practice may be required before optimal results can be obtained. For complex searches or ones involving large numbers of projects, we recommend contacting NBIP staff (See Appendix I for address or telephone number) for advice or organized printouts relating to a special biomonitoring interest.

Reader study of most of the record categories (fields) will reveal standards employed in entering information contained in the Part B project listing. Most are obvious, and need not be recited here. Some of the procedural details were:

1. In all subcategories except those noted below, responder information was accepted with no or very minimal verification. In some cases, telephone calls to responders were made to obtain essential information that did not appear to be correct.

2. Title, Project Purpose, Major Observed Change in Time, Taxa,
Keywords, Geographic Description, Computer/Language, and Abstract -

As previously noted, information provided by responders generally was accepted as received. Editing changes were made only when errors or changes for the better were obvious. Keywords were standardized and enhanced by computer comparison of MINI-BIOMON keywords with terms listed in the Environmental Terminology Index (Huffstetler *et al* 1976).

Additional development of keywords by NBIP staff included use of "cause of change priority keywords". One or more keywords listed below were assigned to each project when applicable.

A. Environmental Impact

agriculture	impoundments
air pollution	industrial chemicals
camping	logging
channelization	mining
coal	nuclear power plants
construction	oil spills
dredging	pesticides
eutrophication	recreational vehicles
fishing	siltation
fossil fueled power plants	thermal effluents
heavy metals	urbanization
hunting	waste water (sewage)
hydroelectric power plants	

B. Environmental Control (Artificial)

habitat modification	prescribed burning
legal regulation	sewage treatment
management measures	species introduction

C. Natural Occurrences

climate	predation
morbidity	red tides
natural catastrophe	seasonal variations
natural introduction	succession
population effects	weather conditions

Thus, the reader can find under one keyword the projects that apply to single important topics, for example, projects in which calcification, thermal pollution, thermal effects, and warm water release are studied all appear in the keyword list under thermal effluents.

Organism-oriented researchers can identify major organism types (See Item 21 on page 2 of Appendix I and various entries in Appendix V), organisms by scientific name (Appendix VII) when these were made available by responders, and organisms by common name in the keyword listing (Appendix VI). We limited the number of entries in the TAXA field to 12 due to constraints of computer programs on field and record sizes. When long lists of organisms were provided by responders, a general notation was made in the TAXA field regarding the type and number of organisms listed; for example, some of these types of entries are "ALGAE, 112 SPECIES"; "BIRDS, 149 SPECIES"; "FISHES, 168 SPECIES"; "MOLLUSCA, 45 SPECIES"; "PLANTS, 405 SPECIES"; and "ZOOPLANKTON, 174 SPECIES". Entry of individual organisms from such listings is planned for the TAXA data base (Figure 1) now being developed.

3. Sponsor's Project Officer, Program Name, Program Director or Administrator, Longitude and Latitude, Geocode Utilized, Data Code Name, and Data Availability -- Information in these subcategories was provided infrequently. For this reason, this type of information was not included in the data base. Limited information of this type is available for some projects in NBIP manual files.

4. References, Taxa, and Geographic Description -- Information in these subcategories is not fully developed at this time. As noted in the discussion of Figure 1, these data bases are or will be under development in the near future. Of these, the BIBLIOGRAPHIC (reference) data base is near completion. In the meantime, all references listed in this report can be given full citation information from NBIP manual files. The TAXA and GEOGRAPHIC DESCRIPTION data bases will require considerable development, since appropriate information was not fully supplied in most responses. Development of these data bases will be pursued as funds permit and as priority of effort is established.

Future Work

In addition to developing satellite data bases (BIBLIOGRAPHIC, TAXA, GEOGRAPHIC DESCRIPTION, and TABULAR DISPLAY) as noted in the discussion of Table 2, a number of additional activities need to be recognized as important work efforts in progress or work to be initiated in the future, as follows:

1. Response/Referral Services -- These are in progress now, but need to be pursued more actively, documented more fully, and followed-up in greater detail.

2. Continued identification of and information-gathering from principal investigators not previously contacted.
3. Updating on about a two-year cycle of information now contained in the main NBIP, MINI-BIOMON, and other files.
4. Contact and coordination with international efforts such as Earthwatch (UN), National Focal Point for the United Nations Environmental Program, International Referral System (EPA).
5. Inclusion of information from such national programs as BIOSTORET, NASQAN, NWQSS, STORET, and the National Pesticide Monitoring Programs. Tentative approaches to accomplish this have been made, but are beyond the present funding capability.
6. Need to assess in depth the true importance of biomonitoring information assembled in the manner described here. The major part of this effort has to date been expended in the necessary operational details of identifying investigators, mailing our documentation forms, accounting for these as they are received, standardizing information for input, editing for conformity and correctness, and attempting to maximally employ computer routines for printable and computer-searchable data bases. These are essential for a well-founded effort. The real import of this program, however, lies in the assimilation and interpretation of the accumulated biomonitoring information recorded,

Discussion

A summary generalization of biomonitoring information in the Part B project listing is difficult to make. Briefly, we believe that all

major concerns of environmental researchers are very well represented and documented in this listing of selected projects. Also, readers are reminded that considerable additional project information (although less complete than for projects in Part B) on specific subjects is available from NBIP's MINI-BIOMON data base and manual files.

Controversial environmental topics, i.e., ones where consensus of adverse effect has not been reached, include channelization, dredging, prescribed burning, rights-of-way, thermal effluents, and various types of power plants (fossil fueled, hydro-electric, and nuclear). Project information on these topics is sufficiently abundant in the listing (Appendix VI, Index on Added Keywords) to permit study of varied opinions and results for forming balanced views of these problems.

Projects on topics involving well-known adverse environmental effects include construction/habitat modification, eutrophication, heavy metals, industrial chemicals, logging, radiation/radionuclides, and pesticides. These are also well-represented in the listing. Review of projects on given topics can allow the reader to formulate personal conclusions as well as providing indications of locations where these problems are most severe.

Part B listing is exceptionally rich in descriptive terminology applied to each project. Many projects are applicable to multiple topics of interest. Because projects of multiple character are so designated, the arrangement of the listing and indices has the effect of greatly enhancing the informational value of each individual project. Hopefully, this will become apparent to the reader as familiarity with this report develops.

Summary

The current and ongoing "National Inventory of Selected Biological Monitoring Programs" has been described and presented as a source of information for those involved in planning and conducting environmental research. Searches of computer files can provide extensive information summaries on individual states or selected regions and a wide variety of technologies. The degree and diversity of responses to the inventory indicate the need for it and its probable future utility. The ability to derive more fully refined information from both the main and supporting data bases will improve as these are developed and supplemented with further information.

A significant beginning has been made toward stated objectives in summarizing and analyzing biomonitoring throughout the U.S. Continuance of this program is totally dependent on the outcome of the assessment of its worth.

Acknowledgements

The need for a nation-wide inventory of biological monitoring was identified by Dr. J.J. Reisa of the staff of the President's Council on Environmental Quality. The merit of the concept was recognized and implemented by funding from the Council, the Fish and Wildlife Service (Office of Biological Services, Project Officer-Dr. J.A. Sherk), the Energy Research and Development Administration (Division of Biomedical and Environmental Research, Project Officers-Drs. W.S. Osburn and J.H. Wilson), and the National Marine Fisheries Service (Drs. C. Larsen and L. Trott). At present (October 1976), NMFS is not an active sponsor. The Inventory's

final approach and operating procedures were defined in consultation with F.G. Goff, R.J. Olson and R.L. Burgess, and by ORNL's biomonitoring staff consisting of Anita B. Adams, Robert L. Barrack, John S. Cherry, Steven M. Dresner, Joann S. Epler, Mary A. Faulkner, Elaine E. Huber, L. Kirk Hyder, Gregory J. Kauffman, John W. Ross, Carolyn S. Tucker, Mary S. Uziel, Marsha B. White, and Gayle E. Whittaker. Each has contributed in special ways to the work of the Inventory. The Institute of Ecology (TIE) has served in an advisory capacity.

Automated aspects of the Inventory would have been impossible without previously developed programs and existing computer facilities of the Computer Applications Department (Dr. A.A. Brooks, Manager), Computer Sciences Division (Union Carbide Corporation, Nuclear Division) located at ORNL. Frank D. Hammerling, Brooks N. McNeely, and Ruth Slusher provided the needed guidance and assistance throughout the computerized manipulations needed for this work.

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APPENDIX I.

DOCUMENTATION FORM

(with numbers of projects and other
information in selected fields, see shading)

**PROJECT DOCUMENTATION
NATIONAL INVENTORY OF BIOLOGICAL MONITORING PROGRAMS**

PLEASE RETURN COMPLETED FORM TO:

**BIOLOGICAL MONITORING INVENTORY
ENVIRONMENTAL SCIENCES DIVISION
OAK RIDGE NATIONAL LABORATORY
OAK RIDGE, TENNESSEE 37830**

**PHONE: (615) 483-8611
EXT. 3-0391**

(Please print in black ink or type)

ADVISORY: THE INSTITUTE OF ECOLOGY

PRINCIPAL INVESTIGATOR

1. (NAME) (Last, First, Initials) **Responses to the Inventory total 3192 with approximately the same number of investigators or co-investigators participating.**

2. (BUSINESS ADDRESS)

3. (CITY)

4. (STATE)

5. (ZIP)

6. (INVESTIGATOR'S AFFILIATION)

7. (PHONE)

()

Ext.

DESCRIPTION OF YOUR BIOLOGICAL MONITORING PROJECT

(If you are in charge of more than one project, please use additional enclosed forms as appropriate)

8. (PROJECT TITLE)

Duration of Funding:

9. (PROJECT PURPOSE(S)) (Briefly)

<1 year

43

1-5 years

418

>5 years

483

unknown

53

10. (PROJECT SPONSOR(S))

11. (SPONSOR'S PROJECT OFFICER)

12. (DATE OF INITIATION)

13. (ANNUAL PROJECT FUNDING) (Circle one, or fill in)

a. Exact Amount \$

b. <\$10,000

c. \$10-50,000

d. \$50-100,000

OTHER (Specify)

14. (WILL PROJECT BE CONTINUED?) (Circle one)

a. Yes

b. No

c. Unknown

d. Terminated

15. (MAJOR OBSERVED CHANGE(S) IN TIME) (Briefly describe biotic change(s) identified as a result of your project)

16. (PROGRAM NAME) (If applicable)

17. (PROGRAM DIRECTOR OR ADMINISTRATOR) (If applicable)

18. (ECOSYSTEM OR BIOME TYPE) (Circle all applicable terms)

A. Terrestrial

1. desert

03

2. forest

303

a. coniferous

280

b. deciduous

228

c. tropical

17

3. savanna

54

4. grassland

180

5. tundra

50

a. arctic

52

b. alpine

27

6. wetland

131

B. Freshwater

1. stream

224

2. river

159

3. lake

221

4. reservoir

138

C. Marine

1. coastal

22

2. estuarine

17

OTHER (Specify)

7. mountain

111

Aquatic studies total = **690**

NOTE: We would also appreciate receiving any descriptive documents or reports about your project.

UCN-11687
(3 8-75)

**PRESIDENT'S COUNCIL
ON ENVIRONMENTAL
QUALITY**

**NATIONAL MARINE
FISHERIES SERVICE**

**U.S. FISH AND
WILDLIFE SERVICE**

**U.S. ENERGY RESEARCH
AND DEVELOPMENT
ADMINISTRATION**

19. (LEVEL OF STUDY) (Circle all applicable terms)

A. organism 541
 B. population 780
 C. community 578
 D. ecosystem 405
 E. region 199

OTHER (Specify)

20. (MANAGEMENT FOCUS) (Circle all applicable terms)

A. endangered species 159 H. range 147
 B. environmental impact 566 I. recreation 209
 C. fisheries 298 J. resource planning 247
 D. wildlife 344 K. pollution control 266
 E. forestry 154 L. water quality 316
 F. indicator species 367 M. power generation 112
 G. radiological 36 N. right-of-way 27

OTHER (Specify)

21. (ORGANISM, MAJOR TYPE) (Circle all appropriate types)

A. Animals 826
 1. vertebrate 651
 a. amphibia 64
 b. reptiles 68
 c. fish 301
 d. birds 236
 e. mammals 262
 2. invertebrate 381
 a. crustacea (specify order) 248
 b. insecta (specify order) 219
 c. other (specify phylum) 5
 d. mollusca 131
 e. shellfish 87
 f. annelida 68
 B. Plants 381
 1. vascular 342
 a. trees 210
 b. shrubs 215
 c. herbs 258
 d. grasses 140
 2. non-vascular (specify below) 50
 a. mosses 29
 b. lichens 18
 c. liverworts 13
 C. Microorganisms 272
 1. viruses 23
 2. bacteria 101
 3. fungi 54
 4. algae 213
 5. protozoa 58

OTHER (Specify)

22. (TAXA) (Genus and species, other taxonomic names, or common names if few; or attach listing or publication, if numerous)

There are 832 projects with entries in this field. Of these, 622 contain Latin nomenclature as specified by responders with approximately 2600 genus, species, or other taxonomic names.

23. (KEYWORDS) (In addition to those under other headings. Limit to 10 words)

Approximately 1600 keywords are employed in addition to 132 "code words" employed in items 18, 19, 20, 21, 24, 25, 27, 33, and 34 of the questionnaire.

24. (PRIMARY PARAMETERS STUDIED) (Circle all appropriate types)

A. age 351 E. distribution 716 I. habitat characterization 493 M. kill 181 Q. numbers 656 V. sex 232
 B. behavior 245 F. diversity 418 J. harvest 231 N. mortality 405 R. physiology 140 W. size/weight 278
 C. biomass 323 G. emigration 179 K. home range size 156 O. migratory patterns 209 S. productivity (specify type) 216 X. stress 144
 D. BOD 64 H. growth 385 L. immigration 165 P. natality 208 T. reproduction 356 Y. territory size 135
 U. residues 94 Z. toxicity 100

OTHER (Specify)

25. (SUPPORTING DATA COLLECTED) (Circle all appropriate types)

A. associated fauna 432 C. associated microorganisms 129 E. climatological data 363 G. soils 219 I. water quality data 378
 B. associated flora 445 D. atmospheric chemistry 48 F. hydrological data 309 H. terrain 165

OTHER (Specify)

26. (HOW WERE PRIMARY DATA COLLECTED?) (Use standard terminology, if possible)

27. (SAMPLING FREQUENCY)

A. continuous 135 B. seasonal 347 C. daily 90 D. weekly 182 E. monthly 280 F. quarterly 74 G. annual 246 H. other periodic 166 I. irregular 213

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APPENDIX II.
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PART B.

LISTING OF CURRENT OR RECENTLY
COMPLETED BIOMONITORING PROJECTS

(Note: Refer to "How to Use..." section
on pp. 21-25 of Part A.)

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ALABAMA

Standard Federal Region 4
Fish and Wildlife Service Region 4
(SEE ALSO 236, 238, 279, 370, 500, 502, 505,
1014)

<1>

INVESTIGATOR(S): Dusi, J. L.
AFFILIATION: Dept. of Zoology-Entomology,
Auburn University
TITLE: Ecologic Impacts of Wading Birds on
the Environment
PURPOSE: To study biology and ecology of
wading birds, especially herons in regard
to population densities and colony
locations in Alabama, Georgia, and Florida.
SPONSOR(S): Auburn University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Nesting colony movements,
increase of cattle egret to most abundant
species, and decrease of little blue heron.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland
LEVEL(S) OF STUDY: population; community;
region
MANAGEMENT FOCUS: environmental impact; water
quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BUBULCUS IBIS; FLORIDA CAERULEA
ADDED KEYWORDS: cattle egrets; little blue
herons; population effects; nesting
behavior; egrets; herons
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; home
range size; mortality; migratory patterns;
natality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
serial reconnaissance; radiotelemetry;
observation; banding
NUMBER OF SAMPLING SITES: 4-6 colonies; 2
transects
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
water quality data
STUDY SITE(S): AL; FL; GA
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
ADDRESS: Dr. J. L. Dusi
Zoology-Entomology Dept.
Auburn University
Auburn, AL 36830
TELEPHONE: (205) 826-4850
NBIP ACCESSION NUMBER: AL/003

<2>

INVESTIGATOR(S): Harper, J. D.
AFFILIATION: Dept. of Zoology-Entomology,
Auburn University
TITLE: Impact of Aerial Applications of Dylox
and Dipel on Forest Tent Caterpillars,
Associated Insect Species, and Selected
Wildlife in Southwestern Alabama
PURPOSE: To determine impact of the
insecticides Dipel and Dylox on non-target
arthropods in forest canopies of NYSSA
AQUATICA treated for forest tent
caterpillar.
SPONSOR(S): International Paper Co.; Scott
Paper Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975

PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Insecticide Dylox killed
many arthropods (spiders and insects) in
canopy immediately after application; data
not yet completely analyzed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
stream; river; marine; estuarine
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
forestry; recreation; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insects
TAXA: MALACOSOMA DISSTRIA
ADDED KEYWORDS: spiders; dipel; dylox; tent
caterpillars; caterpillars; pesticides;
arthropods; araneids; lepidopterans
PRIMARY PARAMETERS INVESTIGATED: diversity;
kill; mortality; numbers; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): AL
GEOGRAPHIC DESCRIPTION: Baldwin County;
Mobile County; Mobile-Tensaw River Basin
TYPE OF DATA: raw
STATISTICS EMPLOYED: non-parametric analysis
ABSTRACT: The effects of insecticide
treatments on non-target insects in tupelo
forest canopies was monitored by placing
traps under treated trees. Samples
collected from these traps are being
sorted and categorized at present.
Preliminary results indicate that Dylox
killed large numbers of non-target insects
and spiders from many different taxa,
while Dipel killed only slightly more
insects than were found in the untreated
area traps. Most of the Dipel killed
insects were non-target lepidopterous
caterpillars.
ADDRESS: Dr. J. D. Harper
Zoology-Entomology Dept.
Auburn University
Auburn, AL 36830
TELEPHONE: (205) 826-4850
NBIP ACCESSION NUMBER: AL/017

<3>

INVESTIGATOR(S): Hemphill, A. F.
AFFILIATION: Dept. of Biology, Spring Hill
College
TITLE: Effects of Canalization on Fish
Populations of the Lower Alabama River
PURPOSE: To study the ecological impact on
fish populations from construction of
canals in lower Alabama River by the
United States Army Corps of Engineers.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Increases in fish
populations of canalized loops in river.
Improvement of sport fishing in area as
result of canalization.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact;

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indicator species; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

ADDED KEYWORDS: channelization; population
effects; habitat modification; canals

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat
characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

traps; hoopnets; gill nets; electrofishing
gear; seines

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data

STUDY SITE(S): AL

GEOGRAPHIC DESCRIPTION: Mobile County;
Baldwin County; Alabama River

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: multivariate analysis

ABSTRACT: Fish populations of five large
loops of the lower Alabama River were
studied. In two of these, the main flow of
the river had been diverted by canals
constructed during 1968 to provide a
shorter barge route. The other three were
unaltered. Comparison was made between
fish populations in canalized and
uncanalized loops over a two year period.
In addition, physical and chemical data
were gathered from the two habitats. Data
indicate larger fish populations present
in the canalized loops. This appears to be
due to the general habitat of these
canalized loops where reduced flow has
apparently contributed to an accumulation
of large numbers of stumps, logs and
trees; these were less in the unaffected
river, probably due to scouring by spring
flood waters. However, hard sand slip
banks, which are required habitats for
some species, seem to be disappearing from
the canalized loops.

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NBIP ACCESSION NUMBER: AL/024

<4>

INVESTIGATOR(S): Hill, E.P.

AFFILIATION: FWS

TITLE: Pesticide Residues in Beaver and River
Otter in Southeast Alabama

PURPOSE: To detect residues in tissues of
beaver and river otter.

SPONSOR(S): State of Alabama

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: River otter (14 of 19),
contained traces of Mirex following an
aerial application of the pesticide.
Composite beaver samples taken from the
Chattahoochee River contained 31 times
more total residues than beavers from
other areas.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: CASTOR CANADENSIS; LUTRA CANADENSIS

ADDED KEYWORDS: beavers; river otters;

otters; pesticides; mirex; fireants; DDT;

DDE; DDD; heptachlor epoxide; endrin;

dieldrin; PCB; toxaphene; aroclor

PRIMARY PARAMETERS INVESTIGATED: age;

harvest; reproduction; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

trapper harvest

NUMBER OF SAMPLING SITES: numerous

SAMPLING FREQUENCY: seasonal

STUDY SITE(S): AL; GA

GEOGRAPHIC DESCRIPTION: Chattahoochee
Watershed

TYPE OF DATA: literature-derived

ABSTRACT: Tissue samples from beaver and
river otter taken by trappers mostly from
southeastern Alabama during January
through March 1973 and 1974, were
subjected to pesticide residue analyses.
Residues found were Mirex, DDT, DDE, DDD,
Heptachlor epoxide, Endrin, Dieldrin,
Toxaphene, and PCB as Aroclor 1260. The
occurrence of Mirex in 14 of 19 river
otter taken in 1974 may have resulted from
large area aerial application of Mirex for
fire ant control. Composite samples of
beaver from the Chattahoochee River
contained 31 times more total residues
than composite samples from other areas.

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NBIP ACCESSION NUMBER: AL/058

<5>

INVESTIGATOR(S): Leuth, P.X.

AFFILIATION: Alabama Dept. of Conservation
and Natural Resources

TITLE: Deer Survey and Investigations

PURPOSE: To measure harvests and condition of
deer.

SPONSOR(S): Alabama Dept. of Conservation

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1952

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Variable with exact area
of state. In general, there was an
increase in deer population, followed by
smaller animals, eventually a decline in
harvest.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife; forestry;

recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: ODOCOLEUS SPP

ADDED KEYWORDS: deer; population effects;

management measures

PRIMARY PARAMETERS INVESTIGATED: age;

harvest; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

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kill records
NUMBER OF SAMPLING SITES: 20-25
SAMPLING FREQUENCY: annual
STUDY SITE(S): AL
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: AL/011

<6>

INVESTIGATOR(S): Mount, R.H.
AFFILIATION: Dept. of Zoology-Entomology,
Auburn University
TITLE: The Reptiles and Amphibians of Alabama
PURPOSE: To conduct a comprehensive analysis
of the herpetofauna of Alabama.
SPONSOR(S): Alabama Agricultural Experiment
Station
SPONSOR CATEGORY: teaching institution; state
government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Marked decline in numbers
of most species of reptiles and many
amphibians.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland;
aquatic; freshwater; stream; river; lake;
marine; estuarine
LEVEL(S) OF STUDY: organism; community;
ecosystem
MANAGEMENT FOCUS: endangered species;
wildlife; forestry; indicator species;
range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles
TAXA: REPTILES, 41 GENERA; AMPHIBIA, 22 GENERA
ADDED KEYWORDS: impoundments; pesticides;
construction; agriculture; habitat
modification; snakes; frogs; turtles;
salamanders; alligators; species
introduction
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
reproduction
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; soils; terrain
STUDY SITE(S): AL
ABSTRACT: The reptiles and amphibians, as a
group, continue to be the least
appreciated of Alabama's native vertebrate
animals. Although a few are perhaps as
numerous now as ever, most have apparently
declined in numbers, some to the point of
rarity or possible extinction. Several
reptiles and amphibians are rare in
Alabama because of factors unrelated to
man or his activities. But in too many
cases the plight of threatened or
declining forms is due to mindless
destruction or degradation of their
habitats - or more regrettably, to
deliberate persecution.
REFERENCES: Mount, 1975; Jordan and Mount,

1975; Speake and Mount, 1973; Mount, 1972;
Mount and Schwaner, 1970; Spangler and
Mount, 1969; Mount, 1963; Mount, 1970
ADDRESS: Dr. Robert Mount
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TELEPHONE: (205) 826-4850
NBIP ACCESSION NUMBER: AL/014

<7>

INVESTIGATOR(S): Powell, M.R.
AFFILIATION: Alabama Dept. of Conservation
and Natural Resources
TITLE: Striped Bass Production and Stocking
Experiments in Alabama Coastal Areas
PURPOSE: Stocking of striped bass fingerlings
in Alabama waters open to the Gulf of
Mexico in attempts to rebuild the
population and to evaluate success of the
introductions.
SPONSOR(S): NMFS; FWS; Alabama Dept. of
Conservation
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1973
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Striped bass population
in both Mobile and Perdido Bay estuarine
areas is increasing.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; marine; coastal;
estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: MORONE SAXATILIS
ADDED KEYWORDS: striped basses; basses;
species introduction; islands; management
measures
PRIMARY PARAMETERS INVESTIGATED:
distribution; growth; habitat
characterization; mortality; migratory
patterns; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; creels; electrofishing gear
NUMBER OF SAMPLING SITES: 4
SUPPORTING DATA COLLECTED: climatological
data; water quality data
STUDY SITE(S): AL
GEOGRAPHIC DESCRIPTION: Baldwin County;
Mobile Bay; Alabama River; Perdido River;
Dauphin Island
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Mobile Bay, Mississippi Sound,
Perdido Bay estuary, and the Mobile Delta
contain about 400,000 surface acres of
water. Since the beginning of this
project, personnel of the Alabama Marine
Resources Division's Claude Petite
Mariculture Center have attempted to
produce sufficient numbers of striped bass
fingerlings to release at least one fish
per acre per season. This goal was
exceeded during the 1975 striped bass
season. Striped bass fry are produced
through artificial propagation of sexually
mature adults. Fry are cultured to a size
of 1.5 to 2 inches and fingerlings to a
size of 6 to 10 inches before release into
Alabama estuaries to establish stocks of
the species. Indications are that the

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small striped bass fingerlings are surviving and growing well in Alabama coastal waters. Several years of stocking at least one fish per acre will result in a healthy and self-sustaining striped bass population.

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NBIP ACCESSION NUMBER: AL/015

<8>

INVESTIGATOR(S): Pullen, T.M.
AFFILIATION: Zoology-Entomology Dept., Auburn University

TITLE: Seasonal Variation in Construction of Beavers in East Central Alabama
PURPOSE: To determine the time of year beavers are most active in building dams and to determine where, within a given area, building activity is most intense.

SPONSOR(S): Auburn University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Dam building occurred all year, but there was a slight peak of activity during the fall months.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland; aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; forestry; range; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: CASTOR CANADENSIS; PLANTS, 37 SPECIES

ADDED KEYWORDS: habitat modification;

beavers; seasonal variations; dams

PRIMARY PARAMETERS INVESTIGATED: behavior;

distribution; habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation

NUMBER OF SAMPLING SITES: 4

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): AL

GEOGRAPHIC DESCRIPTION: Lee County; Macon County

TYPE OF DATA: raw; reduced; summarized; literature-derived

ABSTRACT: Four beaver colonized areas located in the east-central Alabama area were observed during 1972 in an attempt to determine when and where beaver were most active in building and maintaining dams. Data were also gathered concerning the types of building materials used in dam construction. Beaver were found to be active all year long with major maintenance and building activity centered around ponds in which occupied lodges or bank dens were present. Major building materials consisted of mud and de-barked tree trunks and limbs. Lesser amounts of 37 herbaceous and woody plants were also

used.

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NBIP ACCESSION NUMBER: AL/035

<9>

INVESTIGATOR(S): Ranken, D.W.

AFFILIATION: FS

TITLE: Bacteriological Sampling of Swimming Water

PURPOSE: To test United States Forest Service swimming sites for compliance with state and federal water quality criteria.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There are minor fluctuations in bacterial populations from month to month.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: indicator species; recreation; pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; bacteria

ADDED KEYWORDS: management measures

PRIMARY PARAMETERS INVESTIGATED: numbers

NUMBER OF SAMPLING SITES: 8

SAMPLING FREQUENCY: seasonal; monthly

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): AL

GEOGRAPHIC DESCRIPTION: Covington County; Talladega County; Cleburne County; Hale County; Winston County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean

ABSTRACT: The bacteriological monitoring is conducted during the summer use season from April to September. Each site is sampled five times before the use season begins. Thereafter samples are taken monthly throughout the use season. Past sampling has indicated high total coliform bacteria colony counts for those lakes having forest streams flowing through them. Fecal coliform counts have been generally low (0-100 colonies/100 ml) and well within State and Federal water quality criteria.

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NBIP ACCESSION NUMBER: AL/019

<10>

INVESTIGATOR(S): Shipp, R.L.

AFFILIATION: Dept. of Biology, University of South Alabama

TITLE: Effect of By-Pass Canals on Fish Populations of the Lower Alabama River

PURPOSE: To assess the impact of by-pass canals on resident and transient fish population densities in the area north of the Tombigbee-Alabama confluence.

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SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Populations in by-passed river meanders supported stronger populations of game and some other species.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
ADDED KEYWORDS: canals; habitat modification; population effects; population dynamics; population density
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; habitat characterization; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; seines; electroshockers; hoop nets; trot lines
NUMBER OF SAMPLING SITES: 50
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): AL
GEOGRAPHIC DESCRIPTION: Baldwin County; Clarke County; Mobile County; Alabama River; Tombigbee River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: Fish populations of five large loops of the lower Alabama River were studied. In two of these, the main flow of the river had been diverted by canals constructed during 1968 to provide a shorter barge route. The other three were unaltered. Comparison was made between fish populations in canalized and uncanalized loops over a two year period. In addition, physical and chemical data were gathered from the two habitats. Data indicate larger fish populations present in the canalized loops. This appears to be due to the general habitat of these canalized loops where reduced flow has apparently contributed to an accumulation of large numbers of stumps, logs, and trees; these were less in the unaffected river, probably due to scouring by spring flood waters. However, hard sand slip banks which are required habitats for some species seem to be disappearing from the canalized loops.
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NBIP ACCESSION NUMBER: AL/033

<11>

INVESTIGATOR(S): Sparks, E.
AFFILIATION: Stillman College
TITLE: The Effect of Pollutants on Algae
PURPOSE: To determine the morphological and physiological effects of pollutants on the green alga, OEDOGONIUM.
SPONSOR(S): NIE
SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Morphologically, heavy metal pollutants have caused: (a) loss of chlorophyll, and (b) fragmentation of filaments.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: OEDOGONIUM SPP
ADDED KEYWORDS: green algae; heavy metals; industrial chemicals
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): isolation
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): AL
ABSTRACT: The heavy metals cyanide, cadmium, and mercury caused excess bleaching, fragmentation, and reduced respiration on the green algae, OEDOGONIUM.
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TELEPHONE: (205) 752-2548 ext. 24
NBIP ACCESSION NUMBER: AL/041

<12>

INVESTIGATOR(S): Swingle, E.A.
AFFILIATION: Alabama State Marine Resources Div.
TITLE: Environmental Assessment of Coastal Zone Development for Fisheries Management
PURPOSE: Investigation and assessment of coastal development and its relation to ecosystems.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Channels and other dredged areas generally have fewer species of fishes and crustaceans.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea
ADDED KEYWORDS: channelization; dredging; habitat modification; decapods
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; numbers
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): AL
GEOGRAPHIC DESCRIPTION: Mobile County; Fowl River; Mississippi Sand River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Comparison was made of altered and unaltered stretches of an estuarine river.
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Alabama Marine Resources Div.
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Dauphin Island, AL 36528

TELEPHONE: (205) 861-2882

NBIP ACCESSION NUMBER: AL/029

<13>

INVESTIGATOR(S): Taylor, M.P.

AFFILIATION: TVA

TITLE: Aquatic Biological Monitoring of

Brown's Ferry Nuclear Plant

PURPOSE: To note changes in aquatic environments above and below Brown's Ferry Nuclear Plant before and after operation.

SPONSOR(S): TVA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: NO changes have been noted due to operation of the nuclear plant.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species; pollution control; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; invertebrates; crustacea; insecta; mollusca; annelida

TAXA: CORBICULA SPP; HEXAGENIA SPP; ROTIFERA; CHRYSOPHYTA; CYANOPHYTA; CHLOROPHYTA; CHIRONOMIDAE; OLIGOCHAETA

ADDED KEYWORDS: carbon-14; chlorophylls; benthic organisms; nuclear power plants; copepods; cladocerans; ephemeropterans; dipterans; oligochaetes; chironomids

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; mortality; numbers; productivity; reproduction; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plankton tows; Ponar dredge; Van Dorn sampler; chlorophyll extraction methods

NUMBER OF SAMPLING SITES: 8

SAMPLING FREQUENCY: seasonal; quarterly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; water quality data

STUDY SITE(S): AL

GEOGRAPHIC DESCRIPTION: Limestone County;

Lauderdale County; Colbert County;

Tennessee River; Wheeler Reservoir;

Brown's Ferry Nuclear Plant; Athens (AL)

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV

STATISTICS EMPLOYED: mean; percentile; analysis of variance

ABSTRACT: The Nuclear Regulatory Commission (NRC) requires preoperational and operational monitoring of all nuclear plants. Brown's Ferry Nuclear Plant (BNFP) has been monitored since January, 1969 on a quarterly basis. BNFP started operation in the fall of 1973 and all monitoring since then has been operational. Eight stations are included in the monitoring program. Chironomidae, Oligochaeta,

HEXAGENIA SP., and CORBICULA SP. are the indicator benthic fauna. Zooplankton enumeration, carbon-14 productivity, phytoplankton enumeration, chlorophyll A extraction, and diversity of Chlorophyta, Chrysophyta, and Cyanophyta are examined.

ADDRESS: Mr. Mahlon Taylor

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E and D Building

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NBIP ACCESSION NUMBER: AL/043

<14>

INVESTIGATOR(S): Taylor, M.P.

AFFILIATION: TVA

TITLE: Aquatic Biological Monitoring of Bellefonte Nuclear Plant

PURPOSE: To note changes in aquatic environment above and below the Bellefonte Nuclear Plant due to construction and/or operation of the plant.

SPONSOR(S): TVA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There have been no changes due to construction.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species; pollution control; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; annelida; microorganisms; algae

TAXA: OLIGOCHAETA; CHLOROPHYTA; CYANOPHYTA; CHRYSOPHYTA; ROTIFERA; CHIRONOMIDAE; CORBICULA SP; HEXAGENIA SP

ADDED KEYWORDS: carbon-14; benthic organisms; chlorophylls; construction; nuclear power plants; cladocerans; copepods; ephemeropterans; dipterans; chironomids; rotifers; oligochaetes; species diversity

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; mortality; numbers; productivity; reproduction; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plankton dredge; Ponar dredge; chlorophyll extraction; Van Dorn sampler

NUMBER OF SAMPLING SITES: 4

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; associated

microorganisms; climatological data;

hydrological data; water quality data

STUDY SITE(S): AL

GEOGRAPHIC DESCRIPTION: Jackson County;

Tennessee River; Bellefonte Nuclear Power

Plant; Scottsboro

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV

STATISTICS EMPLOYED: mean; percentile; analysis of variance

ABSTRACT: The Nuclear Regulatory Commission (NRC) requires baseline, construction, preoperational, and operational monitoring of the Bellefonte Nuclear Plant (BNP). BNP has been monitored since the spring of 1973 on a monthly basis during all seasons except winter, when monitoring was done once. BNP has not started operation,

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therefore all monitoring data at this time is considered baseline, construction, and preoperational. Four river-mile and similar overbank stations are included in this monitoring program. Chironomidae, Oligochaeta, HEXAGENIA SP, and CORBICULA SP are the indicator benthic fauna. Zooplankton enumeration, carbon-14 productivity, phytoplankton enumeration, chlorophyll A extraction, periphyton, and diversity of Chlorophyta, Chrysophyta and Cyanophyta are examined.

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NBIP ACCESSION NUMBER: AL/045

<15>

INVESTIGATOR(S): Urban, R.D.
AFFILIATION: TVA
TITLE: Effects of Thermal Effluents upon the Aquatic Ecosystem
PURPOSE: Assess the effects of thermal effluents from fossil-fueled steam plants upon the non-fish components of the aquatic ecosystem.
SPONSOR(S): TVA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Preliminary conclusions were that no consistent cause-effect relationship between the thermal effluent from the steam plants studied and alterations of the various aquatic communities exists.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; microorganisms; algae
ADDED KEYWORDS: thermal effluents; benthic organisms; zooplankton; phytoplankton; fossil fueled power plants
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Ponar dredge; Kemmerer sampler; tow net; artificial substrate; plexiglass slides
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data; water quality data; sediment texture
STUDY SITE(S): AL; TN
GEOGRAPHIC DESCRIPTION: Tennessee River; Cumberland River; Clinch River; Holston River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Biological studies were conducted to assess the impact of steam plant

activities. A comprehensive monitoring program on natural populations of the major aquatic communities was initiated in June 1973 to supply the information necessary to comply with the 1972 Federal Water Pollution Control Act Amendments provisions to obtain a Section 316 (a) exemption.

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NBIP ACCESSION NUMBER: AL/055

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INVESTIGATOR(S): Young, R.C.
AFFILIATION: AWARE, Inc.
TITLE: Biological Survey of Five Mile Creek, Jefferson County, Alabama
PURPOSE: To determine alterations in aquatic community structures due to industrial and municipal waste water discharges.
SPONSOR(S): U.S. Pipe and Foundry Company
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Drastic changes in benthic macroinvertebrates and fishery below point of waste water discharges.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; shellfish; annelida
TAXA: ANNELIDA, 3 SPECIES; CRUSTACEA, 2 SPECIES; INSECTA, 20 SPECIES; MOLLUSCA, 4 SPECIES
ADDED KEYWORDS: waste water; sewage treatment; benthic organisms; heavy metals; channelization
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber nets
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): AL
GEOGRAPHIC DESCRIPTION: Jefferson County; Five Mile Creek; Warrior River
TYPE OF DATA: reduced; summarized
ABSTRACT: The U.S. Pipe and Foundry Company commissioned AWARE, Inc. to conduct a chemical and biological survey of Five Mile Creek, Jefferson County, Alabama to evaluate the effects of existing municipal and industrial discharges on the environmental health of the creek. The following observations were made: (1) upper reaches of the creek showed good water quality in terms of dissolved oxygen and organic content; (2) a severe deterioration in water quality was observed immediately below the municipal sewage treatment plant; (3) alkalinity, hardness, turbidity, temperature, and pH were generally favorable for typical stream organisms at every station examined; (4) heavy metals in the water

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were not a significant factor except for copper, which slightly exceeded EPA's in-stream standards at the first station downstream from U.S. Pipe; (5) ammonia levels were erratic; (6) upper reaches of the creek indicate moderate alterations in aquatic macroinvertebrate community structure probably due to channelization, urban runoff, and general misuse by the public; (7) this area of the creek appears

to support a limited fishery; and (8) macroinvertebrate populations indicate substantial water quality degradation in the region below the municipal sewage plant.

REFERENCES: Young, et al, 1975

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AWARE, Inc.

Nashville, TN 37204

TELEPHONE: (615) 794-0110 ext. 34

NBIP ACCESSION NUMBER: TN/018

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(SEE ALSO 564, 715, 897)

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INVESTIGATOR(S): Amundsen, C.C.
AFFILIATION: University of Tennessee
TITLE: Dynamics of the Recovery of Damaged
Tundra Vegetation
PURPOSE: To monitor and predict recovery
dynamics of man-damaged tundra vegetation.
SPONSOR(S): ERDA; University of Tennessee
SPONSOR CATEGORY: federal government;
teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is no classic
secondary plant succession in tundra
examined to date.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; arctic
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;
indicator species; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses;
non-vascular plants; lichens; mosses;
liverworts; microorganisms; bacteria; fungi
TAXA: PLANTS, 400 SPECIES
ADDED KEYWORDS: habitat modification;
succession
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; growth;
habitat characterization; immigration;
migratory patterns; physiology;
reproduction; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
line intercept transects
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; soils; terrain
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Amchitka Island; Adak
Island; Barrow
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM
STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis
ABSTRACT: A study, begun in 1971, was
undertaken to determine the environmental
factors which affect the recovery of
damaged tundra vegetation. A sampling
technique was developed on Amchitka Island
to allow the rapid acquisition of data on
species presence and frequency across
areas disturbed at various times and in
various ways. Attempts were made to sample
across all examples of aspect, slope
steepness, and exposure. The data were
analyzed and we concluded that there was
no directional secondary succession on the
Amchitka tundra, although there was
vigorous recovery on organic soils. Our
study led to recommendations which
resulted in a smaller effort than planned
to reclaim damaged areas by seeding and
fertilizing at a considerable financial
saving and without further biological
perturbation. Because of the increasing
activity on tundra landscape, whether for
energy production, or military or other

reasons, we are expanding our sampling to
other tundra areas. Our immediate plans
include sampling at Adak Island and
Barrow, Alaska.

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NBIP ACCESSION NUMBER: TN/016

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INVESTIGATOR(S): Arneson, P.D.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Identification, Documentation, and
Delineation of Coastal Migratory Bird
Habitats in Alaska
PURPOSE: To measure bird use by species and
numbers of the coastal (littoral) zone of
Alaska.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes in bird
populations in relation to oil impact.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: environmental impact;
wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 60 SPECIES
ADDED KEYWORDS: population dynamics; oil
spills
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial surveys
NUMBER OF SAMPLING SITES: entire coastline
Cape Newenham to Cape Fairweather
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Bristol Bay; Gulf of
Alaska; Cook Inlet; Beaufort Sea; Chukchi
Sea
TYPE OF DATA: raw
ABSTRACT: We are summarizing and evaluating
existing literature and unpublished data
on the distribution, abundance, behavior,
and food dependencies of birds associated
with littoral and estuarine habitats in
the Gulf of Alaska, Bristol Bay, Beaufort
Sea, Chukchi Sea, and on barrier islands
in the Beaufort Sea. We are also
attempting to determine the seasonal
density distribution, critical habitats,
migratory routes, and breeding locales for
principal bird species in littoral and
estuarine habitat. Additionally, we
identify critical species particularly in
regard to possible effects of oil and gas
development.
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NBIP ACCESSION NUMBER: AK/021

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INVESTIGATOR(S): Baker, B.H.

AFFILIATION: Forest Insect and Disease
Management Branch, FSTITLE: Forest Insect and Disease Management
in AlaskaPURPOSE: To provide prompt discovery of
forest and disease outbreaks on all
forested lands in Alaska and to monitor
trends in, and effects of, forest insect
and disease populations.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Various trends in forest
insect and disease occurrence.ECOSYSTEM OR BIOGEOTYPE(S): terrestrial;
forest; coniferous; deciduousLEVEL(S) OF STUDY: population; community;
ecosystem; regionMANAGEMENT FOCUS: environmental impact;
forestryORGANISMS, MAJOR TYPES: animals;
invertebrates; insects; plants; vascular
plants; trees; microorganisms; viruses;
bacteria; fungiTAXA: DENDROCTONUS RUFIPENNIS; DENDROCTONUS
SIMPLEX; IPS SPP; NEODIPRION TSUGAE;
ACLERIS GLOVERANA; ZETRAPHEA SP;
OPEROPHTERA HYPERBOREATA; HEMICHOA
CROCEA; ARCEUTHOBIVUS TSUGENSE; STROBILINUS;
CALICIPCIS PSEUDOTSUGAE;
CHRYSOMYXA LEDICOLA; RHYNCHOTA HASTATA;
LASPEYRESIA YOUNGAGAADDED KEYWORDS: spear-marked black moths;
moths; beetles; budworms; blights; rusts;
mistletoe; birches; paper birches; spruce
beetles; eastern larch beetles; aphids;
western black-headed budworms; hemlocks;
sawflies; striped alder sawflies; hemlock;
dwarf mistletoe; shoot blight; hemlock
cankers; spruce needle rusts; winter
killing; air pollution; weather
conditions; sulfur dioxide; biological
control

PRIMARY PARAMETERS INVESTIGATED:

distribution; kill; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial surveillance; vegetation sampling

NUMBER OF SAMPLING SITES: widespread over 119
million acres

SAMPLING FREQUENCY: continuous; seasonal

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Cook Inlet; Yukon
River; Porcupine River; Tongass National
Forest; Kenai Peninsula; Matanuska Valley;
Susitna Valley

TYPE OF DATA: summarized

ABSTRACT: Most forest insect activity in 1974
occurred on lands managed by the Bureau of
Land Management and the State. The largest
insect outbreak of the year was a rapid
upsurge of spear-marked black moth. A late
summer defoliator, the insect caused leaf
browning of paper birch along the Tanana
and Yukon Rivers. Spruce beetle activity
on state land west of Cook Inlet is
occurring along the Beluga River drainage
north of the earlier Tyonek infestation.
Previously, high spruce beetle populations
on the Kenai Peninsula have, for the mostpart, subsided. High populations of
Eastern larch beetle were detected for the
second year north of Mt. McKinley. Aphids
on paper birch generated public interest
in the Matanuska and Susitna Valleys.
Western black-headed budworm levels
increased at various locations on the
Tongass National Forest. Hemlock dwarf
mistletoe and decay are common in
southeast Alaska's old growth forests.
Other diseases in the coastal forest
during 1974 were hemlock die-back and
abnormally high foliar sulfur levels near
Ketchikan and Sitka. Spruce beetle
infestations drew attention in the Cook
Inlet Basin. While most populations
declined due to host depletion, others
expanded or intensified. Hemlock dwarf
and western black-headed budworm
populations were most prevalent near
Ketchikan. Renewed IPS beetle activity in
white spruce was recorded along the Yukon
and Porcupine Rivers. Principal disease
activities were suppression and evaluation
efforts in dwarf mistletoe infections of
western hemlock and cooperative updating
of cull factor data in southeast Alaska
forests.REFERENCES: Baker and Laurent, 1974; Baker,
et al, 1975; Baker and Kemperman, 1974

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NBIP ACCESSION NUMBER: AK/002

<20>

INVESTIGATOR(S): Beardsley, A.

AFFILIATION: Kodiak Investigations, Northwest
Fisheries CenterTITLE: Marine Resources Monitoring Assessment
and Prediction II: Crabs and Shrimp,
Northeastern Pacific and East Bering SeaPURPOSE: To promote effective use and
conservation of crab and shrimp stocks in
the northern Gulf of Alaska and eastern
Bering Sea by providing a technical base
of information to negotiating and managing
agencies.

SPONSOR(S): NMFS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1953

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in relative
abundance and biomass of major species
over 20 plus years.ECOSYSTEM OR BIOGEOTYPE(S): aquatic; marine;
coastal; estuarineLEVEL(S) OF STUDY: organism; population;
community; ecosystem; regionMANAGEMENT FOCUS: environmental impact;
fisheries; range; resource planningORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca;
shellfishTAXA: PANDALUS JORDANI; PANDALUS BOREALIS;
PANDALUS HYPsinotus; PANDALUS PLATYCEROS;
PANDALOPSIS DISPAR; PARALITHODES
CAMTSCHATICA; PARALITHODES PLATYPUS;
CHIRONOCETES BAIRDI; CHIRONOCETES OPHIOADDED KEYWORDS: management measures; ocean
pink shrimp; coon stripe shrimp; spot
shrimp; side stripe shrimp; king crabs;

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tanner crabs; decapods; echinoderms
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; growth; harvest; mortality;
migratory patterns; natality; numbers;
sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
otter trawl
NUMBER OF SAMPLING SITES: 2,000
SAMPLING FREQUENCY: seasonal; annual;
irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Gulf of Alaska;
Bering Sea
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 1130; FORTRAN
STATISTICS EMPLOYED: mean; mode; analysis of
variance; analysis of covariance;
regression/correlation analysis; modeling,
deterministic; modeling, stochastic
ABSTRACT: This is a continuing project to
monitor, assess, and predict the status of
stocks of crab and shrimp resources on the
continental shelf of the Gulf of Alaska
and the Eastern Bering Sea. Data is
collected by a commercial-sized otter
trawl for crabs and a specially designed
high-opening shrimp trawl. The catch is
sorted by species and weighed. Samples for
length and sex composition are routinely
taken. Outputs include status of stock
reports for use by fisheries managers and
delegations to international fisheries
meetings.
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NBIP ACCESSION NUMBER: AK/010

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INVESTIGATOR(S): Brown, J.; Hagen, R.K.
AFFILIATION: COE; United States Army Cold
Regions Research and Engineering Laboratory
TITLE: Cold Regions Environmental Factors
PURPOSE: To provide information on the
relationships of vegetation, soil,
climate, and thermal conditions of the
ground in order to develop capabilities to
minimize environmental impact of military
operations and construction; and to find
effective ways to restore impacted terrain.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: A recovery of vegetation
from disturbance and long term bioclimatic
observations including tree ring analysis.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; tundra; arctic
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species;
resource planning; water quality;

right-of-way
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: succession; habitat
modification; dendrochronology; pipelines;
construction; roads
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; growth; harvest;
immigration; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; collection
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: continuous; seasonal;
daily; monthly; annual; irregular
SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils; terrain; water
quality data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Yukon; Tanana
Uplands; North Slope
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministic; serial autocorrelations
ABSTRACT: Investigations are undertaken on
the air and surface temperature regimes of
cold-dominated terrains. Emphasis is on
microenvironmental variations of different
vegetation and terrain units. Using
simulation techniques, the influence of
surface modifications on ground thermal
conditions are examined. The rate at which
natural vegetation invades disturbed areas
is examined across broad regional areas,
particularly in the newly accessible
Alaskan pipeline route. New techniques to
enhance vegetative responses are explored.
Seasonal variations in snow and ice depths
are measured, and where applicable their
influence on water depth in lakes will be
determined.
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NBIP ACCESSION NUMBER: NH/026

<22>

INVESTIGATOR(S): Burgner, R.L.
AFFILIATION: Fisheries Research Institute,
University of Washington
TITLE: High Seas Salmon Monitoring
PURPOSE: To forecast annual abundance and age
composition of run of sockeye salmon to
west Alaska, one year prior to arrival.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Cycle of abundance
changed from 4 years to 5 years. Ocean
survival is more constant than freshwater
or estuarine.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; population;
ecosystem
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ONCORHYNCHUS NERKA; ONCORHYNCHUS KETA;
ONCORHYNCHUS GORBUSCHA; ONCORHYNCHUS
KISUTCH; ONCORHYNCHUS TSHAWYTSCHA; SALMO

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ADDED KEYWORDS: salmon; pink salmon; chum salmon; sockeye salmon; coho salmon; chinook salmon; rainbow trout; trout; life history; management measures
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; harvest; immigration; mortality; migratory patterns; natality; numbers; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): purse seine; transect
NUMBER OF SAMPLING SITES: 5 stations
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data; water quality data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Adak Island; Bristol Bay
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC 6400
STATISTICS EMPLOYED: mean; mode; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, stochastic
ABSTRACT: Originally, the research was designed to study ocean life-history of all species of Pacific salmon and steelhead trout for purposes of international treaty with Japan and Canada. Now, the main objective is to assess the abundance and age composition of immature sockeye salmon in a key area at sea where stocks from Bristol Bay are concentrated each year. Data are used to forecast, one year in advance, the abundance and age composition of the next year's run to Bristol Bay. Data are valuable in optimizing management of the resource and in negotiating with Japan in controlling their high seas fishing effort in areas where Bristol Bay sockeye are abundant.
REFERENCES: Rogers, 1974
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NBIP ACCESSION NUMBER: WA/051

<23>

INVESTIGATOR(S): Chapin, F.S.; Johnson, L.A.
AFFILIATION: Institute of Arctic Biology, University of Alaska
TITLE: Enhancement of Natural Reinvasion by Fertilization
PURPOSE: To determine the effect of fertilizer upon increased seed production in native communities and to determine what effect fertilization of disturbed sites has upon invasion rates.
SPONSOR(S): U.S. Army Cold Regions Research and Engineering Laboratory; U.S. Army
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The fertilization of disturbed sites dramatically increased the vascular plant cover and also seemed to produce greener vegetation in the first growing season.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; tundra; arctic; alpine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs; grasses; non-vascular plants; mosses
TAXA: ERIOPHORUM VAGINATUM; SALIX SP.; LEDUM PALUSTRE; EMPETRUM NIGRUM; CAREX SP.; CALAMAGROSTIS CANADENSIS
ADDED KEYWORDS: cotton grasses; willows; labrador teas; crowberries; sedges; reed-bentgrasses; fertilizers; seeds; nitrogen; phosphorus; potassium; nutrients; management measures; prescribed burning; habitat modification
PRIMARY PARAMETERS INVESTIGATED: growth; immigration; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Elliott Study Region; Elliot Highway
TYPE OF DATA: raw; summarized
ABSTRACT: Experimental plots were established to determine the effect of nutrient additions upon colonization of disturbed tundra sites and also upon flowering and seed set within ERIOPHORUM VAGINATUM communities. Disturbed sites are of two types: frost boils and a mixed gravel, mineral soil road. In the frost boils, 3 replicates on two levels each of nitrogen, phosphorus, and potassium; a combination of high nitrogen-phosphorus potassium; and a control seeding of each 2x2 m. plot with ERIOPHORUM VAGINATUM seeds. Road cut plots received 3 replicates of a high level nitrogen, phosphorus, and potassium in addition to the seeds on half of each plot. In order to determine the effect on flowering treatments of high nitrogen, phosphorus, and potassium as compared to no fertilizer were applied to an undisturbed community and a previously burned community within a series of 2 x 2 m. plots. Three replicates of treatments were established. The effect upon colonization is being monitored by estimates of percent cover while the number of covering heads will be determined in the other plots. These data should help to determine the effect of nutrient additions and the optimal nutrient combinations for management of disturbed areas.
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TELEPHONE: (907) 479-7162
NBIP ACCESSION NUMBER: AK/017

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INVESTIGATOR(S): Chapin, F.S.; McKendrick, J.D.

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AFFILIATION: Institute of Arctic Biology,
University of Alaska
TITLE: Nutrient Dynamics of Tundra Vegetation
PURPOSE: To document seasonal changes in
plants of different life forms, and in
plants characteristic of different
habitats.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in nutrient
concentration of important tundra species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; arctic
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses;
non-vascular plants; lichens; mosses
TAXA: DUPONTIA FISCHERI; ERIOPHORUM
ANGUSTIFOLIUM; CAREX AQUATILIS; SALIX
PULCHRA; BETULA NANA; ERIOPHORUM
VAGINATUM; LEDUM PALUSTRE; RUBUS
CHAMAEMORUS; POLYTRICUM SP; AULACONNIUM
SP; CLADONIA SP; CETRARIA SP
ADDED KEYWORDS: sedges; willows; birches;
cotton grasses; labrador teas;
cloudberries; seasonal variations;
nutrients; nitrogen; phosphorus;
potassium; magnesium
PRIMARY PARAMETERS INVESTIGATED: growth;
residues
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Barrow River; Meade
River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGES: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: AK/068

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INVESTIGATOR(S): Didrickson, J.C.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Moose Composition Counts
PURPOSE: To evaluate sex and age ratios and
also production.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A decrease in bull-cow
ratios occurs when only males are
harvested.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; tundra; arctic
LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: ALCES ALCES
ADDED KEYWORDS: moose; management measures
PRIMARY PARAMETERS INVESTIGATED: natality;
numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observers tally; aerial census
SAMPLING FREQUENCY: annual
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Matanuska River; Knik
River; Susitna River; Kahiltna River;
Matanuska Valley; Susitna Valley
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: analysis of covariance
ABSTRACT: Sex and age composition counts
conducted annually in selected areas of
game management units 14A, 14B, 16A, and
16B. These data are on file (BGDP-Big Game
Data Information File) in offices of
Alaska Dept. of Fish and Game throughout
south central Alaska, but primarily in
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INVESTIGATOR(S): Faro, J.B.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Survey and Inventory of Big Game
Species on the Alaskan Peninsula and
Bristol Bay Area
PURPOSE: To identify numbers, population
composition, sub-populations, population
trends, and areas of critical habitat; and
to monitor harvest levels.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1961
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Declining moose
population occurred apparently as a result
of past over-population and range abuse.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; tundra; arctic
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact;
wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: URSUS ARCTOS; URSUS HORRIBILIS; ALCES
ALCES; RANGIFER TARANDUS
ADDED KEYWORDS: moose; grazing; habitat
modification; management measures; bears;
caribou
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; habitat characterization;
harvest; migratory patterns; natality;
numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial surveys; harvest data
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Alaskan Peninsula;
Bristol Bay Area
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean

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ABSTRACT: We are identifying populations of wildlife and critical habitats and are using this data to establish harvest levels and recommend habitat protection for future development (oil). We seek to establish population trends and causes of trends.

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NBIP ACCESSION NUMBER: AK/035

<27>

INVESTIGATOR(S): Franzmann, A.W.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Moose Research
PURPOSE: To obtain better understanding of the moose/environment relationship.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A 12-month sequential hair analysis showed severe copper deficiency in a large population of Alaskan moose. Only in late summer and early autumn were copper levels determined to be within normal range.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; indicator species; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: ALCEA; ALCEA; URSUS ARCTOS; BETULA PAPERIFERA; SALIX SP; VACCINIUM VITIS; POPULUS TRENULOIDES; CANIS LUPUS; URSUS HORRIBILIS; URSUS AMERICANUS
ADDED KEYWORDS: moose; black bears; bears; gray wolves; wolves; browse conditions; manganese; lead; magnesium; iron; zinc; copper; trace elements; grizzly bears
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; harvest; home range size; immigration; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress; territory size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; aerial observations; trapping; winch/tripod weighing device; immobilizing drugs
SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Moose River; Coyote Lake; Kenai Peninsula Borough
STATISTICS EMPLOYED: mean; percentile;

analysis of variance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: Calf mortality at the Kenai Moose Research Center (MRC) during winter 1974-75 was 100 percent. Poor calf survival was also experienced throughout Game Management Unit 15. Snow depths were greater than 50 cm from January through early April 1975. The Willow Lake Rehabilitation Area supported greater numbers of moose than similar control areas and calf survival appeared better. Adult moose mortality attributable to "winter-kill" was experienced at the MRC as well as in Game Management Unit 15C. Marrow fat of two adult moose which were winter-killed at the MRC was 7.4 and 8.6 percent, which was similar to marrow fat values in winter-killed calves. Three of the last four winters on the Kenai Peninsula were severe enough to result in poor calf survival, and recruitment into the population has been negligible. Blood samples were collected from 409 moose during this report period, making a total of 1,488 samples collected and analyzed to date. Six-hundred and ten hair samples were collected and analyzed for 18 mineral elements during this report period making a total of 1,266 samples analyzed since May 1972. Eight moose milk samples were analyzed for 18 mineral elements and gross composition studies of 20 moose milk samples were completed. Mineral metabolism and cycling studies were initiated and analyses of browse, soil, and water were completed. No interpretation was made of these preliminary data, however. Serum corticoid levels proved useful as an adjunct to excitability evaluation in moose.

REFERENCES: Franzmann and Arneson, 1974; Arneson and Franzmann, 1975; Franzmann, et al, 1975a,b; Franzmann, et al, 1974a,b; Flynn and Franzmann, 1974a,b; LeResche and Pausch, 1974; LeResche, et al, 1974

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NBIP ACCESSION NUMBER: AK/062

<28>

INVESTIGATOR(S): Glenn, L.P.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Brown and Grizzly Bear Research
PURPOSE: Brown bear distribution and movement patterns, life history and turnover rate, and geographic variation in skull size by sex and age.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: In the study area, there was a downward trend in mean age of males with female ages remaining about the same. The fall male kill has declined and geographic location influenced mean skull size.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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tundra; arctic

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; recreation;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: URSUS ARCTOS; URSUS HORRIBILIS

ADDED KEYWORDS: brown bears; management
measures; grizzly bears; life history;
bears

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; emigration; growth; harvest;
home range size; immigration; kill;
mortality; migratory patterns; natality;
numbers; physiology; productivity;
reproduction; sex; size/weight; territory
size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

radiotelemetry; aerial surveys; recapture

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal; monthly;

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Meshie River; Black
Lake; Chignik Lake

TYPE OF DATA: raw

ABSTRACT: The Alaska Department of Fish & Game captured, marked, and released 124 brown bears on the Black Lake Study area in 1974. Tagging began on June 8 and continued for 30 consecutive days. Forty-one percent (38 of 93) of the bears over one year of age had been marked in previous years. Excluding known mortality an estimated 200 marked bears remain on the study area. Conclusions about seasonal movements are provisional, based on information gathered from 443 captures of 336 bears and 363 resightings of previously marked bears. Movement histories of 16 marked bears are plotted on maps. The rate of population turnover was high. Hunters killed 85 of 317 marked bears in the last four years (15 months of hunting effort). The population size and rate of turnover have not been determined. Data are accumulating and will be sufficient to provide a realistic estimate upon completion of the study. Most (68 percent) of 443 bears captured were less than 5 years of age. The sex ratio of young, six months to 3.5 years of age, was nearly even whereas the ratio of males to females declined to 43:100 at age 4.5 years, 24:100 at age 5 to 10 years, and 10:100 at 11+ years of age. A computer program was written to compare harvest characteristics by subunit. Results showed that during the past 14 years more bears were killed to the north (781 bears) and to the south (719 bears) than on the study area (617 bears). In general all three subunits showed a continuing trend towards a younger population.

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<29>

INVESTIGATOR(S): Hanson, W.C.

AFFILIATION: Los Alamos Scientific
Laboratory, University of California

TITLE: Radiation Ecology Studies of Northern
Alaska

PURPOSE: To evaluate the transport and fate
of worldwide fallout radionuclides in
relatively simple ecosystems that
effectively transmit materials to man and
other carnivores.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1959

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Peaks of radioactivity
occurred during 1964 and 1966 in caribou
and Eskimos. Seasonal changes correlated
with lichen photosynthesis and caribou
migrations.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; arctic

LEVEL(S) OF STUDY: ecosystem; region

MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; radiological;
pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; mammals; plants; vascular
plants; trees; shrubs; herbs; grasses;
non-vascular plants; lichens

TAXA: HOMO SAPIENS; RANGIFER TARANDUS; CANIS
LUPUS; ALOPEX LAGOPUS; LAGOPUS MUTUS;
CORREGONUS SPP; SALIX ALBENSIS; CAREX
AQUATILIS; CLADONIA ALPESTRIS; CLADONIA
RANGIFERINA; CETRARIA CUCULLATA

ADDED KEYWORDS: reindeer; gray wolves; arctic
foxes; ptarmigans; whitefishes; willows;
water sedges; reindeer lichens; radiation;
eskimos; indians

PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity;
emigration; growth; habitat
characterization; harvest; home range
size; immigration; kill; migratory
patterns; numbers; physiology;
size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

whole body counting; radiochemical analysis

NUMBER OF SAMPLING SITES: 8

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; atmospheric chemistry;
climatological data; soils; terrain

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Anaktuvuk Pass; Cape
Thompson; Tagagawik River; Pah River;
Kanuti River

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

analysis of variance;
regression/correlation analysis; modeling,
deterministic; modeling, stochastic

ABSTRACT: The objectives of this project are
to: (1) define routes, rates of movement,
and resultant concentrations of worldwide
fallout and natural radionuclides within
northern Alaska ecosystems; (2) relate
these data to ecosystem function and
phenomena in a model that has predictive
and assessment purposes; (3) evaluate the
contributions from various sources of
radiation exposure to the Eskimos and
Indians of the region; and (4) apply

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radionuclide cycling data to the effluents
of resource developments of northern
Alaska.

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NBIP ACCESSION NUMBER: NM/028

<30>

INVESTIGATOR(S): Hanson, W.C.
AFFILIATION: Los Alamos Scientific
Laboratory, University of California
TITLE: Ecological Consequences of Alaskan
Northern Slope Oil Development
PURPOSE: To monitor and determine the extent
of the environmental impact of
construction of the Trans Alaska Pipeline
on the Alaskan north slope.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Loss of small mammals,
shorebirds, and their habitats due to
industrial development in tundra
environment.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; arctic
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; range;
right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
shrubs; herbs
TAXA: ALOPEX LAGOPUS; VULPES PULVA;
DICTYOSTONYX GROENLANDICUS; LEMUS
TRIMICRONATUS
ADDED KEYWORDS: arctic foxes; red foxes;
lemmings; habitat modification; diseases
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; habitat
characterization; home range size;
immigration; kill; mortality; migratory
patterns; natality; numbers; physiology;
reproduction; sex; size/weight; territory
size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live-trapping; tagging; release; recapture
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
terrain
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Prudhoe Bay; Colville
River; Sagavanirktok River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis; modeling;
deterministic
ABSTRACT: The objectives of this project are
to: (1) determine the extent and nature

of the interspecific competition between
Arctic and red foxes; (2) determine
locations and characteristics of densities
of both species; (3) determine relative
densities and importance of prey species;
(4) gather information on problems caused
by Arctic and red foxes in construction
camps and pipeline-related operations; (5)
examine and document occurrences of dead,
diseased, injured, or otherwise abnormal
foxes; (6) evaluate the effects of
pipeline activities on fox population
densities, reproduction, and movements;
(7) assess the effect of foxes on pipeline
operations, such as destruction of
equipment and disease transmission; and
(8) determine parameters that influence
fox densities.

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<31>

INVESTIGATOR(S): Holleman, D.F.
AFFILIATION: Institute of Arctic Biology,
University of Alaska
TITLE: Radiocesium Concentration in
Environmental Samples
PURPOSE: To describe radiocesium
concentration in lichens in relation to
reindeer/caribou, man/wolf food chain.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: General decrease in
cesium concentration, however, there is an
annual cycle in the upper trophic level.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; arctic
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: wildlife; radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; non-vascular plants;
lichens
TAXA: RANGIFER TARANDUS; CANIS LUPUS
ADDED KEYWORDS: reindeer; caribou; wolves;
radionuclides; food chains; population
effects; cesium
NUMBER OF SAMPLING SITES: diverse
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: climatological
data; terrain
STUDY SITE(S): AK
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: This project is designed to provide
basic information on the environmental and
the nutritional physiology of reindeer and
tundra caribou, RANGIFER TARANDUS. One
scientific interest lies in determining
the effects of diet and climatic stresses
on rumen function and pathways of
intermechanisms that enable caribou and
reindeer to adapt to their environment, in
studying mineral metabolism including the
metabolism of fallout radionuclides, and
most recently, through integrated studies
with the International Biological Program,

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the role of RANGIFER on dynamic aspects of nutrient cycling on the Tundra Biome. Experimentally, our techniques include the use of esophageal fistulas to determine directly the types and amounts of food selected by the animal, rumen fistulas to study the conversion by rumen microflora of dietary nutrients into new compounds that are absorbed into the body, and radioactive tracer techniques to determine the relative importance of these compounds as sources of energy and as precursors of animal tissue and end products. It is anticipated that new knowledge gained from these studies will enhance efforts to increase the contribution of the Far North to the world's food supply. In addition, it may make more meaningful observations on the passage of fallout radionuclides through the food chain of the Alaskan Eskimo.

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<32>

INVESTIGATOR(S): Jennings, L.E.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Moose Survey and Inventory, Game Unit 12
PURPOSE: To monitor changes within Unit 12 moose populations and study factors affecting those changes.
SPONSOR(S): State of Alaska
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Unit 12 moose populations have declined since 1960 because of low moose calf survival.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: wildlife; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ALCEA ALCEA
ADDED KEYWORDS: moose; moose calf survival; predation; models; wolves; grizzly bears
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; growth; mortality; migratory patterns; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; climatological data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Tok River drainage
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Moose numbers in Unit 12 have declined since 1960 primarily as a result of low calf survival. The low calf

survival rates appear to be caused by predation by wolves and grizzly bears.

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<33>

INVESTIGATOR(S): Johnson, A.M.
AFFILIATION: Div. of Cooperative Research, FWS
TITLE: Marine Mammal Studies
PURPOSE: To determine the ecological effects on marine wildlife of marine activities related to the development of energy resources.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There are seasonal changes in sea otter distribution. Sea otters partially segregate by sex.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; crustacea; mollusca
TAXA: ENHYDRA LUTRIS
ADDED KEYWORDS: sea otters; pipelines; hydrocarbons; natural gas; life history; oil; echinoderms
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; home range; size; mortality; natality; numbers; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys; surface surveys; observation; systematic and random sampling; collections; telemetry
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Prince William Sound
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis
ABSTRACT: Although the major objective is to evaluate effects of human activities on sea otter populations, considerable knowledge of life history, population biology, and ecology are being derived. Sea otter habitats are being described and monitored in selected areas.
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INVESTIGATOR(S): Johnson, D.A.
 AFFILIATION: Alaska Dept. of Fish and Game
 TITLE: Game Biology
 PURPOSE: To gather data on game populations.
 SPONSOR(S): FWS; Alaska Dept. of Fish and Game
 SPONSOR CATEGORY: federal government; state government
 DATE OF INITIATION: 1972
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: There are more people, shorter seasons, and smaller bag limits.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; tundra; arctic; alpine; wetland; mountain; aquatic; freshwater; stream; river; lake; marine; coastal; estuarine
 LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
 MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; indicator species; range; recreation; resource planning; right-of-way
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
 TAXA: URSUS AMERICANUS; CANIS LUPUS; ALCES ALCES; OREOMYX AMERICANUS
 ADDED KEYWORDS: moose; mountain goats; goats; brown bears; black bears; bears; wolves; wolverines; predators; habitat modification
 PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; territory size; age
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys; harvest tickets; sealing forms; ground habitat evaluation; export reports; general public feeling by personal and public meetings
 SAMPLING FREQUENCY: continuous
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
 STUDY SITE(S): AK
 GEOGRAPHIC DESCRIPTION: Icy Bay to Cape Wankarem
 TYPE OF DATA: raw; reduced; summarized
 STATISTICS EMPLOYED: mean; mode; median; percentile
 ABSTRACT: This project gathers data on game animals in relation to hunter densities and on game animals' ability to produce an excess number above and beyond the population loss due to predators and other natural factors.
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<35>

INVESTIGATOR(S): Johnson, L.A.
 AFFILIATION: Cold Regions Research and

Engineering Laboratory, U.S. Army
 TITLE: Restoration at a Subarctic Dam Site
 PURPOSE: The effects of nutrient additions to a silt substrate upon competition between a native and an agronomic grass species are monitored. The rate of invasion of native species onto the fertilized and unfertilized portions of the site are documented.

SPONSOR(S): U.S. Army Cold Regions Research and Engineering Laboratory; U.S. Army
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1975
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: The invasion of native species is largely limited to a few species, especially EQUISETUM PRATENSE, EPILOBIUM ANGUSTIFOLIUM, and MATRICARIA MATRICARIOIDES.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; wetland
 LEVEL(S) OF STUDY: population; community
 MANAGEMENT FOCUS: environmental impact; resource planning
 ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs; grasses; non-vascular plants; lichens
 TAXA: ALCES ALCES; URSUS AMERICANUS; OREOMYX AMERICANUS; CANIS LUPUS; URSUS ARCTOS MIDDENDORFI; GULO GULO
 ADDED KEYWORDS: succession; natural introductions; habitat modification; agriculture; fescue grasses; rye grasses; fireweeds; meadow-horsetails; pineapple-weeds; squirrel-tail grasses
 PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; growth; productivity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): biomass sampling; cover sampling
 NUMBER OF SAMPLING SITES: 3
 SAMPLING FREQUENCY: annual
 SUPPORTING DATA COLLECTED: associated flora; climatological data; soils
 STUDY SITE(S): AK
 GEOGRAPHIC DESCRIPTION: Fairbanks County; Chena River
 TYPE OF DATA: raw; reduced; summarized; literature-derived
 COMPUTER AND LANGUAGE: Honeywell 3200
 STATISTICS EMPLOYED: mean; analysis of variance
 ABSTRACT: This project is examining strategies for short-term revegetation and longer-term restoration to native vegetation by means of nutrient manipulation. Since revegetation research in the subarctic is very recent, long-term results are not available. It is not known what effect the use of agronomic species for revegetation has upon native species' reinvasion of disturbed sites, and this information is needed for future disturbances. There are two main phases of this project. The first tests the effect of various combinations of nitrogen and phosphorus fertilizers upon the competitive relationships within grass mixtures, specifically Arctostaphylos fescue-annual rye and Arctostaphylos fescue-Bluejoint reedgrass. In the second phase the rates of reinvasion of native species are monitored to determine the differences between unfertilized, unseeded areas as opposed to the fertilized, seeded plots. The results of the study should

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indicate which fertilization and seeding schemes can be used to either deter or accelerate natural succession processes. This information is urgently needed for the Subarctic and Arctic regions.

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NBIP ACCESSION NUMBER: AK/016

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INVESTIGATOR(S): Jones, D.E.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Steelhead and Sea-Run Cutthroat Trout Life History Study in Southeast Alaska
PURPOSE: Research on the basic life histories of steelhead and sea-run cutthroat in southeast Alaska.
SPONSOR(S): Anadromous Fish; Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A steady decline in abundance of the steelhead, cutthroat, red, pink, and chum salmon on the study stream.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: fisheries; forestry; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALMO GAIARDNERI; SALMO CLARKI; ONCORHYNCHUS NEKA; ONCORHYNCHUS KETA; ONCORHYNCHUS GORBUSCHA; ONCORHYNCHUS KISUTCH; SALVELINUS MALMA
ADDED KEYWORDS: steelhead trouts; cutthroat trouts; trouts; red salmon; pink salmon; chum salmon; salmon; dolly varden; sockeye salmon; rainbow trouts; life history; migration rates; spawning; fecundity; eggs; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; emigration; growth; kill; mortality; migratory patterns; natality; numbers; reproduction; sex; size/weight; territory size; habitat characterization; harvest; home range size; immigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): trapping; fish weir
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Petersburg Creek; Petersburg Lake
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; median; percentile; analysis of variance; multivariate analysis
ABSTRACT: This project is designed to study

the life history of the steelhead trout, SALMO GAIARDNERI, and the cutthroat trout, SALMO CLARKI, in a typical southeastern Alaska lake-stream system. It involves determination of beginning, peak, and completion of both in- and out-migrations. Numbers of fish involved as well as their length, weight, sex, and age are noted. Investigations of the resident population of cutthroat in Petersburg Lake were initiated during 1974. Age and growth data collected from resident cutthroat was comparable to that for the sea-run populations.

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TELEPHONE: (907) 772-4221
NBIP ACCESSION NUMBER: AK/023

<37>

INVESTIGATOR(S): LaPerriere, J.D.
AFFILIATION: Institute of Water Resources, University of Alaska
TITLE: The Limnology of Two Dissimilar Subarctic Streams and Implications of Resource Development
PURPOSE: To obtain comprehensive physical and chemical data, survey the resident invertebrates, and evaluate assimilative capabilities of the two streams.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: The usual indicator organisms of oligotrophy and eutrophy may not be applicable in Alaska.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta; microorganisms; algae
TAXA: GYRALLUS SP; DINA SP; CHIRONOMUS SP; PHAENOPSECTRA SP; PISIDIUM SP; PELOSCOLEX SP; MONODIANESA SP; PROCLADIUS SP; PROTANYPUS SP; STICTOCHIRONOMUS SP; LENNEA SP; HYALELLA SP; PALPOMYIA SP
ADDED KEYWORDS: eutrophication; ephemeropterans; dipterans; trichopterans; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): drift nets; Surber sampler
NUMBER OF SAMPLING SITES: 19
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: terrain; water quality data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Chatanika River; Goldstream Creek; Harding Lake
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN IV
ABSTRACT: The lakes chosen for the project all seem to be oligotrophic or, at best, the data is inconclusive. It must be

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pointed out that the finding of chironomids indicative of oligotrophy is not conclusive evidence that a lake is oligotrophic, but may indicate only that it has been oligotrophic. What one is searching for in a study like this are indicators of eutrophy which can provide conclusive evidence that a lake is becoming eutrophied. This presents a difficulty in studying oligotrophic lakes because all or nearly all of the chironomids living in the lake must be reared to eliminate the possibility of finding a species indicative of eutrophy. The discovery of new species, which is unavoidable in a relatively unstudied area like Alaska, presents additional problems because the ecology is then not known and its use as an indicator species is not possible. From evidence such as the high-standing crop of tubificid worms in certain areas of Harding Lake, as well as the high hydrophyte biomass, the investigator has come to the conclusion that the trophic state system of lake classification may not be valid for the Alaskan subarctic and arctic.

ADDRESS: Ms. Jacqueline D. Laferriere
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NBIP ACCESSION NUMBER: AK/048

<38>

INVESTIGATOR(S): Larson, R.W.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Survey and Inventory of Alaska's Wildlife
PURPOSE: To manage and perpetuate wildlife species in selected areas.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROGRESS/CONTINUATION: yes
CHANGE(S) OBSERVED: Human population increase.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; tundra; arctic; wetland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs
ADDED KEYWORDS: habitat modification; population effects
PRIMARY PARAMETERS INVESTIGATED: age; emigration; growth; habitat characterization; harvest; home range; size; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observations; range enclosures
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;

associated flora

STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Delta Junction (AK)
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: None provided.
ADDRESS: Mr. Robert W. Larson
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NBIP ACCESSION NUMBER: AK/070

<39>

INVESTIGATOR(S): Mathisen, O.A.
AFFILIATION: Fisheries Center; University of Washington
TITLE: Bristol Bay Research - Kvichak Salmon Studies
PURPOSE: To explain the factors (abiotic and biotic) which create and maintain the sockeye salmon cycle in the Kvichak watershed.
SPONSOR(S): University of Washington; Association of Pacific Fisheries; Alaska Dept. of Fish and Game
SPONSOR CATEGORY: teaching institution; trade association
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Return to five-year cycle of sockeye salmon production.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; marine; coastal; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea
TAXA: ONCORHYNCHUS NEBKA
ADDED KEYWORDS: cladocerans; copepods; sockeye salmon; salmon; seasonal variations; population effects; habitat modification
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Bristol Bay; Kvichak River; Iliamna Lake; Clark Lake
COMPUTER AND LANGUAGE: CDC; FORTRAN
ABSTRACT: Systematic studies of the runs of sockeye salmon to the Kvichak River system were initiated in 1955. Since that time the Fisheries Research Institute has maintained observations on a number of vital parameters pertaining to the Kvichak sockeye salmon runs. Research is directed toward identifying the mechanisms operating to perpetuate cyclic ability in the runs of Kvichak sockeye salmon. The immediate objectives are to further determine the production capacity of the Kvichak spawning grounds and nursery areas for a span of years forming a cycle period, with the overall goal being to develop rational management strategies that will optimize production.
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Seattle, WA 98195
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NBIP ACCESSION NUMBER: WA/053

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INVESTIGATOR(S): McCurdy, M. L.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Pink Salmon and Chum Salmon
Pre-Emergent Fry Index
PURPOSE: To obtain pre-emergent fry indices
on an annual basis from a standard list of
streams for the purpose of forecasting
adult pink and chum salmon returns to
Prince William Sound.
SPONSOR(S): State of Alaska
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Drastic changes in salmon
production as a result of the 1964 Alaska
earthquake.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ONCORHYNCHUS GORBUSCHA; ONCORHYNCHUS
KETA
ADDED KEYWORDS: pink salmon; salmon; chum
salmon; natural catastrophe; population
effects; earthquakes
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; mortality; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hydraulic excavation
NUMBER OF SAMPLING SITES: 43 streams
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Prince William Sound
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: regression/correlation
analysis
ABSTRACT: None provided.
ADDRESS: Michael L. McCurdy
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Cordova, AK 99574
TELEPHONE: (907) 424-3212 ext. 9
NBIP ACCESSION NUMBER: AK/076

<41>

INVESTIGATOR(S): McCurdy, M. L.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Pink and Chum Salmon Egg Deposition
Studies
PURPOSE: To determine spawning success.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Spawning success as
opposed to tectonic changes in stream
drainages incurred by 1964 Alaska
earthquake.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates
TAXA: ONCORHYNCHUS GORBUSCHA; ONCORHYNCHUS
KETA

ADDED KEYWORDS: pink salmon; salmon; natural
catastrophe; earthquakes; spawning; chum
salmon; habitat modification

PRIMARY PARAMETERS INVESTIGATED:
distribution; growth; mortality;
reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hydraulic excavation

NUMBER OF SAMPLING SITES: approximately 20
streams

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Prince William Sound

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: We obtain annual indices of egg
deposition data on specified streams. Data
are collected according to tide levels and
freshwater zones of streams sampled. All
sample zones and sample effort are
standardized with the exception of minor
annual changes in sampling effort.

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NBIP ACCESSION NUMBER: AK/073

<42>

INVESTIGATOR(S): McHenry, E. T.
AFFILIATION: Sport Fish Div., Alaska Dept. of
Fish and Game
TITLE: Coho Salmon Studies in the
Resurrection Bay Area
PURPOSE: To increase Coho salmon populations
for the Resurrection Bay marine sport
fishery through rearing habitat
rehabilitation and enhancement, and
supplemental stocking.
SPONSOR(S): Alaska Dept. of Fish and Game; FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Coho smolt production
increased with improvement of rearing
environment.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream; river; lake; marine; coastal;
estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
plants; vascular plants; trees; shrubs;
microorganisms; bacteria; fungi; algae;
protozoa
TAXA: ONCORHYNCHUS KISUTCH; SALVELINUS MALMA;
ONCORHYNCHUS NEBKA; GASTEROSTEUS ACULEATUS
ADDED KEYWORDS: coho salmon; dolly varden;
char; sockeye salmon; threespine
sticklebacks; management measures;
migration rates; habitat modification;
silver salmon; plankton; dipterans
PRIMARY PARAMETERS INVESTIGATED: age;

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behavior; biomass; distribution;
emigration; growth; habitat
characterization; harvest; immigration;
kill; mortality; migratory patterns;
numbers; productivity; reproduction; sex;
size/weight; stress
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: seasonal; daily; weekly;
annual; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; terrain; water quality
data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Kenai Peninsula
Borough; Bear Creek; Bear Lake;
Resurrection Bay
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis
ABSTRACT: Bear Lake was restocked with
450,000 Coho salmon fingerlings in June
and July, 1975. Smolt out-migration timing
and abundance, age and size compositions,
condition factors, Bear Creek water
temperatures, and stream flows were
monitored from May to September, 1975.
Bear Creek weir upstream and downstream
migrant traps monitored out-migration. The
Resurrection Bay creel census noted
survival rates of marked smolts from
Seward Lagoon and Bear Lake.
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Seward, AK 99664
TELEPHONE: (907) 224-3017
NBIP ACCESSION NUMBER: AK/084

<43>

INVESTIGATOR(S): McIlroy, C.W.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Game Management
PURPOSE: To monitor game populations in game
management units 11 and 13 for management
purposes.
SPONSOR(S): State of Alaska
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Accumulated a history of
changing numbers of moose, caribou, sheep,
and bison along with influencing factors.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; deciduous; tundra;
arctic; alpine; mountain
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: RANGIFER ARCTICUS; ALCEA ALCEA; BISON
BISON; OVIS DALLI; CANIS LUPUS; VULPES
VULPES; COULO LUSCUS; URSUS HORREBILIS;
URSUS AMERICANUS; URSUS ARCTOS

ADDED KEYWORDS: bison; red foxes; moose; dall
sheep; sheep; wolves; bears; grizzly
bears; black bears; population effects;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; mortality;
migratory patterns; natality; numbers; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial surveys; ground surveys; harvest
data
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): AK
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: Population parameters of wild game
are monitored along with influential
factors and regulations are proposed and
supported to obtain management objectives.
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Glenallen, AK 99588
TELEPHONE: (907) 822-3461
NBIP ACCESSION NUMBER: AK/044

<44>

INVESTIGATOR(S): McKendrick, J.D.
AFFILIATION: Agronomy Dept., Agricultural
Experiment Station
TITLE: Revegetation of Disturbed Arctic Tundra
PURPOSE: Evaluate revegetation of disturbed
areas in Prudhoe Bay area.
SPONSOR(S): Private Oil Companies
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Following natural
secondary succession and monitoring
effects and fate of fertilizers.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
tundra; arctic
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
indicator species; range
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses
TAXA: ERIOPHORUM ANGUSTIFOLIUM; CAREX
AQUATILIS; PUCCINELLIA SPP; ARCTAGROSTIS
LATIPOLIA; DESCHAMPSIA CAESPITOSA; BRAYA
SPP
ADDED KEYWORDS: habitat modification;
succession; nitrogen; phosphorus; soil
chemistry; magnesium; fertilization
PRIMARY PARAMETERS INVESTIGATED:
distribution; growth; harvest;
immigration; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
photo plots; soil cores
NUMBER OF SAMPLING SITES: 60 photo plots; 840
fertilizer plots
SUPPORTING DATA COLLECTED: associated flora;
soils
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: North Slope; Prudhoe
Bay
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance
ABSTRACT: We are monitoring native plant
secondary succession and the effects of N,

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P, K, Mg, and additions to the soil. We have four years of soil data showing changes in pH due to fertilization in which nutrients are most limiting to the system. Photo plot records show significant changes in vegetation as secondary succession occurs in the Arctic tundra. We are also monitoring introduced grasses to see if they can expand their territories.

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NBIP ACCESSION NUMBER: AK/071

<45>

INVESTIGATOR(S): McKnight, D.E.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Alaska Game Surveys and Inventories
PURPOSE: To monitor the status of Alaska's game populations in their habitats.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Annual fluctuations in animal abundance and long-term trends in abundance.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; tundra; arctic; alpine; wetland; mountain; aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses; non-vascular plants; mosses
ADDED KEYWORDS: ungulates; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; habitat characterization; harvest; immigration; kill; mortality; migratory patterns; natality; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard population monitoring techniques
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): AK
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; modeling, deterministic
ABSTRACT: This program is designed to determine annually the status, trends and utilization of Alaska's game populations, and the condition and trends of game

habitat. This is done by determining distribution, migration and concentrations, sex and age composition, productivity, mortalities, harvests, and hunting pressure.

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NBIP ACCESSION NUMBER: AK/077

<46>

INVESTIGATOR(S): Nichols, L.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Investigation of Alaska's Dall Sheep Populations and Associated Habitats
PURPOSE: To compare population dynamics, habitat, and climate of three dall sheep (OVIS DALLI DALLI) herds under separate management plans in Kenai Mountains and obtain life history data.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Sheep populations increased from low in 1940's to high in late 1960's but are now declining slowly or are static. Regulated almost entirely by habitat and climate.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic; alpine; mountain
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses; non-vascular plants; mosses
TAXA: OVIS DALLI
ADDED KEYWORDS: dall sheep; sheep; population dynamics; weather conditions
PRIMARY PARAMETERS INVESTIGATED: behavior; habitat characterization; harvest; kill; mortality; natality; numbers; physiology; productivity; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys; collection; necropsy; observation; range survey; microhistological exam; snow survey
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous; seasonal; monthly; annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Kenai Borough; Kenai River; Kenai Lake; Kenai Mountains; Copper Landing Village
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; non-linear estimation
ABSTRACT: Population response was compared (as indicated by changes in population size, reproductive success, and mortality) to three management plans: protection, ram-only public hunting, herd reduction and control through public either-sex hunting, and scientific collection. Three nearby, but isolated herds were compared. Also compared between herds are range and

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forage production on winter and summer ranges, climate as indicated by wind and temperature, and snow conditions in winter. Basic life history data are gathered concurrently; food habits, reproductive behavior, diseases and parasites, reproductive physiology and success, reproductive chronology, and physiological changes during winter. Tentative conclusions to date include (1) reduction of sheep herd to level below winter range carrying capacity stimulates reproduction and decreases mortality, (2) ram-only hunting does not control herds natural increase rate, and (3) Dall sheep populations are primarily regulated by winter climate at present with little influence from man.

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c/o 333 Raspberry Rd.
Anchorage, AK 99502

TELEPHONE: none

NBIP ACCESSION NUMBER: AK/026

<47>

INVESTIGATOR(S): Nickerson, R.B.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Fisheries Rehabilitation, Enhancement,
and Development, Prince William Sound,
Alaska

PURPOSE: To study the habitat, frequency of occurrence, harvesting, population size, gene frequency, and identification of a few of the organisms of Prince William Sound.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Due to modernized harvest techniques, razor clams were more successfully caught. Eviscerating the razor clams renders them edible by removing all of the toxic material which is retained in the viscera.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; marine;
coastal; estuarine

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; mollusca; shellfish

TAXA: SILIGUA PATULA; PROTOTHACA STAMINEA;
SAXIDOMUS GIGANTEUS; ONCORHYNCHUS
GORBUSCHA; ONCORHYNCHUS KETA; ONCORHYNCHUS
KISUTCH

ADDED KEYWORDS: clams; razor clams; dredging;
tides; enzymes

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; harvest; immigration;
mortality; migratory patterns; numbers;
reproduction; sex; size/weight; toxicity;
enzyme systems; stream water chemistry

attributes

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
dredging; beach surveys; mark specimens
and recapture; density indicators

NUMBER OF SAMPLING SITES: 1 for PROTOTHACA
and SAXIDOMUS; 40 for SILIGUA; 871 for
ONCORHYNCHUS

SAMPLING FREQUENCY: seasonal; weekly

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
soils; terrain; water quality data

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Prince William Sound

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-linear
estimation

ABSTRACT: The biology, growth rates, and sexual characteristics of razor clams were studied. Tide levels and their effects on age, total valve length, growth increment in valve length, and larval drift were also observed. These parameters and others were applied to the problem of shellfish toxicity in order to better the harvest of the clams. The salmon were analyzed for stock identification by gene frequencies of various enzyme loci using starch gel electrophoresis. The salmon were categorized by stream types which had been classified according to stream water chemistry attributes.

REFERENCES: Nickerson, 1975

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NBIP ACCESSION NUMBER: AK/064

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INVESTIGATOR(S): Potterville, W.D.; Williams,
F.T.

AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Inventory and Cataloging of Sportfish
and Sportfish Waters of the Copper River,
Prince William Sound, and Susitna River
Drainages

PURPOSE: To protect aquatic life and habitat
from nearby construction projects.

SPONSOR(S): FWS; Alaska Dept. of Fish and Game
SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been a minimum
loss of habitat due to road, pipeline, and
other types of construction.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; marine;
coastal; estuarine

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; pollution control; power
generation; right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

ADDED KEYWORDS: construction; habitat

modification; management measures

PRIMARY PARAMETERS INVESTIGATED:

distribution; growth; habitat

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characterization; harvest; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; water sample collection;
nets; seines; electrofishing gear; weirs;
creel census
SAMPLING FREQUENCY: seasonal; annual
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Copper River; Susitna River; Prince William Sound
TYPE OF DATA: summarized
ABSTRACT: None provided.
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Glennallen, AK 99588
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NBIP ACCESSION NUMBER: AK/069

<49>

INVESTIGATOR(S): Roppel, A.Y.
AFFILIATION: NMFS
TITLE: Northern Fur Seal Study
PURPOSE: To conduct biological research on the northern fur seal useful for managing the species.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: We have been able to manipulate the population number as a way to determine the level of maximum sustainable yield, thus fewer pups are now being born.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population; ecosystem; region
MANAGEMENT FOCUS: fisheries; wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; mammals
TAXA: CALLORHINUS URSINUS
ADDED KEYWORDS: northern fur seals; management measures; food habits; seals; islands; legal regulation
PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; harvest; kill; mortality; migratory patterns; numbers; physiology; productivity; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): counts; collections
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; climatological data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: North Pacific Ocean
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 1130; FORTRAN
STATISTICS EMPLOYED: mean; regression/correlation analysis; non-parametric analysis; modeling, deterministic
ABSTRACT: Management of the northern fur seal and development of techniques from

indiscriminate killing to present-day harvesting of specific sex and age-groups are traced. Restricted to breeding on the Kurile, Robben, Commander, and Pribilof Islands, fur seals were twice exploited almost to extinction before international protection was assured in 1911. Various controls used to regulate the kill of male seals on the Pribilof Islands since 1870 have included quotas, limitations on body length and skin weight, selection by age and secondary sex characteristics, and changes in length of killing season. Analysis of the kill and counts of live pups from 1942 to 1922 resulted in use of a 6-8 percent factor to calculate annual herd growth until 1948, when the system was abandoned as unrealistic. An average annual kill of 66,000 young males from 1939 to 1956 decreased to 48,000 annually from 1957 to 1964. Length classes were used from 1918 to determine the ages of seals until discovery in 1950 of a technique using annual growth layers on the roots of canine teeth. Management policies were revised in 1956 to permit a restricted kill of females. Since that year, 286,506 females have been taken on land. The kill of females has been controlled by quotas and by selection on the basis of body length and vibrissal color. It has been recently calculated that 9,000 to 18,000 females can be taken annually on the Pribilof Islands on a sustained basis.

REFERENCES: Roppel and Davey, 1965
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Seattle, WA 98115
TELEPHONE: (206) 527-3501
NBIP ACCESSION NUMBER: WA/007

<50>

INVESTIGATOR(S): Russell, R.B.
AFFILIATION: Alaska Dept. of Fish and Game, Sport Fish Division
TITLE: Rainbow Trout Life History Studies in Lower Talarik Creek-Kuichak Drainage
PURPOSE: To gather data on rainbow trout migrations, population age structure, spawning, angler utilization, growth, food habits, fecundity, and other life history aspects.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Timing of spawning migration identified, spawning population numbers monitored for 5 years, and decline in angler pressure observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALMO GAIARDNERI
ADDED KEYWORDS: rainbow trouts; trouts; migration rates; spawning
PRIMARY PARAMETERS INVESTIGATED: age; behavior; emigration; growth; harvest;

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immigration; migratory patterns; numbers; reproduction; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): weir; tag and release; spawning counts; interviewing

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Bristol Bay; Lower Talarik Creek

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Rainbow trout life history information has been collected from 1971 through 1975 at Lower Talarik Creek, a tributary to Lake Iliamna, Alaska. Data has been collected on migration timing, population age structure, food habits, sex ratios, fecundity, spawning, length-weight relationships, and growth. In addition, anglers utilizing this population of fish have been interviewed to determine catch effort, retention rates, gear preference, recruitment to the creel data, and economic significance of the fishery. The data have been reported in Federal Aid in Fish Restoration Annual Progress Reports.

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NBIP ACCESSION NUMBER: AK/034

<51>

INVESTIGATOR(S): Siedelman, D.L.

AFFILIATION: Alaska Dept. of Fish and Game

TITLE: Management of Sport Fishing

PURPOSE: To monitor sport fishing and sport fishing water in southern Alaska.

SPONSOR(S): Sport Fish Div.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1959

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Less salmon and more timber harvesting.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; tundra; arctic; alpine; aquatic; freshwater; stream; river; lake; marine; coastal; estuarine

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: environmental impact; fisheries; forestry; range; recreation; resource planning; pollution control; water quality; power generation; right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: SALMONIDAE

ADDED KEYWORDS: trout; salmon; logging

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; growth; harvest; home range size; migratory patterns; numbers; reproduction; sex; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

foot surveys; nets; hook and line; creel census

NUMBER OF SAMPLING SITES: most lakes and rivers

SAMPLING FREQUENCY: seasonal; irregular

SUPPORTING DATA COLLECTED: hydrological data; terrain; water quality data

STUDY SITE(S): AK

GEOGRAPHIC DESCRIPTION: Fredrick Sound; Portland Canal; Ketchikan Creek; Beaver Falls Power Station; Lake Silvis Power Station

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Annual management or related reports have been written since statehood and can be obtained from Ketchikan or Juneau. Most only describe creel census and lake and stream surveys.

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NBIP ACCESSION NUMBER: AK/042

<52>

INVESTIGATOR(S): Teal, J.J.

AFFILIATION: Musk Ox Project, University of Alaska

TITLE: Musk Ox Project

PURPOSE: To achieve the domestication of the musk ox and its introduction into the far northern economy, utilizing qiviut (underwool) in a local textile industry in tundra/coastal villages.

SPONSOR(S): W.K. Kellogg Foundation;
Institute of Northern Agricultural Research
SPONSOR CATEGORY: teaching institution;
societies and other organizations

DATE OF INITIATION: 1954

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Through selective breeding since 1967, faster growth, earlier maturity, and larger qiviut yield have been achieved.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; microorganisms; viruses; bacteria

TAXA: OVIBOS MOSCHATUS

ADDED KEYWORDS: musk oxen; breeding;

genetics; maturation rates; management measures; species introduction; diseases

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; bod; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; residues; sex; size/weight; stress; territory size; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): capturing expeditions; field studies; observation

NUMBER OF SAMPLING SITES: 7

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SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
terrain
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Ellesmere Island;
Nunivak Island
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: None provided.
ADDRESS: Dr. John J. Teal
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NBIP ACCESSION NUMBER: AK/063

<53>

INVESTIGATOR(S): Tamm, D.E.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Dusky Canada Goose Studies
PURPOSE: To monitor the population status of
dusky Canada geese on their breeding
grounds.
SPONSOR(S): Alaska Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuations in clutch
size, percent successful nests, harvest
and percent young composition of the
population; population size changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BRANTA CANADENSIS
ADDED KEYWORDS: population effects;
management measures; geese; Canada geese;
nests; breeding grounds
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; habitat characterization;
harvest; kill; mortality; migratory
patterns; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
banding; nest observations; aerial
observations
NUMBER OF SAMPLING SITES: 308 square mile
delta of Copper River
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Copper River
TYPE OF DATA: raw; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance
ABSTRACT: The first nesting study was
initiated in 1959 by the Fish and Wildlife
Service, however, geese have been banded
since the early 1950's. Beginning in 1964,
the Alaska Dept. of Fish and Game began
conducting nesting, production, and
banding studies. In 1974-1975, a study was
conducted on the breeding ecology of the
subspecies. Changes in the clutch size,
percent successful nests, and percent

young birds in the population have been
monitored since 1964. Mortality and
harvest by hunters have been monitored
using banded birds. Studies by the Dept.
of Fish and Game are now being designed to
insure that the population size objectives
for the subspecies are maintained.

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NBIP ACCESSION NUMBER: AK/067

<54>

INVESTIGATOR(S): Van Cleve, K.
AFFILIATION: Forest Soils Laboratory,
University of Alaska
TITLE: Nutrient Cycles in Selected Interior
Alaskan Forest Types
PURPOSE: Establish distribution of biomass
and nutrients in selected interior Alaskan
forest types and examine processes
important in controlling distribution and
cycling of biomass and mass of nutrients.
SPONSOR(S): FS; Cooperative State Forest
Research Program
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Management of site
nutrient capital, soil temperature, and
moisture regimes by nutrient addition and
thinning have markedly improved growth
rates of white spruce.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; tundra;
arctic
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
forestry; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; non-vascular
plants; lichens; mosses
TAXA: PICEA GLAUCA; BETULA Papyrifera;
POPULUS TRENULOIDES; POPULUS BALSAMIFERA;
POPULUS TRICHOCARPA
ADDED KEYWORDS: white spruces; spruces; paper
birches; birches; aspens; balsam poplars;
poplars; black cottonwoods; cottonwoods;
nutrient cycling; nutrients;
fertilization; management measures;
primary productivity; taiga
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; habitat characterization;
productivity
NUMBER OF SAMPLING SITES: 14
SAMPLING FREQUENCY: continuous; seasonal;
daily; weekly; quarterly
SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms; atmospheric
chemistry; climatological data; soils
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Tanana River; Yukon
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis; modeling,
deterministic
ABSTRACT: Emphasis is on understanding of
soil-plant relationships in undisturbed

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forest communities, and the impact on the forest of manipulations such as fertilization and stand density reduction (thinning). In the cold-dominated ecosystems encountered in interior Alaska, management of site nutrient capital, soil temperature, and moisture regimes by nutrient addition and thinning have markedly improved growth rates of white spruces. Fertilizer applications in combination with thinning increased tree diameter increment 3.6 times over the untreated forest within 1 month following treatment. After two years of fertilization in a post-burn quaking aspen forest, average tree basal area increment was increased approximately 4 times over the untreated forest. Studies in the spruce and aspen have documented changes in site nutrient regime and micro-environment and changes in tree physiology responsible for the marked improvement in tree growth.

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NBIP ACCESSION NUMBER: AK/058

<55>

INVESTIGATOR(S): Van Hulle, P.D.
AFFILIATION: Alaska Dept. of Fish and Game
TITLE: Inventory and Cataloging of the Sport Fish and Sport Fish Waters of Southwest Alaska
PURPOSE: To determine the characteristics of area lakes and streams, and to determine harvest and fluctuations in sport fish populations.
SPONSOR(S): FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased sport fishery effort, better rainbow trout fishing, and increased numbers of steelhead, coho, and graylings.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; tundra; arctic; wetland; mountain; aquatic; freshwater; stream; river; lake; marine; coastal; estuarine
LEVEL(S) OF STUDY: population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; forestry; indicator species; resource planning; pollution control; water quality; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALMO GAIEDNERI; ONCORHYNCHUS KISUTCH; THYMALLUS AETICUS
ADDED KEYWORDS: islands; habitat modification; management measures; population effects; rainbow trouts; trouts; steelhead trouts; coho salmon;

salmon; species introduction; graylings
PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; habitat characterization; harvest; kill; mortality; migratory patterns; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; seines; weirs
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; climatological data; hydrological data; water quality data
STUDY SITE(S): AK
GEOGRAPHIC DESCRIPTION: Kodiak Island; Afognak Island; Alaskan Peninsula
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; analysis of covariance
ABSTRACT: This is an ongoing project designed to provide the necessary data for sport fish management, protection, and development in southwest Alaska. During the course of our surveys data has been collected on fish survival, growth, and movements. In addition, data are available on water chemistry, gill net selectivity, lake rehabilitation, and harvest rates of sport fish.

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NBIP ACCESSION NUMBER: AK/028

<56>

INVESTIGATOR(S): Zasada, J.C.
AFFILIATION: Institute of Northern Forestry, FS
TITLE: White Spruce Regeneration Following Harvesting and Effects of Harvesting on Selected Physical Environmental Factors
PURPOSE: To determine the best methods for regenerating white spruce.
SPONSOR(S): BLM; FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes have occurred in shrub and herb vegetation, and also in microclimate following harvest.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; tundra; arctic
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: PICEA GLAUCA; BETULA Papyrifera; POPULUS TRENULOIDES; ROSA ACICULARIS; SALIX SP; ALNUS CRISPUS
ADDED KEYWORDS: white spruces; paper birches; quaking aspens; willows; alders; roses; clear cutting; logging; management measures; regeneration; taiga
PRIMARY PARAMETERS INVESTIGATED: growth; immigration; mortality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent plots; marked seedlings; seed traps
NUMBER OF SAMPLING SITES: 20

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SAMPLING FREQUENCY: seasonal; daily; weekly
SUPPORTING DATA COLLECTED: climatological
data; soils

STUDY SITE(S): AK

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Reproduction of PICEA GLAUCA is
being studied. Two types of silvicultural
systems are being used, which are
clearcutting and shelterwood. Scarified
and unscarified plots are studied in both

overstory treatments to examine the best
type for optimum regeneration. Selected
environmental parameters such as solar
radiation, air and soil temperature,
precipitation, and soil moisture are
monitored to determine the effect of
harvesting on site microenvironments.

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NBIP ACCESSION NUMBER: AK/080

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ARIZONA

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Fish and Wildlife Service Region 2
(SEE ALSO 100, 154, 180, 203, 502, 620, 718, 835)

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INVESTIGATOR(S): Alcorn, S.M.
AFFILIATION: Dept. of Plant Pathology,
University of Arizona
TITLE: Saguaro Cactus Mortality in a Native
Stand
PURPOSE: To determine rate of decline of
saguaro cacti, relationships to size and
cause, peripheral rate of establishment,
and to attempt to determine if
environmental factors can be related to
population changes and relationship to
bacterial soft-rot.
SPONSOR(S): University of Arizona
Agricultural Experiment Station; USDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1941
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Saguaro populations are
in a state of decline with the major
factor being lack of reproduction.
Bacterial necrosis is a major disease of
mature plants.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species;
indicator species
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; microorganisms; bacteria
TAXA: CARNEGIEA GIGANTEA; CEREUS GIGANTEUS
ADDED KEYWORDS: giant cactus; saguaro cacti;
morbidity; diseases; population dynamics
PRIMARY PARAMETERS INVESTIGATED:
distribution; mortality; numbers;
reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field observations; lab analysis
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: annual
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Pima County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: percentile; analysis of
variance; regression/correlation analysis
ABSTRACT: Illustrative of a number of studies
is the following information. Only 26 of
an original 800 5-cm-tall saguaros
(CARNEGIEA GIGANTEA) survived for 3 months
when accessible to the rodents and rabbits
at Saguaro National Monument, Arizona;
after 1 year all of these small plants
were gone. Although losses among a group
of larger (15-cm-tall) seedlings were less
abrupt, only one plant of an original 120
remained by the end of a year. When
protected from these herbivores by cages,
12% of the smaller plants remained at the
end of 1 year but only 2% after 5 years.
Although browsing by rodents and
lagomorphs quickly destroyed most uncaged
small plants, the planting design probably
accentuated the losses from the
herbivores; in any event, many of these
seedlings would soon have died from other
causes.
REFERENCES: Alcorn and Kurtz, 1959; Alcorn,
et al, 1959; Gregor, et al, 1962; Turner,
et al, 1966; Turner, et al, 1969; Hastings
and Alcorn, 1961; Alcorn, 1961; Alcorn and

May, 1962

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Tucson, AZ 85621
TELEPHONE: (602) 884-1027
NBIP ACCESSION NUMBER: AZ/001

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INVESTIGATOR(S): Balda, R.P.; Johnson, C.D.
AFFILIATION: Dept. of Biology, Northern
Arizona University
TITLE: Secondary Succession along Major
Transmission Line Rights-of-Way
PURPOSE: To describe the biotic changes that
occur due to habitat disturbance caused by
construction of a 500KV line through three
different habitats.
SPONSOR(S): Arizona Public Service Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Too complex to state
simply except that climate plays a major
role as plant communities are
reestablished.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; power
generation; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles; birds; mammals; invertebrates;
insecta; plants; vascular plants
ADDED KEYWORDS: habitat modification;
pinyons; junipers; transmission lines;
succession
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; home range size;
migratory patterns; numbers; reproduction;
sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live trap grids; snap traps; d-vac; pellet
counts; plots; transects
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: seasonal; monthly; annual
SUPPORTING DATA COLLECTED: climatological
data; soils
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Coconino County;
Maricopa County
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: XEROX Sigma 7; FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
contingency table analysis; non-linear
estimation
ABSTRACT: The study provides information
about plant and animal responses to the
disturbance caused by powerline
construction over a 6-year period. This
information can be used to select future
ecologically feasible routes. Major
questions to be answered include: effects
of construction on macro flora and fauna;
rate of recovery through time as mediated
by climate; are powerlines barriers and/or
dispersal routes; do birds, mammals, and
insects respond differently to tower sites
than roads; and does revegetation with
non-native plants speed-up recovery.
Hopefully we will measure the extent of
the electro-magnetic field around the

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functioning line in the near future.
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NBIP ACCESSION NUMBER: AZ/008

<59>

INVESTIGATOR(S): Balda, R.P.; Szaro, R.C.
AFFILIATION: Dept. of Biological Sciences,
Northern Arizona University
TITLE: Population Densities, Habitat
Selection, and Foliage Use by the Birds of
Selected Ponderosa Pine Areas in the
Beaver Creek Watershed
PURPOSE: To determine the absolute and
relative densities of the breeding and
wintering birds on six study plots on the
Beaver Creek watershed.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Differences in foraging
patterns on an individual and community
level from year to year.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 31 SPECIES
ADDED KEYWORDS: habitat modification;
seasonal variations
PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
spot-map method; line-transect method;
foliage observations
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Coconino County
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: XEROX Sigma 6; FORTRAN
IV
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis;
contingency table analysis; multivariate
analysis; non-parametric analysis
ABSTRACT: The objective of this study is to
determine the effects of differing foliage
volumes, foliage patterns, and densities
of trees on the diversity and density of
the breeding and wintering birds of the
ponderosa pine forest. The study also
seeks to determine the standing crop
biomass and existence energy requirements
of the resident birds on each plot.
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NBIP ACCESSION NUMBER: AZ/030

<60>

INVESTIGATOR(S): Brady, W.W.
AFFILIATION: Agriculture Div., Arizona State
University
TITLE: Forage Production on Lower Sonoran
Desert Ranges
PURPOSE: To determine levels and variation in
forage production as it relates to
supporting herbivores, in particular the
desert bighorn and feral burro.
SPONSOR(S): BLM
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Overgrazing of browse.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs;
herbs; grasses
TAXA: EQUUS ASINUS
ADDED KEYWORDS: population effects; browse
conditions; feral burro; desert bighorn
sheep; sheep; burros; grazing
PRIMARY PARAMETERS INVESTIGATED: habitat
characterization; harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
utilization-transects
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Colorado River;
Sonoran Desert
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: UNIVAC; FORTRAN
STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis;
non-parametric analysis; modeling,
deterministic
ABSTRACT: Objectives are to determine impact
of herbivores, particularly feral burros,
on desert vegetation. Vegetation of the
area has been typed and measurements of
production and environmental
characteristics are currently being made.
The utilization pattern of the feral burro
is being monitored.
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NBIP ACCESSION NUMBER: AZ/043

<61>

INVESTIGATOR(S): Cable, D.R.
AFFILIATION: Rocky Mountain Forest and Range
Experiment Station, FS
TITLE: Seasonal Use of Soil Moisture by
LARREA DIVARICATA and AMBROSIA DELTOIDEA
PURPOSE: To determine the annual pattern of
soil water recharge and use under
established stands of creosotebush and
bursage.

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SPONSOR(S): NSF; FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
CHANGE(S) OBSERVED: Moisture recharge was limited to upper 50 centimeters of soil with little difference between bare and vegetated areas.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; range; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs
TAXA: LARREA DIVARICATA; AMBROSIA DELTOIDEA
ADDED KEYWORDS: creosote bushes; sages; soil water; bursage; weather variations; seasonal variations; drought
PRIMARY PARAMETERS INVESTIGATED: soil water use
NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: climatological data; soils
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Pima County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: The objective of this study was to determine the annual pattern of soil water recharge and use within established stands of creosotebush and bursage. Soil water data were collected with a neutron probe at 2-week intervals. Sampling locations were selected on the perimeter of and in openings adjacent to selected plants in such a way that changes in soil water content could be sampled at four presumed levels of root concentration and competition, thereby sampling the influence of differences in shrub density on soil water recharge and use. The study period was very dry. Only 3 precipitation events occurred that added significant water to the soil, limited mostly to the 25-cm depth. With some water at some sampling locations reached 50-cm, and in a few instances 75-cm depths. The magnitude and rates of recharge and depletion of soil water following each of the three precipitation events showed some apparent differences among the five sampling locations at the 25-cm depth, and to a much lesser extent at the 50-cm depth, during the 19-month study period. However, these differences did not appear to be consistently associated with differences in sampling location on the crown perimeter and near the study plants. It is likely that the inconsistencies noted were due to the effects of small differences in micro relief immediately surrounding the access tubes, as they affected infiltration and percolation of precipitation.
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NBIP ACCESSION NUMBER: AZ/048

<62>

INVESTIGATOR(S): Cable, D.R.
AFFILIATION: Rocky Mountain Forest and Range Experiment Station, FS
TITLE: Seasonal Use of Soil Moisture by Mature PROSOPIS JULIFLORA var. VELUTINA, Velvet Mesquite
PURPOSE: To determine the relative amounts of soil moisture removed from various soil depths and at various distances from the trunks of mesquite trees through out the year.
SPONSOR(S): NSF; FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Mesquite used water to 3 meter depth and to 15 meters beyond edge of erosion in adjacent opening. Highest use occurred in spring and summer when soil water was highest.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; range; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: PROSOPIS JULIFLORA
ADDED KEYWORDS: velvet mesquite; mesquite; soil water; competition; weather conditions; seasonal variations; drought
NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: climatological data; soils
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Pima County; Santa Rita Experimental Range
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Changes in soil water content were measured to a depth of 6 meters under living velvet mesquite trees, and to 15 meters beyond the edge of the crown in adjacent openings, to determine the pattern of water extraction by mesquite roots throughout the year. Mesquite used water consistently to a depth of 3 meters and from the trunk outward to 10 meters beyond the crowns, but use at 15 meters was limited mainly to drier periods when water supplies closer to the trees were depleted. With the start of spring growth, water was extracted most rapidly from the surface layers. As the season advanced, the water-supplying zone became increasingly thicker as successively deeper soil layers were added. Rates of extraction were strongly correlated with the amount of water available in the soil, and extraction thus was highest immediately after the recharge precipitation of early spring and early summer, and lowest in late fall. Differences in available water in the soil accounted for 72 to 88 per cent of the variation in rates of extraction. The competitive effect of velvet mesquite on perennial grasses is most severe in the upper 37.5 centimeters of soil under and near the mesquite crowns, gradually decreasing with increasing distance into

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adjacent openings. The competitive effect is also much more severe in dry years than in wet years.

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NBIP ACCESSION NUMBER: AZ/049

<63>

INVESTIGATOR(S): Carder, D.R.
AFFILIATION: Rocky Mountain Forest and Range
Experiment Station, FS
TITLE: Beaver Creek Multiple - Use Evaluation Project
PURPOSE: To conduct pilot tests of vegetation treatments, to evaluate treatment in ecologic and economic terms, and to provide a basis for making management decisions.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tree overstory experimentally changed in various ways.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; range; resource planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; insects; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: PINUS PONDEROSA; PINUS EDULIS; JUNIPERUS SPP
ADDED KEYWORDS: ponderosa pines; pines; pinyons; water-yield improvement; management measures; pesticides; prescribed burning; models; grazing
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; habitat characterization; harvest; home range size; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): paired watersheds; catchment basins; plots; transects; timber inventory; forage preference; observation; pellet counts
NUMBER OF SAMPLING SITES: 44 watersheds; numerous other sites
SAMPLING FREQUENCY: continuous; irregular; seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; soils; terrain; water quality data
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Coconino County; Yavapai County; Beaver Creek
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: XEROX Sigma 6; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance;

regression/correlation analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: Multiple use productivity is described for watershed lands in the ponderosa pine type of Arizona, with special emphasis on the Beaver Creek Pilot Watershed near Flagstaff. Yields of timber, herbage, and water under past management are reported, along with information on wildlife values, esthetics, flood and sedimentation hazards, and water quality. Changes in productivity and environmental quality are then described following five experimental land treatments including livestock grazing and various levels of forest thinning and clearing. Preliminary analytical procedures for predicting treatment responses and costs allow the user to estimate the tradeoffs in production and environmental quality. Some further research needed for bringing these and other response models to operational capability is described.
REFERENCES: W.F. Clary, et al, 1974; H.E. Brown, et al, 1974
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NBIP ACCESSION NUMBER: AZ/038

<64>

INVESTIGATOR(S): Carothers, S.
AFFILIATION: Museum of Northern Arizona
TITLE: Ecological Survey of the Riparian Habitat in the Grand Canyon
PURPOSE: To determine the impact of river use on the natural habitat.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Habitat has low threshold to damage, increased numbers of people do not appear to increase damage, and major damage by feral asses.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; recreation; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; mammals; invertebrates; insects; plants; vascular plants; non-vascular plants; microorganisms; bacteria; algae; protozoa
TAXA: BIRDS, 230 SPECIES
ADDED KEYWORDS: habitat modification; census; population dynamics; lizards; rodents; asses; riparian habitat; raptors
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; habitat characterization; home range size; kill; migratory patterns; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mammal grids; strip census; plant grids; black-lighting
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry;

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hydrological data; soils

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Coconino County;
Mojave County; Colorado River and
tributaries; Grand CanyonTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; mode; median;
regression/correlation analysis

ABSTRACT: New distributional records are presented for twenty species of birds in the Grand Canyon Region. Seven species, the brown pelican, green heron, willet, black tern, summer tanager, great-tailed grackle, and the ovenbird, are new to the previously compiled faunal lists of the canyon. In addition to representing new records for the canyon area, the observation and collection localities of the tanager and the grackle represent the northernmost limits of these species' range in the Southwest. The ovenbird record is the second of such, documented by a specimen, for the state of Arizona. Also discussed is the status of five species considered to be "threatened" the brown pelican, bald eagle, prairie falcon, peregrine falcon, and the spotted owl.

REFERENCES: Carothers, et al, 1975

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NBIP ACCESSION NUMBER: AZ/045

<65>

INVESTIGATOR(S): Carothers, S.W.

AFFILIATION: Harold S. Colton Research
Center, Museum of Northern Arizona

TITLE: Verde Valley Breeding Bird Survey

PURPOSE: To study the effects of phreatophyte
control on breeding birds of the riparian
zone.

SPONSOR(S): Arizona Fish and Game Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1969

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Initial decreases in
population densities for four years, then
less fluctuation the next two years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; deciduous; aquatic;
freshwater; river

LEVEL(S) OF STUDY: organisms; population;
community

MANAGEMENT FOCUS: environmental impact;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees;
shrubs; herbs; grasses

TAXA: POPULUS FREMONTII; POPULUS SPP;
PLATANUS SPP; SALIX SPP; AGER SPP;
FRAXINUS SPP; PROSOPIS SPP

ADDED KEYWORDS: poplars; aspens; sycamores;
buttonwoods; planetrees; willows; osiers;
maples; ashes; mesquite; habitat
modification; management measures;
population dynamics; riparian habitat

PRIMARY PARAMETERS INVESTIGATED: behavior;

biomass; diversity; home range size;

numbers; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
census

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Yavapai County; Verde
River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: IBM; FORTRAN IV,
Version E02

STATISTICS EMPLOYED: mean; mode; median;

percentile; regression/correlation analysis

ABSTRACT: Breeding bird populations were studied on seven riparian woodland study plots in north-central Arizona. The densities of breeding birds varied from 193 to 847 pairs per 40 hectares. These differences were, in part, related to the vegetative structure of the habitat. Bird species diversity (BSD) was not correlated with foliage height diversity (FHD) in riparian habitats consisting of one major vegetational component (the cottonwood tree) where these habitats are bordered by agricultural fields. These areas supported the largest breeding bird populations (847, 612, 512, and 425 pairs per 40 hectares) while areas consisting of a mixed deciduous tree and shrub component had smaller populations of breeding birds (322, 312 and 193 pairs per 40 hectares). On the mixed deciduous woodland areas the correlation between BSD and FHD was similar to what others have found in Eastern deciduous forests. The average weights of individual birds were significantly greater on the homogeneous cottonwood areas ($X=46.4g$) than on the mixed deciduous areas ($X=22.9g$). Data gathered indicate that two systems of social organization are being maintained. In areas of relatively low population density (mixed deciduous) 57% of the pairs maintained "class A" territories. On areas of relatively high population density (homogeneous cottonwood) only 22% of the pairs exhibited this form of spacing; here, most birds forage freely outside of the riparian habitat. We suggest that the differences in population density and average weights of birds found in the two habitat types are a result of the following: (1) relative productivity of areas adjacent to the riparian habitat, and (1.1) degree of intra- and interspecific competition effected by avian populations found breeding in areas adjacent to the riparian habitat.

REFERENCES: Carothers, et al, 1974

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NBIP ACCESSION NUMBER: AZ/046

<66>

INVESTIGATOR(S): Day, G.I.

AFFILIATION: Arizona Game and Fish Dept.

TITLE: Effect of Hunting on Javelina
Populations

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PURPOSE: To compare the response of a javelina population to pistol-only hunting with the response of an adjacent javelina population which had been subjected to five years of rifle hunting.

SPONSOR(S): Arizona Fish and Game Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Herd population decline after five years of hunting. Two herds reduced over 65 percent.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; mountain

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: DICOTYLES TAJACU; PECARI TAJACU

ADDED KEYWORDS: javelinas; peccaries; habitat modification; legal regulation; management measures; population dynamics

PRIMARY PARAMETERS INVESTIGATED: age; behavior; growth; kill; mortality; natality; numbers; reproduction; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): checking stations; radiotracking gear

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Three Bar W.A.; Four Peaks; Mazatzal Mountains; Tonto National Forest

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: AZ/022

<67>

INVESTIGATOR(S): Hall, J.G.

AFFILIATION: Dept. of Biology, San Francisco State University

TITLE: Ecological Study of the Kaibab Squirrel
PURPOSE: To learn as much as possible about habitat requirements; home range, activity patterns, food habits, and population fluctuations; and to propose ways in which populations may be enhanced.

SPONSOR(S): NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Several large changes in population level have been detected, but the overall trend, especially in recent years, has been down.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: SCIURUS KAIBABENSIS; SCIURUS ABERTI

ADDED KEYWORDS: kaibab squirrels; squirrels; habitat modification; population effects

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; habitat

characterization; home range size; mortality; numbers; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field observation; periodic sampling; radiotracking

NUMBER OF SAMPLING SITES: 186

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; terrain

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Grand Canyon National Park; Coconino County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Because of concern over an apparent decline in the Kaibab squirrel in recent years and because relatively little was known of its life history, I undertook a field study on the ecology of the squirrel starting in the summer of 1960, in cooperation with the National Park Service. The aim of this study is to work out details of life history and habitat requirements which can provide the basis for intelligent management practices.

REFERENCES: Hall, 1967

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NBIP ACCESSION NUMBER: CA/037

<68>

INVESTIGATOR(S): Hepworth, D.K.

AFFILIATION: Utah State Div. of Wildlife Resources

TITLE: Index to Annual Fish Population Trends
PURPOSE: To monitor fish populations and determine if changes in abundance occur between years.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Populations of largemouth bass have remained relatively stable while numbers of walleye have increased.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: MICROPTERUS SALMOIDES; STIZOSTEDION

VITREUM; POMOXIS NIGROMACULATUS; ICTALURUS

PUNCTATUS; LEPOMIS MACROCHIRUS; LEPOMIS

CYANELLUS; CYPRINUS CARPIO; CATOSTOMUS

LATIPINNIS

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ADDED KEYWORDS: largemouth basses; walleyes;
blue pikes; black basses; channel
catfishes; bluegills; green sunfishes;
carps; flannemouth suckers; management
measures; population dynamics

PRIMARY PARAMETERS INVESTIGATED: age; growth;
mortality; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets

NUMBER OF SAMPLING SITES: 4; subsampled with
ten nets for three days

SAMPLING FREQUENCY: annual

STUDY SITE(S): UT; AZ

GEOGRAPHIC DESCRIPTION: Kane County; San Juan
County; Lake Powell; Glen Canyon Dam;
Navajo Power Plant

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis

ABSTRACT: Annual gill netting in Lake Powell
has taken place during March, since 1971.
Four sampling areas (Padre Bay, Cha
Canyon, Rincon, and Red Canyons) with
similar habitat characteristics have been
sampled with standardized techniques. At
each location, ten nets were set for three
consecutive days with fish being removed
every 24 hours. Preliminary analysis of
data shows that largemouth bass
populations have remained fairly stable
and walleye populations have increased.

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NBIP ACCESSION NUMBER: AZ/014

<69>

INVESTIGATOR(S): Hungerford, C.R.

AFFILIATION: School of Natural Resources,
University of Arizona Cooperative Wildlife
Research Unit

TITLE: Rodents and Treatment of Beaver Creek
Watersheds

PURPOSE: Effects of clearing and logging on
rodent populations.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Change in density and
composition with treatment.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous

LEVEL(S) OF STUDY: organism; population;
ecosystem

MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; indicator species;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs

TAXA: PINUS PONDEROSA; RODENTIA

ADDED KEYWORDS: ponderosa pines; rodents;
habitat modification; population dynamics;
clearing; logging

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; home range size;
immigration; mortality; natality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trap grids; live traps

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Beaver Creek;
Coconino County; Coconino National Forest

TYPE OF DATA: reduced

STATISTICS EMPLOYED: analysis of variance

ABSTRACT: None provided.

ADDRESS: C. Roger Hungerford
Arizona Cooperative Wildlife
Research Unit

University of Arizona

Tucson, AZ 85721

TELEPHONE: (602) 884-1384

NBIP ACCESSION NUMBER: AZ/018

<70>

INVESTIGATOR(S): Hungerford, C.R.

AFFILIATION: Cooperative Wildlife Research
Unit, University of Arizona

TITLE: Page Ranch Census

PURPOSE: Census bi-annually of one square
mile of desert grassland.

SPONSOR(S): University of Arizona

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1956

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in vertebrate
density due to rainfall or lack thereof.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles; birds; mammals

TAXA: LEPUS CALIFORNICUS; SYLVILAGUS
FLORIDANUS

ADDED KEYWORDS: desert fauna; census;
management measures; jack rabbits;

cottontail rabbits; quails; rabbits

PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

use-class census; observation

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Pinal County;
Page-Trowbridge Ranch

ABSTRACT: The purpose of the study is to
determine the influence of rainfall on
jack rabbit, cottontail rabbit, quail, and
other desert vertebrates; and to detect
possible cyclic population changes.

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NBIP ACCESSION NUMBER: AZ/017

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INVESTIGATOR(S): Kidd, D.E.

AFFILIATION: Dept. of Biology, University of
New Mexico

TITLE: Cultural Eutrophication: An Evaluation
of Man's Potential Impact on the Aquatic
Ecology of Lake Powell

PURPOSE: To determine eutrophication impact

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of marinas, sewage effluents, and tributaries; and study nutrient control of algal primary productivity and plankton diversity.

SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal periodicity in primary productivity, zooplankton and phytoplankton community structure, and nutrient supplies.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; recreation; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: CYANOPHYTA; CHLOROPHYTA; EUGLENOPHYTA; ROTIFERA; CILIATA; COPEPODA; CLADOCERA; MALACOSTRACA
ADDED KEYWORDS: blue-green algae; green algae; rotifers; primary productivity; copepods; water fleas; waste water; eutrophication; nutrient uptake; phytoplankton; zooplankton
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): vertical depth sampling; point source sampling
NUMBER OF SAMPLING SITES: 9; 30 for point source
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): AZ; UT
GEOGRAPHIC DESCRIPTION: Lake Powell; Navajo Generating Station
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; median; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; modeling, deterministic; serial autocorrelations
ABSTRACT: The general purpose is to evaluate man's impact on the eutrophication of Lake Powell, located on the Colorado River. A specific objective is to determine impact on water quality from (1) raw sewage effluent released by boats in marina areas; (2) primary treated effluents released by a marina into the lake; (3) excretion inputs from a major swimming area, shoreline camping, and animal watering places; (4) nutrient inputs from various point sources; and (5) monitoring for NH₃-N, NO₂-NO₃-N, organic N, phosphorics - total and dissolved, total, and fecal coliforms, fecal streptococci, salmonelli, nitrogen fixation, ATP biomass, and laboratory and IN SITU algal bioassay.
ADDRESS: Mr. David Kidd
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NBIP ACCESSION NUMBER: NM/002

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INVESTIGATOR(S): Lanning, D.V.
AFFILIATION: The Evergreen State College
TITLE: Field Study of the Coati, NASUA NARICA, in Arizona
PURPOSE: To monitor certain aspects of the life history, movements, and population dynamics of the coati at the northern margin of the species range in Arizona.
SPONSOR(S): The Evergreen State College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations may fluctuate markedly within a given area, seasonally, and yearly.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; savanna; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: NASUA NARICA
ADDED KEYWORDS: coati; population effects; seasonal variations
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; home range size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live-trapping; marking, releasing, recapturing; radiotelemetry; observation; interviews
SAMPLING FREQUENCY: irregular
STUDY SITE(S): AZ; NM
GEOGRAPHIC DESCRIPTION: Cochise County; Chiricahua Mountains
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; percentile; analysis of variance
ABSTRACT: None provided.
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Portal, AZ 85632
NBIP ACCESSION NUMBER: AZ/034

<73>

INVESTIGATOR(S): Martin, S.C.
AFFILIATION: Rocky Mountain Forest and Range Experiment Station, FS
TITLE: Management of Semidesert Ranges
PURPOSE: To determine impacts of cattle grazing, seeding, and plant control on native plants and animals of semidesert ecosystems.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1903
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Former grassland has been invaded by shrubs and velvet mesquite comes in permanently.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; grassland; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs

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TAXA: BOS TAURUS; HAPLOPAPPUS SP; OPUNTIA SPP

ADDED KEYWORDS: velvet mesquite; cattle;

brush; habitat modification; grazing

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

field observations; line transects

NUMBER OF SAMPLING SITES: numerous

SAMPLING FREQUENCY: annual; irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

soils; terrain

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Pima County; Santa

Rita Experimental Range

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; analysis of

variance; analysis of covariance;

regression/correlation analysis

ABSTRACT: Evaluation of semi-desert ecosystem

is being made with emphasis on determining

the effects of fire on vegetation and

wildlife, pilot testing an improved

grazing system, and describing important

ecological types of desert and semi-desert

range in Arizona and New Mexico.

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NBIP ACCESSION NUMBER: AZ/024

<74>

INVESTIGATOR(S): McCulloch, C.Y.

AFFILIATION: Arizona Game and Fish Dept.

TITLE: Statewide Investigation Project

W-78-R-20 and Statewide Game Management

Project W-53-R-26

PURPOSE: Predict the effects of forest

management and weather on the

exploitability of a deer herd.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Notable annual

fluctuations in herd characteristics under

constant level of hunt pressure on deer.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; coniferous; savanna

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; forestry; range;

recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; trees;

shrubs; herbs; grasses

TAXA: ODOCOILEUS HEMIIONUS

ADDED KEYWORDS: mule deer; population

dynamics; grazing; logging

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; habitat characterization;

harvest; kill; mortality; natality;

numbers; productivity; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

checking stations; ground surveys; aerial

surveys

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora;

climatological data

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Coconino County;

North Kaibab Plateau; Grand Canyon

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; analysis of

variance

ABSTRACT: We are describing annual changes in

mule deer herd characteristics and

searching for possible relationships

between changes in herd characteristics

and land use practices such as grazing and

logging as well as possible relationships

between annual changes in herd and weather

conditions with emphasis on winter.

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NBIP ACCESSION NUMBER: AZ/028

<75>

INVESTIGATOR(S): Mills, G.S.

AFFILIATION: Dept. of Ecology and

Evolutionary Biology, University of Arizona

TITLE: Population and Life History of the

Five-Striped Sparrow in the United States

PURPOSE: To monitor population changes of the

U.S. "colony" and to gather information on

the breeding biology of the species.

SPONSOR(S): Tucson Audubon Society

SPONSOR CATEGORY: societies and other

organizations

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Apparent population

increase.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds

TAXA: AIMOPHILA QUINQUESTRATA

ADDED KEYWORDS: five-striped sparrows;

sparrows; census; management measures;

population dynamics

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; habitat

characterization; home range size;

immigration; natality; numbers;

reproduction; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

field observation

NUMBER OF SAMPLING SITES: one

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Santa Cruz County;

Sonolita Creek

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean

ABSTRACT: Although the five-striped sparrow

is found fairly commonly in some parts of

nearby Mexico, the only United States

record until the 1960's was that of one

collected in Madera Canyon, Arizona. In

the late 60's these birds appeared near

Patagonia, Arizona and have been observed

every year since. In some years evidence

of breeding (young birds) was observed but

no nests or serious attempt to census the

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population was made. This study was initiated to study the following: 1) to census the Patagonia population and determine the breeding status, 2) to search likely areas for other colonies, 3) to study population changes and characteristics of a peripheral population of a species that is apparently expanding its range, 4) to study the breeding biology of this species which is virtually unknown, and 5) to perhaps be able to make recommendations for its continued survival in the United States. Thus far one and one half summers of study are complete. The population has been censused, the breeding status determined, and much information on the breeding biology has been collected.

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NBIP ACCESSION NUMBER: AZ/056

<76>

INVESTIGATOR(S): Nash, T.H.

AFFILIATION: Botany Dept., Arizona State
University

TITLE: Effects of Smelter Effluents on an
Upper Sonoran Desert Chaparral Community
PURPOSE: To document the degree to which
heavy metal effects persist through time.

SPONSOR(S): Arizona State University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Annual herbaceous plants
are eliminated near smelter.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact;
pollution control

ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses

TAXA: CERCIDIUM SPP; OPUNTIA SPP; AMBROSIA
SPP; BRONHUS SPP; SIMMONDSIA SPP; FRANSERIA
SPP; CALLIANDRA SPP; LARREA SPP; PROSOPIS
SPP

ADDED KEYWORDS: paloverde; prickly pears;
ragweeds; bursage; mesquite; creosote
bushes; heavy metals; industrial
chemicals; chaparral; cacti

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrat sampling; heavy metals analysis

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: soils

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Pinal County; Gila
County; Inspiration Copper Co.

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median;
non-parametric analysis

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: AZ/058

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INVESTIGATOR(S): Nash, T.H.

AFFILIATION: Dept. of Botany and
Microbiology, Arizona State University

TITLE: Lichens and Mosses as Bioindicators in
the Four Corners Region

PURPOSE: To document current effects (if any)
of air pollution on lichens and mosses,
and provide a baseline study for the
broader region.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No quantifiable changes
yet detected.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

indicator species; pollution control;
power generation

ORGANISMS, MAJOR TYPES: plants; non-vascular
plants; lichens; mosses

ADDED KEYWORDS: air pollution; heavy metals;
fossil fueled power plants; coal

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats; line point intercepts

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated flora;
soils

STUDY SITE(S): UT; AZ; NM; CO

GEOGRAPHIC DESCRIPTION: Wayne County; Kane
County; San Juan County (UT); Washington
County; Navajo County; Apache County;
Coconino County; San Juan County (NM); San
Juan County (CO); Huntington Canyon;
Navaho Power Plant; Four Corners Power
Plant; San Juan Power Plant; Painted Desert

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; median;
regression/correlation analysis;
non-parametric analysis

ABSTRACT: The ERDA contract is looking at
trace elements accumulated by lichens and
mosses, in view of their well known
potential use as air quality monitors.
Previous studies have specifically looked
at the lichen flora around the Navajo
Power Plant before it began operation. The
lichens around the Four Corners and San
Juan Power Plants were monitored also.
Studies include basic community studies
and in subsequent years toxicity studies.
The ERDA project includes studies on the
effects of sulfur dioxide on
lichen-dominated tundra, in Anaktuvuk,
Alaska (to be initiated in 1976).

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INVESTIGATOR(S): Neal, K.S.
AFFILIATION: Arizona Game and Fish Dept.
TITLE: Big Game and Small Game Investigations
PURPOSE: To survey and monitor both small and big game populations within Region 5 as well as formulating and recommending various hunts.
SPONSOR CATEGORY: state government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Continued accelerated growth in Arizona has eliminated extensive wildlife habitat through urbanization and development.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: MAMMALS, 30 SPECIES; BIRDS, OVER 35 SPECIES
ADDED KEYWORDS: management measures; habitat modification; population dynamics
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; harvest; home range size; kill; mortality; migratory patterns; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): AZ
TYPE OF DATA: raw
ABSTRACT: None provided.
ADDRESS: Mr. Kelly Neal
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Region V
Arizona Game and Fish Dept.
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Phoenix, AZ 85023
TELEPHONE: (602) 942-3000 ext. 293
NBIP ACCESSION NUMBER: AZ/044

<79>

INVESTIGATOR(S): Nelson, M.R.
AFFILIATION: Dept. of Plant Pathology, University of Arizona
TITLE: Plant Viruses and Virus Diseases in Arizona
PURPOSE: Study nature of and develop control measures for plant viruses of cacti and other plants in Arizona.
SPONSOR(S): USDA; State of Arizona
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Gradual increase of virus infection in native cacti. Some viruses originated in cultivated plants.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert; grassland
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs; microorganisms; viruses
TAXA: CARNEGIEA GIGANTEA; CEREUS GIGANTEUS; OPUNTIA SPP; DATURA SPP
ADDED KEYWORDS: saguaro cacti; prickly pears; jimsonweeds; diseases; morbidity; virus plant diseases; cacti
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field samples; serology
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Pima County; Yuma County; Cochise County; Graham County; Maricopa County
TYPE OF DATA: summarized
ABSTRACT: We are studying the relationship of virus diseases of cacti to viruses of certain cultivated plants. Distribution of virus diseases of native plants are closely related to urban or agricultural areas. Certain viruses common in ornamentals or crop plants have been found to infect certain native plants experimentally and others have actually been found in native plants.
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TELEPHONE: (602) 884-2326
NBIP ACCESSION NUMBER: AZ/004

<80>

INVESTIGATOR(S): Ohmart, R.D.
AFFILIATION: Dept. of Zoology, Arizona State University
TITLE: Ecology of Wild Burros
PURPOSE: Examine food habits, movements, reproduction rates, etc. of wild burros.
SPONSOR(S): BLM
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population growth.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; trees; vascular plants; shrubs; herbs; grasses
TAXA: EQUUS ASINUS
ADDED KEYWORDS: asses; management measures; burros; population dynamics
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; home range size; immigration; mortality; migratory patterns; natality; numbers; physiology; reproduction; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and follow population; radiotelemetry

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NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; soils; terrain

STUDY SITE(S): CA; AZ; NM

GEOGRAPHIC DESCRIPTION: Yuma County;
Riverside CountyTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministicABSTRACT: Burro ecology and their impact on
native flora and fauna are being studied.

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NBIP ACCESSION NUMBER: AZ/009

<81>

INVESTIGATOR(S): Patten, D.T.

AFFILIATION: Dept. of Botany and
Microbiology, Arizona State UniversityTITLE: Productivity and Phenology of Desert
Annuals in Relation to EnvironmentsPURPOSE: Relative response of desert annuals
to variable seasonal environments.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Attempting to establish
relationships between specific
environmental variables to predict
productivity rates of plants.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desertLEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: range

ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grassesTAXA: FRANSERIA DELTOIDEA; CERCIDIUM
MICROPHYLLUMADDED KEYWORDS: seasonal variations; weather
conditionsPRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; growth;
habitat characterization; numbers;
physiology; productivityDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrat

NUMBER OF SAMPLING SITES: 1

SUPPORTING DATA COLLECTED: associated flora;
climatological data; hydrological data;
soils; terrain

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Maricopa County

TYPE OF DATA: reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Desert annual plants may contribute
a high percentage of biomass during "good"
years. We are determining those factors
that influence the productivity of desert
annuals by 1) monitoring desert
microenvironmental conditions in varioushabitats, 2) periodically measuring
biomass accumulation of desert annuals, 3)
determining phenological stages of annuals
in relation to time and environment, and
4) measuring CO2 exchange functions of
annuals in relation to environments. In
1972, desert annual biomass accumulation
did not begin until October. Winter rains
were lacking and summer rains were
apparently insufficient. Biomass
accumulation since October has been
concentrated under the shrubs, the area of
apparent optimum environment. Continual
monitoring of annual plant biomass
relative to shrub and open habitats is
beginning to show the factors necessary
for annual plant development in the
Sonoran Desert. Growth has been limited to
the vegetative stage therefore flowering,
seed set and dispersal, and mortality have
not been related to specific environmental
variables. This relationship plus CO2
exchange analyses should help predict
productivity rates of desert annuals.

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NBIP ACCESSION NUMBER: AZ/052

<82>

INVESTIGATOR(S): Pulliam, H.R.

AFFILIATION: Dept. of Ecology and
Evolutionary Biology, University of ArizonaTITLE: Community Structure of Grassland
SparrowsPURPOSE: To understand the coexistence of
sparrows and to document changes in
population size of sparrows through time.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Recovery of grassland
community after grazing and changes in
plant and animal community.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: endangered species; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; herbs;
grassesTAXA: EMBERIZINAE SPP; GRAMINEAE; SPIZELLA
BREWERI; AMMODRAMUS SAVANNARUM; SPIZELLA
PASSERINA; PIPILLO FUSCUS; AIMOPHILA
RUFICEPSADDED KEYWORDS: sparrows; buntings; brewer's
sparrows; grasshopper sparrows; chipping
sparrows; brown towhees; rufous crowned
sparrows; census; population dynamics;
habitat modification; grazingPRIMARY PARAMETERS INVESTIGATED: behavior;
diversity; habitat characterization;
mortality; numbersDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
belt transects; mist nets; observations

SAMPLING FREQUENCY: continuous; weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Santa Cruz County

TYPE OF DATA: raw; reduced; summarized;

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literature-derived
COMPUTER AND LANGUAGE: DEC System-10; FORTRAN IV

STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis; modeling, deterministic; modeling, stochastic; serial autocorrelations

ABSTRACT: A study of the coexistence of sparrows in grassland and woodland habitats of the Research Ranch in southeastern Arizona supports the predictability of current community theory. For each of the habitats studied, the production of seeds and the abundance of seed-eating, winter-resident sparrows were measured. The theory correctly predicts the number of species supported in each of the habitats. In both cases for which the prediction is that only one species could be supported, the theory correctly predicts which species should be present.

REFERENCES: Pulliam, 1975

ADDRESS: Dr. H. Ronald Pulliam
Dept. of Ecology and Evolutionary
Biology
University of Arizona
Tucson, AZ 85721

TELEPHONE: (602) 884-2994

NBIP ACCESSION NUMBER: AZ/039

<83>

INVESTIGATOR(S): Robinson, T.G.
AFFILIATION: Arizona Game and Fish Dept.
TITLE: Statewide Survey of Aquatic Resources
PURPOSE: Annual sampling to determine changes and trends in fish populations and related habitat.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Primary changes caused in river by water releases for agriculture (Bureau of Reclamation) and new pressures by human use.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; aquatic; freshwater; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; recreation; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; fish; invertebrates; crustacea; insects; microorganisms; protozoa

TAXA: MICROPTERUS SALMOIDES; ICTALURUS PUNCTATUS; PILODYCTUS OLIVANUS; LEPOMIS SPP; MOCCUS SPP; MORONE SAIMILIS; MUGIL CEPHALUS; DOROSOMA PETENENSE

ADDED KEYWORDS: largemouth basses; channel catfishes; flathead catfishes; sunfishes; striped basses; striped mullets; threadfin shad; census; management measures;

population dynamics; irrigation

PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; harvest; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; traps; electrofishing gear; intensive interview

NUMBER OF SAMPLING SITES: various

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; water quality data

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Yuma County; Colorado River; Imperial Reservoir; Laguna Reservoir

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; mode; percentile

ABSTRACT: We measure fishing pressure, survey fish populations, and conduct limnological survey of waters in this region.

ADDRESS: Tom Robinson

Regional Fish Specialist

Region IV

Arizona Game and Fish Dept.

3005 Pacific Ave.

Yuma, AZ 85364

TELEPHONE: (602) 782-1826

NBIP ACCESSION NUMBER: AZ/013

<84>

INVESTIGATOR(S): Ross, J.S.

AFFILIATION: Coronado National Forest, FS

TITLE: Effects of Prescribed Burning on Various Desert Scrub Species

PURPOSE: To relate burning to livestock and wildlife management, i.e., forage production and habitat type changes.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fire has reduced low value shrub densities and increased grass and forb production.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; grassland

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species; range;

recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs

TAXA: AGAVE SCHOTTII; CALLIANDRA ERIOPHYLLA; KRAMARIA; PARVIFLORA; MIMOSA BIUNCIFERA; JUNIPERUS MONOSPERMA; HAPLOPAPPUS LAVICIPOLIUS; GRAMINEAE; PECARI ANGULATUS; ODOCOILEUS HEMIIONUS

ADDED KEYWORDS: agave; false mesquite; ratany; catclaw mimosa; one-seed junipers; peccaries; mule deer; prescribed burning; management measures; habitat modification; javelinas

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; habitat characterization; mortality; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transects

NUMBER OF SAMPLING SITES: 6

SUPPORTING DATA COLLECTED: associated fauna; associated flora; terrain

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Pima County; Coronado

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National Forest
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; median; percentile
ABSTRACT: Being studied are the effects of
burning on livestock and wildlife
management, i.e., forage production by
grass increase resulting from fire
destruction of low value shrubs and
habitat type changes.
ADDRESS: John S. Ross
301 W. Congress
USFS
Tucson, AZ 85705
TELEPHONE: (602) 792-6216
NBIP ACCESSION NUMBER: AZ/003

<85>

INVESTIGATOR(S): Schubert, G.H.
AFFILIATION: Rocky Mountain Forest and Range
Experiment Station, FS
TITLE: G.A. Pearson Natural Area Fort Valley
Experimental Forest
PURPOSE: To monitor changes in stand
structure of a virgin stand of ponderosa
pine, to model stand development, and to
use as a data source for research and
teaching.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1915
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Net volume has increased
only slightly over a period of 50 years
(about 20 bd.ft. per acre per year). Over
half of mortality has been in trees over
30 inches d.b.h.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
forestry; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees
TAXA: PINUS PONDEROSA; PESTUCA ARIZONICA;
MUHLENBERGIA MONTANA; ODOCOILEUS HEMIONUS;
SPERMOPHILUS LATERALIS; SCIURUS ABERTII;
COLAPTES AURATUS; CYANOCITTA STELLERI;
MELEAGRIS GALLOPAVO
ADDED KEYWORDS: ponderosa pines; pines;
fescue; mule deer; gophers; tassel-eared
squirrels; flickers; stellar's jays;
turkeys; management measures; population
dynamics
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; growth; habitat
characterization; mortality; productivity;
reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
tree diameter measurement (1915-1960);
climatological data
NUMBER OF SAMPLING SITES: 34 plots on 76 acres
SAMPLING FREQUENCY: daily;
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Coconino County; Fort
Valley Experimental Forest; Colorado
Plateau
TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: XEROX Sigma 6-7;
FORTRAN
STATISTICS EMPLOYED: mean; contingency table
analysis
ABSTRACT: Ten periodic inventories of an
unburned virgin tract of southwestern
ponderosa pine near Flagstaff, Arizona
have yielded growth and mortality data on
more than 3,000 trees. Fifty years of
change on this 40-acre tract are
documented, principally in nonmetric
units, by (1) individual tree records, (2)
2.5-acre (1.01 ha) subplot summaries of
basal area and tree census (tree count)
data, and (3) composite stand tables which
display volumes (cubic feet and board
feet), census data, mortality data and
causes, net periodic basal area, volume,
and diameter growth. This information
should be useful in modeling stand
development and also as a data source for
research and teaching.
ADDRESS: Mr. Gilbert H. Schubert
Forestry Sciences Lab.
Northern Arizona University
Flagstaff, AZ 86001
TELEPHONE: (602) 774-5261 ext. 1467
NBIP ACCESSION NUMBER: AZ/026

<86>

INVESTIGATOR(S): Scott, V.E.
AFFILIATION: FWS
TITLE: Cavity-Nesting Bird Response to Snag
Removal
PURPOSE: To determine response to removal of
dead trees (snags) and the type of snags
used for nesting in the ponderosa pine
zone.
SPONSOR(S): Denver Wildlife Research Center
(FWS)
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There was a 67 percent
reduction in cavity nesting the first year
after snag removal.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees
TAXA: BIRDS, 41 SPECIES; PINUS PONDEROSA;
PINUS FLEXILIS; POPULUS TREMULOIDES
ADDED KEYWORDS: ponderosa pines; white pines;
douglas firs; aspens; firs; pines; clear
cutting; clearing; habitat modification;
nesting sites; logging
PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
birds-spot mapping
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): AZ
GEOGRAPHIC DESCRIPTION: Apache County
TYPE OF DATA: raw; summarized;
literature-derived
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: A study of cavity-nesting bird
response to snag removal indicates that
ponderosa pine snags are important nesting

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structures for cavity-nesting birds. Birds selected the large snags that had been dead six or more years and preferred trees with more than 40 percent bark cover. Where snags were removed during a timber harvest, there was a 67 percent reduction in cavity-nesting birds during the breeding season of the first year after treatment.

REFERENCES: Scott, et al, 1975

ADDRESS: Virgil E. Scott

FWS

3825 E. Mulberry

Port Collins, CO 80521

TELEPHONE: (303) 493-4855 ext. 2

NBIP ACCESSION NUMBER: CO/064

<87>

INVESTIGATOR(S): Yensen, E.

AFFILIATION: Dept. of Biology, Millsaps College

TITLE: Demography of a Saguaro Cactus Population

PURPOSE: To monitor mortality and reproductive success of saguaro cacti over a period of years, measure rates of growth, and construct a life table.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Mortality has greatly exceeded establishment of seedlings over past five years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees

TAXA: CEREUS GIGANTEUS; CARNEGIEA GIGANTEA

ADDED KEYWORDS: saguaro cacti; cacti;

population effects

PRIMARY PARAMETERS INVESTIGATED: age; growth;

mortality; natality; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

direct measurement

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; soils

STUDY SITE(S): AZ

GEOGRAPHIC DESCRIPTION: Washington County

TYPE OF DATA: raw; reduced; summarized;

literature-derived

ABSTRACT: Saguaro populations have shown about a 3% annual mortality over the past 5 years. To date, no significant reproduction has occurred.

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NBIP ACCESSION NUMBER: MS/006

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<88>

INVESTIGATOR(S): Carter, P.A.
AFFILIATION: Arkansas Game and Fish Commission
TITLE: Population Sampling of Fish and Aquatic Vegetation
PURPOSE: To determine changes in fish populations in Lake Hogue, Arkansas.
SPONSOR(S): Arkansas Game and Fish Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The disappearance of aquatic vegetation was caused by stocking of white amur and fertilizing. Changes were observed in total fish population.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: CTENOPHARYNGODON IDELLA
ADDED KEYWORDS: grass carps; species introduction; management measures; population effects; carps; rotenone; piscicides; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: distribution; growth; harvest; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): rotenone
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
STUDY SITE(S): AR
GEOGRAPHIC DESCRIPTION: Poinsett County; Lake Hogue
TYPE OF DATA: summarized
ABSTRACT: None provided.
ADDRESS: Mr. Allen Carter
Drawer 4Y
State University, AR 72467
TELEPHONE: (501) 935-0152
NBIP ACCESSION NUMBER: AR/021

<89>

INVESTIGATOR(S): Choate, P.B.
AFFILIATION: Arkansas Game and Fish Commission
TITLE: Fish Population Sampling
PURPOSE: To follow trends in existing fish populations in each lake in the district.
SPONSOR(S): Arkansas Game and Fish Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The fish population in each lake changes from year to year with sport fishing being an important factor.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MICROPTERUS SALMOIDES; POMOXIS SP;
LEPOMIS MACROCHIRUS; ICTALURUS PUNCTATUS
ADDED KEYWORDS: largemouth basses; basses; crappies; bluegills; channel catfishes; catfishes; population effects; management measures
PRIMARY PARAMETERS INVESTIGATED: diversity;

growth; reproduction
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
STUDY SITE(S): AR
GEOGRAPHIC DESCRIPTION: Hempstead County; Bois D'Arc Lake
TYPE OF DATA: summarized
STATISTICS EMPLOYED: analysis of variance
ABSTRACT: This project attempts to determine existing fish populations and carry out management to correct problems in fish populations. Primary objective is to provide good sport fishing for largemouth black bass, crappie, bluegill, and channel catfish.
ADDRESS: Paul B. Choate
Arkansas Game and Fish Commission
Perrytown, AR 71801
TELEPHONE: (501) 777-5580
NBIP ACCESSION NUMBER: AR/006

<90>

INVESTIGATOR(S): Cloud, J.D.
AFFILIATION: Arkansas Game and Fish Commission
TITLE: Upper White Oak Lake Fish Population Samples
PURPOSE: To investigate fish population species composition, condition, and behavior; and to determine which management procedures are needed for maximum production.
SPONSOR(S): Arkansas Game and Fish Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Lake maturation caused fish population stabilization. Little change was noted except for addition of exotic fish species by stocking.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: fisheries; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 19 SPECIES
ADDED KEYWORDS: management measures; rotenone; largemouth basses; channel catfishes; black crappies; chain pickerels; spotted gar; bowfins; bluegills; species introduction
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; harvest; mortality; numbers; physiology; productivity; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): AR
GEOGRAPHIC DESCRIPTION: White Oak Lake
TYPE OF DATA: raw
STATISTICS EMPLOYED: percentile
ABSTRACT: Fish population sampling is done annually on Upper White Oak Lake. An area of 1 to 2 acres is treated with rotenone fish toxicant and the fish population condition, species composition, and relative balance are determined. This data is used in management. The sample area is sounded, measured, and many times blocked

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by large nets. The chemical is applied manually. All fish are recorded and comparisons are made each year to determine trends.

ADDRESS: Mr. John Cloud
Route 1, Box 49
Chidester, AR 71726
TELEPHONE: (501) 685-2835
NBIP ACCESSION NUMBER: AR/002

<91>

INVESTIGATOR(S): Dorris, P.R.
AFFILIATION: Henderson State University
TITLE: Taxonomy, Ecology and Distribution of Spiders in Mississippi and Arkansas
PURPOSE: To determine what species are present and their distribution and abundance.

SPONSOR(S): Henderson State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Insecticide usage has changed the abundance of species and specimens - especially in Delta areas where aerial spraying is performed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; wetland; aquatic; freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: endangered species; environmental impact; indicator species; range; pollution control

ORGANISMS, MAJOR TYPES: animals; invertebrates; insects

ADDED KEYWORDS: spiders; arachnids; pesticides; insecticides

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; kill; mortality; numbers; productivity; territory size; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sweep nets; hand picking; Berlese funnel; headlighting at night; trapping; sifting

SUPPORTING DATA COLLECTED: associated fauna; climatological data; terrain

STUDY SITE(S): AR; MS

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: analysis of variance;

regression/correlation analysis;

contingency table analysis

ABSTRACT: None provided.

ADDRESS: Peggy R. Dorris
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Arkadelphia, AR 71923
TELEPHONE: (501) 246-5511 ext. 207
NBIP ACCESSION NUMBER: AR/003

<92>

INVESTIGATOR(S): Doyle, W.T.
AFFILIATION: Dept. of Biology, University of California-Santa Cruz
TITLE: Diversity and Abundance of Intertidal

Algae along the Central California Coast
PURPOSE: To monitor short and long term changes in intertidal algae along this coastal section and to compare events at selected stations under stressed and non-stressed situations.

SPONSOR(S): University of California
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is a simplification of community structure in very highly stressed areas.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; indicator species; resource planning

ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: PHYLLOSPADII SP

ADDED KEYWORDS: red algae; brown algae; green algae; intertidal zones; species diversity; tides; habitat modification

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats

NUMBER OF SAMPLING SITES: 11 originally; presently 5

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Santa Cruz County; San Mateo County; Monterey County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: analysis of variance

ABSTRACT: This project studies the diversity, distribution, and abundance of intertidal plants at selected intertidal sites along the central California coast. Intertidal platforms selected represent open coast, bay, stressed, and non-stressed situations. Seasonal studies were made for the first two years of study. Since then, the studies have been annual. Originally there were eleven study sites, there are now only five. All sites studied for diversity and voucher specimens are in the University of California-Santa Cruz reference herbarium. Permanent quadrats in the high, middle, and low intertidal regions enable an assessment of changes in diversity and abundance at specific locations. Random quadrats allow determination of whether such changes are characteristic of the platform as a whole.

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University of California-Santa Cruz
Santa Cruz, CA 95064

TELEPHONE: (408) 439-2914

NBIP ACCESSION NUMBER: CA/102

<93>

INVESTIGATOR(S): Perrin, C.A.
AFFILIATION: Arkansas Game and Fish Commission
TITLE: Fish Population Monitoring in the Public Waters of Six Arkansas Counties
PURPOSE: To manage fish populations for optimum yield.

SPONSOR(S): Arkansas Game and Fish Commission
SPONSOR CATEGORY: state government

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PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Impoundment and
channelization of streams causes a
reduction in species and numbers of fish
in some cases.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; crustacea; insecta

ADDED KEYWORDS: management measures; habitat

modification; rotenone; impoundments;

channelization; catfishes; basses; benthic

organisms

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;

reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

rotenone poisoning; netting;

electrofishing gear

NUMBER OF SAMPLING SITES: 14

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;

water quality data

STUDY SITE(S): AR

GEOGRAPHIC DESCRIPTION: Faulkner County;

Conway County; Cleburne County; Van Buren

County; White County; Independence County;

White River; Arkansas River; Little Red

River; Greers Ferry Lake; Conway Lake;

Overcup Lake

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean

ABSTRACT: None provided.

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Higden, AR 72067

TELEPHONE: (501) 825-7184

NBIP ACCESSION NUMBER: AR/022

<94>

INVESTIGATOR(S): Robinson, H.W.

AFFILIATION: Southern State College

TITLE: Fishes of Arkansas

PURPOSE: To elucidate the ichthyofauna of
Arkansas, describe new species, document
presence of fishes for posterity, note
environmental changes, and monitor
endangered fish populations.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Have observed decline in
certain fish populations as a result of
modification of environment by man.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species;

fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish

ADDED KEYWORDS: habitat modification; rotenone

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization;

numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

seines; rotenone; electroshocking gear

SAMPLING FREQUENCY: continuous; seasonal;

irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): AR

TYPE OF DATA: raw

ABSTRACT: An on-going systematic analysis of
the fishes of Arkansas has been carried
out for the past five years. This project
is a continuous one with sampling trips
taken throughout the state and during all
seasons. Publication is approximately 4-5
years away. Already over 400 collections
have been made with data maintained by the
project director.

ADDRESS: Henry W. Robinson

Science Dept.

P.O. Box 1216

Southern State College

Magnolia, AR 71753

TELEPHONE: (501) 234-5120 ext. 211

NBIP ACCESSION NUMBER: AR/023

<95>

INVESTIGATOR(S): Rogers, M.J.

AFFILIATION: Arkansas Game and Fish Commission

TITLE: Sylamore Deer and Forest Game

Management Study

PURPOSE: To determine range carrying capacity
of white-tailed deer; to determine
specific mortality factors, especially on
fawns; and to document deer habitat
relationships.

SPONSOR(S): FS; FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1959

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Deer populations changed
with habitat alterations. Deer population
capacities were reached on unimproved
range.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; deciduous; mountain

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals

TAXA: ODOCOLEUS VIRGINIANUS

ADDED KEYWORDS: white-tailed deer; management

measures; carrying capacity; deer;

parasites

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; growth; habitat

characterization; mortality; natality;

numbers; reproduction; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

live trapping; observation; census drives;

radiotelemetry; necropsy

NUMBER OF SAMPLING SITES: 1300 acre enclosure

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated flora;

soils

STUDY SITE(S): AR

GEOGRAPHIC DESCRIPTION: Stone County; Ozark
Mountains

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: Data for the study were compiled
through census drives in a few specified
enclosure areas. The composition, age,
sex, physical condition, ectoparasite
presence, reproductive condition, and fawn
mortality of the deer herd were noted and
summarized. Fawns died as a result of
predation, abandonment, or starvation.

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Small clearings were grazed by more deer than larger clearings. The physical condition of the populations seemed to be good to excellent in most cases.

REFERENCES: Rogers, 1969; Crawford and Leonard, 1963; Cartwright and Rogers, 1975; Segelquist and Rogers, 1972; Segelquist, 1972; Rogers, 1970; Rogers, 1971

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NBIP ACCESSION NUMBER: AR/005

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INVESTIGATOR(S): Sinclair, C.B.

AFFILIATION: University of Arkansas-Little
Rock

TITLE: Dardanelle Reservoir Illinois Bayou
Embayment Background Survey

PURPOSE: To monitor water quality in the
reservoir prior to and during the
operation of Arkansas Nuclear 1.

SPONSOR(S): Arkansas Power and Light Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: We have found no biotic
changes resulting from heated water.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
radiological; pollution control; water
quality; power generation

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; insecta; plants;
vascular plants; herbs; microorganisms;
algae; protozoa

ADDED KEYWORDS: nuclear power plants; thermal
effluents; habitat modification; benthic
organisms; aquatic plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; kill; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection

NUMBER OF SAMPLING SITES: 13

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data

STUDY SITE(S): AR

GEOGRAPHIC DESCRIPTION: Pope County; Yell
County; Arkansas River; Dardanelle
Reservoir

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: This project has monitored the
water quality of Dardanelle Reservoir
prior to and during the operation of
Nuclear 1. At some twelve to thirteen
selected stations on the reservoir,
monthly measures are made. Samples are
taken at 1 foot, 2 foot, 5 foot, 7 foot,
and each succeeding 5 foot depth to the
bottom. The parameters are chemical (pH,
DO, COD, Fe, Mn, B, Cl, hardness, and

turbidity), temperature, and biological
(plankton, bottom organisms, and aquatic
plants). Water, mud, and plankton samples
are also collected for radiation analysis.
On-site weather data are also taken at
each collection period. All data are
tabulated, summarized, or grafted for
presentation.

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NBIP ACCESSION NUMBER: AR/007

<97>

INVESTIGATOR(S): Wilson, D.

AFFILIATION: Arkansas Game and Fish Commission

TITLE: Fish Population Sampling

PURPOSE: To determine the balance of fish
populations in order to produce a
sustained yield that can be harvested by
fishermen.

SPONSOR(S): Arkansas Game and Fish Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1959

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in fish
populations toward overcrowded bream and
shad populations. Fish kills were
initiated to correct these conditions.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; lake; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; microorganisms; algae

TAXA: ICTIOBUS SPP; ICTALURUS PUNCTATUS;

DOROSOMA PETENENSE; MORONE SAXATILIS

ADDED KEYWORDS: israeli carps; white amurs;
channel catfishes; threadfin shad; striped
basses; habitat modification; management
measures; rotenone; piscicides; species
introduction

PRIMARY PARAMETERS INVESTIGATED: age; growth;
habitat characterization; numbers;
reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

dip net; shoreline counts

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: annual

STUDY SITE(S): AR

GEOGRAPHIC DESCRIPTION: Crittenden County;

Horseshoe Lake

TYPE OF DATA: raw

STATISTICS EMPLOYED: percentile

ABSTRACT: In 1959, a three year program was
proposed for Horseshoe Lake because of
over population and over sized shad
population. Three selective fish kills
were recommended. The lake was treated
with liquid rotenone and a "bream"
thinning operation was conducted.
Approximately 1,000,000 pounds of fish
were killed, 98 percent of which were
gizzard shad, yellow bass, and drum. In
December 1959 and January 1960, largemouth
bass, channel catfish, bluegill, and
redeer were stocked. In 1961, a selective
fish kill was made for the purpose of
eradicating the shad. Liquid rotenone was
applied to the lake and about 120,000
pounds of gizzard shad and 600 pounds of
catfish were killed. Some stocking

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occurred in October 1961 and May 1963. The "moss" situation on Horseshoe created much concern, since aquatic vegetation grew abundantly especially in the shallow areas of the lake. It was decided to use two species of herbivorous fish as biological controls. The Israeli carp prefers filamentous algae, and has a habit of rooting around on the lake bottom causing the water to become turbid and shades out light. The grass carp has specialized

spawning requirements which presents the possibility of spawning and overpopulation in the lake, and his eating habits are less selective. The grass carp wastes provide nutrients which creates a plankton bloom. The buffalo were then stocked to convert the plankton into fish flesh. Commercial fishing on the lake is being monitored to determine commercial harvest.

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NBIP ACCESSION NUMBER: AR/018

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CALIFORNIA

Standard Federal Region 9
Fish and Wildlife Service Region 1
(SEE ALSO 80, 210, 236, 577, 580, 711, 715,
718, 897, 902)

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INVESTIGATOR(S): Ainley, D.G.
AFFILIATION: Point Reyes Bird Observatory
TITLE: California Beached Bird Survey
PURPOSE: Determine annual, seasonal, and long term trends in mortality of seabirds, and monitor the role of oil pollution on the mortality rate.
SPONSOR(S): Point Reyes Bird Observatory
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Change in mortality observed was coincident with alterations in oceanographic factors. There was a steady increase in mortality due to oil pollution.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: BIRDS, 50 SPECIES; GAVIIFORMES; PODICIPEDIFORMES; PROCELLARIIFORMES; PELCANIFORMES; ANSERIFORMES; CHARADRIIFORMES
ADDED KEYWORDS: oil spills; pelicans; petrels; cormorants; gulls; terns; murres; loons; grebes; coots; ducks; auklets
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; kill; mortality; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census
NUMBER OF SAMPLING SITES: 35
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): CA
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis; non-parametric analysis
ABSTRACT: Beaches are censused regularly at weekly to monthly intervals and all dead birds and marine mammals are noted. Cause of death, if apparent, is noted. Sample beaches are located between Cape Mendocino and San Diego. Results indicate different degrees of susceptibility to oiling of different species and overall a steady increase in the incidence of oiling. Results also indicate changes in the extent of mortality of various taxonomic groups and may be related to alterations in the California current.
REFERENCES: Ainley, et al, 1972
ADDRESS: Dr. David G. Ainley
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NBIP ACCESSION NUMBER: CA/162

<99>

INVESTIGATOR(S): Ainley, D.G.
AFFILIATION: Point Reyes Bird Observatory
TITLE: Marine Birds and Mammals of the Farallon Islands
PURPOSE: To determine community organization, including seasonal and yearly changes therein, of marine birds and mammals of the Farallon Islands.
SPONSOR(S): Point Reyes Bird Observatory
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Colonization, extinction, and recolonization have been detected.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: endangered species; fisheries; wildlife; indicator species; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: HIROUNGA SP; PHOCA SP; CALLORHINUS SP; EUMETOPUS SP; ZALOPHUS SP; OCEANODROMA SP; PHALACROCORAX SP; HAEMATOPUS SP; LARUS SP; URIA SP; CEBOPHUS SP; CEROBIRINCA SP; LUNDA SP; PTYCHORAMPHUS SP
ADDED KEYWORDS: islands; pinnipeds; seals; elephant seals; hair seals; northern fur seals; stellar sea lions; california sea lions; pelicans; petrels; cormorants; oystercatchers; gulls; terns; murres; guillemots; auklets; puffins
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; emigration; growth; home range size; immigration; mortality; migratory patterns; natality; numbers; productivity; reproduction; residues; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly; annual; irregular
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Francisco County; Farallon Islands
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
ABSTRACT: The largest marine bird breeding population in the 48 contiguous states occurs on the Farallon Islands. Large populations of pinnipeds occur there also. Annual and seasonal population levels and reproduction are being monitored. Where possible, changes in these factors are being correlated to environmental factors including oceanography, disturbance, and pollution.
REFERENCES: Ainley, 1972; Ainley and Whitt, 1973; Ainley, et al, 1974; Ainley and Lewis, 1974
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NBIP ACCESSION NUMBER: CA/163

CALIFORNIA
Standard Federal Region 9
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INVESTIGATOR(S): Andres, L.A.
AFFILIATION: ARS, USDA
TITLE: Biological Control of Weeds
PURPOSE: To manipulate insects to control weeds.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1950's
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed reduced abundance of various weeds, buildup of insect populations, and later reduction and stabilization.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; savanna; grassland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: range; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta; plants; vascular plants; shrubs; herbs; grasses
TAXA: HYPERICUM PERFORATUM; SENECIO JACOBAEAE; ALTERNANTHERA PHILOXEROIDES
ADDED KEYWORDS: pastures; coleopterans; lepidopterans; dipterans; species introduction; management measures; weeds; biological control
PRIMARY PARAMETERS INVESTIGATED: age; biomass; growth; habitat characterization; harvest; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; transects; sampling of insects
NUMBER OF SAMPLING SITES: 5-10
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): CA; OR; WA; ID; NV; AZ; MT
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: Various exotic weed-feeding insects were introduced to control several species of introduced terrestrial and aquatic weeds. Considerable success has been achieved in the control of HYPERICUM PERFORATUM, SENECIO JACOBAEAE and ALTERNANTHERA PHILOXEROIDES. A number of other projects look promising.
REFERENCES: Andres, et al, 1974
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NBIP ACCESSION NUMBER: CA/229

<101>

INVESTIGATOR(S): Archer, B.J.
AFFILIATION: California State Dept. of Water Resources
TITLE: California State Water Project: Water Quality Control
PURPOSE: To monitor chemical and biological parameters of project water.
SPONSOR(S): Private and municipal water contractors
SPONSOR CATEGORY: private corporation; city

government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed seasonal succession among general groups of algae. In some restricted cases, phytoplankton data indicates an acceleration of eutrophication.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: indicator species; water quality
ORGANISMS, MAJOR TYPES: invertebrates; mollusca; shellfish; microorganisms; algae
TAXA: CLADOPHORA GLOMERATA; CORBICULA FLUMINEA
ADDED KEYWORDS: green algae; unionacean clams; clams; succession; algal blooms; eutrophication; diatoms; bryozoans; sponges
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers
NUMBER OF SAMPLING SITES: 28
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): CA
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: Biological features of our water system which have inhibited operations include (1) algal blooms which through metabolite excretion or decomposition impart a taste and odor, (2) bryozoans and sponges which impart a taste and odor, (3) diatom blooms which shorten filter runs at treatment facilities, (4) vascular plants and attached algae which upon detachment clog trashracks and turnouts, and (5) mollusk populations, associated with sediment in the aqueduct, which can reduce flows and capacity. Phytoplankton data, in relation to water quality data, is evaluated in terms of establishing historical trends in algal populations. At reservoirs which serve as potable water supply, the schedule has been modified by a greater frequency in sampling. This program aims at detecting periods of exponential growth of nuisance organisms with an application of copper sulfate often following such detection. Monitoring of organisms other than pelagic algae tends to be of a qualitative nature. The major effort is applied to methods of detection and control. Some special investigations have however been performed, these include, (1) life history of CLADOPHORA GLOMERATA, and environmental factors affecting its distribution, (2) distribution and area counts of CORBICULA FLUMINEA, and (3) a forth-coming investigation on the aquatic vascular plant community within Oneill Forebay.
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NBIP ACCESSION NUMBER: CA/221

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INVESTIGATOR(S): Barbour, M.G.

AFFILIATION: Botany Dept., University of California

TITLE: Management of Beach and Dune Vegetation

PURPOSE: To develop techniques to enable use of native plant taxa for beach and dune erosion control along the central California coast.

SPONSOR(S): Sea Grant College Program; NOAA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Change in plant cover and composition, mortality, and growth of naturally-occurring and planted beach plant taxa.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; coastal

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; recreation

ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; grasses

TAXA: ELYMUS NOLIS; ABRONIA LATIFOLIA;

AMBROSIA CHAMISSONIS; AMNOPHILA

BREVILIGULATA

ADDED KEYWORDS: american dune grasses; sand verbenas; beach burrs; european beach grasses; species introduction; management measures; sand dunes; recreational vehicles; erosion

PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; growth; habitat characterization; mortality; natality; numbers; physiology; reproduction; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent strip transects; salt spray traps; sieves

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; terrain

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Marin County; Point Reyes National Seashore

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; contingency table analysis

ABSTRACT: The objective of this project is to determine means for effective management of beach and dune vegetation that will reduce erosion and community instability. We enclose portions of beach and dunes at Point Reyes National Seashore that have been disturbed by foot traffic and plant introductions. We then evaluate the use of several native plant species to hasten recovery to a natural landscape while maintaining or enhancing stability. Field plantings and observations are augmented by greenhouse or growth chamber trials. Relatively short term results should indicate the following: 1) The identification of several native species which can be used in combination to stabilize beach front acreage, instead of

the introduced European beach grass; 2) Methods for propagating such species; 3) Estimates of sand movement in reestablished natural communities and the effect of foot traffic on stability; and 4) The amount of time required to reestablish a natural community.

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NBIP ACCESSION NUMBER: CA/039

<103>

INVESTIGATOR(S): Becking, R.W.

AFFILIATION: School of Natural Resources, Humboldt State University

TITLE: The Ecology of the Coastal Redwood Forest and the Impact of the 1964 Floods upon Redwood Vegetation

PURPOSE: To study the dynamics of the virgin redwood forests and to inventory floristically the redwood biome.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been a degradation of the Bull Creek Watershed, as well as a loss of the virgin redwoods.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous

LEVEL(S) OF STUDY: community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; forestry; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; lichens; mosses

TAXA: SEQUOIA SEMPERVIRENS

ADDED KEYWORDS: floods; redwoods

PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; kill; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent sample plots

NUMBER OF SAMPLING SITES: 8 major lines and about 200-300 plots regionally

SAMPLING FREQUENCY: monthly; annual

SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; soils; terrain

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Luis Obispo County; Del Norte County; Del River

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis

ABSTRACT: Primary objectives of the project are to determine the effects of severe floods on the riparian plant communities in the Redwood Region, which occurred in Dec. 1964 and Jan. 1966, and to follow the successional development of the plant communities established on areas modified by these floods. The project also will determine the role of floods, erosion, and silt deposition in the ecology of the redwood forests. Detailed and periodic

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measurements of soil moisture, temperature, precipitation, and litter fall are made. These factors are correlated with growth and survival of redwood seedlings. Redwood forest communities are also classified.

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NBIP ACCESSION NUMBER: CA/062

<104>

INVESTIGATOR(S): Bell, M.M.
AFFILIATION: FS
TITLE: Brush Rejuvenation Using Prescribed Burning and Crushing
PURPOSE: To improve the quality and quantity of brush for deer and other wildlife found in a chaparral environment.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been an increase in the available browse, a decrease in the age of browse, and both a decrease and increase in deer browsing.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; reptiles; birds; mammals; plants; vascular plants; shrubs; herbs; grasses
TAXA: ODOCOLEUS HEMIONUS; CERCOCARPUS BETULOIDES; Ceanothus cuneatus; Fremontia californica; Quercus garryana
ADDED KEYWORDS: prescribed burning; deer; mule deer; oaks; brewer's oak; buck brush; mahogany; mountain mahogany; fremontia; chaparral
PRIMARY PARAMETERS INVESTIGATED: habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): condition transects; trend transects; Parker three-step transects; circular pellet group plot transects; photo points
NUMBER OF SAMPLING SITES: 120
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Tulare County; Bean Camp
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: percentile
ABSTRACT: Spring-summer prescribed burning and fall crushing techniques are being used to remove blocks of decadent brush. The program is planned for 1971 through 1978. A mosaic pattern of vegetation varying in age form and species composition is desired. Approximately 1,000 acres will be modified by 1978. Pre- and post-burn data are being collected to

determine changes in deer density, plant composition, and age and form class.

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NBIP ACCESSION NUMBER: CA/155

<105>

INVESTIGATOR(S): Bertram, R.C.
AFFILIATION: California State Dept. of Fish and Game
TITLE: North Kings Deer Management Project
PURPOSE: Fawn production and survival studies related to doe condition, weather, and habitat changes.
SPONSOR(S): California State Dept. of Fish and Game; FS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Improved fawn survival occurred with favorable weather as well as improved doe condition and animal condition in habitat improvement projects.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; forestry; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs
TAXA: ODOCOLEUS HEMIONUS
ADDED KEYWORDS: habitat modification; weather conditions; mule deer; migration rates
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; growth; harvest; home range size; kill; migratory patterns; natality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): radiotelemetry; necropsies
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Fresno County; Sierra National Forest
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mode; regression/correlation analysis
ABSTRACT: Radiotransmitter collars were attached to does and fawns to determine migration patterns and home ranges. Does and fawns were collected from the seasonal ranges to relate habitat quality, weather, and doe and fawn condition to fawn survival.
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NBIP ACCESSION NUMBER: CA/254

<106>

INVESTIGATOR(S): Blong, B.
AFFILIATION: California State Dept. of Fish and Game
TITLE: Peninsular Bighorn Sheep - Santa Rosa Mountains, Riverside County - Waterhole

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Count

PURPOSE: To collect minimum information on population trend, mortality, and survival; and document key areas and water sources for bighorn sheep.

SPONSOR(S): California State Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1958

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Determined stable population trend (for 13 years). Documented critical water sources and use of key areas.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; mountain

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: OVIS CANADENSIS

ADDED KEYWORDS: peninsular bighorn sheep; sheep; population effects; habitat modification

PRIMARY PARAMETERS INVESTIGATED: age; mortality; numbers; reproduction; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): waterhole watch

NUMBER OF SAMPLING SITES: 10-12 counting stations

SAMPLING FREQUENCY: annual;

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Riverside County; San Diego County; Santa Rosa Mountains

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: Every other square mile is private and even numbered sections are public land (BLM). Portions of the bighorn habitat are threatened by human encroachment-residential development. The project has been useful to document key habitat, some of which is designated for land acquisition or to be acquired by exchange. Major population fluctuation, lamb survival, and general population condition are indicated. Bighorn are classified as to sex, age, group size, and time of day observed. Temperature and volume of water in the spring is also recorded. Other wildlife observed are also listed. Peninsular bighorn are classified as "rare" by the California Dept. of Fish and Game.

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NBIP ACCESSION NUMBER: CA/259

<107>

INVESTIGATOR(S): Boyd, M.J.

AFFILIATION: Dept. of Biology, Humboldt State University

TITLE: Ecological Survey of the Intertidal and Subtidal Resources of Redwood National

Park

PURPOSE: To develop faunal and floral lists, to monitor seasonal changes of significant species populations, and to provide information for resource management.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

CHANGE(S) OBSERVED: Seasonal changes in annual species of plants and animals in rocky intertidal and sand beach locations observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca;

shellfish; annelida; grasses; algae

TAXA: INVERTEBRATES, 158 SPECIES; RHODOPHYTA;

PHAEOPHYTA; CHLOROPHYTA; FISHES, 8 SPECIES

ADDED KEYWORDS: red algae; brown algae; green algae; gunnel; sculpins; snailfishes; cabezon; rockfishes; natural catastrophe; weather conditions; habitat modification; aquatic plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

transects; quadrats; photographic stations

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Humboldt County; Del Norte County; Redwood National Park

TYPE OF DATA: raw; reduced

COMPUTER AND LANGUAGE: CDC 3150; FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance; multivariate analysis

ABSTRACT: During the period July 1974 through June 1975, over 150 species of invertebrates, 85 species of macroscopic algae, and 8 species of intertidal fish have been collected along the coast of Redwood National Park. Salinity, water temperature, dissolved oxygen, and chlorophyll concentrations have been monitored at six sites along the coast of the park. Wave shock has been identified as the major environmental parameter controlling the establishment and maintenance of organisms in both rocky intertidal and sand beach locations. Driftlogs from numerous coastal streams and rivers also affect the establishment and maintenance of intertidal areas during winter storms, maintaining a high level of disturbance (and diversity) in littoral assemblages. The marine coastal biota of the park reflects an environment only slightly altered by human activity at present.

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NBIP ACCESSION NUMBER: CA/150

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INVESTIGATOR(S): Brattstrom, B.H.

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AFFILIATION: Dept. of Biology, California State University-Fullerton
TITLE: Ecology and Natural History of Amphibians and Reptiles, with Special Reference to Social Behavior and Effects of Habitat Destruction
PURPOSE: Continuing series of projects on the social behavior, ecology, and natural history of reptiles, especially in the southwest. Note is being taken of effects of habitat destruction on animal distribution in the desert with off-road vehicles and on the coast.

SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1948
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: With build-up of Los Angeles and Orange County areas, numerous species have become extinct or their ranges reduced.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; deciduous; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles
ADDED KEYWORDS: habitat modification; chaparral; recreational vehicles
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; emigration; habitat characterization; home range size; immigration; kill; mortality; numbers; physiology; territory size
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; water quality data
STUDY SITE(S): CA; AZ; NV; MX
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: None provided.
REFERENCES: Brattstrom, 1951-1974
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Fullerton, CA 92631
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NBIP ACCESSION NUMBER: CA/026

<109>

INVESTIGATOR(S): Busch, R.A.
AFFILIATION: Fish Pathology Laboratory, Humboldt State University
TITLE: Sources, Types, and Seasonal Fluctuations of Microbial Pollutants and Aquatic Zoonoses in Humboldt Bay, California
PURPOSE: To undertake a systematic and complete program of surveillance of bacterial and viral indicator systems of fecal pollution to the aquatic environment of Humboldt Bay; and to differentiate between sources of indicator efficiency

and identification of zoonotic agents.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: There have been seasonal variations of microbial water quality in terms of fish and shellfish production in estuarine environments as a function of stream flow, run off, precipitation, and agricultural activities.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; fisheries; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; shellfish; microorganisms; viruses; bacteria
ADDED KEYWORDS: agriculture; sewage treatment; enteric viruses; coliform bacteria; fecal coliforms; fecal streptococci; aquatic zoonoses; nuclear power plants; waste water; paper mills
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; immigration; kill; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): membrane filtration techniques; plaque assay; serum neutralization
SAMPLING FREQUENCY: seasonal; weekly; monthly; quarterly
SUPPORTING DATA COLLECTED: associated microorganisms; climatological data; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Humboldt County; Jacoby Creek; Freshwater Creek; Elk Creek; Humboldt Bay; Humboldt Bay Nuclear Reactor; Louisiana Pacific-Paper Mill; Crown Simpson Paper Mill
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; modeling, deterministic
ABSTRACT: Indicator systems presently being used as an index of microbial pollution and water quality, particularly in estuarine environments, are questioned as to their efficiency and application to water quality in terms of public health importance. Problems arise first from the fact that some coliform biotypes are widely distributed in nature and may not necessarily reflect microbial pollution of public health significance. The ability of some microbial indicator systems to simulate the dynamics of aquatic zoonotic agents and pathogens, particularly in estuarine and marine waters, is questionable. Utilizing additional methods of microbial indicator technology including water-borne viruses and differential identification of indicator communities, we hope to be able to differentiate between different sources of microbial pollution including industrial, domestic animal, human, and natural with respect to their public health significance in terms of intensive and extensive culture of aquatic vertebrates

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and invertebrates.
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NBIP ACCESSION NUMBER: CA/124

<110>

INVESTIGATOR(S): Chesemore, D.L.
AFFILIATION: Dept. of Biology, California
State University-Fresno
TITLE: Ecology of the Desert Kit Fox
PURPOSE: To determine the numbers, life
history, and distribution of the desert
kit fox in the Mojave Desert, California.
SPONSOR(S): California State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population density was
considerably greater than expected with
the population of foxes in a 20-30 square
kilometer area remaining relatively
constant the past two and one-half years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: VULPES MACROTIS
ADDED KEYWORDS: desert kit foxes; foxes; food
habits; life history; population effects
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
home range size; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
livetrapping; line-intercept; scent
stations; small mammal trap grid
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Kern County; Mojave
Desert
TYPE OF DATA: reduced
STATISTICS EMPLOYED: mean; non-parametric
analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: CA/097

<111>

INVESTIGATOR(S): Clawson, M.W.
AFFILIATION: California State Dept. of Water
Resources
TITLE: Clear Lake, Lake County, Water Quality
Monitoring Program
PURPOSE: To determine physical, chemical, and
biological conditions and changes in Clear

Lake.

SPONSOR(S): California State Dept. of Water
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Shifts observed in major
species of blue-green algae.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
ecosystem
MANAGEMENT FOCUS: fisheries; recreation;
resource planning; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: phytoplankton; zooplankton;
algal blooms; population effects; primary
productivity
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Net tows
NUMBER OF SAMPLING SITES: 3
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Lake County; Clear
Lake
TYPE OF DATA: reduced
STATISTICS EMPLOYED: mean
ABSTRACT: Because of the unique biological
conditions existing in Clear Lake, it has
been a subject for study since 1874. Since
that time numerous studies have been made
concerning the fisheries and other aspects
of the lake, such as water quality,
biological primary productivity, and
sediment production. The most pertinent
and extensive studies have been made in
the past two decades. The Department of
Water Resources has conducted a number of
these studies and has collected a large
volume of water quality and related data,
most of which are available in the files
of the Northern District office in Red
Bluff. These data provide a basic
understanding of the Lake and are
available to any person or agency planning
on conducting studies of Clear Lake.
REFERENCES: Clawson, et al, 1975
ADDRESS: Mr. Robert Clawson
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Red Bluff, CA 96080
TELEPHONE: (916) 527-6530
NBIP ACCESSION NUMBER: CA/218

<112>

INVESTIGATOR(S): Cobb, F.W.
AFFILIATION: Dept. of Plant Pathology,
University of California-Berkeley
TITLE: Photochemical Air Pollutant Impact on
Stand Seedling Establishment
PURPOSE: To determine the rate of
establishment of new seedling under
various forest conditions, the influence
of biotic and physical factors on seedling
establishment, and the influence of an air
pollution gradient on these factors.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years

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PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been changes in the rate of seed dispersal, rate of seed predation, rate of seed deterioration, rate of seed infection by pathogens, rate of seed germination, and rate of seedling establishment.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; recreation; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; insects; plants; vascular plants; trees; microorganisms; fungi
TAXA: PINUS PONDEROSA; PINUS JEFFREYI
ADDED KEYWORDS: ponderosa pines; jeffrey pines; pines; air pollution; succession; seeds; deer mice; squirrels; ozone; photochemical oxidants; predation; pathogens
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; mortality; numbers; reproduction; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field experiments
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; atmospheric chemistry; climatological data; hydrological data; soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino Mountains; San Bernardino County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; multivariate analysis
ABSTRACT: The effects of photochemical air pollution on forest tree seedling establishment is being determined. The investigation involves a combination of field, greenhouse/growth chamber, and laboratory studies. Field studies include placement of seed traps beneath Ponderosa and Jeffrey pines for which cone production data is available. Seeds are also collected from cones of pines with known oxidant injury scores. Sound seeds taken from these collections are used in field studies to determine the number of seeds lost to rodents, birds, insects, other arthropods, and pathogens reaching the forest floor. Other field studies involve the determination of rate of seedling establishment relative to oxidant exposure, and the rate of seedling establishment relative to litter depth and type. Laboratory studies determine the quality of seedlings from pollution-injured versus healthy trees.
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NBIP ACCESSION NUMBER: CA/237

<113>

INVESTIGATOR(S): Cobb, F.W.
AFFILIATION: Dept. of Plant Pathology, University of California-Berkeley
TITLE: Photochemical Air Pollutant Impact on a Mixed Conifer Ecosystem; Subproject: Photochemical Air Pollutant Impact on Epidemiology of FOMES ANNOSUS
PURPOSE: To determine oxidant air pollution impact on epidemiology of FOMES ANNOSUS.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes were observed in tree and stump susceptibility, fungal characteristics, and pathogenicity as affected by ozone.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; microorganisms; fungi
TAXA: FOMES ANNOSUS; PINUS PONDEROSA; PINUS JEFFREYI
ADDED KEYWORDS: ponderosa pines; jeffrey pines; ozone; air pollution; pines
PRIMARY PARAMETERS INVESTIGATED: mortality; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field experiments; growth chamber studies
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated microorganisms; atmospheric chemistry; climatological data; soils
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; contingency table analysis
ABSTRACT: Investigation of oxidant effects on the epidemiology of F. ANNOSUS included (1) evaluate effects of ozone on growth rate, production, and germination of reproductive spores, and genetic adaptability of the fungus; (2) evaluate effects of exposure to ozone on pathogenicity and virulence capabilities of the fungus; (3) continue to evaluate and analyze effects of oxidants on tree susceptibility to the fungus; (4) evaluate pathogenic variability of isolates of the fungus from areas of different oxidant exposure; (5) analyze extension of the fungus in the root systems of a number of inoculated stumps; (6) evaluate inoculum concentrations by sampling spore load at a number of sites throughout the study area; (7) continue to evaluate effects of oxidants on spread of infection centers and subsequent mortality of peripheral trees; and (8) determine extent and location of tree cutting being carried out by the Forest Service relative to the F. ANNOSUS hazard. Investigations into the effects of oxidants on the incidence of pathogens of forest trees entails evaluation of pathogens in areas affected

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by different amounts of oxidants.
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NBIP ACCESSION NUMBER: CA/238

<114>

INVESTIGATOR(S): D'Eliscu, P.N.
AFFILIATION: Dept. of Biology, University of Santa Clara
TITLE: Seasonality, Characterization, and Pollution Ecology of Planktonic and Benthic Invertebrates of Extreme South San Francisco Bay
PURPOSE: To monitor indicator and dominant species of invertebrates over time; and establish seasonality, nutrient dependency, parasite-predator-prey relationships; and some specific pollutant interactions of major species.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Coliform bacteria, copepod, and diatom (planktonic and tapetic) population shifts were observed over time.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; crustacea; mollusca; annelida; microorganisms; bacteria; fungi; algae; protozoa
ADDED KEYWORDS: plankton; benthic organisms; heavy metals; species diversity; nutrients; diatoms; nematodes; cnidarians; gnathostomulids; rhynchocoels
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; immigration; migratory patterns; numbers; physiology; residues; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): benthic dredge; plankton net; Nansen-type water bottle; standard microbiological substrates
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Santa Clara County; Coyote Creek; Alviso Slough; Guadalupe Slough; San Francisco Bay
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; modeling, stochastic

ABSTRACT: Planktonic and benthic monitoring of extreme south San Francisco Bay is in progress. The purpose of this study is two-fold - establishment of current major components in the estuarine portions of this locality and continued monitoring of the organisms or organismic units in relation to endogenous and exogenous materials. Pollutant residues and metals are assessed in relation to species density, concentration, and impact on productivity. Nutrient input and physical-chemical factors are considered as integral parts of this study. Both land based and small craft sampling methods are employed. Planktonic ecosystem modeling will be included in integrity and final analyses.

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NBIP ACCESSION NUMBER: CA/263

<115>

INVESTIGATOR(S): Dahlsten, D.L.
AFFILIATION: Div. of Biological Control, University of California-Berkeley
TITLE: Oxidant Effects of Western Pine Beetle, DENDROCTONUS BREVICORNIS, Populations
PURPOSE: To study the effects of oxidants on the biology of the western pine beetle (WPB) and its associations with particular reference to parasites and predators, to develop life tables, and to predict population fluctuations of WPB in variously oxidant-injured pines.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Beetle attack densities, gallery densities, and brood densities vary between generations and between variously smog-damaged trees within generations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta; plants; vascular plants; trees
TAXA: DENDROCTONUS BREVICORNIS; PINUS PONDEROSA
ADDED KEYWORDS: western pine beetle; coleopterans; scolytids; ponderosa pines; pines; yellow pines; air pollution; parasites; predation; oxidants
PRIMARY PARAMETERS INVESTIGATED: mortality; natality; numbers; productivity; sex; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): bark samples; emergence counts
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino National Forest; San Bernardino Mountains;

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San Bernardino County; Santa Anna River;
Lake Arrowhead; Big Bear Lake
TYPE OF DATA: raw; reduced
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: CA/205

<116>

INVESTIGATOR(S): Dahlsten, D.L.
AFFILIATION: Div. of Biological Control,
University of California-Berkeley
TITLE: Western Pine Beetle Population Dynamics
PURPOSE: To study the within-tree populations
of western pine beetle and associated
organisms in ponderosa pine in the central
Sierra Nevada Mountains.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Densities of western pine
beetle, its predators, parasitoids, and
major associates changed through beetle
generations, between generations, and
between years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: forestry; recreation;
resource planning
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; plants; vascular
plants; trees
TAXA: DENDROCTONUS BREVICORNIS
ADDED KEYWORDS: western pine beetles;
beetles; coleopterans; population effects
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; kill; mortality; numbers;
productivity; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
bark samples
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: El Dorado County;
Blodgett Experimental Forest
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC 6600; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: CA/206

<117>

INVESTIGATOR(S): Davis, B.J.
AFFILIATION: Dept. of Biology, San Francisco
State University
TITLE: Seasonal Changes in a Hot Springs Marsh
PURPOSE: To monitor the seasonal changes in
the physical parameters, species present,
and certain physiological changes in the
animals.
SPONSOR(S): San Francisco State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Temperature of marsh
changes with season but is influenced by
the hot springs.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: fisheries; indicator
species; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insecta; annelida
TAXA: CYPRINUS CARPIO; ICTALURUS SPP;
MICROPTERUS SPP; THAMNOPHIS; RANA SPP;
PEROMYSCUS SPP; NOTONECTIDAE; TACHINIDAE;
ACRIDIDAE; LIBELLULIDAE; AESHNIDAE;
COENAGRIONIDAE; LYMAEA SPP; NOTEMIGORUS
SPP
ADDED KEYWORDS: hot springs; white shiners;
sunfishes; catfishes; frogs; mice; snakes;
dragonflies; back swimmers; damselflies;
snails; earthworms; marshes; seasonal
variations
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
physiology
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: climatological
data; hydrological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Sierra County; Marble
Hot Springs
TYPE OF DATA: raw; reduced
ABSTRACT: Data is available on certain
physical changes in the marsh and some
species changes.
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TELEPHONE: (415) 469-2418
NBIP ACCESSION NUMBER: CA/121

<118>

INVESTIGATOR(S): Davis, B.J.
AFFILIATION: Dept. of Biology, San Francisco
State University
TITLE: Temperature Adaptations and
Distribution Patterns in the Fish Genus
GIBBONSIA
PURPOSE: To examine species differences in
adapting to seasonal temperature changes
and to try to correlate these differences
with habitat variability.
SPONSOR(S): Scripps Institution of
Oceanography
SPONSOR CATEGORY: state government

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NBIP ACCESSION NUMBER: CA/122

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DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Species differences in ability to acclimate and in amount of genetic polymorphism where found. These may also correlate with habitat variability.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: GIBBONSIA ELEGANS; GIBBONSIA

MONTEREYENSIS; GIBBONSIA METZI

ADDED KEYWORDS: seasonal variations;

polymorphism; genetics; enzymes;

Ripplfishes; acclimation; adaptation;

temperature tolerance; intertidal zones;

tides

PRIMARY PARAMETERS INVESTIGATED:

distribution; physiology

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: quarterly

SUPPORTING DATA COLLECTED: hydrological data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Mateo County;

Santa Barbara County; San Luis Obispo

County; San Diego County; Pillar Pt.; Pt.

Conception; Sunset Cliffs

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Along the California coast there are three intertidal species of the genus GIBBONSIA. To determine the physiological variation in response to temperature of the three species, collections were made seasonally from three areas - north of Pt. Conception, at Pt. Conception, and south of Pt. Conception. Acclimation time of one week proved to be as effective as three weeks as far as cold adaptation was concerned. The search for a biochemical change that could account for the differences in adaptation involved the use of both electrophoresis and enzyme kinetics. GIBBONSIA ELEGANS displayed the highest degree of polymorphism, G. METZI the next highest, and G. MONTEREYENSIS the lowest. Electrophoretically and kinetically, no seasonal or acclimation isozyme changes were found that could explain seasonal differences. G. ELEGANS showed an ability to anticipate seasons, displayed the highest degree of polymorphism, and demonstrated a genetic difference in two populations. In contrast, G. METZI and G. MONTEREYENSIS live in relatively thermally stable habitats and seem ill-adapted to live in an environment that changes seasonally. They also showed the lowest degree of polymorphism. Thus it appears that the distribution patterns of these three species can be explained in large part by differences in thermal adaptation abilities.

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INVESTIGATOR(S): Dayton, P.K.

AFFILIATION: Scripps Institution of

Oceanography

TITLE: Nearshore Ecology

PURPOSE: To study community ecology of nearshore kelp and plant communities as well as rocky and sand bottom benthic and intertidal communities, and determine baseline and functional relationships.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Natural changes in several communities occurred with large amounts of natural variation in this system.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; plants; vascular plants; herbs; microorganisms; algae

TAXA: MACROCYSTIS SP; LAMINARIA SP; SARGASSUM

SP; PLEURYGUPHORA SP; ASTROPLECTRN SP;

STRONGYLOCENTROTUS SP; PYCNOPODIA SP

ADDED KEYWORDS: crabs; lobsters; seastars; predation; benthic organisms; kelp; tides; intertidal zones; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; diversity;

migration; growth; habitat

characterization; harvest; home range

size; immigration; kill; mortality;

natality; numbers; reproduction;

size/weight; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): diving

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: seasonal; weekly;

monthly; irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Los Angeles County;

San Diego County

TYPE OF DATA: raw; reduced; summarized;

literature-derived

ABSTRACT: Community level ecology and patterns of distribution and abundance are being studied with emphasis on mechanisms determining these patterns in kelp communities. Sargassum biology, effects of predation on sand communities, intertidal community dynamics, and aspects of hard bottom encrusting communities are also studied.

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NBIP ACCESSION NUMBER: CA/075

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NBIP ACCESSION NUMBER: CA/001

<120>

INVESTIGATOR(S): DeMartini, J.D.
AFFILIATION: Humboldt State University
TITLE: Monitoring of Benthos in the Vicinity
of the Crown-Simpson Corporation and
Georgia-Pacific Corporation Pulp Mill
Diffusors
PURPOSE: To monitor changes, if any, in the
benthic community near pulp mill diffusors.
SPONSOR(S): Crown-Simpson Corp.;
Georgia-Pacific Corp.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1965
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: No apparent change in
benthic community structure observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; annelida; crustacea;
insecta; mollusca
TAXA: PARAPHAXUS OBTUSIDENS; PARAPHAXUS SP;
BOHAUSTORIUS WASHINGTONIANUS; DIASTYLOPSIS
DAWSONI; THURYX MULTIPIDIS; GLYCINDE
ARMIGERA; MAGELONA SP; NEPHTHYS
CALIFORNIENSIS; NETHRIA IRIDESCEUS;
HAPLOSCOLOPLOS ELIGATUS
ADDED KEYWORDS: industrial chemicals; benthic
organisms; amphipods; gastropods; pulp
mills
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Smith-McIntyre bottom grab
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Humboldt County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; non-parametric
analysis
ABSTRACT: A benthic monitoring program began
in June, 1965 and terminated in June,
1970. The biotype was clean sand about 8
fathoms deep where two pulp mill diffusors
were installed. One diffuser became
operational in August, 1965, and the other
a year later. Sampling was performed with
a 0.1 sq. meter Smith-McIntyre bottom
grab. Animals collected on a 1.00mm
screen, and initially also on a 0.5mm
screen were kept. Amphipods, a cumacean, a
small gastropod, several polychaetes, and
a sand dollar typified the benthic
invertebrate community. The community
apparently is strongly physically
controlled, and the same species recurred
during the period of monitoring.
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INVESTIGATOR(S): DiGiovanni, C.M.
AFFILIATION: University of California-Davis
TITLE: Impact of Clearcut Logging on the
Reestablishment of the North Coastal
Redwood Forest Plant Community
PURPOSE: To compare the virgin redwood forest
plant community with that found in the
initial stages of reestablishment 10 years
after clearcutting.
SPONSOR(S): University of California-Davis
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Douglas fir replaces
coast redwood in artificial exposed,
drought conditions thus interrupting
natural community structure where fir is
only a suppressed associate. Clearcutting
alters microclimate and site quality to
disfavor of redwood and its shrub and herb
associates.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs
TAXA: PLANTS, 28 SPECIES; SEQUOIA
SEMPERVIRENS; PSEUDOTSUGA MENZIESII;
VACCINIUM OVATUM; RHODODENDRON
MACROPHYLLUM; VACCINIUM PARVIFOLIUM;
CEANOOTHUS THYRSIFLOROUS; RUBUS
SPECTABILIS; SAMBUCUS CALLICARPA;
GAULTHERIA SHALLON; BLECHNUM SPICANT;
VIOLA SEMPERVIRENS; PTERIDIUM AQUILINUM;
POLYSTICHUM MUNITUM; OXALIS OREGANA;
TRILLIUM OVATUM
ADDED KEYWORDS: logging; redwoods; douglas
fir; clear cutting; habitat modification;
fir; logging; succession
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
belt and line transects
NUMBER OF SAMPLING SITES: 160 acre clearcut;
virgin forest
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Del Norte County;
Redwood National Forest
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: percentile
ABSTRACT: Comparison of a 10 year old, 160
acre clearcut, seeded with Douglas fir,
with nearby virgin forest showed that
Douglas fir replaces the Coast Redwood in
artificial, exposed, drought conditions
imposed by clearcutting. This interrupted
the preexisting natural community
structure where the fir is only a
suppressed associate. Clearcutting alters
microclimate and site quality to the
disfavor of redwood and its shrub and herb
associates in the following ways: by
elevating air temperature and soil
temperature; increasing evaporation rates
and depressing relative humidity.

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Skid-trails, where soil is exposed and compacted, are populated by Douglas fir almost to the exclusion of redwood which requires a litter covered, herb-shaded soil site. Herb and shrub components of the virgin and clear-cut communities were vastly different in species composition and abundance with 7 species of invading shrubs and 21 herbs found only in the altered clearcut site. One species of shrub and 4 of herbs found in virgin forest were missing from the clearcut.

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<122>

INVESTIGATOR(S): DiGirolamo, R.G.

AFFILIATION: Marine Resource Center and Dept. of Biology

TITLE: Uptake, Elimination, and Effects of Processing on the Survival of Viruses in Bivalve Molluscs of the West Coast

PURPOSE: To determine if the pattern of uptake-survival of viruses as described for eastern shellfish is the same for western shellfish, and to study the survival of viruses after processing.

SPONSOR(S): PHS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Uptake of viruses in West Coast shellfish appeared to occur more rapidly than described for East Coast shellfish.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: fisheries; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; mollusca; plants;

microorganisms; viruses

TAXA: CRASSOSTREA GIGAS; OSTREA LURIDA;

MERCENARIA MERCENARIA

ADDED KEYWORDS: pacific oysters; olympia

oysters; northern quahaug; waste water;

oysters; clams

PRIMARY PARAMETERS INVESTIGATED: toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

viral assays

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated

microorganisms; water quality data

STUDY SITE(S): WA; CA

GEOGRAPHIC DESCRIPTION: Puget Sound; Halfmoon

Bay; Humboldt Bay

TYPE OF DATA: raw; summarized;

literature-derived

STATISTICS EMPLOYED: percentile

ABSTRACT: Accumulation of poliovirus by West Coast oysters was determined by using a stationary seawater system, and depuration was determined by using both stationary and free-flow systems. Results indicate

that these shellfish have the same pattern of accumulation and localization of viruses as do East Coast species. However, uptake appeared to occur more rapidly than described for East Coast shellfish. There appeared to be a gradual diffusion of virus from the digestive tract into the body. Depuration was found to occur more rapidly and completely under free-flow conditions than in a stationary system.

REFERENCES: Di Girolamo, et al, 1974; Di Girolamo, et al, 1973

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<123>

INVESTIGATOR(S): DiGirolamo, R.G.

AFFILIATION: Marine Resource Center and Dept. of Biology

TITLE: Uptake and Persistence of Viruses in Edible West Coast Crabs

PURPOSE: To determine if edible crabs are accumulating viruses from sewage effluent, if the viruses can withstand processing, and if any market crabs are presently contaminated.

SPONSOR(S): College of Notre Dame

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Considerable uptake of virus by crabs was observed. The virus was able to withstand normal boiling, freezing, and chilling.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: environmental impact;

fisheries; pollution control

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; shellfish;

microorganisms; viruses

TAXA: CANCER MAGISTER; CANCER PRODUCTUS;

CANCER ANTENNARIUS

ADDED KEYWORDS: waste water; oysters;

mussels; clams; decapods; arthropods

PRIMARY PARAMETERS INVESTIGATED: toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

virological assay

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: seasonal; weekly

SUPPORTING DATA COLLECTED: associated

microorganisms; water quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Mateo County; San

Francisco Bay; Halfmoon Bay

TYPE OF DATA: raw; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile;

analysis of variance

ABSTRACT: Edible West Coast crabs, when in seawater contaminated with T4 coliphage, were found to accumulate high titers of this virus. To study the extent of the hazard presented by crabs contaminated by virus, samples of edible crabs were contaminated with T4 coliphage and then processed by boiling. Results indicated

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that virus in crabs withstood this method of processing. The survival rate varied 2.5 to 20 percent, depending upon the processing time. Heat penetration studies showed that, although internal temperature in the crabs was sufficient to inactivate virus, the processing times normally used to cook crabs were not. These results suggest that processed crabs could serve as vectors for the dissemination of virus diseases if the crabs are harvested from a polluted area.

REFERENCES: Di Girolamo, et al, 1972; Di Girolamo, et al, 1973

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NBIP ACCESSION NUMBER: CA/018

<124>

INVESTIGATOR(S): Doyen, J.T.
AFFILIATION: Div. of Entomology and
Parasitology, University of
California-Berkeley

TITLE: Beetle Ecology

PURPOSE: To document seasonal and annual changes in population size and composition of selected insects and determine ecological preferences.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes were observed in population density, microgeographic distribution, and species composition.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species; recreation

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insects

TAXA: COELUS CILIATUS; COELUS GLOBOSUS;

COELUS GRACIUS; COELUS SPP; TENEBRIONIDAE

ADDED KEYWORDS: coleopterans; hemipterans; recreational vehicles; sand dunes; species diversity

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; home range size;

migratory patterns; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

sieves

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: monthly; quarterly;

irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Fresno County; Marin

County; Monterey County; San Luis Obispo

County; Morro Bay State Park; Pismo State

Beach; Point Reyes National Seashore

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis

ABSTRACT: The research involves an intensive study of the systematics and ecology of beetles of the genus COELUS. All members of the genus are specialized, fossorial organisms which occur in maritime sand dunes on the Pacific coast of North America. The first objective of the research was to provide a revised classification of COELUS, including descriptions, synonyms, and a key, as well as a detailed analysis of geographic variation using quantitative methods. Both adult and immature life stages are considered. The second objective was to compile detailed descriptions and analyses of the ecological requirements of the species of COELUS. Ecological investigations include physical factors, such as temperature, moisture and substrate preferences and requirements, as well as biotic interactions. The third objective was to evaluate the applicability of various species concepts (phenetic; biological or reproductive; ecological), using COELUS as an example. Data for this portion of the study are available from the performance of the first two objectives. The fourth objective was to examine the effect of heavy recreational use of sand dunes, especially by vehicles, on populations of the beetles. The fifth objective was to accumulate data for a study of the higher classification of the tenebrionid tribe Coniontini. This classification is based on morphological and ecological characteristics of both adults and larvae, using phenetic and cladistic methods of analysis.

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<125>

INVESTIGATOR(S): Ebert, T.A.
AFFILIATION: Dept. of Biology, San Diego
State University

TITLE: Population Studies of Echinoderms

PURPOSE: To examine echinoderm patterns of growth and mortality and attempt to elucidate reasons for patterns.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1963

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Heavy settlement of the sea urchin STRONGYLOCENTROTUS PURPURATUS in Sunset Bay Oregon in 1963 but very low or zero annual recruitment from 1964-1975. Changes in size structure 1964 through 1975 have been documented.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: indicator species

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea

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TAXA: STRONGYLOCENTROTUS PURPURATUS;
ASTROMETIS SERTULIFERA; PATIRIA MINIATA;
PISASTER OCHRACEOUS; PISASTER GIGANTEUS;
OPHIONEIS ANNULATA; OPHIOPOCUS ESMARKI;
OPHIOTHRIX RUDIS; OPHIOTHRIX SPICULATA;
OPHIOTERIS PAPILLOSA; OPHIODERMA PANAHENSE

ADDED KEYWORDS: sea urchins; population effects; starfish; brittle stars; intertidal zones; echinoderms

PRIMARY PARAMETERS INVESTIGATED: age; growth; mortality; natality; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): intertidal collections; Vernier calipers

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: monthly; quarterly; annual

STUDY SITE(S): CA; OR

GEOGRAPHIC DESCRIPTION: Sunset Bay; Coos Bay; False Point; San Diego

TYPE OF DATA: raw; reduced

COMPUTER AND LANGUAGE: IBM 360; TEMPO, TI(0); FORTRAN IV

STATISTICS EMPLOYED: mean; mode; median; modeling, deterministic

ABSTRACT: Sampling of the same 3 populations plus 3 additional populations in Sunset Bay has continued through 1975. Only size distributions were determined. Work at False Point, San Diego, CA, was started in 1969. Information has been gathered on: 1. intertidal distribution, 2. density, and 3. size structure of sea urchins, starfish and brittlestars. Data can be used to estimate times of settlement, growth rates, and mortality rates.

REFERENCES: Ebert, 1967; Ebert, 1968; Ebert, 1975; Ebert, et al, 1975

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NBIP ACCESSION NUMBER: CA/271

<126>

INVESTIGATOR(S): Edwards, J.G.

AFFILIATION: Dept. of Entomology, San Jose State University

TITLE: Abundance and Reproductive Success of California Brown Pelicans

PURPOSE: To determine population fluctuations of the pelicans and to learn the causes of non-cyclic fluctuations.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Successful nestings have increased annually on Anacapa Island and Santa Cruz Island since the 1969 oil spill off Santa Barbara.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; indicator species; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds

TAXA: PELECANUS OCCIDENTALIS

ADDED KEYWORDS: brown pelicans; pelicans; oil spills; pesticides; eggshells; newcastle disease; diseases; islands; habitat modification; predation; legal regulation

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; home range size; kill; mortality; migratory patterns; physiology; reproduction; residues; stress; territory size; human impact; rat predation

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): photography; observations

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: monthly; annual; irregular

SUPPORTING DATA COLLECTED: chronological

productivity; colony disruption

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Channel Islands

National Monument; Anacapa Island; Santa

Cruz Island; Santa Barbara

TYPE OF DATA: raw; reduced; summarized;

literature-derived

ABSTRACT: In spring of 1969, the California colony of brown pelicans suddenly (and for the first time) exhibited reduced reproductive ability. In 1970 and 1971 they were more successful, but suffered extensive disruption from "biological researchers." We proposed protective regulations in 1971, which the NPS enforced, consequently the colony has shown a good recovery since 1971. Other possible causes of the sudden 1969 collapse include the Santa Barbara Oil Spill of January 1969, the great Newcastle disease outbreak of 1970-71, the abundance of rats and gulls in the pelican nesting colony, the stealing of 70% of the eggs (by biologists), and the contamination of the area by chemical pollutants. We wish to determine the relative importance of these factors.

REFERENCES: Edwards, 1972

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NBIP ACCESSION NUMBER: CA/215

<127>

INVESTIGATOR(S): Eighme, L.E.

AFFILIATION: Dept. of Biology, Pacific Union College

TITLE: Insect Populations of the North Coast Mountains of California

PURPOSE: To study of species distribution of insects resulting in permanent reference collections and ecological data.

SPONSOR(S): Pacific Union College

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1958

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Previously unknown species have been discovered in the study area and new records for known species established.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; tundra; alpine; mountain; aquatic; freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: wildlife; indicator species

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ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta
TAXA: PULVERRO MONTICOLA; PULVERRO CALIFORNICA
ADDED KEYWORDS: natural introductions;
hymenopterans; lepidopterans; dipterans;
coleopterans
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collecting; cataloguing
NUMBER OF SAMPLING SITES: random sites
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Siskiyou County;
Trinity County; Mendocino County; Napa
County
TYPE OF DATA: raw
ABSTRACT: This project is a long term study
of the insect fauna of the North Coast
Ranges of mountains in California. Since
1958, samples have been collected in
various parts of the area. Some areas have
yearly collections, but most areas have
been studied at intervals of several years
during the past 20 years. Large portions
of the area have not been studied yet, but
the samples taken have been from a wide
variety of habitats and begin to represent
the insect fauna. Specimens collected are
curated and retained in the entomology
collection of the Biology Department at
Pacific Union College with pertinent data
for future reference.
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NBIP ACCESSION NUMBER: CA/048

<128>

INVESTIGATOR(S): Evans, K.J.
AFFILIATION: Dept. of Biological Sciences,
California State University
TITLE: Ecology of Garter Snakes
PURPOSE: To determine the partitioning of
energy to growth and reproduction in
different age groups of garter snakes.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in relative
abundance of two species of garter snakes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; wetland; aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles
TAXA: THAMNOPHIS SIRTALIS; THAMNOPHIS ELEGANS
ADDED KEYWORDS: garter snakes; snakes;
population effects
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; emigration; growth; home
range size; immigration; mortality;

natality; numbers; physiology;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Lassen County;
Mahogany Lake
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministic; modeling, stochastic
ABSTRACT: Studies to date have been censuses
with information on local movements of
individuals about the perimeter of a small
lake. The numbers of individuals of two
species of garter snakes are known, as
well as size distribution for each
species. The emphasis now is to measure
growth and reproduction in the field and
conduct parallel laboratory studies on the
relationship between food consumption and
growth and reproduction.
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INVESTIGATOR(S): Force, D.C.
AFFILIATION: California State Polytechnic
University
TITLE: Ecology of the BACCHARIS Gall Midge
and its Parasitoids
PURPOSE: To learn the interactions of the
midge parasitoids and how they regulate
their hosts' numbers.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Parasitoids appeared to
"regulate" midge numbers, but all
populations were extremely unstable and
unpredictable over a 6 year period.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: range
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta
TAXA: BACCHARIS PILULARIS; RHOPALOMYIA
CALIFORNICA
ADDED KEYWORDS: gall midge; parasitism;
dipterans; hymenopterans; chaparral
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; diversity; growth;
mortality; natalty; numbers;
reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
time sampling
NUMBER OF SAMPLING SITES: 11
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): CA
TYPE OF DATA: raw
STATISTICS EMPLOYED: correlation analysis
ABSTRACT: BACCHARIS is an evergreen plant and
continues to grow throughout the year if
sufficient moisture is available. The

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plant often forms a dense scrubby cover almost like chaparral, and is considered detrimental to pasture development. The female midge, RHOPALOMYIA CALIFORNICA is restricted to BACCHARIS PILULARIS. The female midge deposits eggs in the plant. The feeding of the larvae appears to stimulate the plant into producing multichambered galls. The midge has not been found south of Santa Barbara even though the host plant is common in those areas.

REFERENCES: Force, 1974

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<130>

INVESTIGATOR(S): Ford, R.F.

AFFILIATION: Center for Marine Studies, San Diego State University

TITLE: Ecological Effects of Thermal Effluent from the San Diego Gas and Electric Company South Bay Power Plant

PURPOSE: To provide baseline information on conditions of the existing aquatic environment in south San Diego Bay on a seasonal basis and to assess the ecological effects of the thermal effluent on marine life.

SPONSOR(S): San Diego Gas and Electric Co.; San Diego Regional Water Quality Control

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1968

PROJECT DURATION: unknown

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Slightly lowered numbers of invertebrate species and species diversity in cooling channel area.

ECOSYSTEM OR BIOHE TYPE(S): aquatic; marine; estuarine

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca;

shellfish; annelida; microorganisms; algae

ADDED KEYWORDS: sponges; tunicates; marine

worms; coelenterates; bryozoans;

nematodes; flatworms; cheliferans;

barnacles; copepods; cumaceans; decapods;

isopods; ostracods; clams; snails;

echinoderms; fossil fueled power plants;

coal; thermal effluents; tides

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; habitat

characterization; kill; mortality;

numbers; reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

grab samples

NUMBER OF SAMPLING SITES: 7 intertidal; 18

subtidal

SAMPLING FREQUENCY: quarterly;

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; water quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Diego County; San Diego Bay; South Bay Power Plant

TYPE OF DATA: raw; reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: IBM 360; TEMPO; PORTRAN

STATISTICS EMPLOYED: mean; mode; median;

percentile; analysis of variance;

regression/correlation analysis;

contingency table analysis; multivariate

analysis; non-parametric analysis

ABSTRACT: Benthic marine plants and

invertebrates inhabiting 7 intertidal and

18 subtidal areas in south San Diego Bay,

their environmental conditions, and the

effects of cooling water effluent, were

monitored from September 1972 to July

1973. Evidence concerning the ecological

effects of thermal effluents was obtained

on species composition, number and

diversity of species, distribution,

abundance, and biomass of species and

major groups, size of individuals, and the

quantitative relationships of those to

temperature and other environmental

factors. Results showed some adverse

effects on benthic organisms, but these

were restricted primarily to the cooling

channel area and to warmer periods of the

year. Some beneficial effects to the

benthic community from the thermal plume

were also observed.

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<131>

INVESTIGATOR(S): Ford, R.F.

AFFILIATION: Center for Marine Studies, San Diego State University

TITLE: Ecological Effects of Thermal Effluent from San Diego Gas and Electric Co.,

Station B Power Plant

PURPOSE: To provide baseline information

conditions of the existing aquatic

environment in outer San Diego Bay

adjacent to the Station B Power Plant on a

seasonal basis.

SPONSOR(S): San Diego Gas and Electric Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1972

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Possible reduction in

numbers of polychaete and crustacean

species and total numbers of invertebrate

species closest to discharge point.

ECOSYSTEM OR BIOHE TYPE(S): aquatic; marine;

estuarine

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species; recreation;

water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; crustacea; mollusca;

shellfish; annelida; microorganisms; algae

ADDED KEYWORDS: thermal effluents; sting

rays; sharks; halibuts; blennies; perches;

sea spiders; clams; gastropods; tunicates;

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gobies; sponges; coelenterates; bryozoans;
ribbon worms; flatworms; amphipods;
barnacles; crabs; shrimp; isopods;
ostracods; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; kill; mortality;
numbers; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
grab sampling; transects; Van Dorn bottles
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: quarterly;
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Diego County; San
Diego Bay
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360; TEMPO; FORTRAN
STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis; non-parametric analysis
ABSTRACT: Environmental conditions and the
effects of thermal effluent on benthic
plants, invertebrates, and benthic and
open water fishes inhabiting the area
offshore from the Station B Power Plant
were investigated. Data on number and
diversity of species suggest that the
thermal plume may have caused a reduction
in polychaete and crustacean species and
total numbers of invertebrate species.
Data on biomass of organisms inhabiting
the bay floor suggest that there may have
been some mild adverse effects at sampling
stations closest to the discharge port.
Data on distribution and abundance of
bottom fishes showed no evidence of
adverse thermal effects. In fact, it
appeared that diamond turbot and kelp bass
were attracted to the inner portion of the
plume.
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NBIP ACCESSION NUMBER: CA/145

<132>

INVESTIGATOR(S): Fuller, T.C.
AFFILIATION: California State Dept. of Food
and Agriculture
TITLE: Identification of Plants Growing in
California or Intercepted in Shipment into
California; Location of Noxious Weeds in
California
PURPOSE: To prevent introduction and spread
of pest species of plants in California.
SPONSOR(S): California State Dept. of Food
and Agriculture
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1924
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Continued changes are
noted in the introduction and spread of
proclaimed noxious weed species. Control
and eradication measures have reduced or
eliminated many weed populations.
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; wildlife;
forestry; range; recreation; resource
planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
TAXA: HERBS, 300 SPECIES
ADDED KEYWORDS: weeds; management measures;
species introduction; legal regulation;
weeds; agrieosystems
PRIMARY PARAMETERS INVESTIGATED:
distribution; emigration; habitat
characterization; immigration; numbers;
physiology; reproduction; toxicity
SAMPLING FREQUENCY: continuous
STUDY SITE(S): CA
TYPE OF DATA: raw; summarized
ABSTRACT: The principal function of the
Botany Laboratory is to provide accurate
and rapid plant identifications, and to
serve as a reference source of botanical
information. These identifications are an
integral part of weed pest detection, and
weed control and eradication, and are
important to all the other sections of the
Division of Plant Industry, Bureau of
Animal Health, Veterinary Laboratory
Services, and the County departments of
agriculture who require such botanical
information in the performance of their
missions. The herbarium of dried specimens
and the literature collection are the
important tools of the program. Therefore,
the continual growth of both collections
improves the rapidity of plant
identifications and more adequately
insures their accuracy. Field
investigations of plants are an integral
part of the program. Examination of the
living material is a necessary part of
making an accurate identification. Plants
must be seen in various stages of growth,
and the import of the weed population in
all its various ecological manifestations
can only be evaluated in a field situation.
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<133>

INVESTIGATOR(S): Garber, D.P.
AFFILIATION: FS
TITLE: Feral Burro Population Dynamics and
Impacts on Native Biota
PURPOSE: To provide a basis for management of
the ecosystem in which feral burros are
established.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a decrease
in the native biota abundance, diversity
and vigor, while there has been an
increase in burro abundance.

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ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert

LEVEL(S) OF STUDY: organism; population;

ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;

amphibia; mammals; plants; vascular

plants; shrubs; herbs; grasses

TAXA: EQUUS ASINUS; ATRIPLEX SPP; LARREA SP;

DALEA SP; ARTEMISIA SPP; PURSHIA SPP;

GRAYIA SP; EUBOTIA SP; TETRADYMIA SP

ADDED KEYWORDS: donkeys; management measures;

population effects; population dynamics;

burros

PRIMARY PARAMETERS INVESTIGATED:

distribution; growth; habitat

characterization; natality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

observation; transects; time-lapse

photography

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;

associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Inyo County; Saline

Valley; Inyo National Forest

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The population of EQUUS ASINUS

numbered 201 individuals in Saline Valley,

Inyo County, California in August, 1971.

Recruitment is principally by natality at

a rate of approximately 87 percent

survival to 3 months of age. Habitat

utilization is influenced greatly by

climate. Concentrations of burros occur in

four distinct areas where water is

available in the summer months. Range

conditions and trends are poor and

downward, respectively. Present carrying

capacity is exceeded by current burro use

by a factor of two. Native wildlife

including a new species of BATRACHOSEPS

and rare plants are adversely influenced

by burro use.

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<134>

INVESTIGATOR(S): Garcia, R.

AFFILIATION: University of California

TITLE: Biological Studies on Aedes sierrensis

PURPOSE: To study human nuisance and domestic

and wild mammal vector potentials,

integrated control as it is related to

Aedes sierrensis, and isolation and

development of biological control agents.

SPONSOR(S): University of California

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Cycles vary with

pathogenic agents, geographic area, and

climatic factors.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; coniferous; deciduous

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insecta; plants; vascular

plants; trees; microorganisms; bacteria;

fungi

TAXA: Aedes sierrensis; Beuvaria tenella;

Diropilaria immitis; Canis latrans

ADDED KEYWORDS: coyotes; dogs; mosquitoes;

dipterans; breeding; vectors; biological

control; population effects; diseases

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; emigration;

habitat characterization; immigration;

mortality; productivity; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

emergence traps; adult traps

NUMBER OF SAMPLING SITES: adults about 20-25;

miniatures 30-40

SAMPLING FREQUENCY: continuous; seasonal;

weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna;

associated microorganisms; climatological

data; hydrological data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Marin County; El

Dorado County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;

percentile; analysis of variance

ABSTRACT: We are studying population dynamics

and mortality factors of the treehole

mosquito, as well as the analysis of

attrition factors in developing stages in

treeholes, adult feeding behaviors, flight

patterns, and distance travelled in mixed

conifer forests and adjacent coastal

hardwood forests, including human

habitations. Analysis of vector potentials

related to heartworm diseases of dogs and

coyotes and how the disease moves and is

reservoired between mosquitoes and these

hosts are also being studied. The

development of non-chemical methods of

control based on biological studies of the

populations includes isolation of

pathogenic agents causing natural

mortality in certain geographic zones.

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<135>

INVESTIGATOR(S): Goldman, C. R.

AFFILIATION: Div. of Environmental Studies,

University of California-Davis

TITLE: Community Interactions: Mechanisms of

Nutrient Recycling as Related to the

Structure, Productivity, and

Photosynthetic Efficiency of the Caotic

Lake Phytoplankton Community

PURPOSE: Basic ecological research

emphasizing matter and energy flow in a

subalpine lake.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

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CHANGE(S) OBSERVED: Changes observed were an increase in species-specific phytoplankton productivity, both phytoplankton and zooplankton community production, and fish production in response to experimental additions of limiting trace elements.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; terrestrial; mountain; aquatic; freshwater; lake
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: fisheries; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; microorganisms; bacteria; algae
TAXA: INSECTA, 40 SPECIES; CRUSTACEA, 15 SPECIES; ALGAE, 400 SPECIES; SALMONIDAE, 2 SPECIES
ADDED KEYWORDS: primary productivity; cladocerans; rotifers; phytoplankton; habitat modification; management measures; salmon; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; growth; migratory patterns; numbers; physiology; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): self-acting traps; Van Dorn bottle; suspended closing trap; coring; hook, line, net; echo sounder
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Siskiyou County; Castle Lake
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis; non-linear estimation; modeling, deterministic; modeling, stochastic
ABSTRACT: The principal direction of the Castle Lake research program has been and continues to be the investigation of processes controlling ecosystem productivity, with particular emphasis on the structure and functioning of the phytoplankton community. Although earlier investigations have shown phytoplankton productivity to be directly affected by nutrient availability, the mechanisms by which nutrients become available for use in photosynthetic production are not well understood. Recent efforts to model the Castle Lake ecosystem demonstrated the need for investigation of the interactions between phytoplankton production and those ecosystem components which affect nutrient supply. The proposed research emphasizes the phytoplankton community as the focal point of several related investigations of those components of the ecosystem which are believed to function as the major mechanisms of nutrient regeneration in aquatic systems. The specific

relationships of interest are phytoplankton community structure, biomass, efficiency and productivity as affected by: (1) grazing and nutrient excretion by the zooplankton community, (2) nutrient regeneration and transport via limnetic detritus pathways, (3) nutrient flux across the sediment-water interface and the effect of benthic organisms on nutrient regeneration, and (4) nutrient transport and regeneration by fish populations. Each of these ecosystem components can function as both the sink and a source for those nutrients which control phytoplankton growth. Our goal is to determine the mechanisms by which and the extent to which these ecosystem components affect nutrient availability for phytoplankton production, and thereby affect the structure and function of the Castle Lake ecosystem.

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<136>

INVESTIGATOR(S): Goldman, C.R.
AFFILIATION: Div. of Environmental Studies, University of California-Davis
TITLE: A Multidisciplinary Research Program in the Lake Tahoe Basin
PURPOSE: To provide factual information for the determination of natural and accelerated rates of eutrophication of Lake Tahoe with emphasis on the influence of the Ward Valley Watershed.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tahoe's annual primary productivity has increased from 1959-1973. Virtually all pelagic cladocerans have disappeared. Nitrate analyses indicates periodic mixing.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; terrestrial; mountain; aquatic; freshwater; stream; lake
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; bacteria; algae
TAXA: PHYTOPLANKTON, 130 SPECIES; PERIPHYTON, 100 SPECIES; ZOOPLANKTON, 40 SPECIES
ADDED KEYWORDS: eutrophication; primary productivity; nutrient cycling; cladocerans; rotifers; nitrates
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; numbers; productivity
NUMBER OF SAMPLING SITES: 1 index; 35 synoptic stations
SAMPLING FREQUENCY: weekly; irregular
SUPPORTING DATA COLLECTED: atmospheric chemistry; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Placer County; El

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Dorado County; Washoe County; Ormsby County; Douglas County; Lake Tahoe; Ward Valley

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, deterministic

ABSTRACT: The Lake Tahoe Basin, a popular summer and winter recreational area, is undergoing intensive development. The impact of this development upon the lake's water quality is being evaluated as part of a multidisciplinary research program. A relatively undeveloped tributary to the lake and its watershed are under investigation to monitor the effects of specific development practices and quantify their resulting nutrient input to the lake, nutrient transfer through ground water and various vegetation systems is being quantified and the impact of these nutrients upon lake water quality assessed. The political influence of scientists in the Tahoe Basin and the potential impact of various policy alternatives upon regional land use and population growth are under investigation.

REFERENCES: Goldman, 1974; Goldman, 1975

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<137>

INVESTIGATOR(S): Griffith, W.H.

AFFILIATION: California State Dept. of Fish and Game

TITLE: Pesticide Residue Monitoring of Wildlife

PURPOSE: To determine the degree of pesticide contamination in selected wildlife species and pesticide persistence and mode of transport.

SPONSOR(S): California State Dept. of Fish and Game; FWS

SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Observed buildup and gradual decline of DDT and DDT metabolites, initial and continued occur.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; region

MANAGEMENT FOCUS: environmental impact; wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: ARDEA HERODIAS; NYCTICORAX NYCTICORAX;

EGRETTA THULA; CASMERODIUS ALBUS; BUTEO

JAMAICENSIS; BUBO VIRGINIANUS

ADDED KEYWORDS: great blue herons; common egrets; black-crowned night herons; snowy egrets; DDT; egg residues; pesticides; red-tailed hawks; great horned owls; owls; egrets

PRIMARY PARAMETERS INVESTIGATED: residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): egg yolk analyses

NUMBER OF SAMPLING SITES: 7

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Central Valley; San Francisco Bay

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean

ABSTRACT: From 1965 through 1971 eggs of six species of fish-eating water birds and raptors were collected and analyzed for chlorinated hydrocarbon pesticide residues by gas liquid chromatography. Eggs of great horned owls and red-tailed hawks had lower residues than fish-eating water birds from the same areas. Other species of birds had generally low residues with some exceptions probably resulting from a local highly contaminated food source. Carnivorous birds had the highest residue levels in their eggs and waterfowl the lowest. Egg residue data demonstrate the North Coast area of California probably has little chlorinated hydrocarbon pesticide contamination. Residues in eggs of great blue herons, black-crowned night herons, snowy egrets and common egrets from the Great Central Valley of California and San Francisco Bay indicate that the lentic ecosystem in these areas is contaminated with chlorinated hydrocarbon pesticides.

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NBIP ACCESSION NUMBER: CA/235

<138>

INVESTIGATOR(S): Griffith, W.H.

AFFILIATION: California State Dept. of Fish and Game

TITLE: Pesticide Investigation: Pesticide Residue Monitoring of Aquatic Resources

PURPOSE: To determine the amount of pesticide residues in the aquatic environment and organisms.

SPONSOR(S): California State Dept. of Fish and Game; FWS; EPA

SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Observed increase and then decline in levels of chlorinated hydrocarbon residues, except PCB'S, which have increased in recent years.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake;

reservoir; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population;

ecosystem; region

MANAGEMENT FOCUS: environmental impact;

fisheries; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

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amphibia; fish; invertebrates; crustacea;
insecta; mollusca; shellfish
TAXA: ACIPENSER TRANSMONTANUS; MORONE
SAXATILIS; SEBASTES PAUCISPINIS; ENGRAULIS
MORDAX; GENYONEMUS LINEATUS; ONCORHYNCHUS
TSHAWYTSCHA; MYTILUS SP; OSTREA SPP
ADDED KEYWORDS: white sturgeons; striped
basses; bocaccio; northern anchovies;
white croakers; king salmon; mussels;
oysters; basses; pesticides; PCB
PRIMARY PARAMETERS INVESTIGATED: residues;
toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
extraction; homogenization
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: quarterly; annual;
irregular
STUDY SITE(S): CA
TYPE OF DATA: raw; summarized;
literature-derived
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
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INVESTIGATOR(S): Haderlie, E.C.
AFFILIATION: Dept. of Oceanography, Naval
Postgraduate School
TITLE: Ecology of Wharf Piling Dwellers in
Monterey Harbor
PURPOSE: Analyze the plant and animal
populations on wooden and concrete pilings
in the harbor, monitor growth rates,
ecological succession and changes in
population structures.
SPONSOR(S): Naval Facilities Engineering
Command, USN
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Certain animals such as
mussels, sea urchins, and some barnacles
have disappeared as a result of sea otter
predation; other populations have been
influenced by oil spills and other
pollution.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: indicator species;
pollution control
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; mollusca;
microorganisms; algae
ADDED KEYWORDS: oil spills; mussels; sea
urchins; barnacles; sea otters; predation;
fouling organisms; population effects;
echinoderms
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; growth; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

collections
NUMBER OF SAMPLING SITES: 12 piles
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Monterey Harbor
TYPE OF DATA: raw
ABSTRACT: This project, initiated in 1969 by
the Naval Facilities Engineering Command,
studies the plant and animal populations
on wooden and concrete pilings in Monterey
Harbor. Growth rates, ecological
succession, and changes in population
structures are monitored.
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NBIP ACCESSION NUMBER: CA/003

<140>
INVESTIGATOR(S): Hassur, R.L.
AFFILIATION: Natural Science and Dept. of
Biology, San Jose State University
TITLE: Population Study of the Fishes of
South San Francisco Bay
PURPOSE: To inventory fish species of the
South Bay, and to observe population
dynamics and cycles, feeding habits,
reproduction, and parasites.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased diversity of
species observed with improved sewage
treatment technology.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: FISHES, 20 SPECIES
ADDED KEYWORDS: inventories; algal blooms;
fishkills; species diversity; silting;
habitat modification; population dynamics;
feeding habits
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; numbers;
reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
beach seine
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Santa Clara County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: percentile
ABSTRACT: All collections were made in the
arm of Hayfield slough lying to the west
of the City of Palo Alto Interpretive
Center. Four collections were made (one
each season) during 1965 through 1967.
More intensive sampling commenced in the
spring of 1968 and has continued to the
present on an almost monthly basis. This
site was selected because it proved to be
representative of south bay sloughs and
was readily accessible. However, the
accumulated effects of the development of

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Pacific Union College

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NBIP ACCESSION NUMBER: CA/152

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a marina adjacent to the collection site and attempts by authorities to regulate tidal action in the slough have tended to make it much less typical of the natural backwaters of the south bay. Evidence for this can be seen in the decrease in species diversity over the last two years, increase in accumulated silt, decreasing water depth, and increase in accumulated organic material contributing directly to large scale algal blooms in the late summer accompanied by sizeable fishkills.

REFERENCES: Hassur, 1974

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NBIP ACCESSION NUMBER: CA/185

<141>

INVESTIGATOR(S): Hemphill, D.V.

AFFILIATION: Dept. of Biology, Pacific Union College

TITLE: Vertebrate Fauna of Howell Mountain, Napa County, California

PURPOSE: To show significance in environmental planning in Napa County, California and to observe changes in local fauna.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1937

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: With environmental modification, there have been some faunal changes.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain; aquatic; freshwater; stream; lake; reservoir

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: fisheries; wildlife;

forestry; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses

ADDED KEYWORDS: habitat modification;

chaparral

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization; numbers

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Napa County; Lake Hennessy; Napa River tributaries; Sacramento River tributaries; Howell Mountain

TYPE OF DATA: raw; summarized;

literature-derived

COMPUTER AND LANGUAGE: Hewlett Packard 2000 E; BASIC

ABSTRACT: None provided.

ADDRESS: Dr. Donald Hemphill

Biology Dept.

<142>

INVESTIGATOR(S): Hemphill, D.V.

AFFILIATION: Dept. of Biology, Pacific Union College

TITLE: The Vertebrate Fauna of the Boreal Regions of the Southern Yolla Bolly Mountains, California

PURPOSE: To show the significance of management in the Mendocino National Forest.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1947

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There have been noticeable faunal changes due to environmental modification, such as logging, road construction, and increased human activity.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain; aquatic; freshwater; stream; lake

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: fisheries; wildlife;

forestry; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; plants; vascular plants; trees; shrubs; herbs

ADDED KEYWORDS: logging; road construction; habitat modification; management measures; chaparral

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization; numbers

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Mendocino County; Lake County; Glenn County; Colusa County; Keller Lake; Mendocino National Forest; Yolla Bolly Mountains

TYPE OF DATA: raw; summarized;

literature-derived

COMPUTER AND LANGUAGE: Hewlett Packard 2000E;

BASIC

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: CA/153

<143>

INVESTIGATOR(S): Horne, A.J.

AFFILIATION: Div. of Sanitary Engineering, University of California-Berkeley

TITLE: Ecology of Clear Lake's Phytoplankton

PURPOSE: To understand reasons for changes in populations of algae, particularly nuisance blue-green algae, and those diatoms and green algae important in the food chain.

SPONSOR(S): WASA; Lake County

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SPONSOR CATEGORY: federal government; county government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decreases in nuisance were correlated with decreased water stability as determined by remote sensing.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: recreation; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: APHANIZOMENON FLOS-AQUAE; ANABAENA CIRCINALIS; MICROCYSTIS SPP; PERIDINIUM DERNARDII; OOCYSTIS SPP; MELOSIRA SPP
ADDED KEYWORDS: algal blooms; eutrophication; blue-green algae
PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; distribution; diversity; growth; mortality; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): IN SITU incubations; remote sensing
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated flora; associated microorganisms; climatological data; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Lake County; Clear Lake
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: CDC 7600; FORTRAN
STATISTICS EMPLOYED: mean; regression/correlation analysis; modeling, deterministic
ABSTRACT: Most of the observed patterns resulted from APHANIZOMENON, but spectral signatures of the algal patterns varied. On May 11, 1973 algal concentrations were bright in infrared light. A photograph of the same area in red light provided a similar, but less contrasting, response and photographs in blue and green light showed no patterns. A different spectral signature occurred on June 21, 1973: algal concentrations which were still bright in infrared light, appeared as similar, though darker patterns in blue, green and red light. The spectral signature observed on May 11, however, only occurred in limited areas. Importantly, lysed (dead) algal streaks were bright in all spectral regions. Temporal and spatial signature variations such as these result from any combination of several factors: algal distribution and concentration in the water column, gas vacuolation in the algae, or background turbidities or anomalous concentration effects.
REFERENCES: Horne, et al, 1971; Horne and Goldman, 1972; Horne and Wrigley, 1974
ADDRESS: Mr. Alexander J. Horne
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University of California-Berkeley
Berkeley, CA 94720
TELEPHONE: (415) 642-0835
NBIP ACCESSION NUMBER: CA/261

<144>

INVESTIGATOR(S): Horne, A.J.
AFFILIATION: Dept. of Sanitary Engineering, University of California
TITLE: Nuisance Drifting Macroalgae in San Francisco Bay; Its Effects on Salt Marshes and Human Communities
PURPOSE: To determine source and distribution of mobile macroalgae causing severe odor problems at Alameda Beach and San Francisco Bay.
SPONSOR(S): City of Alameda, California
SPONSOR CATEGORY: county government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: The algae are carried toward the beaches by counter-clockwise currents and NW winds.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: recreation; pollution control
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: GIGARTINA FRANCISCANA; ULVA EXPANSA; GRACILARIA SJOESTEDTII
ADDED KEYWORDS: red algae; bays; drift; management measures
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; emigration; harvest; immigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrat; SCUBA; aerial photographs; remote sensing
NUMBER OF SAMPLING SITES: 5
SUPPORTING DATA COLLECTED: climatological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Alameda County; San Francisco Bay
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The two red algae appear to grow on old shell-beds all over the bay. In winter, the older plants drift from their original site on benthic counter-clockwise currents. Possibly 1,000 tons of algae lie off the beach and are driven ashore by NW winds. The offshore patches are highly mobile and have been partially detected using infrared photography.
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NBIP ACCESSION NUMBER: CA/262

<145>

INVESTIGATOR(S): Jameson, D.L.
AFFILIATION: University of Houston
TITLE: Population Biology of Hyla REGILLA, the Pacific Tree Toad
PURPOSE: To monitor long term changes in numbers of animals and in the numbers of the various color morphs.
SPONSOR(S): Various sources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1952
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Much of the changes

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observed have been in response to the activities of man.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; tropical; savanna; grassland; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; estuarine

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia

TAXA: NYLA REGILLA

ADDED KEYWORDS: pacific tree toads; toads; habitat modification; population dynamics

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; home range size; immigration; mortality; natality; numbers; sex; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

mark, release, recapture; scud counts

NUMBER OF SAMPLING SITES: 100+

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data

STUDY SITE(S): WA; ID; MT; OR; NV; CA

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis; non-linear estimation; modeling, deterministic; modeling, stochastic; serial autocorrelations

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: TX/079

<146>

INVESTIGATOR(S): Johnson, M.K.

AFFILIATION: Museum of Vertebrate Zoology,
University of California-BerkeleyTITLE: Avifaunal Fluctuation on an Island of
Firs in the Mohave DesertPURPOSE: Annual assessment of breeding
avifauna on an isolated stand of firs.SPONSOR(S): Museum of Vertebrate Zoology,
University of California-Berkeley

SPONSOR CATEGORY: museum; teaching institution

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Avifauna is increasing in

diversity.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; mountain

LEVEL(S) OF STUDY: organism; population;

community

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees

TAXA: ABIES SP

ADDED KEYWORDS: white firs; firs; natural

introductions; population effects; species
diversity

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; emigration;

immigration; migratory patterns; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; collections

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Bernardino
County; Clark MountainTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; percentile;
regression/correlation analysisABSTRACT: Annual census was taken of breeding
birds isolated in 40 acres of white firs
on the top of Clark Mt., San Bernardino
County, California. An original census was
taken in 1939-1940. I started the counts
in 1973 and have taken 3 so far. Censuses
are complete counts of all individuals of
fir-dependent birds. They are taken in May
and/or June of each year and will be
continued for 5, and possibly 10 years.

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NBIP ACCESSION NUMBER: CA/035

<147>

INVESTIGATOR(S): Johnson, S.E.

AFFILIATION: Dept. of Biology, Clark
University

TITLE: Rocky Intertidal Microclimatology

PURPOSE: Examine relation between intertidal
microclimates and population of intertidal
invertebrates.SPONSOR(S): Clark University; Stanford
University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Population changes in
amphipod fauna quantitatively associated
with physical environmental changes.ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastalLEVEL(S) OF STUDY: organism; population;
region

MANAGEMENT FOCUS: indicator species

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea

TAXA: OLIGOCHINUS LIGHTI; ALLORCHESTES ANCEPS

ADDED KEYWORDS: intertidal zones; models;

sand hoppers; energy budgets;

microclimates; amphipods

PRIMARY PARAMETERS INVESTIGATED:

distribution; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

hydrological data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Monterey County;
Hopkins Marine Station; Monterey Bay

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360; FORTRAN 4

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STATISTICS EMPLOYED: mean;
regression/correlation analysis;
multivariate analysis; modeling,
deterministic

ABSTRACT: Organisms of intertidal regions experience climatological factors of marine and non-marine origin. Ecological studies indicate that climatological factors of non-marine origin are of primary importance in determining the distribution and abundance of the gammarid amphipod, *OLIGOCHINUS LIGHTI*. This is indicated by a decrease in population density with increasing height in the intertidal, decrease in the population density accompanying seasonal increases in exposure to non-marine climatic conditions, and by an increase in patchiness which occurs with increasing intertidal height and increasing seasonal exposure. Non-marine climatic factors affecting *OLIGOCHINUS* are changes in temperature, salinity, or moisture content in the algal clump inhabited by the amphipod. The microclimate of the algal clump depends upon its position in the intertidal zone and on how its form modifies the climatic conditions occurring during exposure. The algal microclimate is related in a complex fashion to seasonal changes in the coastal macroclimate mediated by the irregular semidiurnal tidal cycles of the region. A simple mathematical model has been developed to predict population changes on the basis of climatic factors.

REFERENCES: Johnson, 1975; Johnson, 1972

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NBIP ACCESSION NUMBER: MA/045

<148>

INVESTIGATOR(S): Jones, W.E.
AFFILIATION: California State Dept. of Fish
and Game

TITLE: Summer Run Steelhead Survey, Middle
Fork Eel River

PURPOSE: To annually monitor the population,
habitat, and collect pertinent life
history information for management
purposes. Obstacles found to prevent or
hinder migration and holding area use are
scheduled for modification.

SPONSOR(S): California State Dept. of Fish
and Game; FS

SPONSOR CATEGORY: state government; federal
government

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: After recovering from
devastating flood of 1964-1965 to a
population of 1522 in 1974, the population
has decreased to 1,149 despite full
protection in the spawning, rearing and
hold over areas.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: SALMO GAIARDNERI

ADDED KEYWORDS: steelhead trouts; trouts;
floods; habitat modification; management
measures; natural catastrophe

PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
annual surveys in the summer holding area

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Middle Fork Eel River
TYPE OF DATA: raw; reduced

ABSTRACT: The Middle Fork of the Eel River
contains the largest known remaining
population in California of this unique
fish (summer run steelhead trout). Annual
surveys of the hold over area have shown
that the summer steelhead have had a
dramatic and steady comeback from the
devastating flood of 1964-1965. From a low
of 196 adults counted in 1966, the
holdover population has steadily increased
to 1,522 in 1974. However, despite full
protection in the spawning, rearing, and
holdover areas, the count dropped to 1,149
in 1975.

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NBIP ACCESSION NUMBER: CA/251

<149>

INVESTIGATOR(S): Kaneen, R.G.

AFFILIATION: Marine Resources Region,
California Dept. of Fish and Game

TITLE: Assessment of Marine Resources - Fish,
Mollusks, Crustaceans, Marine Algae, and
Fishing Effort

PURPOSE: To monitor fluctuations of marine
life and associated factors.

SPONSOR(S): California State Dept. of Fish
and Game

SPONSOR CATEGORY: state government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Variations in species
catch, catch localities, and catch rates
are being observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca;
shellfish

TAXA: PANDALUS SPP; ENGRAULIS SPP; CANCER
SPP; CRANGONYX SPP; SEBASTES SPP; SERRANUS
SPP; SCOMBRIIDAE SPP; PLEURONECTIFORMES SPP;
OSMERIDAE SPP; EMBIOTOCIDAE SPP;
ANOLOPOMATIDAE SPP;

ADDED KEYWORDS: shrimp; anchovies; rock
crabs; rockfishes; sea basses; flounders;
sablefishes; smelts; surfperches;

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mackerels; tunas; beaches; bays; crabs
 PRIMARY PARAMETERS INVESTIGATED: age;
 biomass; distribution; emigration; growth;
 harvest; immigration; mortality; migratory
 patterns; numbers; reproduction; sex;
 size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 research vessels; field sampling; log book
 data; fishermen interviews

NUMBER OF SAMPLING SITES: various

SAMPLING FREQUENCY: seasonal; daily; weekly;
 monthly; irregular

SUPPORTING DATA COLLECTED: associated fauna;
 associated flora; hydrological data; water
 quality data

STUDY SITE(S): CA; OR; MX

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: CA/258

<150>

INVESTIGATOR(S): Lederer, R.J.

AFFILIATION: Dept. of Biological Sciences,
 California State University

TITLE: The Piscivorous Birds of Eagle Lake,
 Lassen County, California

PURPOSE: To monitor the breeding populations
 of the fish-eating birds of the Eagle Lake
 Basin.

SPONSOR(S): California State University Eagle
 Lake Field Station

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Populations are declining
 overall.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 wetland; aquatic; freshwater; lake

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;
 environmental impact; wildlife; indicator
 species; recreation; resource planning;
 pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds

TAXA: AECHEMOPHCRUS OCCIDENTALIS; PODICEPS
 NIGRICOLLIS; PHALACROCORAX AURITUS; MERGUS
 MERGANSER; HALIAEETUS LEUCOCERPHALUS;
 PANDION HALIAETUS; ARDEA HERODIAS; LARUS
 CALIFORNICUS; STERNA FORSTERI

ADDED KEYWORDS: western grebes; eared grebes;
 grebes; double-crested cormorants;
 cormorants; bald eagles; eagles; ospreys;
 great blue herons; herons; california
 gulls; gulls; black terns; forster's
 terns; terns; camping; recreational
 vehicles; habitat modification

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat
 characterization; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

direct observations; nest location

SUPPORTING DATA COLLECTED: associated fauna;

associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Lassen County; Eagle Lake

TYPE OF DATA: raw; reduced

ABSTRACT: Eagle Lake is rapidly becoming a
 popular recreation area. The general
 decline since 1971 of piscivorous birds
 may be due to this human population
 increase and its resultant increase in
 activity around the lake. The grebes and
 terns that nest in the rushes (*JUNCUS* sp)
 and bullrushes (*SCIRPUS* sp) have
 experienced a loss of habitat in the past
 few years due to human intrusion.
 Increased boating activity has caused the
 destruction of nests, abandonment of the
 nest by the parents, or inundation of the
 eggs, preventing proper incubation. The
 populations may have also been affected by
 the rising water level of the lake. The
 higher water level over previous years
 caused a delay in the nesting times since
 the birds could not nest until the
 emergent vegetation grew tall enough to
 support the floating nests. This delay
 (perhaps of 3 - 4 weeks) caused the peak
 of nesting to occur later in the summer
 during the peak of human activity on the
 lake.

REFERENCES: Lederer, 1974

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California State University-Chico

Chico, CA 95929

TELEPHONE: (916) 895-5800

NBIP ACCESSION NUMBER: CA/004

<151>

INVESTIGATOR(S): LeGore, R.S.

AFFILIATION: Parametrix, Inc.

TITLE: The Effects of Geothermal Energy
 Utilization on Stream Biota and Water
 Quality at the Geysers, California

PURPOSE: To determine the effects of
 geothermal energy utilization on stream
 biota and water quality at the Geysers,
 California.

SPONSOR(S): Union Oil Co. of California

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Seasonal cycles in water
 chemistry and biotic communities.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
 freshwater; stream

LEVEL(S) OF STUDY: population; community;
 ecosystem

MANAGEMENT FOCUS: environmental impact,
 fisheries; pollution control; water
 quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
 fish; invertebrates; insects;
 microorganisms; bacteria

TAXA: SALMO GAIARDNERI; HESPEROLEUCUS

VENUSTUS; CATOSTOMUS SPP

ADDED KEYWORDS: steelhead trouts; rainbow
 trouts; venus roaches; suckers; ammonia;
 heavy metals; geothermal energy; nitrites;
 fishkills; trouts

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; kill; mortality;
 migratory patterns; numbers; size/weight;
 stress; toxicity

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NUMBER OF SAMPLING SITES: 14
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
soils; terrain; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Sonoma County; Big
Sulphur Creek; Squan Creek; Geysers Power
Station
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: regression/correlation
analysis
ABSTRACT: Steelhead trout do not occur in
certain areas of Big Sulphur Creek
adjacent to the Geysers geothermal
development. This phenomenon was
determined to be a natural occurrence,
caused by high nitrite and ammonia
concentrations, aggravated by seasonally
elevated water temperatures. These water
quality problems are not caused by
geothermal energy exploitation; they exist
coincidentally. Occasional accidental
discharges of steam condensates occur,
with variable biological consequences. In
one case, the condensate was not toxic,
but the spill caused a fishkill because it
washed soil containing naturally occurring
sulfuric acid and metals into the stream.
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Parametrix, Inc.
4122 Stone Way N.
Seattle, WA 98103
TELEPHONE: (206) 632-8150
NBIP ACCESSION NUMBER: WA/085

<152>

INVESTIGATOR(S): Lester, W.L.
AFFILIATION: Dept. of Biology, Humboldt State
University
TITLE: Embryologic Bioassay of Kraft Pulp
Mill Effluent Utilizing the Marine Worm
(URECHIS CAUPO) and Selected Echinoderms
PURPOSE: To find means of determining
pollutant concentration in marine
environment using marine species in water
column which correlate with bottom species
and to determine pollutant impact on
gametes and embryos in water column.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Impact quantitation in
marine environment commences this year.
Previous years dealt with assay techniques
and quantitative and qualitative changes
in embryonic indicator species.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; annelida; microorganisms;
bacteria
TAXA: URECHIS CAUPO

ADDED KEYWORDS: marine worms; woras;
echinoderms; thermal effluents; benthic
organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
kill; mortality; reproduction; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
bottom grab
NUMBER OF SAMPLING SITES: tri-dimensional
sub-sites in plume
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated
microorganisms; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Humboldt County
TYPE OF DATA: raw
ABSTRACT: Studies include: development of
marine bioassays utilizing embryonic
development of marine worms and
echinoderms for impact assessment and
quantitation in the water column; impact
of Kraft pulp mill effluent (raw and
partially treated) on selected marine
invertebrates with respect to reproduction
and toxicity; and microorganisms
responsible for detoxification and
breakdown of Kraft mill effluent in the
marine environment and in treatment
processes.
ADDRESS: Dr. William Lester
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Humboldt State University
Arcata, CA 95521
TELEPHONE: (707) 826-3600
NBIP ACCESSION NUMBER: CA/013

<153>

INVESTIGATOR(S): Linn, J.L.
AFFILIATION: Water Quality Section,
California State Dept. of Fish and Game
TITLE: Measure of Chlorine Residuals in
Sewage Treatment Discharge in Relation to
Toxicity to Fishlife
PURPOSE: To make recommendation for
dechlorination of effluents, if required.
SPONSOR(S): California State Dept. of Fish
and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No fish kills observed
following imposition of dechlorination
requirements.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: fisheries; pollution
control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ALOSA SAPIDISSIMA; SALMO GAIARDNERI;
ONCORHYNCHUS TSHAWYTSCHA; MORONE SAXATILIS
ADDED KEYWORDS: salmon; king salmon; basses;
striped basses; trouts; steelhead trouts;
shad; legal regulation; chlorine
PRIMARY PARAMETERS INVESTIGATED: behavior;
kill; mortality; residues; territory size;
toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
exposure tests; wire pens
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): CA

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GEOGRAPHIC DESCRIPTION: Sacramento County;
Sacramento River; American River
TYPE OF DATA: raw; summarized
ABSTRACT: Monitoring revealed chlorine
residuals in receiving waters at levels
toxic to fishlife. Derived data supported
recommendations to Regional Water Quality
Control Board and were utilized in legal
actions.

ADDRESS: Jack L. Linn
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TELEPHONE: (916) 445-0370
NBIP ACCESSION NUMBER: CA/249

<154>

INVESTIGATOR(S): Linsley, E.G.
AFFILIATION: Div. of Entomology and
Parasitology, University of
California-Berkeley
TITLE: Pollination Ecology of Selected Desert
Flowering Plants
PURPOSE: To study pollination mechanisms,
pollinator requirements, and pollinator
competition in selected annual and
perennial flowering plants actually or
potentially useful in management of
recreation areas, range, and wildlands.
SPONSOR(S): University of California
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Impact of rainfall and
agriculture on seasonal and geographical
range of host plants and pollinators.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insects; plants; vascular
plants; trees; shrubs; herbs
TAXA: KALLISTROEMIA GRANDIFLORA; HYMENOPTERA
ADDED KEYWORDS: bees; wasps; Mexican poppy;
seasonal variations; management measures;
pollination; hymenopterans; habitat
modification
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sampling of pollinators
SAMPLING FREQUENCY: annual
STUDY SITE(S): NM; AZ; CA
ABSTRACT: The plant is of special interest
from the standpoint of pollination
ecology, as both the plant and some of the
insects have adaptations in behavior that
are not always mutually beneficial. The
flowers are allogamous for most of the
daily flowering period and become
autogamous as the flowers close. Thus,
they can be either cross- or
self-pollinated, with the former evidently
favored. The flowers have little or no
odor, a color range within "bees yellow",
and a strong ultraviolet reflective
pattern on both upper- and under-surfaces.
Insects are evidently attracted by color
and ultraviolet reflection, with the

latter so arranged as to form
nonreflective, dark target "nectar guide"
areas on both upper- and under-surfaces.

REFERENCES: Hurd, et al, 1970; Cazier, et al,
1974; Hurd, et al, 1975 a,b

ADDRESS: Dr. E. G. Linsley
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University of California-Berkeley
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NBIP ACCESSION NUMBER: CA/053

<155>

INVESTIGATOR(S): Lorenzana, J.A.
AFFILIATION: Mendocino National Forest, FS
TITLE: Deer Herd Unit Studies: Alder
Springs, Lake Pillsbury, and Covelo Deer
Herd Units
PURPOSE: To monitor habitat changes, herd
responses, and measure condition and trend
of key habitats.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decline in condition of
winter ranges resulted in lowered deer
numbers.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; forestry;
indicator species; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses
TAXA: ODOCOLEUS HEMIONUS
ADDED KEYWORDS: mule deer; chaparral;
management measures; habitat modification
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; habitat
characterization; harvest; home range
size; kill; mortality; migratory patterns;
natality; reproduction; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects; pellet counts; growth index
NUMBER OF SAMPLING SITES: 11
SAMPLING FREQUENCY: continuous; seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Glenn County; Colusa
County; Lanke County; Mendocino County;
Trinity County; Tehama County; Mendocino
National Forest; Alder Springs; Lake
Pillsbury; Covelo
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile;
non-parametric analysis
ABSTRACT: Condition and trend of key summer
and winter deer habitats on three deer
herd units within the forest boundaries
were measured. Biological data on several
established parameters (i.e. age, sex
class, pellet group counts, browse growth,
herd composition counts, weather, fires,
etc.) were collected.
ADDRESS: John A. Lorenzana
420 E. Laurel St.
USDA/Forest Service
Willows, CA 95988
TELEPHONE: (916) 934-3316 ext. 58

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NBIP ACCESSION NUMBER: CA/043

<156>
INVESTIGATOR(S): Lucich, R.M.
AFFILIATION: FS
TITLE: Spotted Owl Study
PURPOSE: To determine the distribution and habitat requirements of spotted owls on the Shasta-Trinity National Forest.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Known population numbers and distribution greatly expanded.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species; wildlife; forestry; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: STRIX OCCIDENTALIS
ADDED KEYWORDS: spotted owls; habitat modification; owls; logging; management measures; habitat management
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; numbers; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): vocal imitations; vocal responses recorded
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Trinity County; Shasta County; Tehama County; South Fork Trinity River; Trinity River; Pit Creek; McCloud Creek; Squaw Creek; Sacramento River; Shasta-Trinity National Forest; Six Rivers National Forest
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mode
ABSTRACT: Spotted owls were successfully located in the Douglas fir forests of the Shasta-Trinity National Forest. Limited numbers were also found in mixed conifers-hardwoods with high canopy coverage percentages. The owls were generally located less than 0.5 miles from a readily available water supply and appeared most frequently in upper drainage systems. Data obtained from this study will be considered in timber management proposals on the forest. Attempts to capture spotted owls to attach telemetry equipment were unsuccessful.
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1615 Continental St.
Redding, CA 96001
TELEPHONE: (916) 246-5462
NBIP ACCESSION NUMBER: CA/112

<157>
INVESTIGATOR(S): Luck, R.F.
AFFILIATION: Dept. of Entomology, University of California-Riverside

TITLE: Photochemical Air Pollution Impact on Mixed Conifer Forest Ecosystems: Cone Production
PURPOSE: To determine the frequency and abundance of cone crops produced by PINUS PONDEROSA and P. JEFFREYI exposed to oxidant air pollution (ozone).
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Cone crops vary in abundance.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: forestry; pollution control
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: PINUS PONDEROSA; PINUS JEFFREYI; ABIES CONCOLOR
ADDED KEYWORDS: ponderosa pines; jeffrey pines; pines; white firs; firs; seeds; pine cones; oxidants; air pollution; photochemical oxidants; ozone
PRIMARY PARAMETERS INVESTIGATED: age; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): count; estimation; plots
NUMBER OF SAMPLING SITES: 19
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino County
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: As part of a multidisciplinary effort, this subproject describes, for trees with certain characteristics, the probability that they will produce a cone crop and the probable size of that crop(per tree). Life tables for Ponderosa and Jeffrey pines identifying the major sources and periods of losses for trees and stands with specified characteristics is also proposed. The analysis of data from this subproject will depend, in part, upon data generated by other subprojects and this subproject's data will be available to other subprojects. The data base will be available at the Lawrence Livermore Laboratory, Livermore, CA, sometime in the future.
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University of California
Riverside, CA 92502
TELEPHONE: (714) 787-5713
NBIP ACCESSION NUMBER: CA/170

<158>
INVESTIGATOR(S): McBride, J.R.
AFFILIATION: Dept. of Forestry and Conservation, University of California-Berkeley
TITLE: Impact of Oxidant Air Pollutants of the Mixed Conifer Forests of the San Bernardino Mountains
PURPOSE: To determine the impact of air pollution on plant succession in the mixed conifer forest.
SPONSOR(S): EPA

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SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1973
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: There has been an increased mortality of Ponderosa pines.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
 LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
 MANAGEMENT FOCUS: environmental impact; forestry; indicator species; pollution control
 ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
 TAXA: PINUS PONDEROSA; PINUS LAMBERTIANA; LIBOCEDRUS DECURRENS; ABIES CONCOLOR; QUERCUS KELLOGGII; PLANTS, 405 SPECIES
 ADDED KEYWORDS: ponderosa pines; pines; white firs; firs; California black oaks; oaks; incense-cedars; sugar pines; air pollution; succession; oxidants
 PRIMARY PARAMETERS INVESTIGATED: mortality; reproduction
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats; line intercept; plots
 NUMBER OF SAMPLING SITES: 96
 SAMPLING FREQUENCY: annual;
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; atmospheric chemistry; climatological data; soils
 STUDY SITE(S): CA
 GEOGRAPHIC DESCRIPTION: San Bernardino County; Santa Ana River; Arrowhead Lake; Big Bear Lake; San Bernardino Mountains
 TYPE OF DATA: raw
 COMPUTER AND LANGUAGE: FORTRAN
 STATISTICS EMPLOYED: mean
 ABSTRACT: Oxidizing air pollutants and their effects on the mixed conifer forests are being studied in the San Bernardino Mountains of California. Permanent and temporary plots are set up for the project. Trees and herbs will be observed using quadrats, and shrubs will be monitored by the line intercept method. The major observed change thus far has been the increase in deaths of the Ponderosa pines. Other successional variations have not been noted in the 400 plus species of plants.
 ADDRESS: Dr. Joseph McBride
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 145 Mulford Hall
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 Berkeley, CA 94720
 TELEPHONE: (415) 642-2482
 NBIP ACCESSION NUMBER: CA/099

<159>

INVESTIGATOR(S): McIntyre, D.B.
 AFFILIATION: Lawrence Livermore Laboratory
 TITLE: Omnibus Environmental Assessment of the Lawrence Livermore Laboratory Ecology
 PURPOSE: To define and document changes that have occurred since Lawrence Livermore Laboratory started and what is present now as to plants and animals of this laboratory.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Documented are changes from a grassland-dominated airbase to total ground changes for buildings, roads, weed control, landscaping, and fire control.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; insecta; plants; vascular plants; trees; shrubs; grasses

ADDED KEYWORDS: construction; air pollution; habitat modification

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; road kills; trap and release

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Alameda County; Arrays Mocho River

TYPE OF DATA: raw; summarized

ABSTRACT: None provided.

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TELEPHONE: (415) 447-1100 ext. 7708

NBIP ACCESSION NUMBER: CA/269

<160>

INVESTIGATOR(S): Neafus, A.J.; Young, D.R.

AFFILIATION: Southern California Coastal

Water Research Project

TITLE: Quantitative Response Characteristics of Coastal Fish and Benthic Invertebrate Communities

PURPOSE: Continuing studies of offshore coastal fish and invertebrate communities, including special studies on gear efficiency, trace chemical levels, data analytical techniques, and epidemiology of diseased populations.

SPONSOR(S): EPA; SCCWRP; California State Water Reserve Control Board; City of Los Angeles; San Diego City; Orange County; Ventura Sanitation District

SPONSOR CATEGORY: federal government; state government; city government; county government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Seasonal, diurnal, and aperiodic changes in demersal and benthic community structure and trace pollutant loads are being studied.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control; water quality

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ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; mammals; invertebrates;
crustacea; microorganisms; viruses;
bacteria

TAXA: FISHES, 200 SPECIES; INVERTEBRATES,
3000 SPECIES

ADDED KEYWORDS: diseases; management
measures; heavy metals; waste water;
benthic organisms

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; food; distribution;
diversity; emigration; growth; habitat
characterization; immigration; kill;
mortality; migratory patterns; numbers;
physiology; productivity; reproduction;
residues; sex; size/weight; stress;
territory size; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
otter trawls; baited cameras; television;
bottom grabs; cores

NUMBER OF SAMPLING SITES: 250

SAMPLING FREQUENCY: seasonal; quarterly;
annual; irregular

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; atmospheric chemistry;
climatological data; terrain; water
quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Ventura County; Los
Angeles County; Orange County; San Diego
County; Southern California Bight

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: IBM; FORTRAN IV
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-parametric
analysis; non-linear estimation; modeling,
deterministic; modeling, stochastic;
serial autocorrelations

ABSTRACT: The Coastal Water Research Project
is a local-governmental agency for marine
ecological research and is sponsored by
the sanitation districts of Los Angeles
and Orange Counties, the Cities of Los
Angeles and San Diego, and the Ventura
Regional Sanitation Districts. Research is
sponsored by the EPA, California Water
Reserve Control Board, and Institute of
Marine Resources, University of
California. Biological and chemical
programs are integrated to relate cause
and effect over time and across
geographical gradients. Work is done in
direct collaboration with publicly
sponsored discharge agencies which conduct
self-monitoring ocean programs. Much of
these data are summarized, analyzed, and
reported in technical papers, annual
reports, and meetings.

REFERENCES: Mearns, 1974

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Southern California
Coastal Research Project
1500 East Imperial Highway
B1 Segundo, CA 90245

TELEPHONE: (213) 322-3080
NBIP ACCESSION NUMBER: CA/188

<161>

INVESTIGATOR(S): Mearns, W.L.
AFFILIATION: California State Dept. of Fish
and Game

TITLE: Delta Fish Protective Facility - Fish
Salvage Operation

PURPOSE: To identify and enumerate species of
fish saved by the Delta Fish Protective
Facility at the head of the California
Aqueduct.

SPONSOR(S): California State Dept. of Fish
and Game; California State Dept. of Water
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Numbers of fish saved
depended on water quantity and season of
pumping. Fish salvage efficiency depended
on size and water velocity.

ECOSYSTEM OR BIOHE TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: FISHES, 33 SPECIES; MORONE SALTATILIS;
ICTALURUS CATENS; ALOSA SAPIDISSIMA

ADDED KEYWORDS: striped basses; white
catfishes; american shad; tidal delta;
catfishes; basses; management measures;
shad

PRIMARY PARAMETERS INVESTIGATED: mortality;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sample counts

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: continuous

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Contra Costa County;
Old River

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: This report presents a review of
the operation of the Delta Fish Protective
Facility for the 1974 calendar year. The
purpose of the installation, operated
jointly by the Departments of Water
Resources and Fish and Game, is to remove
fish from water being exported through the
California Aqueduct. As part of a four
agency study of the effect of export
pumping on the survival of young striped
bass, a greater than normal quantity of
water was pumped during June, July, and
August. This increased pumping rate had
the effect of reducing the salvage
efficiency of the facility. A projected
total of approximately 30.6 million fish
were salvaged in 1974. This figure is the
highest yet recorded at the Delta Fish
Protective Facility. The three most
abundant species of fish salvaged were
striped bass - 23.9 million, American shad
- 2.2 million, and white catfish - 1.3
million. An estimated 95 million striped
bass and 700,000 white catfish were lost
through the louvers. Most of these losses
occurred in June, July, and August, the
period of peak juvenile abundance and
reduced salvage efficiency.

ADDRESS: W.L. Mearns
California Dept. of Fish and Game

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Rt. 1 Box 40
Byron, CA 94514
TELEPHONE: (209) 835-7106
NBIP ACCESSION NUMBER: CA/248

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INVESTIGATOR(S): Mewaldt, L.R.
AFFILIATION: Avian Biology Laboratory, San Jose State University
TITLE: WBBA White-Crowned Sparrow Project
PURPOSE: to understand circannual population structure of the white-crowned sparrow, an abundant, multiracial, and migratory bird, and to monitor short and long term continental population trends.
SPONSOR(S): Western Bird Banding Association
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1920
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There seems to be a decrease in returning Puget Sound sparrows.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; grassland; tundra; arctic; alpine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: ZONOTRICHIA LEUCOPHRYS
ADDED KEYWORDS: white-crowned sparrows; population effects; migration rates; sparrows
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; emigration; habitat characterization; home range size; immigration; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; traps; mensural data; banding
NUMBER OF SAMPLING SITES: about 40
SAMPLING FREQUENCY: continuous; seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): CA
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: The white-crowned sparrow project seeks solutions to problems that can best, or perhaps only, be answered by simultaneous collection of data on an abundant, easily captured passerine bird by investigators widely scattered over North America. Two principal objectives include: (1) to better understand circannual population structure and dynamics of the white-crowned sparrow, an abundant, multiracial, widely distributed, migratory species; and (2) to monitor short- and long-term population changes at regional and continental levels. Emphasis in these first few years are to: (1)

determine geographical patterns in spring phenology as indicated by (a) deck (rectrices 1-1) growth patterns in pre-nuptial (pre-migratory) molt, and (b) body weight as indicator of accumulations of pre-migratory fat; and (2) study variance, from station to station in each season and from season to season at each station, of age ratios, racial ratios, survival ratios, wing-weight ratios, and absolute numbers as possible indicators of adult survival and breeding productivity.

REFERENCES: Mewaldt, 1976; Mewaldt, 1964; Mewaldt, 1965; Mewaldt, et al, 1968
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NBIP ACCESSION NUMBER: CA/223

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INVESTIGATOR(S): Miller, A.W.
AFFILIATION: SCS
TITLE: Suisun Marsh Study
PURPOSE: To review the basic data on ecological factors involved in the Suisun Marsh, to provide an inventory of present wildlife benefits and physical works, and to develop management alternatives required to maximize wildlife benefits under three conditions of water quality.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: From 1961 to 1973, the most productive waterfowl food plants increased in the marsh from 10 percent to 24 percent of the ground cover.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; coastal
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; recreation; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; trees; herbs
TAXA: Aedes dorsalis; Culex tarsalis; Cyprinus carpio; Gambusia affinis; Morone saxatilis; birds, 8 species; mammals, 5 species; plants, 21 species
ADDED KEYWORDS: mosquitoes; carps; mosquitofishes; perches; management measures
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): clipped plot sampling
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: monthly; irregular
SUPPORTING DATA COLLECTED: soils; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Solano County; Sacramento River; San Joaquin River; Suisun Bay; Suisun Marsh
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean
ABSTRACT: An inventory of the water control structures and vegetation on the private holdings in the Suisun Marsh was made. Soil and water salinity were monitored within the marsh and marsh management

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practices followed in the marsh were reviewed along with projected water quality. Suitable waterfowl habitat can be maintained with present water quality and to some extent even with degraded water quality if facilities and water management capabilities are maximized. The conversion to fresh water conditions would pose almost as many additional problems as benefits. Some supplemental fresh water will eventually be needed along the west side of the marsh to maintain optimum waterfowl habitat.

REFERENCES: Miller, et al, 1975

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NBIP ACCESSION NUMBER: CA/193

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INVESTIGATOR(S): Mitchell, D.F.
AFFILIATION: California State Dept. of Fish and Game
TITLE: Experimental Reservoir Management - Millerton Lake Study Project R-4
PURPOSE: To define problems associated with warm water game fish populations in fluctuating reservoirs and to find ways to correct or circumvent these problems to improve angling.
SPONSOR(S): California State Dept. of Fish and Game; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A reduction in large mouth bass year-classes resulting from reservoir fluctuation and competition for food between bass and forage fishes has been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; plants; vascular plants; trees; shrubs; herbs
TAXA: MICROPTERUS SALMOIDES; MICROPTERUS PUNCTULATUS; DOROSOMA CETENENSE; MORONE SAXATILIS; LEPTODORUS SP; DAPHNIA SP; HOLOPEIDIUM AMERZONICUM; SALIX SP; POLYGONUM PERSICARIA
ADDED KEYWORDS: basses; largemouth basses; basses; shad; threadfin shad; management measures; predation; competition; zooplankton; copepods; cladocerans
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; growth; harvest; mortality; migratory patterns; numbers; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; nets
NUMBER OF SAMPLING SITES: 6 reservoirs; different parameters on different waters
SAMPLING FREQUENCY: seasonal; weekly; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data

STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Millerton Lake; Lake McClure; Pine Flat Lake; Kaweah Lake; Don Pedro Reservoir

TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; percentile

ABSTRACT: Populations of largemouth bass are sampled to determine year-class size and to relate this to environmental conditions or to interspecific and intraspecific relationships. Populations of threadfin shad are sampled to determine their population size and effect upon populations of zooplankton. The interrelationships of zooplankton, threadfin shad, largemouth bass, and physical factors are examined. The resultant fishery is evaluated (computerized) and long term trends are documented.

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INVESTIGATOR(S): Morin, J.G.
AFFILIATION: Dept. of Biology, University of California-Los Angeles
TITLE: Subtidal Community Structure of a Shallow Sand Bottom (Marine)
PURPOSE: To monitor the temporal and spatial variability of the common shallow subtidal marine epifauna on a sand bottom.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been major invertebrate migration (sand dollars), a decrease in gastropods and decapods over 5 years, and now increased populations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca; annelida; microorganisms; algae; protozoa
TAXA: DRONDRASTER EXCENTRICUS; RENILLA KOLLIKERI; TIVELA STULTORUM; STYLATULA ELONGATA; ASTROPECTEN ARMATUS; ASTROPECTEN VERRILLI; ARMINA CALIFORNICA
ADDED KEYWORDS: population effects; migration rates; sand dollars; subtidal zones; sea pansy; echinoderms; cnidarians
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; habitat characterization; mortality; migratory patterns; natality; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): scuba diving; transects
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Los Angeles County;

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Zuma Beach

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: CA/270

<166>

INVESTIGATOR(S): Murray, S.N.

AFFILIATION: Dept. of Biological Sciences,

California State University

TITLE: Seasonal Analyses of the Effects of

Sewage on the Macro-organisms of Rocky

Intertidal Communities Near Wilson Cove,

San Clemente Island, California

PURPOSE: To determine macro-epibiota abundances and distribution, caloric contents or dominant organisms, patterns of energy flow, and patterns of community development.

SPONSOR(S): University of California Water Resources

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Sewage-affected areas support reduced diversity, reduced biomass, and altered patterns of energy flow.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: environmental impact;

pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; mollusca;

plants; vascular plants; herbs;

non-vascular plants; microorganisms; algae

TAXA: ULVA CALIFORNICA; GELIDIUM PUSILLUM;

PTEROCLADIA CAPILLACEA; SERPULORIBIS

SQUAMIGERUS; CORALLINA OFFICINALIS; LIGIA

OCCIDENTALIS; PACHYGRAPSUS CRASSIPES;

BENTHIC ORGANISMS, 10 SPECIES; AQUATIC

PLANTS, 20 SPECIES

ADDED KEYWORDS: waste water; stratification;

blue-green algae; succession; intertidal

zones; tides; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; habitat

characterization; numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

underwater photography

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: San Clemente Island;

Los Angeles County; Wilson Cove

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile;

non-parametric analysis

ABSTRACT: The biological effects of a

low-volume domestic sewage discharge were studied near Wilson Cove, San Clemente Island, California, from February to June, 1972. There were fewer species and less cover near the outfall (7 macro-invertebrates, 17.6 percent; 13 macrophytes, 91.7 percent) than in nearby "unpolluted" control areas (9 macro-invertebrates, 9.2 percent; 30 macrophytes, 103.4 percent). The outfall biota was less diverse than that of the controls, as shown by 5 different diversity indices. A great reduction in community stratification (spatial heterogeneity) and, hence, community complexity occurred near the outfall. This reduction in stratification was primary due to the absence of *EGREGIA LAEVIGATA*, *HALIDRYS DIOICA*, *SARGASSUM AGARDHIANUM*, and *PHYLLOSPADIX TORREYI*. These were replaced in the mid-intertidal near the outfall by a low turf of blue-green algae, *ULVA CALIFORNICA*, *GELIDIUM PUSILLUM*, and small *PTEROCLADIA CAPILLACEA*, and in the lower intertidal by *SERPULORIBIS SQUAMIGERUS* covered with *CORALLINA OFFICINALIS*. A statistically-based determination of assemblages or groups of organisms (i.e., cluster analysis) revealed 3 discrete outfall and 3 discrete control area groups, and 3 assemblages contained samples from both areas. The distributional patterns of these groups indicate that near the outfall the degree of dilution of discharged sewage is more important in regulatingonation than is tidal height. The enhancement of the suspension feeder *SERPULORIBIS SQUAMIGERUS* and the omnivores *LIGIA OCCIDENTALIS*, *PACHYGRAPSUS CRASSIPES*, and *ANTHOPELEURA ELEGANTISSIMA* in the outer fringe of the outfall plume hypothetically is due to their ability to utilize sewage as a food source. A critical effect of the outfall may be to decrease environmental stability, thereby favoring rapid-colonizers and more sewage-tolerant organisms. The outfall macrophytes were characterized by relatively higher net primary productivities, smaller growth forms, simpler and shorter life histories, and most were components of early successional stages.

REFERENCES: Littler and Murray, 1974; Littler and Murray, 1975

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INVESTIGATOR(S): Neushul, M.

AFFILIATION: Dept. of Biological Sciences,

University of California-Santa Barbara

TITLE: Studies on the Growth and Reproduction of Benthic Marine Algae

PURPOSE: To monitor growth, recruitment and survival of benthic algae in the sea, on a real time basis, with rapidly quantified (computerized) data and a close linkage with real-time environmental (oceanographic) data.

SPONSOR(S): NSF; NOAA

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SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: There is a strong seasonal basis for recruitment rates and survival as well as growth rates. Some organisms have effective survival strategies, while others do not.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs
TAXA: MACROCYSTIS PYRIPERA; MACROCYSTIS ANGUSTIFOLIA
ADDED KEYWORDS: seasonal variations; population effects; recruitment; kelp; habitat modification; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; growth; habitat characterization; harvest; natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): telemetering buoys; sensing instruments; monodrone tape recorder; fouling plates; aerial survey
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: continuous; monthly;
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Santa Barbara County
COMPUTER AND LANGUAGE: IBM 360; BASIC
STATISTICS EMPLOYED: mean; mode; median; regression/correlation analysis; modeling, stochastic; serial autocorrelations
ABSTRACT: Fouling plates (Plexiglas squares and concrete blocks) were bolted in a horizontal position to racks on the ocean floor at a depth of 12m. Some of these were periodically taken from the sea, subjected to non-destructive microscopic survey in the laboratory, and then replaced in the sea. Others were: (a) left undisturbed as controls, b) variously caged to exclude larger predatory animals, or (c) had sediment removed from them at intervals. Populations that developed on the periodically surveyed plates were similar to populations that developed on undisturbed plates. Populations on undisturbed plates were significantly different from those on partially caged plates. The exclusion of large predators by complete caging resulted in highly significantly different communities from those on partially caged plates. Completely caged communities were composed mainly of worms, barnacles, and bryozoans. Summer-installed plates supported significantly different populations at the end of the experimental period (12 months) than winter-installed plates. Plant growth rates were slow, not exceeding 2 cm per month, and the mortality rates were often high. A few species had high rates of recruitment and survival each month. Most had high recruitment only in the most

favorable growth periods and high loss rates. Physical conditions on the sea floor were measured. The methods developed during this study make it possible to quantitatively describe the growth and reproduction of populations of benthic marine algae in the sea.

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NBIP ACCESSION NUMBER: CA/023

<168>

INVESTIGATOR(S): North, W.J.
AFFILIATION: Reck Laboratory, California Institute of Technology
TITLE: Kelp Habitat Improvement Project
PURPOSE: To monitor conditions of kelp beds by photography twice yearly from Los Angeles to San Diego and other areas.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Regrowth of some kelp areas has been observed.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: MACROCYSTIS PYRIPERA
ADDED KEYWORDS: kelp; brown algae; aquatic plants; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; harvest; mortality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): infra-red; aerial photography
NUMBER OF SAMPLING SITES: from Los Angeles to San Diego
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Orange County; Los Angeles County; San Diego County
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: CA/019

<169>

INVESTIGATOR(S): Nybakken, J.W.
AFFILIATION: Moss Landing Marine Laboratory
TITLE: Effects of Dredging and Dredge Spoil Disposal on the Benthic Marine Environment
PURPOSE: To determine temporal variations in recolonization of dredge spoil by marine invertebrates and to study effects of dumping on native marine communities.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown

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CHANGE(S) OBSERVED: The communities at the fluctuating and temporally least predictable extreme of environmental stress gradients rebounded from disturbance at the faster rate.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact; pollution control

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; annelida

TAXA: MOLLUSCA, 31 SPECIES; GASTROPODA, 22 SPECIES; ECHINODERMATA, 5 SPECIES; CRUSTACEA, 88 SPECIES; POLYCHAETA, 109 SPECIES

ADDED KEYWORDS: dredging; dredge spoil; benthic organisms; echinoderms; pericardians; habitat modification

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; mortality

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quantitative replicate cores

SAMPLING FREQUENCY: seasonal; monthly; quarterly

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Monterey Bay; Salinas River; Monterey County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis

ABSTRACT: The project compares characteristics of recolonization at different times and different offshore locations following catastrophic disturbance due to dumping of dredge spoils. It also compares recovery with control areas at similar depths and on similar substrates. Immigration effects and end states of recolonization are being examined as are larval availability and settlement. Life history studies of selected polychaete species are also being done.

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NBIP ACCESSION NUMBER: CA/079

<170>

INVESTIGATOR(S): O'Brien, R.J.

AFFILIATION: California State Dept. of Fish and Game

TITLE: Annual Counts of Adult Salmon and Steelhead Returning from Ocean to Streams or Hatcheries of Origin

PURPOSE: Annual inventory of anadromous fisheries runs on Klamath, Mad, South Fork, Eel, Trinity, and Shasta Rivers.

SPONSOR(S): California State Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1930

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Wide fluctuations, but general downward trends in populations have been observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: ONCORHYNCHUS Tshawytscha; ONCORHYNCHUS KISUTCH; SALMO GAIARDNERI

ADDED KEYWORDS: king salmon; chinook salmon; silver salmon; rainbow trout; salmon; management measures

PRIMARY PARAMETERS INVESTIGATED: migratory patterns; numbers; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): counts

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Siskiyou County; Humboldt County; Trinity County; Klamath River; Mad River; South Fork River; Eel River; Trinity River; Shasta River

TYPE OF DATA: summarized

ABSTRACT: None provided. Reference was made to annual reports but none were received.

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<171>

INVESTIGATOR(S): Parmeter, J.R.

AFFILIATION: Dept. of Plant Pathology, University of California-Berkeley

TITLE: Biological Evaluation of PONES ANNOSUS in Yosemite Valley

PURPOSE: To determine the numbers of root disease centers, the frequency of center initiation, the rate of increase in center size, and the changes in vegetative cover over time.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Conifers are gradually being eliminated and replaced by hardwoods or grass.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; forestry; recreation; resource planning

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; microorganisms; fungi

TAXA: PINUS PONDEROSA; ABIES CONCOLOR; LIBOCEDRUS DECURRENS; QUERCUS SPP; ACER SPP; CORNUS SPP; PONES ANNOSUS

ADDED KEYWORDS: ponderosa pines; pines; diseases; cedars; firs; habitat modification; succession

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; growth; mortality; numbers

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NUMBER OF SAMPLING SITES: 100+
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Merced River;
Yosemite Valley
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean
ABSTRACT: *POHES ANNOSUS*, a root disease, is gradually eliminating the pine, cedar, and fir stands from Yosemite Valley. Since most camp, cabin, and concessionaire facilities are located in such stands, information on the rate at which these stands are being eliminated and the types of vegetation that will replace them is important to Park management. We are monitoring (by mapping and by aerial photography), the rate of initiation and enlargement of root disease centers and the vegetation changes accompanying the death of conifers.
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NBIP ACCESSION NUMBER: CA/136

<172>

INVESTIGATOR(S): Parmeter, J.R.
AFFILIATION: Dept. of Plant Pathology,
University of California-Berkeley
TITLE: Photochemical Air Pollutant Impact on
the Mixed Conifer Ecosystem; Subproject:
Photochemical Air Pollutant Impact on Pine
Litter Decomposition
PURPOSE: To determine oxidant air pollution
impact on pine needle decomposition.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes were observed in
microfloral and microfaunal populations,
weight, and nutrient content of pine
needle litter over time as affected by
ozone.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
forestry; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; microorganisms; fungi
TAXA: *PINUS PONDEROSA*; *PINUS JEFFREYI*
ADDED KEYWORDS: ponderosa pines; jeffrey
pines; ozone; air pollution; litter;
decomposition; pines
PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers; reproduction; residues; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field experiments; growth chamber studies
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; atmospheric chemistry;

climatological data; hydrological data;
soils; terrain

STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino
County; El Dorado County; Stanislaus
County; Blodgett Experimental Forest;
Pinecrest Forest

TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; percentile;
analysis of variance; analysis of
covariance

ABSTRACT: Characterization and estimation of
fungal populations involved in litter
decomposition are being verified and
expanded to include the second and part of
the third year on the forest floor. Nylon
mesh squares are placed annually beneath
study trees to separate annual increments
of litter-fall. Twigs are clipped from
study trees and annual increments of live
foliage are separated. Samples of needles
from the crown increments and the nylon
mesh squares are surface-sterilized and
portions plated on water agar for an
incubation period of approximately one
month prior to observation and culture of
emergent fungal colonies. Cultured litter
fungi are subjected to laboratory tests
for determination of their ability to
decompose cellulose, lignin and pectin.
Apparently important litter fungi are
further tested in growth chambers to
determine their ability to grow,
reproduce, and effect needle decomposition
in filtered and ozone-enriched air.

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NBIP ACCESSION NUMBER: CA/239

<173>

INVESTIGATOR(S): Perrin, W.P.
AFFILIATION: NMFS
TITLE: Porpoise Biology
PURPOSE: To study systematics, growth and
reproduction, and ecology of tropical
pelagic dolphins involved in tuna seine
fishery; and to provide background for
assessment of impact of fishery on
porpoises.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Possible populational
responses to incidental fishing pressure,
e.g., increased reproduction rates.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: *STENELLA ATTENUATA*; *STENELLA*
LONGIROSTRIS; *STENELLA COERVLEOALBA*;
DELPHINUS DELPHIS; *TURSIOPS TRUNCATUS*;
LAGENODELPHIS HOSEI; *PEPONOCEPHALA*
ELECTRA; *STENOBRIDANENSIS*; *PERESA*
ATTENUATA; *GLOBICEPHALA MACRORHYNCHUS*
ADDED KEYWORDS: dolphins; porpoises;

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cetaceans; tunas; marine mammals;
population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; growth;
home range size; kill; mortality;
migratory patterns; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; commercial samples
NUMBER OF SAMPLING SITES: 1000's
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Pacific Ocean
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: CDC 6700; DML; ALGOL;
FORTRAN
STATISTICS EMPLOYED: mean; mode; analysis of
variance; regression/correlation analysis;
multivariate analysis; non-parametric
analysis; k; modeling, deterministic;
modeling, stochastic
ABSTRACT: This report presents the
preliminary results of a partially-
completed study of the life history of the
spinner porpoise in the eastern tropical
Pacific. The spinner porpoise is the
second-most important species involved in
the purse seine fishery for yellowfin tuna
in the eastern Pacific. The purpose of the
study is to develop estimates of life
history parameters for use in assessing
the status of the spinner porpoise stocks,
and the impact of the incidental mortality
in the yellowfin tuna fishery.
REFERENCES: Perrin and Walker, 1975; Hubbs,
et al, 1973; Leatherwood, et al, 1973;
Perrin, et al, 1973; Perrin, et al, 1975;
Dailey and Perrin, 1973; Perrin, 1973;
Perrin, 1975
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NBIP ACCESSION NUMBER: CA/175

<174>

INVESTIGATOR(S): Power, D.M.
AFFILIATION: Santa Barbara Museum of Natural
History
TITLE: Adaptive Variation in Island
Population of Birds
PURPOSE: To study evolution and biogeography
of birds (terrestrial) on the islands off
California and Baja California.
SPONSOR(S): NSF; Santa Barbara Museum of
Natural History
SPONSOR CATEGORY: federal government;
societies and other organizations; other
country
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Few changes but some
fluctuations in abundance and distribution
of island birds.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; savanna; grassland
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; range;
recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: CARPODacus MEXICANUS; SALPINCTES
OBSOLETUS
ADDED KEYWORDS: house finches; finches; rock
wrens; wrens; biogeography; population
effects; islands; models
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation
NUMBER OF SAMPLING SITES: 16 islands
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): CA; MX
GEOGRAPHIC DESCRIPTION: California Islands
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM-360; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis; non-parametric
analysis; modeling, deterministic
ABSTRACT: Two studies are underway. The first
is on morphological variation, evolution,
and population parameters of two
widespread species of birds (house finch
and rock wren) on the California Islands.
The study is one of island evolution below
the species level. The second study is on
the ecological and geographical factors
relating to island species diversity, and
statistical models accounting for species
diversity.
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NBIP ACCESSION NUMBER: CA/169

<175>

INVESTIGATOR(S): Powers, J.E.
AFFILIATION: Southwest Fisheries Center, NMFS
TITLE: Stock Assessment of Porpoises Killed
Incidental to the Tuna Purse-Seine Fishery
PURPOSE: To determine the numbers of
porpoises in the affected stocks, to
determine each stock's capacity for
withstanding fishing mortality, and to
determine the amount of fishing mortality.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in yearly gross
production of spinner porpoises.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: STENELLA ATTENUATA; STENELLA
LONGIROSTRIS
ADDED KEYWORDS: dolphins; tunas; porpoises;

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spinner porpoises; whitebelly spinner porpoises; spotted porpoises; spinner porpoises; population effects; models
PRIMARY PARAMETERS INVESTIGATED: distribution; home range size; kill; mortality; natality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Eastern Tropical Pacific Ocean
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: Univac 1100; Data Management Language
STATISTICS EMPLOYED: mean; regression/correlation analysis; contingency table analysis; modeling, deterministic
ABSTRACT: Population estimates were made for the offshore spotted porpoise and the eastern spinner porpoise using line transect theory. Current estimates of abundances are between 3.09 and 3.45 million spotted porpoise and 1.11 to 1.24 million spinner porpoise. Capacity for increase (the ability to withstand fishing mortality) was estimated for the spotted porpoise using a Leslie matrix model. Fishing mortalities between 1.4 and 4 percent do not appear to decrease the population size. Due to changes in yearly gross production of spinner porpoise, their capacity for increase was estimated at 2.8 percent. Estimates of spinner fishing mortality was 1.9 percent in 1975, spotted porpoise was 2.2 percent. Current studies are refining these estimates.
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NBIP ACCESSION NUMBER: CA/176

<176>

INVESTIGATOR(S): Quinn, R.D.
AFFILIATION: Dept. of Biology, California Polytechnical University
TITLE: Post-Fire Succession of Small Mammals in Chaparral
PURPOSE: To study the effects of chaparral wildfire on rodent populations.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Some species of rodents disappear after fire, other rodents species appear in high densities after fire, but are gradually replaced by the pre-fire species.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; shrubs;

herbs; grasses
TAXA: DIPODOMYS AGILIS; PEROMYSCUS MANICULATUS; PEROMYSCUS BOYLEI; NEOTOMA LEPIDA; NEOTOMA PUSCIPES
ADDED KEYWORDS: kangaroo rats; rats; pacific kangaroo rats; deer mice; desert packrats; dusky-footed packrats; fires; natural catastrophe; succession; chaparral
PRIMARY PARAMETERS INVESTIGATED: behavior; habitat characterization; home range size; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live trapping; marking
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated flora; soils; terrain
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Riverside County
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: CDC; FORTRAN IV
STATISTICS EMPLOYED: mean; median; analysis of variance; non-parametric analysis
ABSTRACT: In August, 1969, a wildfire burned most of the chaparral at the Santa Margarita Research Station, Riverside County, California. The following October, field studies were begun on the small mammal population during post-fire succession. The principal study area is a 14.4 acre plot, divided into 50 foot squares, with a trapping station at each corner. The abundant rodents are DIPODOMYS AGILIS, PEROMYSCUS MANICULATUS, PEROMYSCUS CALIFORNICUS, and PEROMYSCUS BREMICUS. Methods have included live trapping (1969 to present), vegetation analysis (1969, 1972), soil analysis (1970), burrow studies (1970, 1973), topography and rodent distribution (1973), vegetation and rodent distribution (1970), rodent dietary preferences (1972), and seed searching behavior (1973).
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NBIP ACCESSION NUMBER: CA/147

<177>

INVESTIGATOR(S): Badosevich, S.R.
AFFILIATION: Dept. of Botany, University of California-Davis
TITLE: The Behavior of 2,4-D and 2,4,5-T in California Chaparral
PURPOSE: To determine the rate of disappearance of 2,4-D and 2,4,5-T from brush, forage, soil, and surface litter under conditions representative of California brushlands.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Both herbicides (2,4-D and 2,4,5-T) were rapidly lost from brush and soil litter, which were major receptors. Little residue was found in any sample after one year.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland

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LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: plants; shrubs;
grasses
TAXA: ADENOSTOMA PACIFICULATUM
ADDED KEYWORDS: chamise; management measures;
pesticides; herbicides; 2,4-D; 2,4,5-T;
chaparral
PRIMARY PARAMETERS INVESTIGATED: residues
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: climatological
data; soils
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Diego County;
Monterey County; Japatal Valley
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis
ABSTRACT: The objective of this study was to
determine the rate of disappearance of
2,4-D and 2,4,5-T from brush, forage,
soil, and surface litter under conditions
representative of the California
brushlands. It was also our objective to
measure the vegetative changes which occur
from this management practice. A need to
determine the existence of phenoxy
herbicides in water exists, but study of
this problem is not within the scope of
this research.
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NBIP ACCESSION NUMBER: CA/065

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INVESTIGATOR(S): Reish, D.J.
AFFILIATION: Dept. of Biology, California
State University-Long Beach
TITLE: Marine Studies of San Pedro Bay,
California
PURPOSE: To analyze fouling and benthic
polychaete distribution.
SPONSOR(S): California State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population fluctuations
due to storm drains, waste water, and
petroleum products.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insects;
mollusca; annelida
TAXA: BENTHIC ORGANISMS, 78 SPECIES
ADDED KEYWORDS: waste water; oil spills;
habitat modification; benthic organisms;
polychaetes
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat

characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation
NUMBER OF SAMPLING SITES: varies
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Orange County; Los
Angeles County; Long Beach Naval Station
TYPE OF DATA: raw
ABSTRACT: A twelve-month, seven-station, 131
sample survey was conducted in the Long
Beach Naval Station and Shipyard, Long
Beach, California. The established study
sites were analyzed biologically (fouling
and benthic polychaete distribution),
chemically (dissolved oxygen, chlorinity,
nitrites, and nitrates), and physically
(temperature). Fouling samples were taken
by scraping floating pier logs and camels.
Benthic biological samples were taken with
a Hayward orange-peel bucket. Chemical and
physical analyses of the surface water
were conducted. The data on seasonal
variation indicate that the polychaete
populations are most abundant during the
summer months with a lower number recorded
during the winter period. Chemical data
showed little correlation with the
population distribution.
REFERENCES: Reish, 1961; Reish, 1964 a,b;
Reish, et al, 1967; Reish, 1968; Reish,
1971; Reish, 1973; Reish, 1974; Reish,
1975 a,b
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NBIP ACCESSION NUMBER: CA/158

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INVESTIGATOR(S): Rodrigue, R.F.
AFFILIATION: Tetra and Tech, Inc.
TITLE: A Twelve-Month Investigation of the
Intertidal Biology of Ocean Beach and the
Point Arguello Boat House, California
PURPOSE: To provide a data baseline for input
into the Vandenberg Air Force Base
Management Plan to assist the
decision-making process and EIS
development relating to the Space Shuttle.
SPONSOR(S): USAF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Sandy beach organisms are
highly variable throughout year, rocky
intertidal populations are more stable,
and significant increases in individuals
at both sites during spring and summer
months. Storm effects are documented.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
indicator species; resource planning;
water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; mollusca;
shellfish; annelida; plants; vascular

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plants; herts; annelida; microorganisms;
algae
ADDED KEYWORDS: amphipods; decapods; isopods;
mysidaceans; thoracicans; arthropods;
species diversity; coelenterates;
echinoderms; nemerteans; poriferans;
chlorophytes; phaeophytes; rhodophytes;
intertidal zones; management measures;
benthic organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
core; sieve; quadrat; transect
NUMBER OF SAMPLING SITES: Ocean Beach - 6
sampling sites; Pt. Arguello Boat House -
3 sampling sites
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Santa Barbara County;
Santa Inez River-Lagoon; Vandenberg Air
Force Base; Ocean Beach; Pt. Arguello
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: CDC-6600; FORTRAN IV
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance
ABSTRACT: Initial work included the
establishment of two sandy-beach
intertidal transect stations at Ocean
Beach, and one rocky intertidal transect
station at the Point Arguello Boat House.
Field data collection included monthly
measurements of various physical and
biological factors at three intertidal
levels on each transect. Measured physical
factors included beach profiles, substrate
character, sediment grain-size, and air
and water temperature. Measured biological
factors included species identification,
numerical counts, and location with
respect to the substrate; samples of
species unknowns were collected and later
identified. Surf-zone water samples were
periodically collected at each site and
analyzed for chemical quality. Raw field
data were reduced to yield information on
species composition, density, aggregation,
richness, diversity, and clustering.
Recruitment cycles and accompanying storm
effects were documented. The energy
dynamics associated with the community
structure was defined. Impacts associated
with the proposed development of a harbor
facility at each alternative site were
identified and compared.
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NBIP ACCESSION NUMBER: CA/161

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INVESTIGATOR(S): Royall, W.C.
AFFILIATION: Wildlife Research Center, FWS
TITLE: Midwinter Blackbird-Starling Roost

Survey, Western United States

PURPOSE: To learn the geographic location and
habitat types of blackbird-starling roosts
in midwinter and estimate the species
composition and population size in these
roosts.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1961

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Long term trends have
been masked by variation in survey effort
by cooperators between surveys and between
areas within one winter's survey.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland

LEVEL(S) OF STUDY: organism; population;
region

MANAGEMENT FOCUS: environmental impact

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees;
shrubs; herbs

TAXA: STURNUS VULGARIS; AGELAIUS SP; EUPHAGUS
SP; CASSIDIX SP; QUISCALUS SP; MOLOTHRUS
SP; XANTHOCEPHALUS SP; TANGAVIUS SP

ADDED KEYWORDS: blackbirds; starlings;
census; species composition; grackles;
cowbirds; marshes; swamps; brush;
red-winged blackbirds; brewer's
blackbirds; rusty blackbirds; boat-tailed
grackles; agrieocosystems; population
effects; roosts

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
roost survey forms

SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): WA; OR; CA; ID; NV; UT; AZ;
MT; WY; CO; NM; ND; SD; NE; KS; OK; TX

TYPE OF DATA: raw; summarized
ABSTRACT: The 1969-70 nationwide winter

inventory of blackbird-starling roosts and
populations reported 674 roosts -- 262 in
the East and 412 in the West. The total
estimated population was 340 million
birds: 267 million blackbirds and
starlings in the East and 73 million in
the West. The national population was
composed of 10 species, about as follows:
40 percent red-winged blackbirds, 20
percent starlings, 20 percent common
grackles, 15 percent brown-headed
cowbirds, 3 percent Brewer's blackbirds,
and 1 percent rusty blackbirds; the other
1 percent included boat-tailed grackles,
yellow-headed blackbirds, tricolored
blackbirds, and bronzed cowbirds. Of the
262 roosts reported in the East, 17 were
classed as major (a million or more birds
each) and 58 as large (hundred thousand -
million birds each). These 134 roosts
contained 265 million of the 267 million
blackbirds and starlings reported in the
East. Of the 412 roosts in the West, 24
were major and 41 were large. These 65
roosts contained 70 of the 73 million
Western birds reported. Descriptive
information on the roosting site indicated
52 percent from wetland habitat, 48
percent from upland habitat, and 11
percent from man-made structures.

REFERENCES: Webb and Royal, 1970

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Wildlife Research Center, USFWS

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 NBIP ACCESSION NUMBER: CO/040

<181>

INVESTIGATOR(S): Smith, G.E.
 AFFILIATION: California State Dept. of Fish and Game
 TITLE: Sturgeon Population Dynamics and Life History Studies
 PURPOSE: To determine population dynamic factors and life history aspects of sturgeon in San Francisco Bay and Estuary.
 SPONSOR(S): California State Dept. of Fish and Game; FWS
 SPONSOR CATEGORY: state government; federal government
 DATE OF INITIATION: 1967
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Sturgeon population, harvest, and fishing effort and success have been decreasing.
 ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; river; marine; estuarine
 LEVEL(S) OF STUDY: population
 MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
 TAXA: ACIPENSE MEDIOBOSTRIS; ACIPENSER TRANSMONTANUS
 ADDED KEYWORDS: green sturgeons; white sturgeons; management measures; sturgeons
 PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; harvest; mortality; migratory patterns; numbers; reproduction; sex
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and recapture; otter trawl; improvised net for ova and larvae; creel census; party boat reporting logs
 NUMBER OF SAMPLING SITES: throughout San Francisco Bay and Estuary
 SAMPLING FREQUENCY: continuous; seasonal
 SUPPORTING DATA COLLECTED: hydrological data
 STUDY SITE(S): CA
 GEOGRAPHIC DESCRIPTION: San Francisco Bay; Sacramento River; San Joaquin River
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN; ALGOL
 STATISTICS EMPLOYED: mean; percentile
 ABSTRACT: A mark-recapture experiment indicated there were about 115,000 sturgeon in the estuary in 1967. Analysis of party boat reporting logs suggest the sturgeon population has declined since 1967 and perhaps since 1964. Angler success and effort has declined steadily since 1967. Mean size of angler-caught fish has increased since 1964. These data suggest the population is experiencing poor recruitment. Harvest decreased from about 7% of the population in 1967-68 to about 5% in 1974. Programs are being started to determine the cause of this situation and to make management recommendations.

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 NBIP ACCESSION NUMBER: CA/244

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INVESTIGATOR(S): Smith, G.E.
 AFFILIATION: California State Dept. of Fish and Game
 TITLE: Adult Striped Bass Population Study
 PURPOSE: To determine factors affecting recruitment and size of the adult striped bass population, and to evaluate regulations and make recommendations to optimize resource utilization.
 SPONSOR(S): California State Dept. of Fish and Game; FWS
 SPONSOR CATEGORY: state government; federal government
 DATE OF INITIATION: 1969
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Bass population has declined in abundance since early 1960's. Abundance has been relatively stable since 1969. Growth rates have increased. There has been a minor shift in migration patterns.
 ECOSYSTEM OR BIONE TYPE(S): aquatic; stream; marine; estuarine
 LEVEL(S) OF STUDY: population
 MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
 TAXA: MORONE SAXATILIS
 ADDED KEYWORDS: striped basses; legal regulation; migration rates; management measures; basses
 PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; growth; habitat characterization; harvest; mortality; migratory patterns; numbers; sex
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and recapture; creel census; party boat reporting logs
 NUMBER OF SAMPLING SITES: 8
 SAMPLING FREQUENCY: continuous; seasonal
 SUPPORTING DATA COLLECTED: hydrological data
 STUDY SITE(S): CA
 GEOGRAPHIC DESCRIPTION: Sacramento River; San Joaquin River; Sacramento San Joaquin Estuary
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN; ALGOL
 STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
 ABSTRACT: Striped bass population has been monitored in the Sacramento-San Joaquin Estuary through a mark-recapture program each year since 1969 and fishery catch records since 1938. The purpose is to determine factors affecting recruitment to the fishery and to evaluate angling regulations. Since 1969, estimated adult (16 inches or longer) abundance has ranged from 1.5 to 1.9 million fish, harvest from 11 to 17%, natural mortality from 14 to 35%, and survival from 53 to 70%. Catch records from the fishery suggest recent population levels are about one-half population levels in early 1960's, and

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suggest annual recruitment is related to hydraulic conditions in estuary when the recruited fish were young.
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NBIP ACCESSION NUMBER: CA/245

<183>

INVESTIGATOR(S): Smith, R.T.; Band, C.
AFFILIATION: Dept. of Zoology, University of California-Berkeley
TITLE: Biological Effects of Waste Heat Effluents from Coastal Power Plants
PURPOSE: To determine effects of raised temperature on growth and reproduction in mussels, barnacles, and sea anemones growing in warm water effluent channel of the power plant.
SPONSOR(S): University of California
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some species show accelerated reproduction, others are repressed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca
TAXA: CHTHALUS FISSUS; BALANUS GLANDULA; TETRACLITA SQUAMOSA; POLLICIPES POLYMERUS; MYTILUS EDULIS; MYTILUS CALIFORNIANUS; ANTHOPLEURA ELEGANTISSIMA
ADDED KEYWORDS: thermal effluents; barnacles; mussels; sea anemones; anemones; nuclear power plants
PRIMARY PARAMETERS INVESTIGATED: mortality; natality; physiology; reproduction; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gonad indices
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Morro Bay
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: Reproduction in two species of mussels and four species of barnacles was studied at a power plant at Morro Bay, California. Monthly comparisons of gonad indices and brooding frequencies of outfall and control populations show a variety of effects of the heated water on the six species. Gonad output of M. CALIFORNIANUS was enhanced in the outfall but in M. EDULIS it was reduced. In B. GLANDULA brooding was delayed and repressed in the outfall and in T.

SQUAMOSA it was earlier than normal. Brooding in C. FISSUS and P. POLYMERUS was unaffected by the outfall.

REFERENCES: Hines, 1975
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NBIP ACCESSION NUMBER: CA/002

<184>

INVESTIGATOR(S): Snyder, L.R.G.
AFFILIATION: Stanford University
TITLE: Population Genetics of the Deer Mouse, PEROMYSCUS MANICULATUS
PURPOSE: To investigate genetic adaptation to extreme environments and to account for genetic variability in natural populations.
SPONSOR(S): NIH
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Minor fluctuations were observed from year to year in gene frequencies at enzyme loci in deer mice.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; grassland; tundra; alpine; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: PEROMYSCUS MANICULATUS; PEROMYSCUS SPP
ADDED KEYWORDS: deer mice; weather conditions; genetics; enzymes; polymorphism; mice
PRIMARY PARAMETERS INVESTIGATED: distribution; home range size; numbers; physiology; sex; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark-release-recapture studies
SAMPLING FREQUENCY: annual; irregular
STUDY SITE(S): CA; CO; SD
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Data was gathered on gene frequencies for 2 red blood proteins (hemoglobin and 6PGD), in 18 populations of deer mice, representing 4 subspecies. The 4 subspecies were differentiated with respect to hemoglobin phenotypes but were similar in 6PGD phenotypes. Within populations there were minor fluctuations in gene frequencies from year to year. There were no correlations between gene frequencies and altitude over altitudinal ranges of 4,000 to 14,000 feet.
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NBIP ACCESSION NUMBER: CA/024

<185>

INVESTIGATOR(S): Soule, D.F.
AFFILIATION: Allan Hancock Foundation, University of Southern California
TITLE: Harbors Environmental Projects
PURPOSE: To develop biological, physical and chemical baseline, monitoring,

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experimental, and analytical projects focusing on the Los Angeles-Long Beach harbors and adjacent inshore marine areas.

SPONSOR(S): NOAA; COE; Tuna Research Foundation; Pacific Lighting Corp.; City of Los Angeles; City of Long Beach

SPONSOR CATEGORY: federal government; trade association; private corporation; city government; private individuals

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been an improvement in water quality due to enforcement and development of waste management at the sources (not secondary treatment).

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; indicator species; radiological; recreation; resource planning; pollution control; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; crustacea; mollusca; annelida; microorganisms; bacteria; algae; protozoa

TAXA: PORIFERA, 7 SPECIES; COELENTERATA, 6 SPECIES; PLATYHELMINTHES, 5 SPECIES; ANNELIDA, 200 SPECIES; ENTEROPROCTA, 2 SPECIES; MOLLUSCA, 112 SPECIES; ARTHROPODA, 59 SPECIES; PHORONIDA, 5 SPECIES; BRYOZOA, 41 SPECIES; ECHINODERMATA, 11 SPECIES; CHORDATA, 49 SPECIES

ADDED KEYWORDS: fish canneries; waste water; primary productivity; secondary productivity; management measures; heavy metals; pesticides; sediments

PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; bod; distribution; diversity; emigration; growth; habitat characterization; immigration; kill; numbers; productivity; reproduction; stress; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): conical net tow; lite-dark incubator; box corer; Campbell grab; settling racks; water sampler; Bartek remote probe

NUMBER OF SAMPLING SITES: 42 in 1973, 1974; 12 in 1972, 1975; plus special BOD's for 44 canneries biweekly

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; water quality data

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Los Angeles County; Orange County; Haynes Power Station; Los Angeles Estuary; San Gabriel Estuary; Edison Power Station; Alimos Power Station

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: IBM 370; Calcomp Plotter

STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance;

regression/correlation analysis;

multivariate analysis; modeling, stochastic

ABSTRACT: Harbor projects is a series of short term or long term contracts and/or grants aimed at supplying local users in the public and private sectors with direct reports or publications containing needed information to reference. This may be applied to planning and management or to preparation of environmental impact statements. The two-year Corps of Engineers baseline inventory was completed in January, 1975. Local monitoring is now limited to small, single industry impact studies.

REFERENCES: Staff, 1975

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NBIP ACCESSION NUMBER: CA/127

<186>

INVESTIGATOR(S): Springer, P.F.

AFFILIATION: Migratory Bird Research Station; FWS

TITLE: Population and Behavior of Black Brant in Humboldt Bay, California, in Relation to Environmental Factors

PURPOSE: To investigate the reasons for the decline of winter population of black brant in Humboldt Bay as a basis for reestablishing this population.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fall and winter populations of black brant in Humboldt Bay have declined drastically from previously reported populations.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; wildlife; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: BRANTA NIGRICANS

ADDED KEYWORDS: black brants; brants; population effects; productivity

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; emigration; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct observation from ground and plane

NUMBER OF SAMPLING SITES: counts

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated flora; hydrological data; water quality data

STUDY SITE(S): CA; OR; WA

GEOGRAPHIC DESCRIPTION: Humboldt Bay

TYPE OF DATA: raw; reduced; summarized; literature-derived

ABSTRACT: None provided.

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CALIFORNIA
Standard Federal Region 9
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NBIP ACCESSION NUMBER: CA/132

<187>
INVESTIGATOR(S): Staley, J.R.
AFFILIATION: California State Dept. of Fish and Game
TITLE: King Salmon Spawning Stock Inventory
PURPOSE: To annually estimate the number of king salmon spawning in selected streams.
SPONSOR(S): California State Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1945
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Generalization is difficult because of the numbers of streams involved. Despite being below the historic average, significantly greater spawning occurred in 1973 than in 1972.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: ONCORHYNCHUS Tshawytscha
ADDED KEYWORDS: king salmon; chinook salmon
PRIMARY PARAMETERS INVESTIGATED: numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and recapture; carcass counts
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: seasonal; weekly
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Butte County; Sacramento County; San Joaquin County; Yuba County; Central Valley
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: This report covers the 21st annual (1973) inventory of king salmon (ONCORHYNCHUS Tshawytscha) spawning populations in the Sacramento-San Joaquin River system. It is a compilation of estimates of fall-, spring-, late fall-, and winter-run king salmon spawning populations for every stream in the Sacramento-San Joaquin system which supports a significant spawning run. Estimates are made from counts of carcasses and live fish on spawning areas, aerial redd counts, and counts of fish migrating past Red Bluff Diversion Dam. The total 1973 king salmon spawning escapement in the Central Valley was 327,000 fish. Of these, 286,000 were fall-spawning fish (fall- or spring-run). This is slightly below the historic (1953-1972) average of 302,000, but is a dramatic increase over the 162,000 in the previous year. Appendix tables present fall- and spring-run spawning escapements by stream for 1973 and by major streams for the years 1964 through 1973.
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NBIP ACCESSION NUMBER: CA/247

<188>
INVESTIGATOR(S): Stern, K.R.
AFFILIATION: Dept. of Biological Sciences, California State University
TITLE: California Native Plant Society Rare and Endangered Species Survey
PURPOSE: To identify and map locations of rare and endangered plant species in several North California counties, as a part of a state-wide survey sponsored by the California Native Plant Society.
SPONSOR(S): California Native Plant Society
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some plants have become extinct; others will shortly.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; grassland; tundra; alpine; wetland; mountain; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: PLANTS, 1260 SPECIES
ADDED KEYWORDS: population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): herbarium specimens; field studies
NUMBER OF SAMPLING SITES: numerous
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Lassen County; Modoc County; Butte County; Siskiyou County; Tehama County
TYPE OF DATA: reduced; literature-derived
ABSTRACT: A comprehensive study of rare and endangered plants in California was undertaken by a number of botanists on a voluntary basis. The locations were initially sought from herbarium specimens. This was followed by on site field studies. Then mapping and information were pooled at a convention at the University of California-Davis in the summer of 1974.
REFERENCES: Powell, et al, 1974
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NBIP ACCESSION NUMBER: CA/063

<189>
INVESTIGATOR(S): Stewart, G.R.
AFFILIATION: Dept. of Biological Sciences, California State Polytechnic University
TITLE: Semi-aquatic Vertebrates of Bear Creek
PURPOSE: Determine population trends of five species of lower vertebrates inhabiting a three-mile-long segment of a heavily-used stream.
SPONSOR(S): PI

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SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Apparent decline in population densities of all species concerned.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species;

environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles

TAXA: TABICHA TOROSA; Hyla CAIAVERINA; RANA

MUSCOGA; RANA BOYLEI; THANNOPHIS COUCHI

ADDED KEYWORDS: population effects;

california newts; foothill yellow-legged

frogs; canyon tree frogs; two-striped

garter snakes; mountain yellow-legged

frogs; newts; frogs; snakes; habitat

modification

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; mortality; natality;

numbers; reproduction; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

stream bed transect

SAMPLING FREQUENCY: seasonal; irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

terrain

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Los Angeles County;

Bear Creek

TYPE OF DATA: raw

ABSTRACT: Bear Creek lies in the San Gabriel Wilderness within a few miles of the Los Angeles metropolitan area. The stream flows all year through rugged terrain. It is heavily used by recreationists, especially during the summer. Thus far, the work referred to here has not been formally organized. However, it is hoped that, with regular student assistance, a more intensive study of the human impact on wildlife populations in this area can be developed.

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NBIP ACCESSION NUMBER: CA/088

<190>

INVESTIGATOR(S): Stimson, J.S.

AFFILIATION: Dept. of Zoology, University of Hawaii

TITLE: Population Ecology of LOTTIA GIGANTEA

PURPOSE: To study population dynamics and territoriality of a limpet species.

SPONGOD(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Continuous decline in abundance of a limpet species.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: indicator species

ORGANISMS, MAJOR TYPES: animals;

invertebrates; mollusca

TAXA: LOTTIA GIGANTEA

ADDED KEYWORDS: limpets; owl limpets;

territoriality; population effects

PRIMARY PARAMETERS INVESTIGATED: behavior;

growth; home range size; mortality;

reproduction; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

counts; shell length measurements

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: Santa Barbara County;

Eagle Canyon

ABSTRACT: The marine mollusk LOTTIA GIGANTEA, a large grazing limpet of the upper intertidal zone, grazes algal film from a territory which it defends against intrusions by conspecifics and other grazers as well as the gradual encroachment of sessile organisms. The areas of the territories are correlated with the length of the resident LOTTIA, but for a given size of LOTTIA the areas vary greatly at different study sites. The thickness of the algal film characteristic of the territory fluctuates, being greatest in spring. Experimental removal of abundant algal film from some territories in spring was followed by enlargement of these territories relative to controls. Growth rates of LOTTIA are positively correlated with the thickness of the algal film in their territories. The smaller limpets (1-2 cm in length) of the genus ACHAEA are able to crop the algal film more closely than LOTTIA and will remove almost all the algal film from a territory if the territory-resident is removed. Experiments to determine whether territorial behavior sets a limit to the abundance of LOTTIA showed that removal of large individuals from the smooth surfaces they characteristically graze allowed smaller LOTTIA to move from less suitable sites and establish territories on the smooth surface. Experimental reduction of abundant algal film in enclosures where LOTTIA were living at high densities was followed by a decrease in the numbers of LOTTIA relative to controls. The decline in numbers of LOTTIA over 3 years in a population at the principal study site was due to a decrease in recruitment from the plankton or a low rate of survival of newly settled animals but was not a result of mortality induced by territorial defense. Territorial behavior of LOTTIA apparently evolved as an adaptation that allows the defense of a thick algal film necessary for growth of such a large grazing limpet. Defense of territories also keeps the grazing area free of sessile organisms that compete for space.

REFERENCES: Stimson, 1973

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NBIP ACCESSION NUMBER: HI/011

<191>

INVESTIGATOR(S): Taylor, C.E.
AFFILIATION: Dept. of Biology, University of California-Riverside
TITLE: Recolonization of Burned Areas by DROSOPHILA Species
PURPOSE: To monitor species composition and inversion frequencies of DROSOPHILA species reinvading a burned area and in an adjacent control area.
SPONSOR(S): University of California
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been changes in the composition of DROSOPHILA species, their numbers, and inversion frequencies.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: DROSOPHILA PSEUDOBOBSURA; DROSOPHILA PERSIMILIS
ADDED KEYWORDS: genetics; fires; dipterans; chaparral; karyotypes; habitat modification
PRIMARY PARAMETERS INVESTIGATED: diversity; numbers; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): fermented banana baits
NUMBER OF SAMPLING SITES: 3
SUPPORTING DATA COLLECTED: associated flora; climatological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Riverside County; Indian Mountain; San Bernardino National Forest; Mt. San Jacinto
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; contingency table analysis; non-parametric analysis; modeling, deterministic
ABSTRACT: At biweekly intervals, the species composition of DROSOPHILA has been recorded one (1) kilometer into a burned area of chaparral, at the edge of the burned area, and at the edge of an unburned area. The chromosome inversion frequencies of the D. PSEUDOBOBSURA and D. PERSIMILIS populations in these areas have also been recorded.
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NBIP ACCESSION NUMBER: CA/070

<192>

INVESTIGATOR(S): Taylor, O.C.
AFFILIATION: Statewide Air Pollution Research Center, University of California
TITLE: Oxidant Air Pollutant Effects on a Western Mixed Conifer Forest Ecosystem

PURPOSE: To develop data sets, a data management system, and computer simulation models to describe and predict direct and indirect effects on major subsystems.

SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in vigor, death, reproduction, litter production-decomposition, insect pests and diseases, small mammals, oxidant levels, and climate are observed in mixed tree species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; indicator species; recreation; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; invertebrates; insecta; plants; vascular plants; trees; shrubs; herbs; microorganisms; fungi
TAXA: PINUS PONDEROSA; PINUS LAMBERTIANA; ABIES CONCOLOR; LIBOCEDRUS DECURRENS; QUERCUS KELLOGGII; PICES ANNOSUS; DENDROCTONUS SP
ADDED KEYWORDS: ponderosa pines; pines; sugar pines; white firs; firs; california black oaks; oaks; incense-cedars; bark beetles; coleopterans; litter; decomposition; models; climate; succession; seasonal variations; air pollution; scolytids; ozone; pests; diseases; PAN
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; habitat characterization; mortality; natality; numbers; physiology; productivity; reproduction; residues; sex; size/weight; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field plots
NUMBER OF SAMPLING SITES: 20; 35-45 special plots
SAMPLING FREQUENCY: continuous; monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; climatological data; hydrological data; soils
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: San Bernardino County; San Bernardino National Forest; Mojave River; Santa Ana River; Silverwood Lake; Lake Arrowhead; Big Bear Lake
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC 7600; FORTRAN IV; LLL special language
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: Since 1972, a multidisciplinary study has been underway to determine the impact of oxidant air pollutants on the mixed conifer forest ecosystem in general, and on two dominant tree species (PINUS PONDEROSA and P. JEFFREYI) in particular. The ecosystem studied was in the San Bernardino National Forest in southern California. The mixed conifer forest ranges between 5,000 to 7,500 feet in elevation. Portions of the 1,000 square mile area have been exposed to phytotoxic

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levels of smog for over two decades. Levels of oxidant air pollutants and duration of exposure decline markedly from the western end of the San Bernardino National Forest to the eastern end of the area. A limited number of stations were established in the study area to obtain measurements of basic climatic conditions and of air pollutants considered to be the most important. The pollutant of major concern at present is total oxidant (primarily ozone), but instrumentation to measure peroxyacetyl nitrate (PAN), nitrogen dioxide, and sulfur dioxide are maintained in key locations. The response of different species to oxidant air pollutants will modify the normal pattern of plant succession in the San Bernardino Mountains. Investigations during the past 20 years have shown that Ponderosa and Jeffrey pines have suffered more than other species. Wildlife specialists postulated that the impact of air pollutants on animals would be most apparent as a secondary effect on seed-eating species, such as small animals and birds. There is evidence to indicate that infestation of the Western Pine beetle on the Ponderosa pine is encouraged when tree vigor has been impaired by environmental factors. Micro-arthropods associated with decomposition of forest litter are included in the study. Natural decomposition is hindered and interfered with when air pollutants invade the area. Pathogenic and nonpathogenic organisms are being examined as they are affected by air pollutants and in turn, affect directly or indirectly, higher plants. The data collected during this project will have to be managed effectively; thus data storage, capture, and retrieval systems are being set up.

REFERENCES: Taylor, 1971; Taylor, 1973a,b; Taylor, 1974; Taylor and Miller, 1973

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NBIP ACCESSION NUMBER: CA/038

<193>

INVESTIGATOR(S): Thompson, S.J.

AFFILIATION: California State Dept. of Fish and Game

TITLE: Wildlife Studies - General

PURPOSE: To keep abreast of status and trends in wildlife population and habitat conditions.

SPONSOR(S): State of California

SPONSOR CATEGORY: state government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: General changes in wildlife programs are made as needed. Provisions for habitat protection are developed.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; savanna; grassland;

wetland; mountain

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; range; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; mammals

ADDED KEYWORDS: deer; antelopes; elk; chukar; quails; pheasants; turkeys; raptors; management measures; habitat modification

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization; harvest; home range size; kill; mortality; numbers; productivity; habitat characterization; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

census and inventory techniques

NUMBER OF SAMPLING SITES: throughout 8

northern counties of California

SAMPLING FREQUENCY: continuous; seasonal; monthly; annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain

STUDY SITE(S): CA

GEOGRAPHIC DESCRIPTION: 8 northern counties

TYPE OF DATA: summarized

ABSTRACT: Project is oriented toward basic monitoring of wildlife population and trends. This information is used to develop programs for proper management and/or habitat protection. Both game and non-game species are considered. Data are collected regularly on deer, antelope, elk, chukar, quail, pheasant, turkey, raptors, and furbearing mammals.

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Redding, CA 96001

TELEPHONE: (916) 246-6560

NBIP ACCESSION NUMBER: CA/252

<194>

INVESTIGATOR(S): Thornburgh, D.A.

AFFILIATION: Dept. of Forestry, Humboldt State University

TITLE: Successional and Impact Changes in Subalpine Ecosystems

PURPOSE: To monitor recreational impact changes in wilderness of the Pacific Northwest.

SPONSOR(S): FS; NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1961

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Species composition changes with increased recreational use as the sensitive plants are eliminated.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; alpine; mountain

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact; recreation

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses

TAXA: PHYLLODOCE HYPETRIFORMIS; VACCINIUM DELICIOSUM; CASSIOPE BERTENSIANA; ANEMONE OCCIDENTALIS; ANTENARIA LAMATA; VALERIANA SITCHENSIS

ADDED KEYWORDS: soil compaction; wilderness areas; habitat modification

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

CALIFORNIA
Standard Federal Region 9
Fish and Wildlife Service Region 1
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permanent plots
NUMBER OF SAMPLING SITES: 7
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): CA; WA
TYPE OF DATA: summarized
ABSTRACT: Permanent plots have been established in seven sites in wilderness areas in California and Washington. These plots have been monitored for several years. Depending upon the type of wilderness management system used, changes in the species composition of subalpine meadow communities have been noted.
ADDRESS: Dr. Dale Thornburgh
Forestry Dept.
Humboldt State University
Arcata, CA 95521
TELEPHONE: (707) 826-4617
NBIP ACCESSION NUMBER: CA/077

<195>

INVESTIGATOR(S): Thornburgh, D.A.
AFFILIATION: Dept. of Forestry, Humboldt State University
TITLE: Dynamics of Young Growth Redwood Forests
PURPOSE: To understand environmental inputs and their effect on growth of various species.
SPONSOR(S): Humboldt State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Redwoods dominate the ecosystem with time, to the point of excluding other species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: SEQUOIA SEMPERVIRENS
ADDED KEYWORDS: tree growth; succession; redwoods
PRIMARY PARAMETERS INVESTIGATED: growth; physiology; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field measurements
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated flora; climatological data; soils
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Humboldt County
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: CA/078

<196>

INVESTIGATOR(S): Vance, R.R.
AFFILIATION: Dept. of Biology, University of

California
TITLE: The Ecology of a Subtidal Rock Wall Community
PURPOSE: To study the biological interactions and mechanisms of coexistence of species living attached to subtidal rock surfaces.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Natural seasonal and experimentally induced species abundance changes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organisms; population; community
ORGANISMS, MAJOR TYPES: shellfish
TAXA: HALICLONA PERMOLLIS; TEDANIA TOPSENTI; CORYNACTIS CALIFORNICA; TRIDIDENHUM OPACUM; APLIDIUM SP; RYNCHOZOAN ROSTRATIUM; HOLOPERELLA BRUNEA; SCRUPOCELLARIA BENTHOLETTI; BALANUS TINTINNABULUM
ADDED KEYWORDS: seasonal variations; habitat modification; tides; cirripedians; poriferans; cnidarians; chordatans; bryozoans; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent quadrats
NUMBER OF SAMPLING SITES: 180 quadrats
SAMPLING FREQUENCY: monthly
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Los Angeles County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: The approach involves mostly field observation and experimentation. Permanently marked quadrats at three depths on a rock wall are photographed monthly. These photographs provide quantitative data on space occupancy through time by different species. Each quadrat is subjected to one of three treatments: (1) Some remain entirely unmolested. These yield information on substratum utilization, seasonal patterns of species abundances, and interactions between species under natural conditions. (2) All organisms are removed from the underlying rock of other quadrats. The resulting pattern of ecological succession will indicate how the community responds to extreme disturbance. (3) The remaining quadrats are covered with mesh cages to exclude predators. These quadrats document the response of the attached fauna to the absence of biotic disturbance. A wide range of additional observations supplement these monthly photographs. Vertical distribution and substratum utilization of all common species are documented from vertical transects. Settling plates are established and collected periodically to determine seasonal recruitment patterns of the various species. The feeding activities of several potentially important motile predators, especially the abundant starfish, PISASTER GIGANTEUS, are observed.
ADDRESS: Dr. Richard Vance
Biology Dept.
University of California-Los Angeles

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CALIFORNIA

Standard Federal Region 9
Fish and Wildlife Service Region 1
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405 Hilgard Avenue
Los Angeles, CA 90024
TELEPHONE: (213) 825-2685
NBIP ACCESSION NUMBER: CA/094

<197>

INVESTIGATOR(S): Weissman, D.B.
AFFILIATION: Stanford University
TITLE: Origin and Affinities of the
Orthoptera on the California Channel
Islands and Adjacent Mainland California
PURPOSE: Document and investigate
evolutionary trends and speciation
patterns in the orthoptera on the channel
islands.
SPONSOR(S): NSF; NIH
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: There is extensive island
speciation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland;
aquatic; freshwater; stream; reservoir;
marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; region
MANAGEMENT FOCUS: endangered species;
wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta
TAXA: ORTHOPTERA
ADDED KEYWORDS: natural introductions;
biogeography; orthopterans; islands;
chaparral
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration; home
range size; immigration; migratory
patterns; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field and laboratory investigation
NUMBER OF SAMPLING SITES: 14
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Los Angeles County;
Ventura County; Santa Barbara
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360/67
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis
ABSTRACT: Crickets of the genus *CNEMIDOTYX*
occur only in central California and all
of the Channel Islands except the
smallest, Santa Barbara. Prior to this
study a single species was known for the
genus but our investigations show that at
least five species are present in the
genus, one only known from the mainland,
one shared with the mainland and Santa
Catalina, and three found only on the
islands. These insects are among the only
Orthoptera with the ability to spin silk
which they produce from their maxillary
glands. It is utilized in reinforcement of
their burrows in sandy areas. Our analysis

suggests radiation and speciation on the
Channel Islands. This situation is in
contrast to the convincing evidence
presented by the botanists which indicates
that most of the Channel Island floristic
endemics are relicts of extensive past
mainland distribution.

REFERENCES: Rentz, et al, 1973
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Tustin, CA 92680
NBIP ACCESSION NUMBER: CA/054

<198>

INVESTIGATOR(S): Widdowson, T.B.
AFFILIATION: Dept. of Biology, California
State University
TITLE: Distribution of Intertidal Macroalgae
in Southern California
PURPOSE: To document long term changes in
intertidal flora by recording species
presence, absence, and reproductive season.
SPONSOR(S): Long Beach California State
College Foundation; University of
California
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: A reduction in many
species of algae and increases by a few.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: ALGAE, 50 SPECIES
ADDED KEYWORDS: brown algae; red algae; green
algae; waste water; population effects;
aquatic plants; tides; intertidal zones;
habitat modification
PRIMARY PARAMETERS INVESTIGATED:
distribution; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 72
SAMPLING FREQUENCY: irregular
STUDY SITE(S): CA
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: CDC 3300; FORTRAN;
COBOL
STATISTICS EMPLOYED: non-parametric analysis
ABSTRACT: Each of 15 stations between Pt.
Dume and Dana Point were reoccupied two or
three times during the period, 1968 to
1970. The most conspicuous reductions were
found in the flora of stations exposed to
direct human interference and in the
species which characteristically grow
half-buried in sand. Methods are suggested
by which problems associated with sand
movement, seasonal variation, and taxonomy
may be minimized.
REFERENCES: Widdowson, 1971
ADDRESS: Dr. Thomas Widdowson
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California State University
Long Beach, CA 90840
TELEPHONE: (213) 498-4917
NBIP ACCESSION NUMBER: CA/020

<199>

INVESTIGATOR(S): Wilbur, S.R.

CALIFORNIA
Standard Federal Region 9
Fish and Wildlife Service Region 1
(CONTINUED)

<199> CONT.

AFFILIATION: Patuxent Wildlife Research Center, FWS
TITLE: Life History and Status of the California Condor
PURPOSE: To determine reasons and remedies for the population decline of the California condor, particularly related to decreases in annual production, and to monitor numbers and production of condors.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Both population size and production of the condor population are declining.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: GYMNOGYPUS CALIFORNIANUS
ADDED KEYWORDS: condors; nesting disturbance; California condor; population effects; habitat modification; genetics; chaparral
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; home range size; mortality; migratory patterns; natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field observations
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Tulare County; Kern County; Ventura County; Santa Barbara County
TYPE OF DATA: raw; reduced; summarized; literature-derived
ABSTRACT: Continued monitoring of the California condor population has shown a continued decline in numbers and production. Problems are related to deteriorating habitat, particularly changes in food supply and disturbance within the nesting areas. At the current level of about 50 birds, social and genetic factors may be increasingly important in limiting production.
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1190 East Ojai Ave.
Ojai, CA 93023
TELEPHONE: (805) 646-5455
NBIP ACCESSION NUMBER: CA/096

<200>

INVESTIGATOR(S): Williams, D.F.
AFFILIATION: Dept. of Biological Sciences, California State College
TITLE: Seasonal Activity Cycles of Insectivorous Bats in Central California
PURPOSE: To gather data on seasonal activity patterns, reproductive cycles, and relative abundance of bats in central California.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Marked decrease in numbers and diversity since 1971.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: BATS, SEVERAL SPECIES
ADDED KEYWORDS: bats; habitat modification; population effects; chiropterans
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; migratory patterns; numbers; reproduction; sex
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
STUDY SITE(S): CA
GEOGRAPHIC DESCRIPTION: Stanislaus County; Del Puerto Canyon
TYPE OF DATA: raw
ABSTRACT: None provided.
ADDRESS: Daniel F. Williams
Biological Sciences Dept.
California State College-Stanislaus
Turlock, CA 95380
TELEPHONE: (209) 633-2485
NBIP ACCESSION NUMBER: CA/011

<201>

INVESTIGATOR(S): Wright, T.A.
AFFILIATION: California State Dept. of Fish and Game
TITLE: Wildlife Condition Status - Region 2
PURPOSE: To monitor wildlife species annually to determine production, mortality, population trends, migration patterns, effects of habitat changes, and harvest.
SPONSOR(S): California State Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The loss and deterioration of habitat has contributed to the decline of most wildlife species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; wetland; mountain
LEVEL(S) OF STUDY: population; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs
ADDED KEYWORDS: habitat modification; management measures; predators
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; habitat characterization; harvest; home range size; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard wildlife management information gathering techniques
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: annual
STUDY SITE(S): CA

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CALIFORNIA

Standard Federal Region 9

Fish and Wildlife Service Region 1

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GEOGRAPHIC DESCRIPTION: Upper Sacramento Valley; Great Basin

TYPE OF DATA: summarized

ABSTRACT: Biological data is collected annually in Region 2 of the California Department of Fish and Game. The data gathering includes: herd composition counts; vegetation transects; range reconnaissance; pellet and track counts; radio collar monitoring; check station information; brood counts; raptor counts; aerial census, coo counts; nest counts;

fur snag sampling; carcass counts; and roadside counts. The data gathered is compiled, analyzed and reported to staff program coordinators who use the material in preparing recommendations for seasons and bag limits and to take actions necessary to protect or enhance wildlife species and their habitats.

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1001 Jedsmith Dr
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TELEPHONE: (916) 445-0394

NBIF ACCESSION NUMBER: CA/250

COLORADO

Standard Federal Region 8
Fish and Wildlife Service Region 6
(SEE ALSO 77, 180, 184, 569, 835)

6416 Fossil Crest Dr.
Environmental Analysts, Inc. of
Colorado

Ft. Collins, CO 80521

TELEPHONE: (303) 493-0168

NBIP ACCESSION NUMBER: CO/019

<202>

INVESTIGATOR(S): Adams, R.P.

AFFILIATION: Environmental Analysts, Inc. of
Colorado

TITLE: Gravel Mining Impact on the Flora of
the White Rocks Area, Boulder County,
Colorado

PURPOSE: To determine if changes occur in the
flora of an outcrop of Laramie Sandstone
(White Rocks) and to evaluate the impact
of adjacent gravel mining on the flora.

SPONSOR(S): Flatiron Sand and Gravel, Inc.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No impact yet from
graveling approximately 2000 feet away,
but major changes due to rainfall changes
and human and cattle trespassing.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses

TAXA: ASPLENIUM ADIANTUM-NIGRUM; APIOS

AMERICANA; EROMUS TECTORUM; CIRSIIUM

ARVENSE; CARDARIA DRABA; MELILOTUS

OFFICINALIS; MELILOTUS ALEA; TRIFOLIUM

SPP; PLANTS, 165 SPECIES

ADDED KEYWORDS: american potato beans; cheat
grasses; population effects; habitat
modification; mining; weather conditions;
ferns; grazing

PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; growth; habitat
characterization; numbers; reproduction;
size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observations; photographic stations;
checklists

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora;
climatological data

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Boulder County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: CDC 6100; FORTRAN 4

STATISTICS EMPLOYED: mean

ABSTRACT: We conclude that there is some
change in the flora of the White Rocks
this year due to the late spring and the
continued spreading of weeds in the
floodplain area between the cliffs and
Boulder Creek. The rare fern and the
potato-bean appear to be undisturbed. No
significant changes in these species were
noted. Some effects of trampling by kids
and others is apparent but the extent of
damage is small. We conclude that the
Flatiron graveling operations during the
past two years have not had a harmful
effect on the vegetation of the White
Rocks and have had a beneficial effect in
creating more diversity in the ecosystem
(where reclamation has been in progress
for two growing seasons).

ADDRESS: Dr. Robert Adams

<203>

INVESTIGATOR(S): Behnke, R.J.

AFFILIATION: Dept. of Zoology, Colorado State
University

TITLE: Restoration and Protection of Native
Trout

PURPOSE: To protect existing populations and
establish new populations of endangered
and threatened trouts native to Rocky
Mountain region.

SPONSOR(S): Federal and State agencies

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Introduced (non-native)
brook trout cause decline and extinction
of native trout. Habitat disruption
favors non-native species.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; lake

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: SALMO CLARKI; SALMO TRUTTA

ADDED KEYWORDS: cutthroat trouts; trouts;
habitat modification; management measures;
population effects; species introduction;
brown trouts; paute trouts

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collections

NUMBER OF SAMPLING SITES: variable

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): CO; WY; UT; AZ; MT; NV

TYPE OF DATA: summarized; literature-derived

ABSTRACT: Studies were often assisted by grad
students and have been funded by several
state and federal agencies. Mainly, they
deal with taxonomy and distribution
(identification and evaluation of purity)
of several species and subspecies of
western trouts of genus SALMO,
particularly in relation to environmental
assessments. The studies of Paiute trout
were undertaken to protect and expand the
distribution and abundance of this trout.
The rareness and unique beauty of the
Paiute trout suggests a potential to lure
hikers from the main trails into more
remote and little used areas of National
Forests: a possible "crowd dispersal"
technique of fisheries management.

ADDRESS: Robert J. Behnke

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Colorado State University

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NBIP ACCESSION NUMBER: CO/022

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COLORADO

Standard Federal Region 8

Fish and Wildlife Service Region 6

(CONTINUED)

<204>

INVESTIGATOR(S): Bonham, C.D.

AFFILIATION: Range Science Dept., Colorado State University

TITLE: Evaluation of Grazing Systems

PURPOSE: To document ecological changes in plant communities according to various grazing intensities by livestock.

SPONSOR(S): Colorado State Experiment Station; FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Species which have declined in composition under heavy grazing have returned after grazing pressure was removed for a period of five years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: organism; community

MANAGEMENT FOCUS: indicator species; range

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; shrubs; herbs; grasses

TAXA: BOUTELOUA GRACILIS; STIPA COMATA; CALAMOVILFA LONGIFOLIA; SPOBOBOLUS CRYPTANDRUS; ARTEMISIA FILIFOLIA; CAREX SP; PLANTS, 57 SPECIES

ADDED KEYWORDS: grazing; livestock; species composition; blue grama; needle-and-thread grasses; prairie sandreed grasses; sand dropseeds; sand sagebrushes; sunsedges; phlox; hairy grammas; little bluestems; surfeases; thistles; pastures; models

PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats; line transects

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data; soils; terrain

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Washington County

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; analysis of variance; multivariate analysis; modeling, stochastic

ABSTRACT: Vegetation patterns were examined with regard to grazing practices. Data used to determine these patterns were taken from a grazing study conducted at the Eastern Colo. Range Station from 1955 through 1967. Data were collected on individual species composition, cover, and frequency. Species composition data were selected for analysis for differences over years due to grazing by intensities of light, moderate and heavy. A discriminant analysis model was used to study 57 plant species and their variability due to the grazing intensity practices. Preliminary analyses indicated much more refinement of data grouping was necessary. Therefore, the data were grouped into individual years in order to obtain the response of species within pastures according to years. This analysis led to the selection of six species which were the major contributors of variability occurring

among the pastures before the grazing intensities were initiated. These species were phlox, sunsedge, hairy grama, little bluestem, scurfpea, and thistle. These six species were indicators of differences which were occurring among the pastures being grazed at different intensities for the year 1956.

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TELEPHONE: (303) 493-5650
NBIP ACCESSION NUMBER: CO/025

<205>

INVESTIGATOR(S): Cringan, A.T.

AFFILIATION: Environmental Impact Analysts, Inc.

TITLE: Studies Monitoring Wildlife in the White Rocks Area, Boulder County, Colorado

PURPOSE: To assess the effects of a gravel-mining operation upon wild vertebrate animals.

SPONSOR(S): Flatiron Companies Ltd. of Boulder

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Avian diversity increased 1973-75 as a result of increased diversity of habitats available. Numbers of black-tailed prairie dogs increased.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; wetland; aquatic; freshwater; stream

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; reptiles; fish; birds; mammals

ADDED KEYWORDS: mining; habitat modification; raptors; prairie dogs

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

field observations; live trapping; low

altitude aerial inventory; photography

NUMBER OF SAMPLING SITES: entire area of 200 hectares

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Boulder Creek

TYPE OF DATA: raw; summarized

ABSTRACT: Two years of graveling operations do not appear to have adversely affected the wild vertebrates of the area. Several species of aquatic birds have benefited from increased habitat diversity. Some mammals and large birds may have benefited from reduced disturbance by humans.

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TELEPHONE: (303) 493-9138

NBIP ACCESSION NUMBER: CO/018

<206>

INVESTIGATOR(S): Driscoll, R.S.

AFFILIATION: Rocky Mountain Forest and Range Experiment Station, FS

COLORADO

Standard Federal Region 8
Fish and Wildlife Service Region 6
(CONTINUED)

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TITLE: National Renewable Resource Supply and Evaluation Techniques

PURPOSE: A national research project to significantly improve the capability to conduct renewable resources inventories and evaluations for periodic assessments of those resources.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in supplies of renewable resources including timber, range, and changes in land base.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; savanna; grassland; tundra; alpine; wetland; mountain

LEVEL(S) OF STUDY: community; ecosystem; region

MANAGEMENT FOCUS: fisheries; wildlife; forestry; range; recreation; resource planning

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs

ADDED KEYWORDS: habitat modification; management measures; logging

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; harvest; productivity; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): ground sampling; aerial photography

NUMBER OF SAMPLING SITES: variable

SUPPORTING DATA COLLECTED: associated flora; soils; terrain

STUDY SITE(S): CO

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; modeling, deterministic

ABSTRACT: This is a research program to develop improved or new techniques to secure and provide data on the state of the nation's resources (natural and renewable). We have the data in storage on timber supplies and changes in the data base. We do not have this for range parameters yet.

ADDRESS: Mr. Richard S. Driscoll
USDA Forest Service
Rocky Mountain Forest and Range
Experiment Station
240 W. Prospect St.
Fort Collins, CO 80521

TELEPHONE: FTS 484-6264

NBIP ACCESSION NUMBER: CO/014

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INVESTIGATOR(S): Emmel, T.C.

AFFILIATION: Dept. of Zoology, University of Florida

TITLE: Evolutionary Biology of the Satyrid Butterfly, CERCYONIS OETUS, in the Western United States

PURPOSE: To monitor population fluctuations and phenotypic/genotypic changes in a series of butterfly populations.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Extinction of some populations, dramatic changes in spotting characters on the wings, and in isozyme allele frequencies.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; grassland; tundra; alpine

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; forestry; indicator species

ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; plants; vascular plants; herbs; grasses

TAXA: CERCYONIS OETUS

ADDED KEYWORDS: population effects; satyrid butterflies; butterflies; lepidopterans

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; home range size; immigration; mortality; migratory patterns; natality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and release

NUMBER OF SAMPLING SITES: 22

SAMPLING FREQUENCY: daily; annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Teller County; Pike County; South Platte River; Fish Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; modeling, deterministic

ABSTRACT: The local distribution, flight periods, habitat preferences, larval food plants, adult feeding plants (nectar sources), and adult behavior of 60 species of butterflies are recorded for the Big Spring Ranch area (elevation 8500 to 9220 ft), four miles southwest of Florissant, Teller County, Colorado. The influence of plant associations as both "barriers" and "corridors" is emphasized as controlling the distribution of certain species. Other factors affecting the distribution of butterflies, such as larval and adult food-plant distribution and water sources are studied.

REFERENCES: Emmel, 1964

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Gainesville, FL 32611

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NBIP ACCESSION NUMBER: FL/094

<208>

INVESTIGATOR(S): Enderson, J.H.

AFFILIATION: Dept. of Biology, The Colorado College

TITLE: Status of Peregrine Falcon in Rocky Mountain Region

PURPOSE: Record trend of endangered population, eggshell condition, and DDE residues in eggs.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

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PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A population decrease from 14 pairs (1973) to 7 pairs (1975) was observed.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: endangered species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: FALCO PEREGRINUS

ADDED KEYWORDS: peregrine falcons; falcons; eggshells; pesticides; nests; DDE; DDT

PRIMARY PARAMETERS INVESTIGATED: mortality; natality; residues; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field observations

NUMBER OF SAMPLING SITES: 41

STUDY SITE(S): CO; NM; MT; WY

TYPE OF DATA: literature-derived

ABSTRACT: This study covers eyrie occupancy, reproductive success, eggshell condition, and chlorinated pesticide residues for Peregrine Falcons nesting mainly in the region from northern New Mexico to southern Montana. Peregrines are presently using only about one-third of their former eyries in the central Rocky Mountain region, and a population reduction on the order of 50% in the last few decades seems indicated. Poor reproduction, especially in 1973, is correlated with eggshells that are about 20% thinner than those from this subspecies prior to 1948. DDE levels in four eggs from 1973 average about as high as those reported from Peregrine eggs anywhere.

REFERENCES: Anderson and Craig, 1974

ADDRESS: Dr. James Anderson

Dept. of Biology

The Colorado College

Colorado Springs, CO 80903

TELEPHONE: (303) 473-2233 ext. 315

NBIP ACCESSION NUMBER: CO/054

<209>

INVESTIGATOR(S): Erickson, J.G.

AFFILIATION: Dept. of Biology, Fort Lewis College; Four Corners Environmental Research Corp.

TITLE: Biological Studies of Selected Reaches and Tributaries of the Colorado River

PURPOSE: Evaluation of stream degradation by various sources of pollution; replication of an earlier (1968) study.

SPONSOR(S): Colorado Dept. of Health

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Some water quality improvement and several stable polluted situations were observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; insecta;

microorganisms; algae

TAXA: ALGAE, 39 SPECIES; NEOELMIS, 1 SPECIES;

STONEFLIES, 9 SPP; MIDGES, 16 SPECIES;

DIPTERA, 7 SPECIES; COLLEMBOLA; HEMIPTERA;

HYDRACARINA; NEMATODA; ODONATA; PELECYPODA

ADDED KEYWORDS: benthic organisms; mining;

heavy metals; waste water; chromium; zinc;

gold; molybdenum

PRIMARY PARAMETERS INVESTIGATED: diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Surber sampler; microscope slides

NUMBER OF SAMPLING SITES: 150

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Colorado River

System; Tenuile Creek; Eagle River;

Roaring Fork; Colorado River; Slate River;

Gunnison River; Cimarron River;

Uncompahgre River; Upper Douglas River;

Lower Douglas River; San Miguel River; San

Juan River System

TYPE OF DATA: raw; reduced

ABSTRACT: The primary purpose of the present study was to provide some comparison between 1966 and 1975 data. There have been surprisingly few substantive changes in the intervening years. The situations which showed problems in 1966 still showed those problems in 1975. Eagle River, Tenuile Creek, and Roaring Fork showed some improvement in heavy metal levels along with an increase in species numbers and diversity. The Colorado River, Cimarron River, and Uncompahgre River (except Oak Creek) showed a general decline in numbers of animals per square foot. The Slate River and Delores River showed fewer animals with an increase in heavy metals.

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Biology Dept.

Fort Lewis College

College Heights

Durango, CO 81301

NBIP ACCESSION NUMBER: CO/075

<210>

INVESTIGATOR(S): Gibson, J.H.

AFFILIATION: Natural Resource Ecology

Laboratory, Colorado State University

TITLE: Analysis of Structure, Function, and

Utilization of Grassland Ecosystems

PURPOSE: To gain an understanding of the structure, function, and utilization of grassland ecosystem.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: No long-term biotic changes in natural or control areas of the studies have been identified. Major changes have been observed in areas stressed with water and nitrogen.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: organism; population;

community; ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

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mammals; invertebrates; insecta; plants;
vascular plants; grasses; microorganisms;
fungi

TAXA: PLANTS, 313 SPECIES

ADDED KEYWORDS: grazing; species composition;
nutrient cycling; decomposition; soil
microorganisms; primary productivity;
decomposers; management measures;
nitrogen; models; coleopterans; arthropods

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution;

emigration; growth; habitat

characterization; harvest; numbers;

productivity; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

clip, double sample, and soil core; drop

trap; soil core; trap re-trap

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: continuous; daily;

monthly; annual; irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; associated

microorganisms; climatological data;

hydrological data; soils

STUDY SITE(S): OK; TX; NM; CO; SD; MT; WA;

CA; ND; KS

GEOGRAPHIC DESCRIPTION: Weld County (CO);

Benton County (WA); Flathead County (MT);

Park County (MT); Jackson County (SD);

Stark County (ND); Ellis County (KS);

Mendocino County (CA); Dona Ana County

(NM); Osage County (OK); Carson County

(TX); San Joaquin County (CA)

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: CDC 6400; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;

percentile; analysis of variance; analysis

of covariance; regression/correlation

analysis; contingency table analysis;

multivariate analysis; non-parametric

analysis; non-linear estimation; modeling,

stochastic; serial autocorrelations

ABSTRACT: The Grassland Ecosystem Study has

resulted in the formulation of the first

mathematical model of the grassland

ecosystem. Emphasis has been placed on

water use, grazing, shifting species

composition, nutrient cycling,

decomposition, and soil microorganisms.

The model tying together results of these

various activities is a total ecosystem

model. It is a non-linear model, designed

to represent the biomass dynamics of a

grassland site. It is sufficiently

flexible that with modification of certain

parameters it can be adapted to different

grassland types. Temperature, water,

insolation, and nutrient availability are

the main controlling factors for primary

production. It is capable of interrelating

the abiotic, producer, consumer,

decomposer, and nutrient functions of the

ecosystem. In these times of increased

concern about deteriorating environments

and endangered ecosystems, the grassland

ecosystem has improved. This improvement

is largely a result of enlightened

management of the system based on the

knowledge gained by bitter experiences in

early efforts at modification of the

grassland ecosystem. The major

contribution of the Grassland Biome
Program to applied ecology is
establishment of a more complete
scientific basis for future management
decisions, and the tools in the form of
simulation models for evaluating
alternative management strategies.

REFERENCES: Coleman, et al, 1973

ADDRESS: Dr. James R. Gibson

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TELEPHONE: (303) 491-5571

NBIP ACCESSION NUMBER: CO/058

<211>

INVESTIGATOR(S): Hartman, E. L.

AFFILIATION: Ecology Dept., University of

Colorado; Science Consultant, St.

Scholastica Academy

TITLE: The Study of Vegetation Recovery

(Secondary Succession) in Areas Previously

Logged and Mined in the Lower Montane of

Colorado

PURPOSE: Plant inventories and vegetation

analyses of both disturbed and undisturbed

areas of the Poverty Gulch Mountain Field

Station for the long-range study of

vegetation recovery and secondary

succession.

SPONSOR(S): St. Scholastica Academy

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: None to date as a result

of logging and mining.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; coniferous; grassland; mountain

LEVEL(S) OF STUDY: organism; population;

community

MANAGEMENT FOCUS: environmental impact;

forestry; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; shrubs; herbs; grasses;

non-vascular plants; mosses

ADDED KEYWORDS: logging; mining; secondary

succession; habitat modification

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration;

habitat characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

quadrats

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: continuous; seasonal

SUPPORTING DATA COLLECTED: associated fauna;

climatological data; soils; terrain

STUDY SITE(S): CO

GEOGRAPHIC DESCRIPTION: Fremont County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; percentile;

regression/correlation analysis;

multivariate analysis

ABSTRACT: Plant inventories and vegetation

analyses (descriptive and quantitative) of

both disturbed (mining and logging) and

undisturbed areas for the long-range study

of vegetation recovery and secondary plant

succession are being made at the Poverty

Gulch Mountain Field Station. The latter

is a newly-established educational field

facility providing instructional and

research opportunities to both public and

private educational sectors of Fremont

County, Colorado. Climatological data are

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also being collected from recording instruments housed in a standard U.S.W.B. approved weather station on the premises.
ADDRESS: Dr. Emily Hartman
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University of Colorado-Denver
1100 14th St.
Denver, CO 80203
TELEPHONE: (303) 892-1117 ext. 260
NBIP ACCESSION NUMBER: CO/024

<212>

INVESTIGATOR(S): Krebs, P.V.
AFFILIATION: Institute of Arctic and Alpine Research, University of Colorado
TITLE: Dendroclimatology - Dendroecology
PURPOSE: Monitoring of winter orographic snow augmentation and establishment of climatic trends through dendrochronologic analysis.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Varying tree growth layer thickness (ponderosa pine) in response to temperature and precipitation evaluated on climatic data groups for growing season.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: PINUS PONDEROSA
ADDED KEYWORDS: weather conditions; climate; weather modification; cloud seeding; dendrochronology; snow; ponderosa pines; pines
PRIMARY PARAMETERS INVESTIGATED: age; growth; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field collection; growth layer analysis
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora; climatological data; terrain
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: San Juan Mountains
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis; serial autocorrelations
ABSTRACT: To assess the effects of a weather modification program in mountainous terrain, dendrochronologic analysis was used in conjunction with climatic data to (1) detect changes in growth pattern, (2) determine effect of cloud seeding on growth, (3) establish historical climatic trends prior to written record, and (4) develop a monitoring technique.
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Institute of Arctic and Alpine Research
University of Colorado
Boulder, CO 80203

TELEPHONE: (303) 492-8841
NBIP ACCESSION NUMBER: CO/033

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INVESTIGATOR(S): LaBounty, J.F.; Sartoris, J.J.
AFFILIATION: BR
TITLE: Ecological Effects of Pumped Storage Operation
PURPOSE: To describe the environmental consequences of operating a pumped-storage power plant on the aquatic environments of the Western United States.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The pumped-storage power plant will not be operational until summer 1977. Its effluents will go into Twin Lakes. Twin Lakes were changed from natural lakes into reservoirs in the 1900's. Heavy metals were brought in by heavy metal sediments, and sewage input led to increased eutrophication. New fish species and fish food were introduced into the lakes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; resource planning; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; microorganisms; bacteria; algae; protozoa
TAXA: CATOSTOMUS COMMERSONI; MYXIS RELIUTA; CYCLOPS; CRAPTONUS; CHIRONOMUS SP; PISIDIUM SPP
ADDED KEYWORDS: hydroelectric power plants; impoundments; eutrophication; heavy metals; waste water; common suckers; freshwater shrimp; fingernail clams; clams; primary productivity
PRIMARY PARAMETERS INVESTIGATED: biomass; bod; distribution; diversity; habitat characterization; numbers; physiology; productivity; toxicity
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; atmospheric chemistry; climatological data; hydrological data; water quality data
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Lake County; Twin Lakes
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: USBR Control Data; FORTRAN
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, deterministic
ABSTRACT: Ecological effects upon bodies of water involved in construction and operation of pumped storage hydroelectric plants are largely unknown. Some effects could be serious, but if known and recognized soon enough, could be avoided

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or significantly reduced. This study is designed to determine and evaluate such effects. Twin Lakes, Colorado, is now being used as a study area representative of an alpine aquatic ecosystem. Present (preoperational) environmental conditions within the reservoir are being determined to provide base data against which future comparisons can be made, and from which sensitive and possibly critical situations can be identified. The physical, chemical, and biological parameters will be monitored throughout construction and several years of operation.

ADDRESS: James P. LaBounty
U.S. Bureau of Reclamation
MC1522, Bldg. 56
Engineering and Research Center
Denver, CO 80225
TELEPHONE: (303) 234-4380
NBIP ACCESSION NUMBER: CO/076

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INVESTIGATOR(S): Lavigne, R.J.
AFFILIATION: University of Wyoming
TITLE: Analysis of Structure, Function, and Utilization of Grassland Ecosystems: Above and Below-Ground Insect Investigations
PURPOSE: To ascertain the effect of artificially induced environmental stress on grassland insect populations.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Application of water and water plus nitrogen stimulated plant growth which in turn stimulated increases in numbers of insects.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects
ADDED KEYWORDS: habitat modification; nitrogen; arthropods; litter; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; numbers; stress
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Weld County
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: CDC 6400; FORTRAN
ABSTRACT: A study of the effects of applications of water, nitrogen, and water plus nitrogen on the density and biomass of insects of the Pawnee National Grasslands was continued during 1973. Those replicated plots receiving both water and nitrogen consistently contained greater numbers of insects which had greater biomass. Those plots receiving water alone contained somewhat lesser

numbers and biomass. There were few differences apparent between the control plots and those receiving nitrogen alone. Both contained considerably fewer insects than those plots receiving water treatments. The insects collected from the plots, using a D-vac suction apparatus, were subjected to trophic analysis (i.e., categorized according to feeding habit) to determine if there were differential responses to the environmental stress treatments by insects representing the different trophic levels: (1) plant sap feeding, (2) plant tissue feeding, (3) omnivores, (4) predators, (5) scavengers, and (6) parasites.

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University of Wyoming
Laramie, WY 82070
TELEPHONE: (307) 766-5199
NBIP ACCESSION NUMBER: WY/020

<215>

INVESTIGATOR(S): Mahoney, C.L.
AFFILIATION: College of Forestry and Natural Resources, Colorado State University
TITLE: Soil Insects as Indicators of Use Patterns in Recreation Areas
PURPOSE: To attempt to determine relationships of intensive recreation use on population levels of soil dwelling COLLEMBOLA. Whether initial changes in population levels of soil fauna foretell more serious damage under intensive use.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: A reduction in numbers of individuals and species of COLLEMBOLA has been observed with more intensive recreation use.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; forestry; recreation
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects
TAXA: COLLEMBOLA, 12 SPECIES
ADDED KEYWORDS: habitat modification; collembolans
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): soil sampler; Berlese Funnels
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; soils
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Larimer County; Little South Poudre; Roosevelt National Forest
TYPE OF DATA: summarized
ABSTRACT: A study on the Roosevelt National Forest, Colorado, suggests that population levels of soil microarthropods, notably the abundant and ubiquitous springtails, may offer a useful bioassay for possible environmental gradients in and around recreation areas.
ADDRESS: Dr. Charles L. Mahoney

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College of Forestry and Natural
Resources
Colorado State University
Fort Collins, CO 80523
TELEPHONE: (303) 491-6675
NBIP ACCESSION NUMBER: CO/012

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INVESTIGATOR(S): May, T.A.; Braun, C.E.
AFFILIATION: Institute of Arctic and Alpine
Research, University of Colorado
TITLE: Population Ecology of Colorado
White-Tailed Ptarmigan
PURPOSE: To monitor population changes from
1965-1975, to develop hypotheses of
population regulation for this species,
and to develop as complete an
understanding as possible of the ecology
of this species.
SPONSOR(S): NSF; Colorado State University;
Colorado Division of Wildlife
SPONSOR CATEGORY: federal government;
teaching institution; state government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No drastic changes were
observed, but we now have a rather
complete understanding of the population
dynamics and habitat requirements of this
species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
tundra; alpine; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; shrubs;
herbs
TAXA: LAGOPUS LEUCURUS; SALIX SPP
ADDED KEYWORDS: white-tailed ptarmigans;
ptarmigans; willows; population effects;
parasites
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; habitat
characterization; harvest; home range
size; immigration; kill; mortality;
migratory patterns; natality; numbers;
physiology; productivity; reproduction;
residues; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
capture; tagging; observation
NUMBER OF SAMPLING SITES: 7
SAMPLING FREQUENCY: daily; irregular
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Boulder County;
Larimer County; Clear Creek County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: CDC-6400; FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
non-linear estimation; modeling,
deterministic
ABSTRACT: None provided.
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University of Maine-Orono

Orono, ME 04473
TELEPHONE: (303) 492-6387
NBIP ACCESSION NUMBER: ME/033

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INVESTIGATOR(S): Reid, C.P.P.
AFFILIATION: Dept. of Forest and Wood
Sciences, Colorado State University
TITLE: San Juan Ecology Project: Subproject:
Effects of Snowpack on Moisture Stress in
Engelmann Spruce
PURPOSE: To ascertain the effects of snowpack
augmentation on tree growth.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Late lying snowpack
increases moisture stress in spruce and
may affect growth initiation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: environmental impact;
forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees
TAXA: PICEA ENGELMANNII
ADDED KEYWORDS: engelmann spruces; weather
conditions; radiation; soil properties;
models; spruces
PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; physiology; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
pressure chamber technique
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: continuous; seasonal;
weekly
SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils; terrain
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Rio Grande County;
LaPlata County; Mineral County; San Juan
Mountains
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministic
ABSTRACT: A four-year field study was
conducted in the San Juan Mountains to
examine the effects of microenvironment on
patterns of water stress in mature
Engelmann spruce and quaking aspen during
the periods of snowmelt and midsummer.
Xylem pressure potential (P), measured by
the pressure chamber technique as an
indication of water stress, was compared
to a variety of simultaneously measured
environmental parameters. Initial analysis
of spruce data confirmed the need for
separate models to describe P during
snowmelt and during midsummer, with the
division at the snow-free date.
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NBIP ACCESSION NUMBER: CO/031

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INVESTIGATOR(S): Ryder, R.A.

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AFFILIATION: Dept. of Fishery and Wildlife
Biology, Colorado State University
TITLE: Avian Populations on the Fort St.
Vrain Nuclear Power Generating Site,
Colorado
PURPOSE: To document species and numbers of
birds using 3 study areas all within 1
mile site (initially at least 1 year
before and 1 year after operation of
plant). Plant still not fully operational.
SPONSOR(S): Thorne Ecological Institute
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Only minor changes such
as changes in species and numbers of birds
have been observed. Changes noted were due
to alteration of habitat by grazing, fire,
and general clean-ups by ranch operator
and not due to operation of power plant.
Project is still in pre-operational stage.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland; wetland;
mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
ADDED KEYWORDS: nuclear power plants; census;
habitat modification; grazing; fires;
cottonwoods; nests; territoriality;
contaminants
PRIMARY PARAMETERS INVESTIGATED: behavior;
immigration; migratory patterns; natality;
numbers; productivity; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
spot mapping; transect censuses; nest
counts
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: weekly;
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; water quality data
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Weld County; St.
Vrain River; South Platte River; Fort St.
Vrain Power Station
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; contingency table analysis
ABSTRACT: Data on abundance, composition, and
reproduction of avian populations were
gathered from 3 April 1972 through 6 April
1973. The purpose of the study was to
establish procedures for monitoring
avifauna in the area surrounding the Fort
St. Vrain Nuclear Power Site at
Platteville, Colorado. This study should
contribute to the limited knowledge of
avifauna in cottonwood riverbottom
ecosystems. Data gathered 1 year prior to
plant operation will serve as baseline
measurements for comparison after
operation begins. Twenty-seven sunrise
censuses were conducted by ground
reconnaissance through cottonwood
riverbottom pasture areas at two study
sites of 71.6 and 52.2 hectares, plus spot
observation at an 8.5 hectare pond.

Nesting activity and territorial males
were recorded on spot maps. One hundred
thirty species were identified on the
three areas combined. Species at each of
the two cottonwood forest sites numbered
approximately 20 during the winter, 40 in
the summer and 60 to 70 in the fall and
spring. Total species density per 40.5
hectares during one year ranged from 88
through 220 at the two cottonwood sites
and 119 through 943 for 3 seasons
excluding winter at the pond. Forty-two
nests of 13 species were found along the
census routes. An intensive search for
nests of red-winged blackbirds (*AGELAIUS*
PHOENICEUS) and yellow-headed blackbirds
(*XANTHOCEPHALUS XANTHOCEPHALUS*) resulted
in 55 and 64 nests respectively. The
yellow-headed and/or red-winged blackbird,
house wren (*TROGLODYTES AEDON*), and
western meadowlark (*STURNELLA NEGLECTA*)
were chosen as probable indicator species
for contaminant monitoring based on food
habits, residency, nesting locations, and
availability for collection.

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INVESTIGATOR(S): Wasser, C.H.
AFFILIATION: Dept. of Range Science, Colorado
State University
TITLE: Bison-Induced Stresses of Canyon
Bottom Ecosystems
PURPOSE: To inventory flora, ascertain diet
of bison, and make eco-analysis of
community and site changes induced by
bison.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An alteration in
vegetation community structure adjacent to
sources of drinking water has been
observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; coniferous; grassland; aquatic;
freshwater; stream
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses
TAXA: BISON BISON; ARTEMISIA TRIDENTATA;
JUNIPERUS OSTEOSPERMA; PINUS EDULIS;
BRONUS TECTORUM; ARISTIDA LONGISETA;
HILARIA JAMESII; ORYZOPSIS HYMENOIDES;
SPOROBOLUS CRYPTANDRUS; STIPA COMATA;
CHRYSOTHAMNUS SPP
ADDED KEYWORDS: bison; canyons; sagebrush;
feces; grazing; pinyons; utah junipers;
juniper; pinon
PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
canopy-coverage method; random collection
of feces; stratified sampling

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NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: seasonal; monthly; annual
SUPPORTING DATA COLLECTED: associated flora;
soils
STUDY SITE(S): CO
GEOGRAPHIC DESCRIPTION: Mesa County; Ute
Canyon; Monument Canyon
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Data are not completely analyzed
for first year. There are preliminary
indications of community structure
alteration by bisons' intensive grazing
use especially close to permanent seasonal
sources of drinking water.

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INVESTIGATOR(S): Berry, S.J.
AFFILIATION: Dept. of Biology, Wesleyan University
TITLE: Changes in Cyclic AMP Levels in Lepidopteran Brain Tissue as a Function of Environmental Changes
PURPOSE: To examine the transduction of signals from the environment such as elevation in temperature, or alteration of ambient photoperiod, and the implication of these changes in insect development.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
CHANGE(S) OBSERVED: The cyclic AMP content of the brain reflects changes in a number of environmental cues.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects
TAXA: MANDUCA SEXTA; ACTIAS LUNA; HYALOPHORA CECROPIA; ANTERAERA PERNYI; ANTERAERA POLYPHEMUS
ADDED KEYWORDS: cyclic AMP; transduction; lepidopterans; thermal effects
PRIMARY PARAMETERS INVESTIGATED: physiology; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): biochemical assay procedures
SAMPLING FREQUENCY: continuous; seasonal; daily
STUDY SITE(S): CT
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: We have determined that the cyclic AMP content of the brain of a number of lepidopteran species varies dramatically when environmental parameters which are associated with physiological activation are varied. There is a definite circadian rhythm in AMP content which can be manipulated by manipulating day length. When silkworm pupae are transferred from 4 degrees C (winter) to 22 degrees C (spring) conditions, a characteristic rise and fall in brain AMP is noted within hours, and is modified by factors such as length of chilling and ambient photoperiod. We are examining the coupling of environmental cues to AMP levels to events of hormonal activation. We hope to develop basic data on energy transduction at the cellular level which may be useful in planning pest control strategies based on slight alterations of the environment.
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NBIP ACCESSION NUMBER: CT/002

<221>

INVESTIGATOR(S): Buck, J.D.
AFFILIATION: Biological Sciences Group, University of Connecticut

TITLE: Connecticut River Microbiology
PURPOSE: To assess the effects, if any, of thermal effluent from a nuclear-powered electricity generating station on the microbiology and chemistry of the Connecticut River.

SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Major shifts in phytoplankton types in immediate mixing zone, but no significant changes in bacteria.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population; community; region
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: microorganisms; bacteria; algae
TAXA: ACHROMOBACTER SPP; ALCALIGENES SPP; AEROMONAS SPP; VIBRIO SPP
ADDED KEYWORDS: phytoplankton; periphyton; thermal effluents; nuclear power plants
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; mortality; numbers; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plate counts; membrane filtration; counting
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): CT
GEOGRAPHIC DESCRIPTION: Connecticut River; Middlesex County; Connecticut Yankee Power Co.
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: Counts of mesophilic (30 C), psychrophilic (5 C) and thermophilic (45 and 55 C) bacteria were made. In addition, the following types of bacteria were enumerated: proteolytic, amylolytic, lipolytic, anaerobes, acid and base producers, "marine" forms, total and fecal coliforms, and fecal streptococci (enterococci). Laboratory aspects of the study included generic identification of dominant isolates from mesophile platings, temperature tolerance of psychrophilic and thermophilic isolates, salinity and oxygen response of marine bacteria and anaerobes, chemostat studies on river water and biochemical characteristics of pollution-indicating bacteria. No quantitative differences were noted in any of groups of bacteria studied. Field and chemostat studies indicated that, in the mixing zone near the outfall area, some shifts in dominant genera may have occurred; the ACHROMOBACTER-ALCALIGENES group increased while the AEROMONAS-VIBRIO complex decreased. Considerable adaptability to temperature, salinity, and oxygen was shown by "thermophilic," "psychrophilic" and "marine" bacteria. It is stressed that all post-operational observations were considered to be relatively short-term ones. With these limitations in mind, it cannot be stated

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that any drastic changes have occurred at the present time in the overall microbial ecology of the Connecticut River as a direct result of the addition of thermal effluent. It is suggested that future parallel studies in the same area be considered for a more valid assessment of the effects of thermal addition on this environment.

REFERENCES: Foerster, et al, 1974; Buck, et al, 1974

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NBIP ACCESSION NUMBER: CT/001

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INVESTIGATOR(S): Buck, J.D.
AFFILIATION: Biological Sciences Group,
University of Connecticut
TITLE: Biotic Changes in the
Willimantic-Shetucket River Associated
with Changes in Sewage Treatment:
Microbiology
PURPOSE: To monitor selected populations of
indicator and other bacteria and yeasts
before and after improvement in sewage
treatment in the Shetucket River basin.

SPONSOR(S): ONRT

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Weather changes and
secondary sewage treatment resulted in
significantly lower pollution indicator
populations downstream of the effluent
outfall.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: indicator species;
pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms;
bacteria; fungi

ADDED KEYWORDS: sewage treatment; secondary
treatment; fecal coliforms; coliform
bacteria; yeasts

PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
filtered samples; plating; counting

NUMBER OF SAMPLING SITES: 7

SUPPORTING DATA COLLECTED: hydrological data;
water quality data

STUDY SITE(S): CT

GEOGRAPHIC DESCRIPTION: Willimantic River;
Natchaug River; Shetucket River; Scotland
Impoundment

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean;
regression/correlation analysis;
non-parametric analysis

ABSTRACT: Accepted indicator bacteria and
some yeasts were used to detect changes in
water quality associated with an
improvement in sewage treatment (primary

settling to activated sludge) in the
Shetucket River basin in eastern
Connecticut. Multiple regression
techniques were used to identify
relationships between groups of indicators
and among indicators and river
temperature, discharge and conductivity.
Temperature and discharge accounted for up
to 69% of the variance observed in
populations of indicators and yeasts.
Rainfall and subsequent events were the
most important factors determining
population sizes at control stations, but
were difficult to quantify. Chlorination
and dilution of the effluent determined
downstream population numbers. The total
coliforms are useful as indicators only in
close proximity (4.5 km from a point
source) to sewage pollution, and a group
of yeasts is highly correlated with other
accepted indicators. A cause and effect
relationship was not established between
improvement in treatment procedure and
reductions in effluent indicators due to
changes in influent quality and quantity.
Chlorination procedures are still required
to meet existing health standards, based
on total coliform densities.

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NBIP ACCESSION NUMBER: CT/019

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INVESTIGATOR(S): Cosgrove, R.
AFFILIATION: Environmental Health Services
Div., Connecticut State Health Dept.
TITLE: Connecticut Shellfish Project
PURPOSE: To classify shellfish growing waters
as to their suitability for harvesting
shellfish.

SPONSOR(S): State of Connecticut
SPONSOR CATEGORY: state government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been an
increase in the number of shellfish
growing waters closed to the harvesting of
shellfish.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: fisheries; indicator
species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; shellfish;
microorganisms; bacteria

TAXA: MERCENARIA MERCENARIA; CRASSOSTREA
VINOYINICA, MYTILUS EDULIS

ADDED KEYWORDS: heavy metals; hydrocarbons;
quahogs; virginia oysters; mussels;
pelecypods; oysters

PRIMARY PARAMETERS INVESTIGATED: toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection; mouse bioassay

NUMBER OF SAMPLING SITES: over 500

SAMPLING FREQUENCY: seasonal; quarterly;
irregular

SUPPORTING DATA COLLECTED: hydrological data;
water quality data

STUDY SITE(S): CT

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TYPE OF DATA: raw
ABSTRACT: As a member of the National Shellfish Sanitation Program, the State Health Dept., Environmental Health Services Div. is responsible for classifying all state waters as to their suitability for harvesting shellfish. To meet this commitment, the bacteriological quality of all shellfish growing waters is monitored. Periodically, shellfish meats (mussels) are monitored for paralytic shellfish poison levels. Market shellfish are also monitored for bag content, heavy metal, and hydrocarbon content to assess market quality.
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NBIP ACCESSION NUMBER: CT/011

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INVESTIGATOR(S): Guttay, A.J.E.
AFFILIATION: Plant Science Dept., University of Connecticut
TITLE: Impact of Deicing Salts upon the Mycorrhizae of the Sugar Maple
PURPOSE: To evaluate the effects of deicing salts on the mycorrhizae and rhizosphere of the sugar maple and its relationship to maple decline.
SPONSOR(S): University of Connecticut Research Fund
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Salts destroy mycorrhizae of sugar maples and destroy soil structure of rhizosphere, causing decline.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; pollution control; right-of-way
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: ACER SACCHARUM
ADDED KEYWORDS: sugar maples; maples; deicing salts; mycorrhizae; rhizosphere; industrial chemicals; trace elements
PRIMARY PARAMETERS INVESTIGATED: growth; habitat characterization; physiology; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): root microsections
NUMBER OF SAMPLING SITES: 44
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: soils
STUDY SITE(S): CT
GEOGRAPHIC DESCRIPTION: Fairfield County; Tolland County; Merriott Parkway; Route 195
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: analysis of variance; regression/correlation analysis
ABSTRACT: Sugar maple roots and soil of the immediate rhizosphere are collected from roadside maples suffering various levels of decline. Stained microsections of

representative short roots from damaged trees are compared to those of healthy trees. Differences in hyphal morphology, mycorrhizal habit, and content of sodium and chlorine are particularly noted.

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NBIP ACCESSION NUMBER: CT/003

<225>

INVESTIGATOR(S): Hillman, R.E.
AFFILIATION: Battelle Columbus Laboratories; William F. Clapp Labs, Inc.
TITLE: A Monitoring Program on the Ecology of the Marine Environment of the Hillstone Point, Connecticut, Area
PURPOSE: To monitor the marine environment around the site of a nuclear power generating station on Long Island Sound.
SPONSOR(S): Northeast Utilities Service Company
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Significant increase in species diversity of many algal and invertebrate groups.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca; microorganisms; algae
TAXA: BENTHIC ORGANISMS, 350 SPECIES
ADDED KEYWORDS: worms; ectoproteans; arthropods; benthic organisms; nuclear power plants; copepods; isopods; decapods
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; emigration; growth; habitat characterization; immigration; kill; mortality; migratory patterns; natality; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): otter trawl; seine; gill nets; plankton nets; SCUBA; exposure panels; hydro-lab
NUMBER OF SAMPLING SITES: 40
SAMPLING FREQUENCY: seasonal; weekly; monthly; quarterly; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): CT
GEOGRAPHIC DESCRIPTION: Long Island Sound
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC 6400; CDC Cyber 73; FORTRAN
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; non-parametric analysis; non-linear estimation
ABSTRACT: A comprehensive ecological study of the marine environment is being carried out to evaluate the impact of the construction and operation of a nuclear

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power plant located on Long Island Sound. The study, which began in 1968, involves extensive field investigations with samples of the plant and animal life taken at approximately 40 sites. The purpose is to describe and discuss the general population structure of the area and watch for changes over time.

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NBIP ACCESSION NUMBER: MA/061

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INVESTIGATOR(S): Hoehn, T.R.
AFFILIATION: Dept. of Environmental Protection
TITLE: Baseline Benthic Invertebrates of Connecticut's Long Island Sound Near Shore
PURPOSE: To record baseline benthic invertebrate information for environmental indicators.
SPONSOR(S): State Dept. of Environmental Protection
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Historic information was rare but we have shown a dramatic change in polychaete and bivalve communities since 1953.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca
ADDED KEYWORDS: clams; benthic organisms; worms; polychaetes; species diversity; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; mortality; reproduction; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Van Veen bottom sampler
NUMBER OF SAMPLING SITES: 35
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): CT
GEOGRAPHIC DESCRIPTION: Long Island Sound; Connecticut shore and rivers
TYPE OF DATA: raw
ABSTRACT: The project was initiated as a baseline environmental inventory of Connecticut's benthic invertebrates in Long Island Sound. Samples were taken on monthly intervals with a one twenty-fifth square meter Van Veen bottom sampler. Austerity has severely restricted analysis of these samples, i.e. 10 stations have been completely analyzed, 13 others partially analyzed. Diversity indices, quantitative and qualitative data have been presented for analyzed samples.

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NBIP ACCESSION NUMBER: CT/020

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INVESTIGATOR(S): Reid, R.N.
AFFILIATION: Middle Atlantic Coastal Fisheries Center, NMFS
TITLE: Coastal Ecosystems Investigations
PURPOSE: Baseline/impact studies concentrating on benthic ecology of Long and Block Island Sounds, Raritan Bay, and Baltimore Canyon Trough.
SPONSOR(S): NMFS; USN
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Benthic "population crash" and subsequent recovery in Long Island Sound, recolonization of dredge spoils at New London, Connecticut, and disappearance of ampeliscid amphipods from Raritan Bay.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; annelida
TAXA: MERCENARIA MERCENARIA; AMPHELISCA VADORUM; METRIDIDUM SENILE; HENRICIA SP; CRASSOSTREA VIRGINICA; MODIOLUS SP; CRASSOSTREA SPP; LUMBRINERIS TENUIIS; NUCULA PROXIMA; ASTERIAS FORBESI; ASTARTE SP; NEMERTEA; PITAR MORRHUANA; THARYX ANNULOSUS; METRIDIDUM SENILE; CANCER SPP; POLYCHAETA; ABTICA SP
ADDED KEYWORDS: habitat modification; waste water; dredging; sediments; heavy metals; species diversity
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers; productivity; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Smith-McIntyre grab samples; core samples; Hiskin sampler; Van Dorn water sampler
NUMBER OF SAMPLING SITES: 625
SAMPLING FREQUENCY: quarterly; annual; irregular
SUPPORTING DATA COLLECTED: hydrological data; soils; water quality data
STUDY SITE(S): NY; CT; NJ
GEOGRAPHIC DESCRIPTION: Block Island Sound; Baltimore Canyon Trough; Raritan Bay; Long Island Sound
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN IV
STATISTICS EMPLOYED: mean; median; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: Environmental baseline surveys of sediments, benthic macrofauna, and a number of water column parameters have been completed for Raritan Bay, Long

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Island Sound, the New Jersey Coast, and portions of the Baltimore Canyon Trough. Data from the latter two surveys are combined for subsequent determination of impacts of oil exploration activities. In Raritan Bay, advanced data analysis techniques are being employed to determine relationships among sediments, heavy metals, and macrofauna. The Long Island Sound project is investigating relationships among benthic species and contaminant effects on community structure. Periodic reoccupation of selected stations is projected for all survey areas to measure temporal changes from the established baselines. Smith-McIntyre quantitative benthic grab samples were used to obtain "baseline" characterizations of sediments and benthic macrofauna in the Thames River, Connecticut, the adjacent New London dumping ground, and a proposed alternate disposal area in Block Island Sound. Quarterly monitoring surveys are being conducted to determine impacts of dredging in the Thames and spoil disposal at the New London site. Research is also being completed under contract to provide data on: current movement and transport of suspended materials at the dredging and spoiling sites, heavy metal loading of the sediment and biota, and increases in suspended matter due to dredging and spoiling. Diving observations are also being conducted to determine IN SITU change in spoils and ambient sediments as well as recolonization of spoils.

REFERENCES: Middle Atlantic Coastal Fisheries Center Informal Report No. 75, 1975

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NBIP ACCESSION NUMBER: NJ/048

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INVESTIGATOR(S): Steinmetz, C.
AFFILIATION: Dept. of Biology, Southern Connecticut State College
TITLE: Class Projects, Primarily in Aquatic Biology
PURPOSE: To gather data and examine principal features of the aquatic environment, primarily the highest associated fauna and flora.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in abundance and distribution of some fishes, primarily in New Haven Harbor.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; invertebrates; crustacea; insecta; plants; vascular plants; microorganisms; algae; protozoa
ADDED KEYWORDS: habitat modification; population effects; decapods
PRIMARY PARAMETERS INVESTIGATED: diversity; habitat characterization; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data
STUDY SITE(S): CT
GEOGRAPHIC DESCRIPTION: West River; Pomperung River; Simpsons Pond; New Haven Harbor
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
ADDRESS: Mr. Charles Steinmetz
Southern Connecticut State College
501 Crescent Street
New Haven, CT 06515
TELEPHONE: (203) 397-2102 ext. 346
NBIP ACCESSION NUMBER: CT/007

<229>

INVESTIGATOR(S): Taylor, R.B.
AFFILIATION: Dept. of Environmental Protection
TITLE: Biological Monitoring Phase of Primary Monitoring Network Pursuant to Public Law 92-500
PURPOSE: To characterize the aquatic biological communities in surface waters and evaluate long term trends.
SPONSOR(S): State Dept. of Environmental Protection
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been improvements in diversity and productivity where upgraded wastewater treatment has been implemented.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; shellfish; annelida; plants; vascular plants; microorganisms; algae; protozoa
TAXA: ANNELIDA, 49 SPECIES; MOLLUSCA, 45 SPECIES; ARTHROPODA, 92 SPECIES; ECHINODERMATA, 4 SPECIES; PHYTOPLANKTON, 209 SPECIES; FISHES, 45 SPECIES; INSECTA, 54 SPECIES
ADDED KEYWORDS: waste water; sewage treatment; species diversity
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): grabs; tows; Ekman dredge; Ponar dredge; biological dredge; grapple; fish-otter trawl; electroshocking gear
NUMBER OF SAMPLING SITES: 30
SAMPLING FREQUENCY: seasonal

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CONNECTICUT
Standard Federal Region 1
Fish and Wildlife Service Region 5
(CONTINUED)

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SUPPORTING DATA COLLECTED: associated
microorganisms; hydrological data; water
quality data.

STUDY SITE(S): CT

GEOGRAPHIC DESCRIPTION: Quinnipiac River;
Still River; Shepaug River; Naugatuck
River; Thames River; Connecticut River;
Salmon River; Pequabuck River; Stonington
Harbor; Mystic Harbor; Mumford Cove;
Narrctic Bay; Branford Harbor; New Haven
Harbor; Bridgeport Harbor

TYPE OF DATA: raw

ABSTRACT: None provided.

REFERENCES: Cortell, et al, 1975

ADDRESS: Mr. Robert Taylor
Dept. of Environmental Protection
165 Capital Ave.
Hartford, CT 06115

TELEPHONE: (203) 566-3245

NBIP ACCESSION NUMBER: CT/014

<230>

INVESTIGATOR(S): Welsh, B.L.

AFFILIATION: University of Connecticut.

TITLE: The Study of Dynamic Interaction of
Marshes and Mud FlatsPURPOSE: To develop a criteria for ecological
stability of coastal ecosystems.

SPONSOR(S): COF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The marshes and mud flats
act together to hold nutrients in the
area, rather than being flushed out into
the ocean.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

wetland; aquatic; marine; estuarine

LEVEL(S) OF STUDY: population; community;
ecosystemMANAGEMENT FOCUS: environmental impact;
resource planningORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; mammals; invertebrates;
crustacea; insecta; mollusca; plants;

vascular plants; herbs; grasses;

non-vascular plants; microorganisms; algae

TAXA: SPARTINA ALTERNIFLORA; SPARTINA PATENS;

NASSARIUS; ULVA SPP

ADDED KEYWORDS: plankton; benthic organisms;
nekton; marsh grasses; whelks; green
algae; habitat modification; energy flow;
nutrients; density; oil spills; tides;

tidal zones; polychaetes; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; productivity; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
synoptic sampling

NUMBER OF SAMPLING SITES: 10

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; soils;
water quality data

STUDY SITE(S): CT

GEOGRAPHIC DESCRIPTION: Branford Harbor;
Branford River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
multivariate analysis; non-parametric
analysis

ABSTRACT: We are collecting synoptic data on
hydrology, geochemistry, and marine
subtidal, intertidal, and emergent marsh
communities. Data are analyzed to
determine community interactions and
criteria for stability in such marsh
systems focusing upon the feasibility rate
of return to stability after deposition of
dredged material. One possible application
is to use marsh and mudflat systems for
the deposition of dredged materials.

ADDRESS: Barbara L. Welsh
Marine Research Laboratory
University of Connecticut
P.O. Box 278
Newark, CT 06340

TELEPHONE: (203) 446-1020

NBIP ACCESSION NUMBER: CT/009

<231>

INVESTIGATOR(S): Widmer, W.J.

AFFILIATION: Dept. of Civil Engineering,
University of ConnecticutTITLE: Biotic changes in the
Williamantic-Shetucket River Associated
with Improvements in Sewage Treatment

PURPOSE: To determine changes in biota
following completion of a new activated
sludge sewage treatment plant; to
correlate these with chemical changes in
the river and with changes in effluent
quality; and to evaluate the local stream
pollution abatement program implementation
in terms of the above.

SPONSOR(S): University of Connecticut

Institute of Water Resources

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

CHANGE(S) OBSERVED: Biotic changes due to
effluent improvement were overwhelmed or
masked by normal fluctuations in upstream
river flow and quality. Some nutrient
increases were apparent and bacterial
populations were moderated by chlorination.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; riverLEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: fisheries; indicator

species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; insecta;

microorganisms; bacteria; algae

TAXA: PONTEDERIA CORDATA; PSEUDOMONAS SPP;

CATOSTOMUS COMMERSONI; HYDROPSYCHE SPP;

POTAMOGETON PEREGRINUS; BACILLUS SPP;

MICROCOCCUS SPP; CHEMOTOPSYCHE SPP;

ACHNANTHES SPP; PSEUDOMONAS SPP;

SELENASTRUM

ADDED KEYWORDS: chironomids; dipterans;

trichopterans; flies; caddisflies;

effluents; sewage treatment; population

effects; management measures; chlorine

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

direct sampling; artificial substrate

NUMBER OF SAMPLING SITES: 6

SUPPORTING DATA COLLECTED: hydrological data;

water quality data

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STUDY SITE(S): CT

GEOGRAPHIC DESCRIPTION: Windham County;
Willimantic River; Natchaug River;
Shetucket River

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: regression/correlation
analysis

ABSTRACT: Selected populations of algae,
macrophytes, bacteria, fungi,
invertebrates, and fish were studied for 1
1/2 years before and after an improvement
in sewage treatment (primary settling to
activated sludge) at Willimantic,
Connecticut. Diurnal, seasonal, and annual
changes in biotic populations, nutrients
and metabolic end-products indicate that
this system receives chronic low-level
industrial and agricultural pollution from
the entire watershed. Minor localized
effects of the treatment plant effluent
were observed and were minimized by high

dilution rates (about 1 percent annually)
and rapid reoxygenation in the turbulent
river. The only significant changes
observed were 1) an increase in
downstream ortho-phosphate and 2) a
decrease in downstream pollution indicator
bacteria. Both results are attributed to
changes in the sewage treatment plant, but
not necessarily due to the improvement in
sewage treatment per se. Chlorination
procedures were still required to meet
Connecticut public health standards.
Rerouting of some industrial effluents
coincided with a reduction in algal growth
potential as measured by a new assay
developed during the study.

ADDRESS: Mr. W. J. Widmer
University of Connecticut
School of Engineering
Box U-37
Storrs, CT 06268

TELEPHONE: (203) 486-4014

NBIP ACCESSION NUMBER: CT/018

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DELAWARE

Standard Federal Region 3
Fish and Wildlife Service Region 5
(SEE ALSO 236, 408, 409, 434, 602, 610, 733)

<232>

INVESTIGATOR(S): Maurer, D.L.
AFFILIATION: College of Marine Studies,
University of Delaware
TITLE: Effects of a Thermal Effluent on the
American Oyster
PURPOSE: To determine the effect of a thermal
discharge on the American oyster.
SPONSOR(S): Delmarva Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Depending on the season,
there was both beneficial and detrimental
effects.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact;
resource planning; pollution control;
water quality; power generation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mollusca
TAXA: CRASSOSTREA VIRGINICA
ADDED KEYWORDS: oysters; thermal effluents
PRIMARY PARAMETERS INVESTIGATED: growth;
mortality; physiology; reproduction;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
oysters in racks
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: monthly
STUDY SITE(S): DE
GEOGRAPHIC DESCRIPTION: Sussex County; Indian
River; Millamoro Power Plant
TYPE OF DATA: summarized; literature-derived
ABSTRACT: None provided.
ADDRESS: Donald L. Maurer
College of Marine Studies
University of Delaware
Lewis, DE 19958
TELEPHONE: (302) 645-4308
NBIP ACCESSION NUMBER: DE/004

<233>

INVESTIGATOR(S): Schuler, V.J.
AFFILIATION: Ichthyological Associates, Inc.
TITLE: Delaware River Ecological Study
PURPOSE: Pre- and post-operational biological
studies for a nuclear generating station
on an artificial island.
SPONSOR(S): Public Service Electric and Gas
Company
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No aquatic or terrestrial
effects have been observed due to
construction. A two-lane roadway was
built through the marsh disturbing the
marsh only in that it removed portions of
marshland. Annual changes in the fish
communities which are completely unrelated
to the power plant construction have been
observed, i.e. Atlantic croaker and spot
are increasing in numbers.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population;

community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; wildlife;
radiological; water quality; power
generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insecta;
mollusca; shellfish; annelida; plants;
vascular plants; trees; shrubs; herbs;
grasses; non-vascular plants; lichens;
microorganisms; algae; protozoa
TAXA: PHYTOPLANKTON, 42 GENERA; ZOOPLANKTON,
100 SPECIES; INVERTEBRATES, 40 SPECIES;
FISHES, 104 SPECIES; AMPHIBIA, 20 SPECIES;
REPTILES, 24 SPECIES; BIRDS, 215 SPECIES;
MAMMALS, 40 SPECIES
ADDED KEYWORDS: nuclear power plants;
entrainment; impingement; thermal
effluents; chlorine; power plants;
phytoplankton; zooplankton; benthic
organisms; secondary productivity; primary
productivity; amphipods; isopods;
cladocerans; copepods; decapods;
dipterans; coelenterates; poriferans;
tardigrades
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; harvest;
immigration; kill; mortality; migratory
patterns; natality; numbers; productivity;
reproduction; sex; size/weight; stress;
toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trawl; seine; gill net; plankton net;
Clarke-Bumpus sampler; plankton pump;
Neuston net; light-dark bottle; Van Dorn
bottle; Kemmerer bottle; Ponar grab;
Peterson dredge; core sampler; crab pot
NUMBER OF SAMPLING SITES: 172
SAMPLING FREQUENCY: weekly; monthly;
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; water quality data
STUDY SITE(S): DE; NJ
GEOGRAPHIC DESCRIPTION: New Castle County;
Salem County; Delaware River; Delaware
Bay; Salem Nuclear Generating Station;
Artificial Island in Delaware River
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: Hewlett-Packard 9830A;
UNIVAC 1100; BASIC; FORTRAN
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
contingency table analysis
ABSTRACT: The primary objective is to gather
biological and related physicochemical
information to which findings in the
post-operational phase of the study can be
compared. Effort is directed largely to
the identification of terrestrial flora
and fauna, and of the fishes,
invertebrates, and phytoplankton that
utilize this region, and to the
determination of their seasonal and
spatial distribution and abundance. This
involves field observations and systematic
sampling throughout each year with a
variety of gear. Fishes are collected by
bottom trawl, gill net, and seine.
Plankton and benthos are collected with
plankton nets, pump samplers, and grab
samplers. Studies of age and growth,
feeding habits, and life history of

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Fish and Wildlife Service Region 5
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important species are done. Laboratory investigations of thermal preference, avoidance and tolerance, and chemical avoidance of aquatic organisms are conducted as well as are studies of temperature and pressure effects on entrainable organisms. Post-operational phase of the study includes continuing studies of the flora and fauna utilizing the area and assessment of the effects of impingement and entrainment by the condenser cooling water.
ADDRESS: Victor J. Schuler
Ichthyological Associates, Inc.
100 S. Cass St.
Middletown, DE 19709
TELEPHONE: (302) 378-9881
NBIP ACCESSION NUMBER: DE/015

<234>

INVESTIGATOR(S): Taylor, M.H.
AFFILIATION: Dept. of Biological Sciences,
University of Delaware
TITLE: An Assessment of the Effects of
Tropical Storm Agnes on the Delaware
Estuary
PURPOSE: Documentation of changes in fish,
blue crabs, and benthic invertebrates
resulting from tropical storm Agnes.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Dilution of estuary and
temporary displacement of demersal and
pelagic populations.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; marine; estuarine
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; shellfish
TAXA: CALLINECTES SAPIDUS
ADDED KEYWORDS: blue crabs; benthic
organisms; natural catastrophe; population
effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Van Veen grab; otter trawl
NUMBER OF SAMPLING SITES: 7
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): DE
GEOGRAPHIC DESCRIPTION: Delaware River;
Delaware Bay
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
ADDRESS: Dr. Malcolm Taylor
Dept. of Biology
University of Delaware
Newark, DE 19711
TELEPHONE: (302) 738-2881
NBIP ACCESSION NUMBER: DE/006

<235>

INVESTIGATOR(S): Wiese, J.H.
AFFILIATION: Tall Timbers Research Station
TITLE: Pea Patch Island, Delaware, Wader
Studies
PURPOSE: To determine species composition,
numbers of individuals within each
species, and factors affecting nesting
ecology and success of herons and ibises.
Emphasis is on effect of nesting on
vegetation substrate and succession.
Population dynamic factors are explored.
SPONSOR(S): Delmarva Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major changes in
vegetation succession and viability
brought about by nesting. Shifts of nest
site locations followed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland
LEVEL(S) OF STUDY: organism; population;
community; region
MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; resource
planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees;
shrubs; herbs
TAXA: ARDEA SPP; CASMERODIUS SPP; FLORIDA
SPP; EGRETTA SPP; BUBULCUS SPP; HYDRANASSA
SPP; NYCTANASSA SPP; PLEGADIS SPP
ADDED KEYWORDS: heronry survey;
threskiornithids; ardeids; herons; egrets;
ibises; population effects; nests;
succession; islands
PRIMARY PARAMETERS INVESTIGATED: behavior;
diversity; growth; habitat
characterization; mortality; natality;
migratory patterns; reproduction;
size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation from blinds; transects;
labeled nests
NUMBER OF SAMPLING SITES: 1,000 nests
SAMPLING FREQUENCY: daily
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): DE
GEOGRAPHIC DESCRIPTION: New Castle County;
Pea Patch Island
STATISTICS EMPLOYED: mean; analysis of
variance; multivariate analysis
ABSTRACT: Nine species of wading birds nest
on the northern part of Pea Patch Island.
This population is increasing yearly,
causing extensive vegetation destruction.
Preliminary indications show a periodic
shift of major nesting areas and
subsequent regeneration of unused areas.
In addition baseline data such as clutch
size, hatching successes, growth rates,
and fledging rates are determined for most
species. Color-banding of young allows
determination of population dispersal,
turnover, and stability. Other parameters
such as feeding areas, flight ranks, and
factors affecting nesting success are
determined. This study is done in
collaboration with the goals set during
the First Annual Heron Workshop held at
Patuxent Research Center, Laurel, MD.
ADDRESS: Dr. Jochen H. Wiese
Tall Timbers Research Station

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Tallahassee, FL 32303
TELEPHONE: (904) 385-1753 ext. 8
NBIP ACCESSION NUMBER: FL/006

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Route 1, Box 160

FLORIDA

Standard Federal Region 4
Fish and Wildlife Service Region 4
(SEE ALSO 1, 279, 340, 333, 370, 409, 502,
657, 785, 1014)

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INVESTIGATOR(S): Butler, P.A.
AFFILIATION: Ecological Monitoring Branch, EPA
TITLE: National Estuarine Monitoring Program
PURPOSE: To determine existing levels and
future trends in residues of synthetic
pesticides and metals (cadmium, lead, and
mercury) in estuarine and continental
shellfish.

SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been a decline
and restoration of the reproductive
success in estuarine fish in one Texas
estuary. Other changes noted have been a
decline in DDT residues, but an increase
in substitute pesticides.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; mollusca; shellfish
TAXA: BENTHIC ORGANISMS, 130 SPECIES; FISHES,
60 SPECIES

ADDED KEYWORDS: pesticides; DDT; cadmium;
lead; mercury; dieldrin; PCB; endrin;
mirex; toxaphene

PRIMARY PARAMETERS INVESTIGATED: residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
chemical analyses of fish

NUMBER OF SAMPLING SITES: 150

STUDY SITE(S): AL; CA; DE; FL; GA; ME; MD;
MS; NJ; NY; NC; SC; TX; VA; WA; PR; VI

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: Analyses of the 8,095 samples for
15 persistent organochlorine compounds
showed that DDT residues were ubiquitous;
the maximum DDT residue detected was 5.39
ppm. Dieldrin was the second most commonly
detected compound with a maximum residue
of 0.23 ppm. Endrin, mirex, toxaphene, and
polychlorinated biphenyls were found only
occasionally. Results indicate a clearly
defined trend towards decreased levels of
DDT residues, beginning in 1969-70. At no
time were residues observed of such a
magnitude as to imply damage to mollusks;
however, residues were large enough to
pose a threat to other elements of the
biota through the processes of recycling
and magnification.

REFERENCES: Butler, 1973

ADDRESS: Dr. Philip Butler
Gulf Breeze Laboratory
EPA/OEP
Sabine Island
Gulf Breeze, FL 32516

TELEPHONE: (904) 932-5311

NBIP ACCESSION NUMBER: FL/003

<237>

INVESTIGATOR(S): Buzas, M.A.
AFFILIATION: National Museum of Natural
History, Smithsonian Institution
TITLE: Foraminifera of Sea Grass Communities

PURPOSE: To identify periodic (temporal)
changes in species composition and relate
changes to biotic variables.

SPONSOR(S): SI

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The distribution,
density, and diversity of Foraminifera
varies with stress differences resulting
from environmental changes.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact

ORGANISMS, MAJOR TYPES: microorganisms;

protozoa

TAXA: ELPHIDIUM INCERTUM; AMMONIA BECCARII;
QUINQUELOCULINA SEMINULA; FORAMINIFERA, 28
SPECIES

ADDED KEYWORDS: seasonal variations;
population effects; foraminiferans;
aquatic plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
cores

NUMBER OF SAMPLING SITES: 7

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Indian River

TYPE OF DATA: raw

COMPUTER AND LANGUAGE: Honeywell; FORTRAN

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: Studies begun in May, 1975 of
Foraminifera have resulted in 5,039
individuals belonging to 28 species from 6
sampling areas in the Indian River. The
majority of individuals were of 3
species-AMMONIA BECCARII, ELPHIDIUM
INCERTUM, and QUINQUELOCULINA SEMINULA.
Preliminary data suggest a correlation of
distribution of Foraminifera with a
gradient of physical stress. The
northernmost areas having greater
variability of temperature, salinity, and
tides have lower densities and diversities
than the more southern stations.

REFERENCES: Staff, 1975

ADDRESS: Mr. M.A. Buzas

Smithsonian Institution

Washington, DC 20560

TELEPHONE: (202) 381-5431

NBIP ACCESSION NUMBER: DC/012

<238>

INVESTIGATOR(S): Campbell, H.W.

AFFILIATION: FWS

TITLE: Status and Distribution of Manatee

(TRICHECHUS MANATUS) populations in the

United States and Circum-Caribbean Regions

PURPOSE: To document current distribution and

population levels of manatees in the

prescribed area, to monitor these

populations over time, to relate patterns

of distribution to environmental

features, and to determine patterns and

causes of population changes, if any.

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FLORIDA

Standard Federal Region 4

Fish and Wildlife Service Region 4

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SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Baseline data are now being accumulated. Large historic declines in population levels are documented.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; river; lake; reservoir; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species;

environmental impact; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: TRICHECHUS MANATUS

ADDED KEYWORDS: manatees; sea cows; population effects; habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution;

emigration; growth; habitat

characterization; home range size;

immigration; kill; mortality; migratory

patterns; natality; numbers; sex;

size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial survey; observation; public

response questionnaire; interviews;

tracking studies

SAMPLING FREQUENCY: continuous; seasonal;

daily; monthly; irregular

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

hydrological data; water quality data

STUDY SITE(S): NC; SC; GA; FL; AL; MS; LA; TX

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: analysis of variance;

analysis of covariance;

regression/correlation analysis;

non-parametric analysis; modeling,

- deterministic

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: FL/031

<239>

INVESTIGATOR(S): Conway, K.E.

AFFILIATION: Dept. of Plant Pathology,

University of Florida

TITLE: Biological Control of Water Weeds with Plant Pathogens

PURPOSE: To find and develop pathogens of nuisance aquatic weeds for biological control of these weeds.

SPONSOR(S): CFW; FWRT; Florida Dept. of Natural Resources

SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The fungal flora of water hyacinths.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population;

community; ecosystem

MANAGEMENT FOCUS: water quality

ORGANISMS, MAJOR TYPES: plants; vascular

plants; herbs; microorganisms; fungi

TAXA: EICHORNIA CRASSIPES; MYRIOPHYLLUM

SPICATUM; HYDRILLA SPP; ALTERNANTHERA

PHILOXEROIDES

ADDED KEYWORDS: water hyacinths; milfoil;

alligatorweeds; aquatic plants; population

effects; biological control

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; kill; mortality;

stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

observation; collection

NUMBER OF SAMPLING SITES: 6-12

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated flora;

associated microorganisms

STUDY SITE(S): FL; MS; LA

GEOGRAPHIC DESCRIPTION: Rodman Reservoir

ABSTRACT: Aquatic weeds in many lakes and streams in Florida have become the concern of scientists and sportsmen. Although aquatic plants perform a function, an overabundance can rapidly lead to a decrease in boating, fishing, and environmental quality. Therefore, there is a need to limit the growth and spread of certain aquatic weeds. Currently, the number one problem is the water hyacinth, estimated to infest 200-300 thousand acres of water in the state of Florida. In November of 1973, a project was initiated to survey, isolate, identify, test, and catalogue all fungi associated with water hyacinths. The objective of this research was to find fungal organisms that could be used as biological controls to limit the growth rate or destroy the water hyacinth. It was felt that a broad ranged approach looking at both parasites and saprophytes would significantly augment our understanding of the role played by fungi in the decline and death of the water hyacinth. This approach would also aid our understanding of the natural succession of fungal organisms on the water hyacinth. More effective biocontrol should be possible by knowing what environmental factors favor the presence of fungal pathogens.

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NBIP ACCESSION NUMBER: FL/026

<240>

INVESTIGATOR(S): Cowell, B.C.

AFFILIATION: Dept. of Biology, University of South Florida

TITLE: Monitoring Eutrophication and Determination of Rates of Reversal of Eutrophication in Lake Thonotosassa, Florida

PURPOSE: To determine rates of reversal of eutrophication processes, determine

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methods of biological monitoring in subtropical lakes, and evaluate the adequacy of state advanced waste standards.
SPONSOR(S): University of South Florida
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Coliform bacteria reductions, increased diversity in benthic invertebrates, and changes in species composition of phyto- and zooplankton.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; fish; invertebrates; crustacea; insecta; microorganisms; bacteria; algae
TAXA: PHYTOPLANKTON, 47 SPECIES; ZOOPLANKTON, 49 SPECIES; BENTHIC ORGANISMS, 64 SPECIES
ADDED KEYWORDS: eutrophication; waste water; phytoplankton; zooplankton; benthic organisms; sewage treatment; copepods; dipterans; rotifers; coliform bacteria
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; productivity
NUMBER OF SAMPLING SITES: 24
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Hillsborough County; Thonotosassa Lake
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis
ABSTRACT: Limnological sampling of Lake Thonotosassa was initiated in 1970 to document current conditions following 15 years of artificial enrichment by organic wastes from primary treated sewage and citrus processing plants, and to provide base-level data for a long-term study of the rates of change following the installation of a secondary sewage treatment facility. Results from the first year of study indicated that the lake was in an advanced state of eutrophy. Inorganic nutrient levels were high. Oxygen deficits occurred in the hypolimnion and at the mud-water interface. Phytoplankton volumes were large and dominated by blue-green algae. Primary productivity rates were comparable with those of grossly polluted lakes. Small-bodied herbivores dominated the zooplankton. Benthic invertebrate populations were comprised of an overwhelming abundance of oligochaetes and chironomids. Construction of the new sewage treatment plant reduced the organic load and BOD of the incoming waters and benthic diversity in the inlet subsequently increased. However, in the lake itself decreases in coliform bacteria

concentrations were the only signs of immediate influence.

REFERENCES: Cowell, et al, 1973

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NBIP ACCESSION NUMBER: FL/009

<241>

INVESTIGATOR(S): Crawford, R.L.
AFFILIATION: Tall Timbers Research Station
TITLE: Bird Casualties at a Leon County, Florida TV Tower
PURPOSE: To continue the studies of birds killed by colliding with the WCTV transmitting tower in Leon County, Florida.
SPONSOR(S): Tall Timbers Research Station
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decline in numbers of recovered birds possibly due to predation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: BIRDS, 149 SPECIES
ADDED KEYWORDS: collisions; predators; TV towers; natural catastrophe
PRIMARY PARAMETERS INVESTIGATED: kill; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): counts; baiting
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: daily
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Leon County
TYPE OF DATA: summarized
ABSTRACT: Bird casualties at the WCTV tower in Leon County, Florida, have been studied since October 1955. This summary presents data on about 5,550 individuals of 148 species that occurred at the tower October 1966-September 1973 and provides some comparisons over the entire 18 year period, with several declines in numbers of recoveries being noted. Predation on the downed birds is suggested as the primary cause for these declines. The recovery of a banded bird is noted and newly established extremes in migration dates are given.
REFERENCES: Stoddard and Norris, 1967; Crawford, 1973
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NBIP ACCESSION NUMBER: FL/089

<242>

INVESTIGATOR(S): Cummings, S.R.
AFFILIATION: Conservation Consultants, Inc.
TITLE: A Summary and Analysis of Past Ecological Studies in the Vicinity of the Big Bend Steam Electric Station, Tampa Bay, Florida

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PURPOSE: To summarize the plankton portion of a four year study and interpret the significance of the data.

SPONSOR(S): Conservation Consultants, Inc.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: The overall size of the plankton population declined at intake and release (30 percent) but species composition or proportion was not altered.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact;

fisheries; pollution control; water

quality; power generation

ORGANISMS, MAJOR TYPES: microorganisms; algae

ADDED KEYWORDS: plankton; species

composition; species diversity; diatoms;

zooplankton; fossil fueled power plants;

dinoflagellates; coal

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated

microorganisms; climatological data;

hydrological data; water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Hillsborough County;

Tampa Bay

TYPE OF DATA: reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: CDC-6400; FORTRAN

STATISTICS EMPLOYED: percentile;

regression/correlation analysis

ABSTRACT: The effect of a steam electric station on the local plankton population was summarized from previously gathered plankton data. Inadequate methodology and data gathering techniques reduced four years of plankton data to 18 months of reliable data. Uneven sample counts made diversity and evenness analysis uninterpretable. Species composition and overall population size were proportional and consistent among sample sites. No environmental damage was found. The effect of a large embayment located prior to the release site station was not studied.

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NBIP ACCESSION NUMBER: MA/044

<243>

INVESTIGATOR(S): Duever, M.J.

AFFILIATION: National Audubon Society

TITLE: Ecosystem Analysis at Corkscrew Swamp

PURPOSE: To relate vegetation types to

hydrology and other significant factors.

SPONSOR(S): Rockefeller Foundation

SPONSOR CATEGORY: societies and other

organizations

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: No observed changes in undisturbed habitats but successional processes observed in disturbed habitats.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

wetland

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: endangered species;

environmental impact; wildlife; resource

planning; water quality

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; shrubs; herbs; grasses

ADDED KEYWORDS: habitat modification;

succession; decomposition; cypresses;

logging; grazing; fires

PRIMARY PARAMETERS INVESTIGATED: biomass;

diversity; growth; habitat

characterization; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

litter boxes; decomposition bags; harvest

and weighing

NUMBER OF SAMPLING SITES: intensive-9;

extensive-28

SAMPLING FREQUENCY: weekly; monthly;

quarterly; annual; irregular

SUPPORTING DATA COLLECTED: climatological

data; hydrological data; soils; terrain;

water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Collier County; Lee

County; Corkscrew Swamp

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile;

analysis of variance;

regression/correlation analysis; modeling,

deterministic

ABSTRACT: The primary purpose of the Corkscrew Swamp Sanctuary project is to determine the environmental characteristics of a mature cypress forest. This knowledge will facilitate understanding of the long-term implications of using the more widespread younger cypress forests as water conservation areas, contrasting with the main program study sites at Gainesville, Florida. This project also provides information on cypress forests in a geographically different area and insight into the differences between a flowing water "strand" system and a ponded "dome" system which, when integrated with results from the Gainesville base studies, will lend perspective to our view of cypress ecology. The work is designed to provide a broad understanding of how hydrological factors and soil types influence the distribution of vegetation communities and vice versa. Studies on non-cypress habitats on the sanctuary will clarify environmental factors determining the location and productivity of cypress forests. Successional processes and rates operating in disturbed sites (logged, grazed, burned) are also being monitored.

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NBIP ACCESSION NUMBER: FL/106

<244>

INVESTIGATOR(S): Ewel, J.J.

AFFILIATION: University of Florida

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TITLE: MELALEUCA in South Florida
PURPOSE: To determine impact of spread of
MELALEUCA QUINQUENARIA on south Florida
ecosystem.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: MELALEUCA successfully
invades most south Florida ecosystems when
these are disturbed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; tropical;
grassland; wetland
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
indicator species; resource planning
ORGANISMS, MAJOR TYPES: animals; plants;
vascular plants; trees
TAXA: MELALEUCA QUINQUENARIA
ADDED KEYWORDS: exotic trees; species
introduction; competition; natural
catastrophe; fires
PRIMARY PARAMETERS INVESTIGATED:
distribution; emigration; growth; habitat
characterization; numbers; reproduction
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: monthly; quarterly;
irregular
SUPPORTING DATA COLLECTED: associated flora;
hydrological data; soils
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Lee County; Collier
County; Dade County; Broward County;
Monroe County; Palm Beach County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
ABSTRACT: Continued testing is carried out to
determine the potential of MELALEUCA
QUINQUENARIA (an exotic tree) to invade
various disturbed and undisturbed
ecosystems in south Florida. MELALEUCA are
introduced as seed and seedlings and
survival and growth are recorded. Site
variables monitored include water level
fluctuations, fire, and competing
vegetation.
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NBIP ACCESSION NUMBER: FL/014

<245>

INVESTIGATOR(S): Haller, W.T.
AFFILIATION: Agronomy Dept., University of
Florida
TITLE: Effect of Chemical Control of Water
Hyacinths on the Aquatic Environment of
Shallow Ponds
PURPOSE: To document adverse effects of
hyacinths on aquatic system, determine
effects of chemical control on non-target
organisms, and monitor increased diversity
in aquatic system.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Water hyacinths have been
killed, algae blooms have occurred, sulfur
bacteria have decreased, and invertebrates
are more diverse.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; shellfish; annelida; plants;
vascular plants; herbs; microorganisms;
bacteria; algae; protozoa
TAXA: EICHORNIA CRASSIPES; CHIRONOMIDAE;
ROTATORIA; CERATUM SPP; MELOSIRA SPP;
GOMPHONEMA SPP; NOSTOC SPP; APHANIZOENON
SPP
ADDED KEYWORDS: herbicides; habitat
modification; water hyacinths; 2,4-D;
plankton; diatoms; benthic organisms;
species diversity
PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; growth; kill; numbers;
residues; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ekman dredge; plankton nets; quadrats
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; water quality data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Marion County; Hen
Reef; Chicken Reef; Florida Keys
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; median; analysis
of variance
ABSTRACT: Dense mats of water hyacinths have
profound detrimental effects on the
physical and biological characteristics of
their associated bodies of water. Water
hyacinth infestations were studied in 1 to
2 ha. shallow ponds by monitoring biomass,
light penetration, water quality, plankton
content, sedimentation, periphyton
diatoms, benthic organisms, and redox
potentials. Such parameters were also
monitored in ponds sprayed with 2,4-D to
control water hyacinths. Periphyton diatom
and plankton population in untreated ponds
were low in density and diversity. Water
temperature profiles showed that the
greatest temperature change occurred in
the surface 0.3 M of water throughout the
study period. Water immediately below the
water hyacinths contained very little
dissolved oxygen, and the anaerobic
conditions near the bottom of the ponds
prevented survival of benthic organisms.
Ponds treated with 2,4-D had short-term
reductions in periphyton and plankton
populations; however, these populations
returned to pretreatment levels within 4
to 7 weeks after herbicide application.
Organisms (sulfur bacteria, blue-green
algae, etc.) found in the ponds were
typical of those generally associated with
sewage treatment lagoons. Detrimental
effects of chemical control of dense water

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hyacinth stands on aquatic parameters were short-term and only slightly greater than when water hyacinth growth remained unchecked.

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NBIP ACCESSION NUMBER: FL/067

<246>

INVESTIGATOR(S): Haller, W.T.

AFFILIATION: University of Florida

TITLE: Physiology and Control of Vegetative

Reproduction in HYDRILLA VERTICILLATA

PURPOSE: Study phenology and autecology of HYDRILLA in relation to control of vegetative reproduction by water management and timed herbicide applications.

SPONSOR(S): Florida Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: HYDRILLA increases in Rodman Reservoir after drawdown, but naturally recedes in fall. Tubers are produced in winter.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: recreation

ORGANISMS, MAJOR TYPES: plants; vascular

plants; herbs; microorganisms; algae

TAXA: HYDRILLA VERTICILLATA; VALLISNERIA

NEOTROPICALIS

ADDED KEYWORDS: herbicides; hydrilla; population effects; management measures; drawdown; weed control; epiphytic algae; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; numbers; physiology; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

laboratory studies; sampling; collection

NUMBER OF SAMPLING SITES: several

SAMPLING FREQUENCY: weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Putnam County;

Oklavaha River; Lake Oklavaha; Rodman

reservoir

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis

ABSTRACT: Formation and germination of tubers of hydrilla have seasonal patterns in North Florida. Growth of hydrilla in the water column is greatest between May and October; however, during this period few tubers are formed. After hydrilla flowers, growth ceases except for production of tubers which occurs at a maximum between October and April. Laboratory studies showed that tubers are commonly formed within 4 weeks after apical sections were

planted in the hydrosol. The average number of tubers formed 4 weeks after planting during October through April was 52 tubers/sq. meter. Monthly sampling and collection of tubers prior to and after a 1 meter winter drawdown provided evidence that dewatering stimulated tuber germination. In exposed, sandy areas of the reservoir, tuber germination was essentially complete; whereas in low, poorly drained areas some tubers did not germinate and remain a potential source of reinfestation. Related laboratory studies have shown that carbon dioxide is an important factor in maintaining dormancy in tubers. Also, no evidence was found to support the theory that placing hydrilla under stress by drawdowns stimulates tuber formation. Hydrilla regrowth resulted from tuftions (vegetative propagules). Field research in Rodman Reservoir has substantiated laboratory data showing that hydrilla tubers are formed primarily during winter months and that most tubers germinate the following summer. These data and observations suggest that proper timing of drawdowns and/or chemical treatments may provide more effective hydrilla control.

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NBIP ACCESSION NUMBER: FL/068

<247>

INVESTIGATOR(S): Hestand, R.S.

AFFILIATION: Florida State Game and Fresh

Water Fish Commission

TITLE: Aquatic Plant Research

PURPOSE: To monitor the effects of controlling aquatic plants on the ecosystem and management of these plants to maximize fishery benefits and other recreational activities.

SPONSOR(S): Florida State Game and Fresh

Water Fish Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The continued spread of Hydrilla has not been slowed and infested lakes have been rendered nearly useless.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: fisheries; indicator

species; recreation; water quality

ORGANISMS, MAJOR TYPES: plants; vascular

plants; shrubs; herbs; microorganisms;

bacteria; algae

TAXA: CERATOPHYLLUM DEMERSUM; POLYGONUM

LAPATHIFOLIUM

ADDED KEYWORDS: phytoplankton; hydrilla; coontails; southern naiads; brazilian elodea; water hyacinths; alligatorweeds; smartweeds; waterpurslane; pickerelweeds; population effects; eutrophication; aquatic plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; growth; physiology

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DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
line transects; plots; Kemmerer sampler
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms; soils; water
quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: St. Johns River;
Ocklawaha River; Jackson Lake; Rodman
Lake; Kissimmee Lake

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: percentile

ABSTRACT: The project has consisted of
several studies: (1) Rodman drawdown -
will determine if a drawdown will control
hydrilla; (2) herbicide evaluations for
effects on target and non-target plants,
water quality, invertebrates, and
phytoplankton; (3) effects of grass carp
on aquatic vegetation in selected lakes;
and (4) vegetation surveys on the St.
Johns River, Lake Kissimmee, Lake Jackson,
Lake Orange, and eutrophic lakes.

REFERENCES: Hestand and Carter, 1975

ADDRESS: Rue S. Hestand

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NBIP ACCESSION NUMBER: FL/108

<248>

INVESTIGATOR(S): Hines, T.C.

AFFILIATION: Florida State Game and Fresh
Water Fish Commission

TITLE: Alligator Management Research

PURPOSE: To monitor population trends and
develop a statewide alligator management
program.

SPONSOR(S): Florida State Game and Fresh
Water Fish Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Observed alligator
population increase, but data are not
sufficient to accurately quantify changes.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; lake; reservoir; marine; coastal;
estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species;

wildlife; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles

TAXA: ALLIGATOR MISSISSIPPIENSIS

ADDED KEYWORDS: alligators; management
measures; legal regulation; population
effects

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; emigration; growth; habitat
characterization; harvest; mortality;
natality; numbers; reproduction; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

night transects; light location of animals

NUMBER OF SAMPLING SITES: 26

SAMPLING FREQUENCY: seasonal; annual

STUDY SITE(S): FL

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: The American alligator is an
important part of the fauna of Florida.
There is ample evidence that populations
have increased since the effective
elimination of interstate commerce in
alligator skins. However, in order to
manage alligators we must know the status
of the population and be able to
effectively monitor population trends. The
status of alligator populations has been
documented to some degree in the
Everglades, but no quantitative measure of
status or trend is available for much of
the remainder of Florida.

REFERENCES: Hines, 1975

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NBIP ACCESSION NUMBER: FL/073

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INVESTIGATOR(S): Hofstetter, R.H.

AFFILIATION: University of Miami

TITLE: Everglades Vegetation

PURPOSE: To evaluate present status of the
major communities in the Florida
everglades and predict their future.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Major changes are loss in
area and stature of sawgrass, the dominant
species.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;

forest; coniferous; tropical; wetland

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: environmental impact;
indicator species

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; grasses

TAXA: CLADIUM JAMAICENSE

ADDED KEYWORDS: sawgrasses; sedges; nitrogen;
fires; succession; drought; sediments;
nitrogen cycle; peat

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; mortality; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats; spot measurements

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: annual; annual; irregular

SUPPORTING DATA COLLECTED: hydrological data;
soils; water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Palm Beach County;
Broward County; Monroe County; Dade
County; Upper Shark River

TYPE OF DATA: literature-derived

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis

ABSTRACT: The current project, beginning
June, 1975, is a continuation of parts of
projects sponsored between July, 1971 and
June, 1975 by the U.S. Park Service on the
ecological role of fire in the natural
communities of southern Florida. The

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emphasis now is on the sawgrass, components of the nitrogen cycle found in sawgrass, and the surrounding waters and peat. Sawgrass has been dying at an increasing rate since 1970 and causal factors are being sought.

ADDRESS: Dr. Ronald Hofstetter
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University of Miami
Coral Gables, FL 33124
TELEPHONE: (305) 284-4840
NBIP ACCESSION NUMBER: FL/024

<250>

INVESTIGATOR(S): Hubbell, D.H.
AFFILIATION: Dept. of Soil Science,
University of Florida
TITLE: The Interaction of Pesticides with
Soil Organisms
PURPOSE: To examine the possible cumulative
effects of pesticides on soil microbial
populations after repeated yearly
applications to soil.
SPONSOR(S): FI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No detectable changes in
microbial populations. Weed fallow is
stimulated by Furadan.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
pollution control
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs; grasses; microorganisms;
bacteria; fungi; algae
ADDED KEYWORDS: actinomycetes; furadan; soil
microorganisms; pesticides; soil algae;
soil fungi; soil bacteria; agrieosystems;
weeds
PRIMARY PARAMETERS INVESTIGATED: numbers;
physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plate counts
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; weekly;
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): FL
TYPE OF DATA: reduced; summarized
ABSTRACT: None provided.
ADDRESS: Mr. D. H. Hubbell
Soil Science Dept.
University of Florida
Gainesville, FL 32611
TELEPHONE: (904) 392-1951
NBIP ACCESSION NUMBER: FL/028

<251>

INVESTIGATOR(S): Hudson, J.H.
AFFILIATION: USGS
TITLE: Environmental Effects in Area of
Carbonate Deposition
PURPOSE: To develop a methodology whereby
past environmental history affecting coral

growth and death can be determined through
use of coral growth rings.

SPONSOR(S): USGS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Limited regrowth of coral
tissue over partially killed coral heads.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
indicator species; resource planning;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea
TAXA: MONTASTREA ANNULARIS
ADDED KEYWORDS: weather conditions; density;
star corals; mortality rates; coelenterates
PRIMARY PARAMETERS INVESTIGATED: age; growth;
mortality; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hydraulic drill cores; growth ring data
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Monroe County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean
ABSTRACT: During the winter of 1969-70, Hen
and Chickens patch reef in the Florida
Keys suffered 80-90 percent mortality.
Twenty cores from both living and dead
MONTASTREA ANNULARIS coral heads taken
from this reef with a newly developed
underwater coring device, were slabbbed and
x-radiographed for the purpose of
determining the cause of death. Distinct
annual summer "tree ring" banding provided
a precise chronology, allowing annual
growth rate measurements and timing of
abnormalities from the present back to
1926. "Stress bands," formed during winter
months, occur periodically between annual
summer bands. "Stress bands" deposited by
the coral under unfavorable environmental
conditions in 1942, 1958, 1964, and 1970
were easily dated by direct counting of
annual bands. Comparison of "stress bands"
with U.S. Weather Bureau data shows that
they correspond to occurrence of unusually
cold winters. The most recent "stress
band" in all living corals at Hen and
Chickens patch reef correlates with the
observed time of mass mortality and a 3
day span during which maximum air
temperatures were consistently below the
temperature (13.9C) known to be lethal to
M. ANNULARIS. It is concluded that the
death of Hen and Chickens patch reef was
caused by uncommonly cold water.
X-radiographs of coral cores from
elsewhere in the Florida reef tract
indicate that this particular event was
not unique to Hen and Chickens and that in
the past other, less damaging periods of
critically low water temperatures have
been recorded by Florida corals.
ADDRESS: J. Harold Hudson
U. S. Geological Survey
Fisher Island Station
Miami Beach, FL 33139

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TELEPHONE: (305) 672-1784
NBIP ACCESSION NUMBER: FL/055

<252>

INVESTIGATOR(S): Klimstra, W.D.
AFFILIATION: Cooperative Wildlife Research
Laboratory, Southern Illinois University
TITLE: Key Deer Investigations
PURPOSE: To evaluate population levels,
dynamics and distribution, habitat
utilization, impact of man's activities,
and recommend a program of management.
SPONSOR(S): FWS; Southern Illinois
University; National Geographic Society;
North American Wildlife Foundation
SPONSOR CATEGORY: federal government;
teaching institution; societies and other
organizations
DATE OF INITIATION: 1967
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Loss of habitat via
development, although there was some
increase in deer population.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; tropical
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; forestry;
indicator species; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs
TAXA: ODOCOLEUS VIRGINIANUS
ADDED KEYWORDS: deer; key deer; management
measures; population effects; islands
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; emigration; growth; habitat
characterization; home range size;
mortality; natality; numbers; physiology;
reproduction; residues; sex; size/weight;
territory size
SAMPLING FREQUENCY: continuous; seasonal;
daily; weekly; monthly; quarterly; annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils; terrain
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Florida Keys; Monroe
County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-parametric
analysis; non-linear estimation
ABSTRACT: None provided.
ADDRESS: Dr. Willard D. Klimstra
Coop. Wildlife Research Lab.
Southern Illinois University
Carbondale, IL 62901
TELEPHONE: (618) 453-2875
NBIP ACCESSION NUMBER: IL/035

<253>

INVESTIGATOR(S): Layne, J.W.
AFFILIATION: Archbold Biological Station;
American Museum of Natural History
TITLE: Small Mammal Populations of the
Archbold Biological Station
PURPOSE: To determine habitat relationships,
life history and ecology, and population
trends of small mammals in five major
habitats on the Archbold Biological
Station.
SPONSOR(S): Archbold Expeditions
SPONSOR CATEGORY: museum
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a general
decline in overall populations in four of
five habitats, which may reflect a
long-term cycle.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: endangered species;
forestry; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: BLARINA BREVICAUDA; CRYPTOTIS PARVA;
PEROMYSCUS GOSSYPINUS; PEROMYSCUS
FLORIDANUS; PEROMYSCUS POLIOTOTUS;
SIGMODON HISPIDUS; ORYZOMYS PALUSTRIS;
OCHROTOMYS NUTTALLI; MUS MUSCULUS; RATTUS
RATTUS
ADDED KEYWORDS: short-tailed shrews; shrews;
least shrews; cotton mice; gopher mice;
beach mice; mice; cotton rats; house mice;
roof rats; rats; habitat modification;
population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; growth;
habitat characterization; home range size;
mortality; natality; numbers; physiology;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark-and-release; trap-line transects
NUMBER OF SAMPLING SITES: 5 quadrats; 40
trap-line transects
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Highlands County;
Archbold Biological Station
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
contingency table analysis; non-parametric
analysis
ABSTRACT: Small mammals are live-trapped,
marked, and released on five permanent
7-acre quadrats in five major habitat
types (south Florida slash pine-turkey
oak, sand pine scrub, scrubby flatwoods,
low flatwoods, and bayhead) for four
nights each month (1968-1973) or quarterly
(1974-presently). Data on sex, age, molt,
weight, reproductive condition, and
ectoparasites are obtained from each
specimen handled. In addition, samples of
each species are collected quarterly from
the same habitats with trap-line
transects. These specimens are necropsied
for data on food habits, pregnancy rates,
endoparasites, etc. Live trapping and

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necropsy records are maintained on
key-sort cards.

ADDRESS: Dr. James N. Layne
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NBIP ACCESSION NUMBER: FL/112

<254>

INVESTIGATOR(S): Layne, J.N.
AFFILIATION: Archbold Biological Station;
American Museum of Natural History
TITLE: Large Mammal Studies on the Archbold
Biological Station
PURPOSE: To determine habitat relationships
and population trends of large mammals and
obtain data on their life history and
ecology.
SPONSOR(S): American Museum of Natural History
SPONSOR CATEGORY: museum
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Year to year variations
in populations of several species have
been observed.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: endangered species;
indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: DIDELPHIS VIRGINIANA; DASYPUS
NOVEMCINCTUS; PROCYON LOTOR; MEPHITIS
MEPHITIS; SPILOGALE PUTORIUS; UROCYON
CINEREOARGENTUS; VULPES VULPES
ADDED KEYWORDS: marsupials; opossums;
blue-banded armadillo; armadillo;
raccoons; striped skunks; spotted skunks;
skunks; gray foxes; red foxes; foxes;
population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; growth;
habitat characterization; home range size;
mortality; natality; numbers; physiology;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark-release trapping; track counts;
radiotracking
NUMBER OF SAMPLING SITES: 130 trap stations
on total 1080 ha. property
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Highlands County;
Archbold Biological Station
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
contingency table analysis; non-parametric
analysis
ABSTRACT: Specimens taken in live-trapping
operations are ear-tagged, weighed,
checked for ectoparasites, molt, and
reproductive condition, and released at

the point of capture. Individual records
are maintained on key-sort cards. Track
counts are made on a specially prepared
sandy transect extending through all
habitat types. Ten 24-hour counts are made
at each census period (July and January).
Radiotracking of raccoons has been carried
out in 1975-76 to obtain supplemental data
on movements, daily and seasonal activity,
and refuge sites of this species.

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NBIP ACCESSION NUMBER: FL/113

<255>

INVESTIGATOR(S): Layne, J.N.
AFFILIATION: Archbold Biological Station;
American Museum of Natural History
TITLE: Population Status of Solitoid Bird
Species in South Central Florida
PURPOSE: To determine seasonal and annual
population trends of wading birds, diurnal
raptors, kingfishers, and loggerhead
shrikes in southern peninsular Florida.
SPONSOR(S): American Museum of Natural History
SPONSOR CATEGORY: museum
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major seasonal changes
have been recorded reflecting changes in
water levels and migration patterns. Year
to year changes in numbers of certain
wading birds are correlated with variation
in annual rainfall.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; deciduous; savanna;
wetland
LEVEL(S) OF STUDY: organism; population;
ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 13 SPECIES
ADDED KEYWORDS: hawks; raptors; caracaras;
vultures; kingfishers; kestrels; egrets;
ibises; shrikes; population effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
roadside census
NUMBER OF SAMPLING SITES: 300 road miles
covered
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Highlands County;
Glades County; Charlotte County;
Okeechobee County; Hardee County; DeSoto
County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; contingency table
analysis; non-parametric analysis
ABSTRACT: Counts are made in July and January
of wading birds, birds of prey,
kingfishers, and loggerhead shrikes by
slowly moving along selected routes on

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each of 4 days and enumerating all individuals of the included species observed within 1/4 mile on each side of vehicle. In 1973-74, spring and fall roadside counts were also performed and two aerial counts of selected species were conducted (September 1973 and April 1974). In addition to numbers of individuals, observations on habitats and other aspects of ecology are recorded, including, where possible, age and sex data. Numbers and distribution of each species are plotted on separate maps. The census covers a wide range of habitats and an area of approximately 900 square miles.

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NBIP ACCESSION NUMBER: FL/114

<256>

INVESTIGATOR(S): Lincer, J.L.
AFFILIATION: Mote Marine Laboratory
TITLE: Ecological Status of Deana and Robert's Bays

PURPOSE: To determine the ecological impact of a coastal drainage project on the receiving estuary.

SPONSOR(S): Sarasota County; SCS
SPONSOR CATEGORY: county government; federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Undesirable changes in substrate, fauna, and flora with opening of flood gates.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; tropical; grassland; wetland; aquatic; freshwater; stream; marine; estuarine

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; wildlife; indicator species; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; crustacea; plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria; algae; protozoa

ADDED KEYWORDS: habitat modification; channelization; floods

PRIMARY PARAMETERS INVESTIGATED: bod; distribution; diversity; growth; habitat characterization; mortality; numbers; residues; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard methods (EPA guidelines)

NUMBER OF SAMPLING SITES: 18

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Sarasota County; Cow Pen Slough

TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 1401; DEC
PDP-11/20; Autocoder; FORTRAN IV
STATISTICS EMPLOYED: mean

ABSTRACT: A typically shallow Florida Gulf Coast estuary was studied primarily to determine the effects of upland watershed channelization on the receiving system. Research efforts included: a hydrographic study, water quality monitoring, biological surveys, a sedimentation study, and photographic analyses, which involved both an historic review and monthly aerial infra-red documentation. Since pre-perturbation data were not available for temporal comparison, a spatial comparative approach was taken which also yielded information on other, more natural estuaries. Utilizing the computer, data are presented which reveal the respective input from terrestrial land alterations, suburbanization, and the Intracoastal Waterway.

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NBIP ACCESSION NUMBER: FL/115

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INVESTIGATOR(S): Livingston, R.J.
AFFILIATION: Dept. of Biological Science, Florida State University
TITLE: Analysis of the Impact of Pulp Mill Wastes on Estuarine Communities and Possible Recovery after Pollution Control Measures

PURPOSE: To sample water quality, benthic macrophytes, fishes, and invertebrates for 5 years.

SPONSOR(S): PI
SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Extreme reductions in primary (macrophyte) and secondary productivity starting to come back now.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; microorganisms; algae

TAXA: BENTHIC ORGANISMS, 500 SPECIES; ALGAE, 34 SPECIES

ADDED KEYWORDS: benthic organisms; industrial chemicals; pulp mills; waste water; primary productivity; secondary productivity; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; bod; distribution; diversity; growth; habitat characterization; harvest; kill; mortality; numbers; physiology; productivity; size/weight; stress; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): diving; grab sampling; trawls; seines

NUMBER OF SAMPLING SITES: 20

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna;

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associated flora; hydrological data; water
quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Ecofins River;

Fenholloway River; Taylor County;

Appalachee Bay; Buckeye Cellulose

Corporation

TYPE OF DATA: raw; reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: CDB 6500; FORTRAN

STATISTICS EMPLOYED: mean; analysis of

variance; regression/correlation analysis;

multivariate analysis; non-parametric

analysis

ABSTRACT: None provided.

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Dept. of Oceanography

Florida State University

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TELEPHONE: (904) 644-1466

NBIP ACCESSION NUMBER: FL/064

<258>

INVESTIGATOR(S): Lugo, A.E.

AFFILIATION: Botany Dept., University of
Florida

TITLE: Mangrove Forest Ecology

PURPOSE: To measure the productivity of
mangrove forests, relate structure and
function, and document the role of
mangroves in maintaining fish and wildlife
populations.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Tree growth and water
quality are affected by plants, leaf and
litterfall productivity, and fish
populations.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarineLEVEL(S) OF STUDY: population; community;
ecosystem; region

MANAGEMENT FOCUS: environmental impact;

fisheries; wildlife; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; plants; vascular plants; trees

TAXA: RHIZOPHORA MANGLE; LAGUNCULARIA

RACEMOSA; CONOCARPUS ERRECTA; AVICENNIA

NITIDIA; AVICENNIA GERMINANS

ADDED KEYWORDS: black mangroves; red

mangroves; white mangroves; buttonwood

mangroves; habitat modification;

channelization; siltation; natural

catastrophe; mangroves

PRIMARY PARAMETERS INVESTIGATED: biomass;
bod; distribution; diversity; emigration;
growth; habitat characterization;
immigration; migratory patterns; numbers;
physiology; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

litterfall baskets; biomass harvests;

standard fishing techniques; plot,

transect, and quarter methods

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: climatological
data; hydrological data; terrain; water

quality data

STUDY SITE(S): FL; PR

GEOGRAPHIC DESCRIPTION: Turkey Point; South
Florida; Puerto Rico

TYPE OF DATA: reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; mode; median;
regression/correlation analysis; modeling,
deterministic

ABSTRACT: One hundred seventy-six litter
baskets were placed in six types of
mangrove forests (overwash, fringe,
riverine, basin, hammock, and scrub) at
three locations each in Florida and Puerto
Rico. Litter was collected at two to three
intervals, dried to constant weight at 70
C, and separated into components of
leaves, wood, and miscellaneous (fruits,
bracts, insect frass, etc.). For all
mangrove forest types total litterfall
ranged from a low of 0.2 g/sq. meter /day
(or estimated annual litterfall of 85
g/sq. meter) in the scrub mangrove forest
at Turkey Point, Florida to a high of 3.6
g/sq. meter/day (or estimated annual
litterfall of 1278 g/sq. meter) in the
riverine mangrove forest of Vacia Talega,
Puerto Rico. Highest rates of litterfall
corresponded with annual peaks of wet
season and frequent wind storms. During
normal dry periods, leaf fall decreased.
Mean daily rates of litterfall for all
sites combined was 2.2 g/sq. meter or 2.6
g/sq. meter if the scrub mangroves are
excluded.

REFERENCES: Lugo and Snedacker, 1974; Lugo,
et al, 1975; Pool, et al, 1976

ADDRESS: A.E. Lugo

Botany Dept.

University of Florida

Gainesville, FL 32601

TELEPHONE: (904) 392-1489

NBIP ACCESSION NUMBER: FL/013

<259>

INVESTIGATOR(S): Perkins, B.D.

AFFILIATION: ARS

TITLE: Biological Control of Water Hyacinth

PURPOSE: To determine the amount of reduction
in size and abundance of the aquatic weed,
water hyacinth (EICHORNIA CRASSIPES), as
brought about by imported host-specific
insects.

SPONSOR(S): Florida Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction in water
hyacinth height and size.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; regionMANAGEMENT FOCUS: recreation; pollution
control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insects; plants; vascular

plants; herbs

TAXA: NEOCHETINA EICHORNIAE; NEOCHETINA

BRUCHI; EICHORNIA CRASSIPES

ADDED KEYWORDS: aquatic plants; weevils;

mottled water hyacinth weevils; water

hyacinths; chevroned water hyacinth

weevils; species introduction; coleopterans

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PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; emigration;
growth; immigration; kill; mortality;
numbers; reproduction; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects
NUMBER OF SAMPLING SITES: 10-20
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated microorganisms
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Lake Trafford
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis
ABSTRACT: Two species of weevils, NEOCHETINA
BRUCHI and N. EICHHORNIAE, have been
introduced into the United States to
combat water hyacinths, EICHHORNIA
CRASSIPES, one of the world's most serious
aquatic weeds. N. EICHHORNIAE was
introduced in 1972 and N. BRUCHI in 1974.
Notable reduction in size of the weed has
been occurring steadily in areas where N.
EICHHORNIAE is established. N. BRUCHI is
just becoming established but is expected
to reduce water hyacinth size similarly.
ADDRESS: B. David Perkins
USDA
ARS
Aquatic Plant Investigations
3205 SW 70th Ave.
P.O. Box 9087
Ft. Lauderdale, FL 33314
TELEPHONE: (305) 583-5541
NBIP ACCESSION NUMBER: FL/030

<260>

INVESTIGATOR(S): Poonai, P.
AFFILIATION: Bethune-Cookman College
TITLE: Restoration of the Lagunal
Environment and Evaluation of Remote
Sensing Methods for North Merritt Island
PURPOSE: To monitor environmental changes on
and around North Merritt Island.
SPONSOR(S): NASA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A small reduction in
populations of certain sensitive species
of plants as the result of drainage.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; savanna; wetland;
aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: environmental impact;
indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; plants;
vascular plants; trees; shrubs; herbs;
grasses
TAXA: SAGITTARIA LATIFOLIA; TYPHA ANGUSTIFOLIA
ADDED KEYWORDS: remote sensing; cattails;
arrowheads; habitat modification; remote
sensing; islands
PRIMARY PARAMETERS INVESTIGATED: behavior;

distribution; habitat characterization;
mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects; ERTS scanners
NUMBER OF SAMPLING SITES: random
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated flora;
terrain
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Brevard County;
Banana River; Kennedy Space Center; North
Merritt Island
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: G.E. 635; IMAGE 100;
FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis
ABSTRACT: The Atlantic coastal vegetation of
central Florida was divided into six
associations on the basis of multispectral
data acquired by ERTS and on the basis of
color infra-red photos acquired by low
flying aircraft. Changes in composition of
the associations are being monitored by
remote sensing and ground-truthing. At
present there is greater emphasis on
monitoring the terrestrial environment
than the estuarine environment.
ADDRESS: Dr. Premshukh Poonai
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640 Second Ave.
Daytona Beach, FL 32015
TELEPHONE: (904) 255-1401 ext. 315
NBIP ACCESSION NUMBER: FL/053

<261>

INVESTIGATOR(S): Rich, E.R.
AFFILIATION: Rio Palenque, Inc.; University
of Miami
TITLE: Ocean Reef Club Construction Monitoring
PURPOSE: To monitor the environmental impact
of construction work and follow up on
coastal marine ecosystem.
SPONSOR(S): Ocean Reef Club
SPONSOR CATEGORY: societies and other
organizations
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in flow patterns,
bottom changes, and replacement of
mangrove communities have been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
pollution control
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
mollusca; shellfish; annelida; plants;
vascular plants; herbs; grasses;
non-vascular plants; microorganisms;
algae; protozoa
ADDED KEYWORDS: construction; habitat
modification; mangroves; plankton;
dredging; channelization
PRIMARY PARAMETERS INVESTIGATED: biomass;
biodiversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
artificial substrate; dredge sampling
NUMBER OF SAMPLING SITES: 14-17
SAMPLING FREQUENCY: weekly; monthly;
quarterly; annual
SUPPORTING DATA COLLECTED: associated fauna;

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associated flora; associated
microorganisms; atmospheric chemistry;
climatological data; water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Monroe County;
Angelfish Creek; Pumpkin Creek; Card
Sound; Key Largo

TYPE OF DATA: raw; summarized

ABSTRACT: This project is concerned with
monitoring chemical and biotic factors in
waters possibly influenced by ocean reef
construction (including canal dredging
through mangroves).

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4212 Laguna
Coral Gables, FL 33146

TELEPHONE: (305) 444-5822

NBIP ACCESSION NUMBER: FL/062

<262>

INVESTIGATOR(S): Roessler, M.A.
AFFILIATION: Tropical BioIndustries
Development Co.

TITLE: An Ecological Study of South Biscayne
Bay and Card Sound, Florida (Benthic
Invertebrates and Fishes)

PURPOSE: To study changes in distribution,
density, and diversity of organisms in
relation to a power plant effluent.

SPONSOR(S): ERDA; EPA; NOAA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Loss of animals in areas
heated 5 degrees centigrade and seasonal
changes in abundance in 2-3 degree areas.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal

LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; power
generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca

TAXA: FISHES, 99 SPECIES; MOLLUSCA, 199

SPECIES: POBIPERA, 23 SPECIES;

ECHINODERMATA, 26 SPECIES

ADDED KEYWORDS: thermal effluents; benthic
organisms; power plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

shrimp trawl; mesh liner

NUMBER OF SAMPLING SITES: 20-40

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms; hydrological
data; water quality data; temperature

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Dade County; Biscayne
Bay; Card Sound; Turkey Point Power Station

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 360/65; UNIVAC;

FORTRAN; PL/1; APL

STATISTICS EMPLOYED: mean; mode; median;
analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate

analysis; non-parametric analysis;
modeling, deterministic

ABSTRACT: Field studies on the effects of
thermal additions from the Florida Power
and Light Company's discharge at Turkey
Point have been conducted to determine the
effects of this effluent on the
macro-invertebrates and fishes of the
area. Replicate samples with a 3m (10
foot) otter trawl lined with 6.3mm (1/4
in.) bar mesh were made monthly at 51
stations. Data on temperature, salinity
and oxygen were collected during each
sampling period. Additional chemical data
were collected when opportunity existed.
The experimental results suggest that
maximum summer temperatures above 32 C
cause detrimental changes in the
environment which are reversible in the
winter, while temperatures above 33 C
cause damage which does not recover during
the cooler months. Intermittent flow of
discharge water is not as damaging as
constant flow. Card Sound was occupied by
a sponge-brittle star community but many
organisms were common to both the Sound
and Biscayne Bay. The discharge into Card
Sound lasted about one year and
temperatures in excess of 33 C were
common. Only a few indicator species
showed stress and higher apparent
abundance of others offset their decrease.
Generally no lasting damage occurred in
Card Sound. Recovery after closing Grand
Canal was relatively complete at one
station, 200 yards from the effluent.
Another showed signs of recovery, but time
is needed to allow colonization by sea
grasses before the area recovers fully.

REFERENCES: Roessler, et al, 1975

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University of Miami
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Miami, FL 33149

TELEPHONE: (305) 279-7026

NBIP ACCESSION NUMBER: FL/110

<263>

INVESTIGATOR(S): Rushing, W.H.
AFFILIATION: United States Army Engineer
Waterways Experiment Station, COE

TITLE: Large-scale Operations Management Test
with the White Amur

PURPOSE: To determine the feasibility of
using the white amur fish as an
operational tool for management of the
troublesome submerged aquatic plant,
HYDRILLA VERTICILLATA.

SPONSOR(S): COE

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1976

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The biomass of HYDRILLA
has increased at alarming rates since
being introduced in the 1960's. The white
amur fish is being tested as a plant
control.

ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organisms; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; recreation; pollution

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control; water quality
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 fish; plants; vascular plants; herbs
 TAXA: HYDRILLA VERTICILLATA; CTENOPHARYNGODON
 IDELLA

ADDED KEYWORDS: population effects; species
 introduction; white amurs; grass carps;
 benthic organisms; aquatic plants;
 phytoplankton; zooplankton; sediments
 PRIMARY PARAMETERS INVESTIGATED: age;
 behavior; biomass; distribution; growth;
 habitat characterization; kill; mortality;
 migratory patterns; numbers; physiology;
 reproduction; sex; size/weight; territory
 size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 nets; sediment samples; transects

SAMPLING FREQUENCY: monthly; quarterly;
 irregular

SUPPORTING DATA COLLECTED: associated fauna;
 associated flora; associated
 microorganisms; climatological data;
 hydrological data; soils; water quality
 data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Orange County; Conway
 Lake

TYPE OF DATA: raw; reduced; summarized;
 literature-derived

COMPUTER AND LANGUAGE: Honeywell G-635;
 FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
 analysis of variance;
 regression/correlation analysis;
 contingency table analysis; modeling,
 deterministic; modeling, stochastic

ABSTRACT: The Corps of Engineers' Aquatic
 Plant Control Research Program is directed
 toward providing operational tools for
 management of troublesome aquatic plants
 in the nation's waterways. Research on the
 white amur or grass carp for controlling
 submerged aquatics has matured to the
 point that it needs to be tested in a
 field situation of sufficiently large
 scale to determine its operational
 feasibility. The most problematic
 submerged aquatic plant is HYDRILLA,
 therefore, the present project is to be a
 comprehensive evaluation of the plant
 problem, the white amur, interrelated
 effects of each, environmental impact,
 total ecosystem management, and technology
 transfer of operational feasibility.

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 Environmental Characterization
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 Waterways Experiment Station
 P. O. Box 631
 Vicksburg, MS 39180

TELEPHONE: (601) 636-3111

NBIP ACCESSION NUMBER: MS/024

<264>

INVESTIGATOR(S): Simon, J.L.
 AFFILIATION: Dept. of Biology, University of
 South Florida

TITLE: Effects of Sewage Pollution Abatement
 on Environmental Quality in Hillsborough
 Bay, Florida

PURPOSE: To document, before and after, the
 biological, sedimentological, and water
 quality characteristics in Hillsborough
 Bay due to the construction of an advanced
 (tertiary) waste water treatment plant.

SPONSOR(S): City of Tampa; University of
 South Florida; Hillsborough County

SPONSOR CATEGORY: city government; teaching
 institution; county government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: We have found major
 seasonal shifts in species numbers and
 densities of benthic invertebrates.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
 estuarine

LEVEL(S) OF STUDY: organism; population;
 community; ecosystem

MANAGEMENT FOCUS: environmental impact;
 indicator species; pollution control;
 water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; insecta; mollusca

TAXA: BENTHIC ORGANISMS, 150 SPECIES

ADDED KEYWORDS: benthic organisms; sewage
 treatment; construction; seasonal
 variations; sediments; heavy metals;
 species diversity

PRIMARY PARAMETERS INVESTIGATED: biomass;
 bod; distribution; diversity; habitat
 characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 cores

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna;
 water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Hillsborough Bay;
 Tampa Bay; Hillsborough County

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN

STATISTICS EMPLOYED: mean; analysis of
 variance; regression/correlation analysis

ABSTRACT: Owing to the construction of a
 large municipal advanced (tertiary) waste
 water treatment plant, a unique
 opportunity exists to study the effects of
 removal of a known major source of
 pollution in the estuarine environment of
 Hillsborough Bay, Florida. The objectives
 of the study are to provide baseline data
 on sediment parameters and sediment
 chemistry; provide baseline data on
 benthic infaunal invertebrate assemblages;
 provide baseline data on water quality;
 attempt to correlate the distribution of
 benthic organisms with water quality and
 sedimentary parameters with an eye toward
 predicting what changes might occur as a
 result of tertiary treatment; and to
 document the changes which accompany
 tertiary plant operation.

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 University of South Florida
 4202 Fowler Ave.
 Tampa, FL 33620

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NBIP ACCESSION NUMBER: FL/015

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INVESTIGATOR(S): Simon, J.L.
 AFFILIATION: Dept. of Biology, University of

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South Florida

TITLE: Repopulation Following Red-tide
Induced DefaunationPURPOSE: To follow the pattern of
recolonization following natural
defaunation in an estuarine intertidal
sand community.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Reestablishment of
benthic infaunal community occurred within
2 years.ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarineLEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; mollusca

TAXA: BENTHIC ORGANISMS, 153 SPECIES

ADDED KEYWORDS: benthic organisms; natural
catastrophe; red tides; algal blooms;
succession; amphipods; polychaetes;
species diversity

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity;

emigration; immigration; kill; numbers; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
corersNUMBER OF SAMPLING SITES: 3 transects of 4
stations each

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: temperature;
salinity

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Hillsborough County;
Tampa Bay

TYPE OF DATA: reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
analysis of variance;

regression/correlation analysis

ABSTRACT: During summer, 1971, a red tide outbreak resulted in the defaunation of a sandy intertidal habitat in Tampa Bay, Florida. Colonization was studied from August 1971 to July 1973. During that period, monthly samples revealed 153 species of infaunal invertebrates. Species colonization and abundance patterns over time were studied for the entire macrofauna. Additionally, five major taxonomic categories were examined separately: polychaetes, mollusks, amphipods, other crustaceans, and miscellaneous phyla. The fauna made a rapid recovery in terms of species numbers and composition, returning to much the same assemblage as prior to defaunation. Polychaetes were the most rapid colonists both in terms of number of species and number of individuals. Mollusks and amphipods were slower in appearance and were significantly affected by seasonal patterns of reproduction, and thus dispersal. Only the polychaetes, other crustacea, and total fauna showed species colonization patterns indicating an

approach to an equilibrium value. Species abundance patterns showed a variety of responses from strong seasonal influences (mollusks and amphipods) to a continuously increasing pattern (total fauna). The demonstration that major taxa show different colonizing abilities leads to the conclusion that care should be used when interpreting environmental perturbation studies where only a single taxon has been examined.

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NBIP ACCESSION NUMBER: FL/017

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INVESTIGATOR(S): Small, J.W.

AFFILIATION: Dept. of Biology, Rollins College

TITLE: Ecological Studies on Fishes

Inhabiting Shallow Weed Beds in Central

Florida Lakes

PURPOSE: To monitor fish biomass changes with time, study life history of selected species, study the importance of weeds in food chains in the lake, and evaluate relationships between aufwuchs on weeds and fish.

SPONSOR(S): City of Winter Park; NSP

SPONSOR CATEGORY: city government; federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Changes in species
composition of weeds with some total
biomass changes, but data are inconclusive.ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lakeLEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;

fisheries; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; plants;

vascular plants; herbs

TAXA: LUCANIA GOODEI; FUNDULUS SEMINOLIS;

HETERANDRIA FORNOSA; GAMBUSIA AFFINIS;

CHYDORUS JPHERICUS

ADDED KEYWORDS: population effects; food chains; bluefin killifishes; semiole killifishes; least killifishes; mosquitofishes; sunfishes; copepods; ostracods; cladocerans; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity;

emigration; growth; habitat

characterization; home range size;

migratory patterns

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seines; glass V-traps; block nets; sieves

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Orange County;

Virginia Lake; Mize Lake; Maitland Lake;

Osceola Lake

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; analysis of
covariance

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ABSTRACT: Weed bed areas were sampled with seine and dipnet in Lakes Virginia, Maitland, and Mizell. High water prevented other sampling. *LUCANIA GOODEI* and *FUNDULUS SEMINOLIS* were captured and measured monthly for length frequency analysis. Growth was determined from these studies and these results used for consumption calculations. Consumption was determined as a function of respiration and growth. Respiration was determined from field studies of oxygen consumption over 24 hours in sealed vessels. Calorimetry was performed for energy content with a microbomb calorimeter, and length-weight regressions were computed. Trapping was carried out with glass V-traps to assess fish movement. Movement was greatest in the morning within weed beds with no significant immigration or emigration. Stomach analysis indicated fish in weed beds feed mostly on aufwuchs.

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NBIP ACCESSION NUMBER: FL/048

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INVESTIGATOR(S): Spencer, N. H.
AFFILIATION: ARS
TITLE: Biological Control of Water Hyacinth
PURPOSE: To control the aquatic weed, water hyacinth, by the introduction of host specific insect imported from South America.
SPONSOR(S): ARS; COE; Florida Dept. of Natural Resources
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Water hyacinth are beginning to show the effect of stress placed upon them by water hyacinth insects.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; plants; vascular plants; herbs
TAXA: *EICHORNIA CRASSIPES*; *NEOCHETINA EICHORNIAE*; *NEOCHETINA BRUCHI*; *SAMEODES ALBIGUTTALIS*
ADDED KEYWORDS: mottled water hyacinth weevils; weevils; water hyacinths; chevroned water hyacinth weevils; biological control; aquatic plants; species introduction; models; management measures; coleopterans; lepidopterans; hydrilla
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; habitat characterization; mortality; numbers; productivity; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plots; transects
NUMBER OF SAMPLING SITES: 1 major

SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; water quality data

STUDY SITE(S): FL; MS; LA; TX
GEOGRAPHIC DESCRIPTION: Alachua County; Lake Alice

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis

ABSTRACT: The Agricultural Research Service of the USDA has been actively engaged in research on the biological control of aquatic weeds since 1959. Research emphasis until 1967 was on alligatorweed, *ALTERNANTHERA PHILOXEROIDES*. As a result of this research, three species of insects from Argentina were released in the southeastern United States. Alligatorweed control with these natural enemies has been variable, but indications are that control will be substantial over most of the range of the weed. One species of weevil, *NEOCHETINA EICHORNIAE*, has been released against water hyacinth, *EICHORNIA CRASSIPES*, in the USA as a result of research in Argentina. A second closely related species, *N. BRUCHI*, is presently undergoing final clearance procedures. Several other arthropods are being studied in Argentina as possible biological control agents of water hyacinth. A U.S.-sponsored program in Yugoslavia under the direction of Dr. M. Lekic resulted in the discovery of two insect species that show potential as control agents for Eurasian watermilfoil, *MYRIOPHYLLUM SPICATUM*. Further testing for host specificity of these insects will be carried out in the U.S. in quarantine in Florida. A U.S. - sponsored Pakistan program under Dr. H. A. Ghani is investigating insects and other phytophagous organisms attacking *HYDRILLA VERTICILLATA*. The results are encouraging.

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TELEPHONE: (904) 372-3505
NBIP ACCESSION NUMBER: FL/019

<268>

INVESTIGATOR(S): Steidinger, K. A.
AFFILIATION: Florida Dept. of Natural Resources, Marine Resources Laboratory
TITLE: Red Tide Research Program
PURPOSE: To research the morphology, life history, and nutrition of *GYMNODINUM BREVES*; and to study prediction, pathology, management, and ecological effects of preventative methods of control.
SPONSOR(S): Florida Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Red tide has periodically

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caused severe fish kill and defaunation along coastal shorelines.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca; microorganisms; algae

TAXA: GYMNODINIUM BREVIE; GONYAULAX MONILATA; CRASSOSTREA VIRGINICA

ADDED KEYWORDS: red tides; toxicity

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; kill;

numbers; physiology; reproduction; toxicity

NUMBER OF SAMPLING SITES: 22 (one year); 22 (2 year); irregular stations

SAMPLING FREQUENCY: seasonal; daily; weekly; monthly; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; climatological data; hydrological data

STUDY SITE(S): FL

TYPE OF DATA: raw; reduced; summarized; literature-derived

ABSTRACT: None provided.

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State of Florida

Marine Research Laboratory

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St. Petersburg, FL 33701

TELEPHONE: (813) 896-8626 ext. 28

NBIP ACCESSION NUMBER: FL/052

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INVESTIGATOR(S): Stevenson, H.M.

AFFILIATION: Tall Timbers Research Station

TITLE: Seasonal and Annual Variations of

Avian Abundance in Northwest Florida

PURPOSE: To monitor changes in abundance monthly and yearly, and to assess probable causes for change.

SPONSOR(S): Tall Timbers Research Station

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1946

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decreases are seen in certain species of predators (especially piscivorous, insectivorous species, and vultures) but increases occur in certain pest species.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; aquatic; marine; coastal

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

ADDED KEYWORDS: piscivorous birds; insectivorous; vultures; predators; population effects

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): counts

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora; climatological data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Leon County; Wakulla County; Franklin County; Jackson County; Okaloosa County

TYPE OF DATA: raw; summarized

ABSTRACT: From September 1946 through August 1975, birds were counted and time records kept in about 25 areas in Leon County, Florida, and about the same number in Franklin and Wakulla Counties. The amount of time spent in each area was a designated and rather constant (month-to-month) per cent of the total time afield, and, in many instances, it was an insignificantly small amount per month. In June 1975, a smaller number of routes was established to enable observers to spend more time on each route. Thus, the coverage since September, 1975 is less variable than before. Six observers cooperate in the project.

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TELEPHONE: (904) 222-2026

NBIP ACCESSION NUMBER: FL/044

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INVESTIGATOR(S): Steward, K.K.

AFFILIATION: ARS

TITLE: Autecology and Sawgrass in the Florida Everglades

PURPOSE: To obtain baseline data on autecology of sawgrass in South Florida.

SPONSOR(S): NPS; ARS

SPONSOR CATEGORY: federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Natural seasonal changes and changes occurring after wildfires were observed.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; grasses

TAXA: CLADION JAMAICENSE; UTRICULARIA SP; CHARA SP

ADDED KEYWORDS: sawgrasses; fires; seasonal variations; micronutrients; nitrogen; nutrient uptake; phosphorus; nutrients; potassium; standing crop; waste water; marshes; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: biomass; growth; habitat characterization; numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats; core samples; grab samples

NUMBER OF SAMPLING SITES: 5 to 10 random sites within one general location

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; water quality data

STUDY SITE(S): FL

GEOGRAPHIC DESCRIPTION: Everglades; Marsh Conservation Area 3B

TYPE OF DATA: raw; reduced; summarized;

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literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: The objectives of this study were to determine the effects of increased nutrient levels on the vegetation of the Everglades and the feasibility of water reuse. Nutrients were applied to confined stands of sawgrass. Nutrient concentrations in plant tissue were compared with controls 125 days after treatment. The enrichment did not increase growth, even though nutrients were assimilated into the plants. Sawgrass has a limited capacity for removing nutrients from the water. Sawgrass could not be used efficiently to renovate wastewater with high nutrient concentrations. The marsh system seems to have a limited capacity for assimilating nutrients. Undesirable effects could result from an increased supply of nutrients into the Everglades ecosystem.

REFERENCES: Steward and Ornes, 1975a,b;
Seward, 1974

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Agriculture Research Service
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Ft. Lauderdale, FL 33314
TELEPHONE: PTS 350-9248; (305) 583-5541
NBIP ACCESSION NUMBER: FL/116

<271>

INVESTIGATOR(S): Tiffany, W.J.
AFFILIATION: Conservation Consultants, Inc.
TITLE: Benthic Invertebrate and Substrate Section of Elothermal Monitoring at Big Bend
PURPOSE: To ascertain changes in benthic invertebrate community structure due to thermal additions from the Tampa Electric Co. Big Bend facility.
SPONSOR(S): Tampa Electric Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: To date, no adverse effects have been noted on the benthic invertebrates; however, the program is being quantified.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species; range; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca
ADDED KEYWORDS: thermal effluents; benthic organisms; species diversity
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; esigration; habitat characterization; kill; mortality; numbers; physiology; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard benthic sampling equipment

NUMBER OF SAMPLING SITES: 50
SAMPLING FREQUENCY: seasonal; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry; climatological data; hydrological data; water quality data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Hillsborough County; Tampa Electric Co.; Big Bend Plant; Tampa Bay
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: The intent of this program is to assess the impact of thermal additions on the benthic invertebrate communities in the vicinity of Tampa Electric Company's Big Bend steam electric generating facility located on Hillsborough Bay (Tampa Bay), Florida.
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Palmetto, FL 33561
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NBIP ACCESSION NUMBER: FL/034

<272>

INVESTIGATOR(S): White, D.C.
AFFILIATION: Dept. of Biological Science, Florida State University
TITLE: Use of Swamps to Remove Sulfate from Cooling Tower Discharge Water
PURPOSE: To maximize sulfate removal from power plant waste water by use of a swamp microbial system.
SPONSOR(S): City of Tallahassee
SPONSOR CATEGORY: city government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: A reduction in sulfate without increase of hydrogen sulfide was observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: fisheries; wildlife; forestry; resource planning; water quality; power generation
ORGANISMS, MAJOR TYPES: microorganisms; bacteria; fungi; algae; protozoa
TAXA: DESULFOVIBRIO SPP
ADDED KEYWORDS: swamps; hydrogen; sediments; fossil fueled power plants; sulfur-35
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; physiology
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Leon County; Talquin Lake; A. V. Hopkins Power Station
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: Measured were sulfate reduction, hydrogen sulfide formation, and metabolic and organic sulfide formation in the

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Florida State University
Tallahassee, FL 32306
TELEPHONE: (904) 644-5027
NRIP ACCESSION NUMBER: FL/037

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sulfate-rich discharge from cooling towers of power-generating plants that empty into a natural swamp system. We maximized the microbial reduction and fixation of sulfate, thereby protecting Lake Talquin's water quality.

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NRIP ACCESSION NUMBER: FL/036

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INVESTIGATOR(S): White, D.C.
AFFILIATION: Dept. of Biological Sciences,
Florida State University
TITLE: Energy Relationships and the
Productivity of Apalachicola Bay
PURPOSE: To study energy relationships from
detritus to the base of the food chain.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Clear cutting resulted in
reduced pH, increased tannins, and
decreased productivity.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: fisheries; recreation;
resource planning; pollution control;
water quality; power generation
ORGANISMS, MAJOR TYPES: grasses;
microorganisms; bacteria; fungi; algae;
protozoa
ADDED KEYWORDS: benthic organisms; food
chains; clear cutting; construction; dams
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
baskets set out in the Bay
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Franklin County;
Apalachicola Bay
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median;
analysis of variance;
regression/correlation analysis;
Multivariate analysis
ABSTRACT: An integrated program assessing the
seasonal variations, pollutional impact,
photobiological requirements,
productivity, the infauna, epifauna, flora
and microbial activity, mass, succession,
and transfer between eukaryotes and
prokaryotes in an important
river dominated North Florida estuary
which is showing serious effects of
clearcutting, non-point source
agricultural pollution, and the proposed
Corps of Engineers Dam.
ADDRESS: David White
Dept. of Biological Science

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INVESTIGATOR(S): White, L.D.
AFFILIATION: School of Forest Research and
Conservation, University of Florida
TITLE: Ecosystem Analysis of Paynes Prairie
PURPOSE: To identify optimum conditions of
the prairie for management as a natural
area for native species and to establish
specific means of maintaining optimum
conditions.
SPONSOR(S): Florida State Div. of Recreation
and Parks
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Removal of cattle reduced
desirable habitat resulting in
approximately half the bird species
becoming rare. Vegetation rapidly grows
under favorable conditions, resulting in
decreased plant species diversity.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; tropical; grassland; wetland;
aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: wildlife; range;
recreation; resource planning; water
quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; mammals; invertebrates;
plants; vascular plants; herbs
TAXA: NEOFIBER ALLINI; HERBS, 30 SPECIES;
BIRDS, 34 SPECIES; INVERTEBRATES, 20
FAMILIES
ADDED KEYWORDS: florida water rats; cattle;
management measures; habitat modification;
succession; rats
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
clip quadrats; time-lapse photography
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; soils; terrain; water
quality data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Alachua County;
Alachua Lake; Paynes Prairie
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis
ABSTRACT: The major objective of the study
was to determine how the prairie basin
should be managed for "preservation and
public enjoyment." Since the area was
already unique, major concern was
expressed about any detrimental changes
that might result from new management. To
do this the existing conditions at the
time of purchase (management of livestock
grazing and water manipulation) were to
be maintained until any resultant changes
from other treatments, including complete
protection from livestock grazing, could
be evaluated. The specific objectives of

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this project are: (1) to identify and map the plant communities of the prairie, and for each, to identify the types and numbers of native faunal species; (2) to establish quantities of various types to be maintained since faunal types and quantities are affected by prairie conditions; (3) to identify the optimum conditions of the prairie for management as a natural area for native species, taking into account the desirability of providing legitimate and perhaps selected types of public enjoyment; (4) to establish specific means of maintaining the optimum condition identified; and (5) to prepare a comprehensive operating manual of instructions to direct the complete management of the prairie.

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NBIP ACCESSION NUMBER: FL/056

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INVESTIGATOR(S): Woodruff, D.S.
AFFILIATION: Dept. of Biological Sciences,
Purdue University
TITLE: Variation, Ecology, and Evolution of
CERION - a Remarkably Diverse Genus of
Sand Snails
PURPOSE: To monitor changes in population in
Florida Keys. Initial surveys were
conducted in 1912.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Species range was reduced
as a result of habitat destruction and
alteration.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: recreation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mollusca
TAXA: CERION INCANUM
ADDED KEYWORDS: snails; habitat modification;
population effects; fires; natural
catastrophe
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; emigration; habitat
characterization; immigration; mortality;
numbers; physiology; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): FL
GEOGRAPHIC DESCRIPTION: Florida Keys
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360; CDC 6500;
FORTRAN IV
STATISTICS EMPLOYED: mean; mode; median;
analysis of variance; analysis of
covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-parametric
analysis; modeling, stochastic; serial
autocorrelations
ABSTRACT: Studies in the Florida Keys and the
Tortugas Center are concerned with
resurveying populations of land snails
described over 50 years ago. We are
interested in changes in distribution and
morphology over this time span. CERION
INCANUM is not presently an endangered
species although habitat destruction
(associated with human activities,
including increased frequency of fire) has
caused local extinction.
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NBIP ACCESSION NUMBER: IN/018

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Standard Federal Region 4
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INVESTIGATOR(S): Brister, G.H.
AFFILIATION: School of Forest Resources,
University of Georgia
TITLE: Sewage Effluent Irrigation Project at
the Unicoi Recreation Experiment Station
PURPOSE: To develop criteria and guidelines
for the design and operation of sewage
effluent spray irrigation systems in the
Georgia mountains.
SPONSOR(S): University of Georgia; Georgia
Dept. of Natural Resources
SPONSOR CATEGORY: teaching institution; state
government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in composition
and structure of vegetational strata and
forest floor.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; mountain
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
forestry; resource planning; pollution
control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses;
microorganisms; bacteria; fungi
ADDED KEYWORDS: sewage treatment; nitrogen
cycle; management measures; nitrates;
phosphorus
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; emigration;
growth; habitat characterization;
immigration; mortality; numbers;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent plots; sampling
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly; annual
SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data;
hydrological data; soils
STUDY SITE(S): GA
GEOGRAPHIC DESCRIPTION: White County; Smith
Creek; Chattahoochee River; Unicoi
Station; Blue Ridge Mountains
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 365-370; FORTRAN
IV; PL/1
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis; non-linear
estimation; modeling, deterministic;
modeling, stochastic
ABSTRACT: A mixed pine-hardwood forest in the
high-rainfall Southern Appalachians is
spray irrigated with the sewage effluent
produced by a large recreation-conference
facility. Effluent is applied once every
seven days on 10-30% slopes at a rate of
80 mm per hour for a total of 760 mm.
Effluent is applied throughout the year
regardless of weather. A total of 925
cubic meters of effluent is applied weekly
to 1.2 ha. The project objectives are to
develop design guidelines for land
treatment systems on steep forested slopes
with particular emphasis on the

nitrification-denitrification cycle. All
effluent applied infiltrates and no
overland flow has been observed. The
effluent, soil percolate, and a nearby
stream are analyzed for N, total P, Cl, K,
Ca, Na, and Mg. Effluent renovation in the
soil percolate is: total P 99%, K 93%, Ca
98%, Na 57%, and Mg 63%. Cl is used as a
tracer. Strong lateral subsurface flow
from the site creates periodic soil
saturation at the base of the slope where
nitrate is reduced 30% or more over the
irrigated upslope concentrations. The
nitrate-nitrogen concentration of 0.6 mg/l
at the base of the slope is within the
normal background range of discharge from
small streams in the area.

REFERENCES: Nutter, et al, 1974; Nutter, et
al, 1975

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HBIP ACCESSION NUMBER: GA/001

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INVESTIGATOR(S): Hall, E.T.
AFFILIATION: Georgia Dept. of Natural
Resources
TITLE: Georgia Stream Monitoring Program
PURPOSE: To detect water quality trends as
manifested in aquatic life.
SPONSOR(S): Environmental Protection Div.;
Georgia Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An increase in diversity
of species of organisms and improvement of
water quality.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: indicator species;
pollution control; water quality; power
generation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; microorganisms;
bacteria; fungi; algae
ADDED KEYWORDS: waste water
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
artificial substrates; natural substrates
NUMBER OF SAMPLING SITES: 29
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; soils;
water quality data
STUDY SITE(S): GA
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance
ABSTRACT: Since 1965, we have conducted
biological investigations, almost always
with chemical analysis of the water in
most of the significant streams of
Georgia. Most of these investigations
resulted in published reports many of
which are available (some on a loan basis)
to authorized persons and organizations.
Approximately one hundred reports have
been prepared.

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NBIP ACCESSION NUMBER: GA/037

<278>

INVESTIGATOR(S): Keferl, E.P.
AFFILIATION: Dept. of Biology, Brunswick
Junior College
TITLE: Water Quality Investigation of
Estuaries of Georgia
PURPOSE: To monitor physical and chemical
environment parameters, and to make
observations on the macro-fauna in the
immediate vicinity of the sampling
stations (presently only from fouling
plates set out quarterly).
SPONSOR(S): Environmental Protection Div.,
Georgia Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been no major
changes noted.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates
TAXA: ARTHROPODA, 13 SPECIES; TUBULARIA SP;
STYLOCHUS SP; NEREIS SP; GLYCERA SP;
SCOLECOLEPIDES SP; MEMBRANIPORA SP;
MITRELLA SP; MODIOLUS SP; ASTERIAS SP
ADDED KEYWORDS: fouling organisms; coliform
bacteria; waste water
PRIMARY PARAMETERS INVESTIGATED: bsd;
diversity; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plastic fouling plates; sensor channels
(Hydrolab model 70)
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): GA
GEOGRAPHIC DESCRIPTION: Chatham County;
McIntosh County; Glynn County; Camden
County; Savannah River; Ogeechee River;
Altamaha River; Satilla River; St. Mary's
River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: non-parametric analysis
ABSTRACT: A water quality monitoring program
for the estuaries of Georgia was begun in
September, 1973. This program included the
establishment of sampling stations in
estuaries along the coast of Georgia from
Savannah to St. Mary's; field observations
of physical and chemical environmental
parameters; field observations of the
quality of the marsh vegetation; the
collection of water samples to be shipped to
the Georgia Environmental Protection
Division (EPD) in Atlanta for analysis of
biological, chemical, and physical

parameters; and the identification of
macro-fauna in the immediate vicinity of
the sampling stations. The purpose of this
program was to establish a data base of
water quality parameters for these
estuaries.

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NBIP ACCESSION NUMBER: GA/029

<279>

INVESTIGATOR(S): Kellogg, F.E.
AFFILIATION: College of Veterinary Medicine,
University of Georgia
TITLE: Abomasal Parasite Counts and Their
Relation to Deer Density and Habitat
Quality
PURPOSE: To use abomasal parasite counts to
monitor well-being of deer herds.
SPONSOR(S): FWS; Game and Fish Agencies of 13
southeast states
SPONSOR CATEGORY: federal government
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: With inadequate harvest
deer population increases, abomasal
parasites increase, and habitat
deteriorates. The number of parasites
points out the point in cycle at time of
sample.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; indicator
species; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; invertebrates; mollusca; shellfish
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; parasites;
diseases; natural catastrophe; population
effects; deer; nematodes
PRIMARY PARAMETERS INVESTIGATED: habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection; necropsy of deer
NUMBER OF SAMPLING SITES: 50+
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): KY; TN; NC; MS; AL; GA; SC; FL
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: We use abomasal parasite counts to
monitor well-being of deer herds.
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Southeastern Cooperative Wildlife
Disease Study
College of Veterinary Medicine
University of Georgia
Athens, GA 30601
TELEPHONE: (404) 542-1741
NBIP ACCESSION NUMBER: GA/013

<280>

INVESTIGATOR(S): Nutter, W.L.
AFFILIATION: School of Forest Resources,
University of Georgia
TITLE: Guidelines for the Design of Land
Treatment of Municipal Wastewater in the
Georgia Mountains
PURPOSE: To monitor changes in vegetation,

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soil, and water following extended application of municipal waste water and to develop guidelines and design criteria.

SPONSOR(S): Environmental Protection Div., Georgia Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in species composition and nutrient status.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact; forestry; resource planning; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria

ADDED KEYWORDS: waste water; habitat modification; sewage treatment; population effects

PRIMARY PARAMETERS INVESTIGATED: age; biomass; bod; distribution; diversity; growth; mortality; numbers; reproduction; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nested plots

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal; weekly; annual

SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; terrain; water quality data

STUDY SITE(S): GA

GEOGRAPHIC DESCRIPTION: White County; Unicoi Station

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN IV

STATISTICS EMPLOYED: mean; mode; median; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; modeling, deterministic

ABSTRACT: The Unicoi sewage treatment system consists of an oxidation pond including a pre-aeration section with mechanical aerators. All sewage produced from the campsites, staff, guest cottages, and the lodge and conference center is treated at the pond. The average net daily flow is approximately 12,000 gpd including evaporation losses and rainfall additions. The application site is a mixed pine-hardwood forest with a herbaceous understory on the upper slope and laurel understory on the lower slope. The water quality sampling points are established at various depths in the irrigated or treatment area, an adjacent control area and at the base of the treatment slope or seep area. The soil percolate, sampled with vacuum soil water samplers, pond, and a nearby first-order stream are analyzed for nitrate-N, ammonia-N, total Kjeldahl N, total P, ortho-P, Cl, Na, Mg, K, and pH. All analyses were conducted weekly during the first year. During the second year, several of the ions showing little change were analyzed monthly. Briefly, renovation of the applied effluent by the vegetation and soil complex during the

first year of operation was more than satisfactory. Nitrate levels in the water discharged from the site were quite low, in most cases similar to the levels found in natural ground water.

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NBIP ACCESSION NUMBER: GA/019

<281>

INVESTIGATOR(S): Plummer, G.L.

AFFILIATION: Dept. of Botany, University of Georgia-Athens

TITLE: Pitcher Plant Habitats

PURPOSE: To determine the distribution and characteristics of carnivorous plants.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Habitats are becoming drier, thus populations of carnivorous plants are being reduced.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs

TAXA: SARRACENIA FLAVA; SARRACENIA MINOR; SARRACENIA PSITTACINA; SARRACENIA RUBRA; PINGUICULA SPP; UTRICULARIA SPP; DROSERA SPP; NEPENTHES SPP

ADDED KEYWORDS: insectivorous plants; carnivorous plants; trumpets; huntsman's-horns; pitcher plants; butterworts; bladderworts; sundews; daily-dews; habitat modification

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; growth; habitat characterization; numbers; physiology; productivity; reproduction; territory size

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated flora; hydrological data; soils; terrain

STUDY SITE(S): GA

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: GA/004

<282>

INVESTIGATOR(S): Heimold, R.J.

AFFILIATION: Marine Resources, University of Georgia Extension Center

TITLE: Species Diversity and Estuarine Mixing

PURPOSE: To monitor the effects of effluent from toxaphene-producing plants on the surrounding ecosystem by determining the nekton species diversity of adjacent salt marsh creeks and effluent dispersion by use of dye studies.

SPONSOR(S): Hercules, Inc.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1975

GEORGIA
Standard Federal Region 4
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PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Species diversity in principal area was affected by effluent increasing and level of pollution decreasing.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca
TAXA: FISHES, 30 SPECIES; LOLIGO BREVIOSTRUM; SHRIMP, 5 SPECIES
ADDED KEYWORDS: squids; shrimp; toxaphene; decapods; cephalopods; habitat modification
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): otter trawl; water sample bottle; aerial photography
NUMBER OF SAMPLING SITES: 7
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): GA
GEOGRAPHIC DESCRIPTION: Glynn County; McIntosh County; Clubbs Creek; Little River; Terry Creek; Duplin Estuary; Plantation Creek
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: In determining the species diversity and estuarine mixing of the study area, a two-fold approach was used to document the movement of toxaphene wastes from the manufacturing plant into the estuary and to assess the long term ecological effect of toxaphene manufacturing wastes on the estuarine ecosystem. The species diversity of the area was determined by collecting nekton samples with an otter trawl from several estuaries, comparing this data with nekton samples collected from a pristine estuary several miles north of the study area, and analyzing the data on an IBM 370 computer. Three different species diversity indices are based on the number of individuals collected and on the basis of biomass. The estuarine mixing is determined by adding Rhodamine WT dye to the plant effluent ditch at the beginning of an ebb tide. Water samples were collected on an hourly basis for the first 24 hours and on a six hour basis for the following 72 hours from stations in the study area. Resultant water samples were analyzed using a Turner Model 111 fluorometer. Resultant dye concentrations in parts per billion were used to interpret the dilutions, time of travel, discharge-rate of flow, mixing-diffusion, and dispersion within the study area. In order to document the movement of dye in the estuary, aerial photography was also employed so that dye concentrations might be mapped. This

provided a way of quantifying dye movement in the entire estuary.

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NBIP ACCESSION NUMBER: GA/016

<283>

INVESTIGATOR(S): Willingham, P.F.
AFFILIATION: Horticulture Dept., Callaway Gardens
TITLE: Biosystematics of the Flowering Forms of RHODODENDRON CALENDULACEUM
PURPOSE: To assess the degree and rate of hybridization between RHODODENDRON CALENDULACEUM and RHODODENDRON BAKERI along disturbed mountain areas in North Carolina.
SPONSOR(S): Wake Forest University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Appearance of RHODODENDRON CALENDULACEUM in recently timbered areas which ordinarily would not be suitable for this species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs
TAXA: RHODODENDRON CALENDULACEUM; RHODODENDRON BAKERI
ADDED KEYWORDS: logging; habitat modification; population effects; rhododendrons
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization
NUMBER OF SAMPLING SITES: 60
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): NC; GA
GEOGRAPHIC DESCRIPTION: Macon County; Union County
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Phase and form are like subcategories of a species. In other words, they carry a definite taxonomic connotation with easily recognizable categories that have a status just below the rank of species. No one has conducted a detailed study of just the single species R. CALENDULACEUM over its entire altitude range and flowering season to determine whether notions about the flowering forms are correct. In addition, the role R. BAKERI has played in contributing to the apparent uniqueness of the Nantahala azaleas was studied.
REFERENCES: Willingham, 1975
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NBIP ACCESSION NUMBER: GA/024

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HAWAII

Standard Federal Region 9
Fish and Wildlife Service Region 1

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INVESTIGATOR(S): Grigg, R.W.
AFFILIATION: University of Hawaii
TITLE: Succession of Hermatypic Corals on Lava Flows in Hawaii, Analysis of Changes over Time
PURPOSE: To analyze the pattern of colonization of corals on dated denuded surfaces (over periods of time equal to decades).
SPONSOR(S): University of Hawaii
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Recovery of coral communities requires from 20 to 50 years.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea
TAXA: CORALS, 14 SPECIES
ADDED KEYWORDS: population effects; lava; succession; corals; natural catastrophe; colonization
PRIMARY PARAMETERS INVESTIGATED: diversity; growth; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): IN SITU surveys; transect methods; SCUBA
NUMBER OF SAMPLING SITES: 12
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): HI
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; modeling, deterministic
ABSTRACT: Recovery time for recolonization of coral communities on submerged lava flows in Hawaii may largely depend on exposure to sea and swell. In exposed areas, recovery time (in terms of number of species, per cent cover, and diversity) of areas decimated by lava and perhaps similar disturbances appears to be about 20 yr. At sheltered stations, more than 50 yr. may be required for complete recovery. This difference in recovery time is apparently related to differences between undisturbed coral communities at exposed and sheltered stations. In exposed areas succession seems to be constantly interrupted, resulting in pioneer stages. At sheltered stations reefs are more fully developed in terms of percent cover and thickness, and are thus closer to being climax coral communities. They therefore require more time for full recovery. The data, although meager, indicate that diversity increases during succession, but attains a peak value before climax is reached. The apparent decline in diversity as climax is approached may be due to interspecific competition for space, which leads to resource monopolization. Comparison of community structure with more tropical coral reefs reveals that this pattern may apply only to physically controlled communities.
REFERENCES: Grigg and Maragos, 1974
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University of Hawaii

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NBIP ACCESSION NUMBER: HI/009

<285>

INVESTIGATOR(S): Kinzie, R.A.
AFFILIATION: Dept. of Zoology, University of Hawaii
TITLE: The Chronometric Reliability of Contemporary Corals
PURPOSE: To assess the effect of environmental changes in growth of corals.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Small cyclic variations in the skeletal density of PORITES LOBATA have a lunar periodicity with the low-density region of the skeleton probably deposited around the time of the full moon.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea
TAXA: PORITES LOBATA
ADDED KEYWORDS: cnidarians; corals; lunar cycles; seasonal variations; reefs
PRIMARY PARAMETERS INVESTIGATED: age; growth; habitat characterization; reproduction; sex; size/weight; stress
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): HI
GEOGRAPHIC DESCRIPTION: Honolulu; Oahu Island
ABSTRACT: Skeletal accretion of the hermatypic coral, PORITES LOBATA, has been studied by periodic alizarin staining in the field, followed by X-radiography of slices through the specimens. Short term skeletal density variations occur with lunar periodicity, with low-density layers apparently associated with the full moon. Linear growth rates show substantial seasonal variations, with most of the growth occurring as low-density skeletal deposition during the summer months. The lunar fine structure is not observed in the narrow, denser band of winter skeletal accretion, and is apparently recorded only when growth rates are relatively rapid. The variations in bulk skeletal density are related to variations in trabeculae thickness. The spacing of the trabeculae is relatively constant, and their deposition does not appear to have any recognizable periodicity. The nature of growth responses in this species to annual and monthly cycles in the environment appear to make the skeletal record more suitable for evaluating the quality of the growth environment than for retrieving information about solar and lunar periodicities.
REFERENCES: Rosenberg and Runcorn, 1975
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HAWAII

Standard Federal Region 9
Fish and Wildlife Service Region 1
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NBIP ACCESSION NUMBER: HI/003

<286>

INVESTIGATOR(S): Mueller-Dombois, D.
AFFILIATION: Dept. of Botany, University of Hawaii

TITLE: Monitoring Vegetation Recovery
Resulting from Excluding Exotic Feral
Animals

PURPOSE: To assess and evaluate vegetation
dynamics for the purpose of determining
the best natural area management
procedures.

SPONSOR(S): NSF; NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: An interruption of
reproduction cycle of ACACIA KOA by goat
browsing occurred as well as a recovery of
endemic plant species after goat removal.

ECOSYSTEM OR BIOGE TYPE(S): terrestrial;

forest; tropical; savanna; grassland

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: endangered species;

environmental impact; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; trees;

shrubs; herbs; grasses

TAXA: CANAVALIA KAUENSIS; ACACIA KOA;

ERAGROSTIS TENELLA; MELINIS MINUTIFLORA;

HETEROPOGON CONTORTUS; METROSIDEROS

COLLINA; DIOSPYROS FERREA; CAPRA HIRCUS;

PLANTS, 100 SPECIES; CAPRA HIRCUS

ADDED KEYWORDS: species introduction; goats;

pigs; succession; natural catastrophe;

exotic species; management measures;

volcanoes; islands

PRIMARY PARAMETERS INVESTIGATED: behavior;

distribution; diversity; emigration; growth

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

exclosures; transects

NUMBER OF SAMPLING SITES: 10

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

soils

STUDY SITE(S): HI

GEOGRAPHIC DESCRIPTION: Island of Hawaii;

Hawaii Volcanoes National Park

TYPE OF DATA: reduced; literature-derived

COMPUTER AND LANGUAGE: R/P 2000/Access; BASIC

STATISTICS EMPLOYED: mean; analysis of

variance; multivariate analysis

ABSTRACT: Goats were introduced to the
Hawaiian Islands nearly 200 years ago.
They have become wild and today roam in
many Hawaiian ecosystems with dry-season
climates from the lowlands to the
mountains. Experimental goat displacement
by means of exclosures has shown that the
present vegetation is entirely
goat-derived. The response to displacement
of goats was immediate. In the annual
grassland, bunchgrasses, woody
chamaephytes, and endemic legume vine
(CANAVALIA KAUENSIS) became established
within less than two years, while the
annuals were fast disappearing. In the
perennial grassland, MELINIS MINUTIFLORA

enlarged its grass mat, woody plants
became more abundant, and exposed soil was
partially covered within a year after
exclosure construction. Reproduction of
ACACIA KOA, the only important tree
species in the mountain parkland
ecosystem, increased markedly after goats
were excluded.

REFERENCES: Snathers and Mueller-Dombois,
1974; Mueller-Dombois and Spatz, 1975;
Spatz and Mueller-Dombois, 1973

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NBIP ACCESSION NUMBER: HI/008

<287>

INVESTIGATOR(S): Scovcroft, P.G.

AFFILIATION: FS

TITLE: Rate of Mamane Forest Decline and Test
of the Feasibility of Mapping Vegetation
on Mauna Kea, Hawaii

PURPOSE: To quantify changes in the number of
live trees, canopy density, and relative
dominance of herbaceous vegetation, bare
soil, and rock within the Mamane-naio
association of the west flank of Mauna Kea.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The vegetation has
suffered a decline as a result of the
grazing and overuse by feral sheep. Other
causes have been noted but not qualified.

ECOSYSTEM OR BIOGE TYPE(S): terrestrial;

forest; tropical

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: endangered species

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; plants; vascular plants;

trees

TAXA: SOPHORA CHRYSOPHYLLA; MYOPORUM

SANDWICHENSE; STYPHELIA TAMERLANEAE;

PSITTACOSTRA BAILLEUI

ADDED KEYWORDS: mamane; naio; exotic species;

canopy density; maps; pukiawe; palila;

sheep; population effects

PRIMARY PARAMETERS INVESTIGATED:

distribution; mortality; numbers;

reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial photography; sample plots

NUMBER OF SAMPLING SITES: over 1000

STUDY SITE(S): HI

GEOGRAPHIC DESCRIPTION: Mauna Kea; Hawaii

County

TYPE OF DATA: raw; summarized;

literature-derived

COMPUTER AND LANGUAGE: IBM 360; FORTRAN IV

STATISTICS EMPLOYED: non-parametric analysis

ABSTRACT: The rate of mamane forest decline
is being determined, as well as the
feasibility of mapping the vegetation in
the 15,000 acre study area on Mauna Kea.
Vegetation varies from dense stands of
naio, mamane, or pukiawe to mixture
gradations and open stands of these scrub
trees and shrubs. Feral sheep are
concentrated in the eastern half of the
study area above 8,000 ft. Forest damage

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due to browsing appears to increase with increased elevation. Aerial photos are being taken and will be analyzed for the number of live trees and their canopy density and the dominance of other elements in each of the sample plots. The findings will aid us in discovering the critical habitat for the palila, an endangered endemic bird, which is dependent upon the mamane forest.

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NBIP ACCESSION NUMBER: HI/006

<289>

INVESTIGATOR(S): Tagawa, T.K.
AFFILIATION: Div. of Forestry, State of Hawaii Dept. of Land and Natural Resources

TITLE: Forest Pest Control

PURPOSE: Prevention, detection, evaluation, and suppression of forest pests.

SPONSOR(S): State of Hawaii

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1976

PROJECT DURATION: unknown

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Forest status is dependent upon pest status.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; tropical

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: forestry

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insects; plants; vascular plants; trees

TAXA: XYLOSANDRUS COMPACTUS; IOPHODERNIUM
PINASTRI; PINUS PINI; PHYTOPHTHORA
CINNAMOMI; FLAGITHMYSUS BILINEATUS; PSYLLA
UNCATOIDES

ADDED KEYWORDS: management measures; pests; coleopterans; homopterans

PRIMARY PARAMETERS INVESTIGATED:

distribution; mortality

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial detection

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): HI

TYPE OF DATA: raw

ABSTRACT: The forested areas within the state are monitored for forest pest outbreaks from the air. Outbreaks are ground checked and evaluated to determine a need for or against suppression measures.

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NBIP ACCESSION NUMBER: HI/002

<289>

INVESTIGATOR(S): Uchida, R.N.

AFFILIATION: NMFS

TITLE: Hawaiian Skipjack Tuna Stock
Assessment and Fishery Evaluation

PURPOSE: To study the relative abundance and fishery dependency-independency in the Hawaiian skipjack fishery, provide an assessment of the skipjack resource, and analyze changes in the operation of the fishing fleet.

SPONSOR(S): NMFS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1962

PROJECT DURATION: over five years

CHANGE(S) OBSERVED: In Hawaiian waters, skipjack tuna apparent abundance was not influenced by changes in the amount of fishing effort expended by fishery independent factors.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal

LEVEL(S) OF STUDY: population; ecosystem; region

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: KATSUWONUS PELAMIS; EUTHYNNUS PELAMIS

ADDED KEYWORDS: skipjack tuna; population effects

PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; emigration; growth; habitat characterization; harvest; immigration; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): catch reports; observation

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): HI

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: IBM 370/158; FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; non-parametric analysis

ABSTRACT: Catch per effective trip, used in 1948-64 as an index of apparent abundance of skipjack tuna, KATSUWONUS PELAMIS, in Hawaiian waters, is biased because effective trips (defined as one on which fish were caught) underestimated effort. Catch per day fished, calculated from data collected in 1965-70, is a refined index because effort includes days with or without catches. Our data describe the existence of a linear relationship between catch per effective trip and catch per day fished in 1965-70, and a method of estimating the latter from the former in 1948-64 based on this relationship. Fishing intensity, which was measured by standard effective trips in past studies, is calculated in standard days fished. Changes in catch per standard day fished are not associated with changes in relative fishing intensity. Skipjack tuna abundance in Hawaiian waters, therefore, is fishery independent and is probably influenced by availability and strength of year classes.

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NBIP ACCESSION NUMBER: HI/005

IDAHO

Standard Federal Region 10
Fish and Wildlife Service Region 1
(SEE ALSO 100, 145, 180, 522, 534, 832, 835,
867, 971)

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INVESTIGATOR(S): Bowler, B.
AFFILIATION: Idaho Dept. of Fish and Game
TITLE: Pend Oreille Lake Fish Investigations
PURPOSE: To assess fish stock in Pend Oreille
Lake, Idaho, with primary preference to
Kokanee Salmon.
SPONSOR(S): FWS; Idaho Dept. of Fish and Game
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decline in Kokanee stock
in the lake.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;
microorganisms; algae
TAXA: ONCORHYNCHUS NEBKA; SALMO GAIARDNERI
ADDED KEYWORDS: kokanee salmon; salmon;
kawloops trouts; trouts; population
effects; predation; species introduction;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; growth; harvest;
mortality; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
acoustics; gill netting
NUMBER OF SAMPLING SITES: 137 transects
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
water quality data
STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Bonner County;
Kootenai County; Pend Oreille Lake
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: A long term study has been
initiated to assess the status of the fish
stocks in Pend Oreille Lake, Idaho. The
two stocks of most concern are Kokanee
salmon, a prey species, and Kawloops
trout, a predator species. Recent declines
of Kokanee and Kawloops in the angler
harvest stimulated fishery management
personnel to initiate a research program
on the lake. Through a program of
limnological studies, echosounding, age
and growth analyses, angler harvest, and
opinions, we hope to gain more knowledge
about Kokanee and Kawloop population
dynamics in the lake for development of
alternatives to managing the fisheries in
the lake.
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NBIP ACCESSION NUMBER: ID/023

<291>

INVESTIGATOR(S): Hickey, W.O.
AFFILIATION: Idaho Dept. of Fish and Game

TITLE: Bighorn Sheep Ecology

PURPOSE: To qualify and quantify ranges as to
vegetation habitat types and correlate
food habits with these habitat types; to
define migrations to and from and on
seasonal ranges; and to describe
productivity, population dynamics of
several bighorn populations, and assess
physiological condition of individual
animals.
SPONSOR(S): Idaho Dept. of Fish and Game; FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is an apparent
upward trend in the Middle Fork of the
Salmon River sheep population. There is
an upward trend in the Panther Creek sheep
population. These may be only short term
increases that may not prove to be
significant long term increases.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; tundra;
alpine; mountain
LEVEL(S) OF STUDY: organism; population;
ecosystem
MANAGEMENT FOCUS: wildlife; range;
recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses
TAXA: OVIS CANADENSIS; GRASSES, 10 SPECIES;
FORBS, 61 SPECIES; SHRUBS, 16 SPECIES;
TREES, 2 SPECIES
ADDED KEYWORDS: seasonal variations; species
introduction; sheep; mountain sheep;
horsetails; migration rates; feeding habits
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; bod; habitat characterization;
harvest; home range size; kill; mortality;
migratory patterns; numbers; physiology;
reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
helicopter and fixed-wing aircraft
classification; live capture; blood
sample; hunter report cards; on foot
survey; Daubennire canopy-coverage
transect for vegetation, photography;
rumen sample analysis; radio collars and
ear tags; radio tracking; immobilizing
injection darts; corral trapping
SAMPLING FREQUENCY: seasonal; weekly;
monthly; annual; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Custer County; Idaho
County; Lemhi County; Valley County;
Salmon River; Big Lost River; Pahsimeroi
River;
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
contingency table analysis
ABSTRACT: Studies were made to determine
factors that constitute quality bighorn
habitat. Specific areas covered were:
present and potential bighorn ranges;
availability of bighorns and level of
harvest; quantification and qualification
of ranges used by indigenous and
introduced sheep by vegetation habitat
type and definition of food habits;
movements, migration, and habitat

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preference of bighorn sheep in Idaho;
productivity and population dynamics of
bighorns; reintroduction of bighorns; and
questionnaire and evaluation of bighorn
sheep hunting.

REFERENCES: Hickey, 1973a,b; Hickey 1974;
Hickey, 1975

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NBIP ACCESSION NUMBER: ID/006

<292>

INVESTIGATOR(S): Johnson, D.B.
AFFILIATION: Dept. of Biology, University of
Idaho

TITLE: Population Status of Ospreys in
Northern Idaho and Northeastern Washington

PURPOSE: To monitor the number of nesting
pairs, migration patterns, and wintering
areas; also to monitor the threats to
survival including pesticide
contamination, as well as other causes of
mortality.

SPONSOR(S): Various sources
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: These populations show
good productivity; there is evidence of
progressive increase in numbers of nesting
pairs, but there is some DDT contamination.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; river; lake;
reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: PANDION HALIAETUS

ADDED KEYWORDS: ospreys; DDT; food habits;
nests; pesticides; PCB

PRIMARY PARAMETERS INVESTIGATED: behavior;
mortality; migratory patterns; natality;
numbers; residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
census of nesting pairs; band recoveries;
streamer marking; pesticide analysis of
eggs; measurement of eggshell thickness

NUMBER OF SAMPLING SITES: three watersheds

SAMPLING FREQUENCY: annual

STUDY SITE(S): ID: WA

GEOGRAPHIC DESCRIPTION: Bonner County;

Boundary County; Fend Oreille County

TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Since 1969, we have investigated
certain aspects of the ecology of nesting
populations of ospreys in northern Idaho
and northeastern Washington. We have
censused populations, determined
reproductive success, and banded nestlings
to study migration and survival. These
populations are reproducing successfully.
The number of nesting pairs has steadily
increased during the past two decades. The

threats to nesting success remain of
interest however, and we have attempted to
evaluate them. The levels of DDT residues
and PCB found in fresh eggs of the Coeur
d'Alene population are reported here. Some
of the factors which influence exposure of
this population to pesticide contamination
are also described.

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NBIP ACCESSION NUMBER: ID/001

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INVESTIGATOR(S): Leege, T.A.

AFFILIATION: Idaho Dept. of Fish and Game

TITLE: Vegetation Response to Prescribed
Burning

PURPOSE: To document the response of various
vegetation types to different types of
prescribed burns and to evaluate this
technique for improving elk range.

SPONSOR(S): Idaho Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Sprouting of shrubs,
germination, and growth of new seedlings.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: wildlife; forestry; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs

TAXA: CERVUS CANADENSIS; CEANOTHUS

SANGUINEUS; SALIX; CEANOTHUS VELUTINUS;

ACER GLABRUM; AMELANCHIER ALNIFOLIA;

RHAMNUS PURSHIANA; PRUNUS EMARGINATA;

PHILADELPHUS LEWISII; HOLODISCUS DISCOLOR;

PRUNUS VIRGINIANA; PHYSOCARPUS MALVACEUS;

SAMBUCUS COERULEA; SHRUBS, 8 SPECIES

ADDED KEYWORDS: elk; redstem ceanothus;

willows; shiny-leaf ceanothus; mountain

maples; serviceberries; cascara; bitter

cherries; ocean spray; chokecherries;

ninebark; elderberries; prescribed

burning; phenology

PRIMARY PARAMETERS INVESTIGATED: growth;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
crown intercept transects; twig counts;
circular plots

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): ID

GEOGRAPHIC DESCRIPTION: Idaho County;

Kootenai County; Lochsa River; St. Joe

River; Fish Creek; Holly Creek; Pete King
Creek

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis

ABSTRACT: Most of the elk herds in northern
Idaho depend upon seral brush fields
created many years ago by wildfires in
mature timber. Browse produced in the
brush fields has decreased because of
advancing plant succession and palatable
shrubs growing too tall to be effectively

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utilized. We initiated a study in 1965 to evaluate the effectiveness of spring and fall burning in reducing the height of browse. Individuals of all shrub species usually sprouted prolifically after both spring and fall burns. More sprouts generally resulted after spring burning, but the sprouts grew taller on the fall-burned plants. The physical and chemical characteristics of the sprouts are discussed. Multiple regression components are listed for predicting numbers of basal sprouts after the burn from preburn crown measurements.

REFERENCES: Leege and Hickey, 1971; Leege, 1972; Leege and Hickey, 1975

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NBIP ACCESSION NUMBER: ID/016

<294>

INVESTIGATOR(S): Lyon, L.J.

AFFILIATION: Intermountain Forest and Range
Exp. Sta., FS

TITLE: Vegetal Development Following Northern
Rocky Mountain Forest Fires

PURPOSE: To document forest community
structure before and long term development
after fire.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1962

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Vegetal community
recovery is a function of pre-fire
community structure.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact;
wildlife; forestry

ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs

TAXA: TREES, 6 SPECIES; SHRUBS, 17 SPECIES;
HERBS, 41 SPECIES

ADDED KEYWORDS: prescribed burning;
succession; recovery prediction; douglas
firs; rocky mountain maples; snowbrush;

scouler willows; management measures

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; growth;
habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent plots; annual sampling

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): ID

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: One-hundred and twenty acres of
standing Douglas fir timber in Neal
Canyon, near Ketchum, Idaho, were burned
with prescribed fire on August 1, 1963.
Descriptions of the fire, the prefire
forest community, and the first 7 years of
postfire vegetal development, and effects

on wildlife habitat are stressed. The Neal
Canyon prescribed fire was burned during
daylight hours under conditions severe
enough to produce crown fire in the
timber. Measurements of heat flux were
comparable to measurements taken in slash
fires with 15 to 20 tons of fuel per acre
and fine fuel moisture near 5 percent. All
litter and herbaceous plants, all dead
woody stems under 3 inches in diameter,
and all live stems under 2 inches were
completely consumed. After seven growing
seasons, the early seral herbaceous
community contains nearly twice as many
species as the preburn community.
Virtually all the perennial herbaceous
species resprouted and many new species
have appeared. Postfire canopy cover has
never dropped significantly below preburn
levels. The Douglas fir overstory was
killed in the fire, but a new forest has
been established by planting, direct
seeding, and some natural seeding. Canopy
closure of the tree overstory is predicted
before the thirtieth year. Most of the
shrub species recorded in the community
before the fire have resprouted, but the
relative importance of several species has
been significantly modified. Crown volume
per acre of Rocky Mountain maple (ACER
GLABRUM) was greater than all other shrub
species before the fire. During the first
7 postfire years, however, Scouler willow
(SALIX SCOULERIANA) and maple have been
about equal in crown volume, and it is
predicted that crown volume per acre of
snowbrush (CEANOTHUS VELUTINUS) will
surpass all other shrub species by
succession year 9.

REFERENCES: Lyon, 1971

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NBIP ACCESSION NUMBER: MT/053

<295>

INVESTIGATOR(S): McHesters, M.J.

AFFILIATION: Idaho Dept. of Health and Welfare

TITLE: Water Quality Survey and Evaluation
Lake Studies

PURPOSE: To assess sanitary, biological, and
chemical water quality.

SPONSOR(S): Idaho Dept. of Health and Welfare

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Water quality is
improving with control of point sources
and cultural development.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain; aquatic;
freshwater; lake

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; bacteria; algae

ADDED KEYWORDS: coliform bacteria; plankton;
phytoplankton; zooplankton; nekton;
dipterans; aquatic plants; waste water;
habitat modification; eutrophication

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PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; numbers; productivity;
toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
conventional sampling techniques
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms
STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Winchester Lake;
Coeur d'Alene Lake; Priest Lake; Pend
Oreille Lake; Spirit Lake; Twin Lake;
Heuser Lake; Petnan Lake; Hayden Lake
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: IBM 370/158; FORTRAN
ABSTRACT: Water quality assessments were
conducted on the major freshwater lakes to
determine and assess the water quality and
eutrophication status. Sanitary assessments
to determine bacteriological impacts from
shoreline development and recharge streams
were made. Eutrophication status was
determined on nutrient loading and algal
productivity capabilities.
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NBIP ACCESSION NUMBER: ID/044

<296>

INVESTIGATOR(S): McMasters, M.J.
AFFILIATION: Idaho Dept. of Health and Welfare
TITLE: Water Quality Survey and Evaluation:
Lotic Stream Studies
PURPOSE: To assess sanitary, biological, and
chemical water quality.
SPONSOR(S): Idaho Dept. of Health and Welfare
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Water quality is
improving with the reduction of point
source loading.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; mountain; aquatic;
freshwater; stream; river
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; bacteria; algae
ADDED KEYWORDS: coliform bacteria;
periphyton; plecopterans; ephemeropterans;
trichopterans; dipterans; waste water;
benthic organisms
PRIMARY PARAMETERS INVESTIGATED: bod;
diversity; habitat characterization;
numbers; productivity; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
conventional sampling techniques
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated

microorganisms

STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Snake River;
Clearwater River; Potlatch River; Palouse
River; Coeur d'Alene River; St. Joe River
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: IBM 370/158; FORTRAN
ABSTRACT: Water quality assessments were
conducted on selected stream segments
subject to extraordinary point and
non-point impacts. Sanitary surveys were
conducted to determine municipal and
agricultural effects and water quality
assessment to determine loading
characteristics in terms of BOD, suspended
solids, temperature, pH, dissolved oxygen,
and nutrients from entering sources and
background.
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NBIP ACCESSION NUMBER: ID/045

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INVESTIGATOR(S): Minter, R.F.
AFFILIATION: EPA
TITLE: Boise River Water Quality Monitoring
PURPOSE: To determine biological and chemical
characteristics of the Boise River
throughout the Ada County reach and to
attempt to summarize critical water
quality problems associated with Boise
River.
SPONSOR(S): SG; EPA
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes in species
diversity and biomass of benthic
macroinvertebrates was seasonal and there
was a gradient type of response as
contributions increased.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organisms; population
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; pollution
control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta
TAXA: TRICHOPTERA; EPHEMEROPTERA; DIPTERA;
OLIGOCHAETA; NEMATODA; PLECOPTERA;
LEPIDOPTERA; ISOPODA; HIRUDINEA; AMPHIPODA
ADDED KEYWORDS: caddisflies; mayflies; true
flies; round worms; worms; stoneflies;
scuds; aquatic moths; sowbugs; leeches;
coliform bacteria; amphipods; benthic
organisms; management measures; seasonal
variations; waste water
PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; numbers
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated
microorganisms; water quality data
STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Ada County; Boise
River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: This investigation was conducted on

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the Ada County reach of the Boise River, a tributary to the Snake River in southwestern Idaho, for the purpose of assessing selected physical, chemical, and biological conditions in the river; and to gain a better understanding of the behavior and possible interaction of these factors on the river environment. In addition, the data obtained would help to pinpoint and solve water quality problems in the lower Boise River, serve as a baseline from which to measure future changes in river conditions, and lend background information for the development and implementation of an Ada County Area-wide Waste Treatment Management Plan being developed by the Ada Council of Governments as specified under a Federal Water Pollution Control Act.

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NBIP ACCESSION NUMBER: ID/010

<298>

INVESTIGATOR(S): Pettit, S.W.
AFFILIATION: Idaho Dept. of Fish and Game
TITLE: Dworshak Fisheries Studies DSS-20-5
PURPOSE: Evaluation of changes in species composition and abundance of game fish above Dworshak Reservoir, below the reservoir and within the reservoir.
SPONSOR(S): COF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Replacement of native river game fish species with stocked species and removal of wild steelhead from drainage above dam.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; reservoir
LEVEL(S) OF STUDY: organism; population; ecosystem; region
MANAGEMENT FOCUS: fisheries; recreation; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta
TAXA: SALMO GAIARDNERI; SALMO CLARKI; PROSOPOM WILLIAMSONI; SALVELINUS MALMA; PTYCHOCEILUS OREGONENSIS; MICROPTERUS DOLOMIEUI; ONCORHYNCHUS NEBKA
ADDED KEYWORDS: rainbow trouts; cutthroat trouts; mountain whitefishes; dolly varden; northern squawfishes; steelhead trouts; smallmouth basses; kokanee salmon; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; growth; habitat characterization; harvest; migratory patterns; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): creel census; gill nets; electrofishing gear; explosives; underwater observation
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: hydrological data;

water quality data

STUDY SITE(S): ID
GEOGRAPHIC DESCRIPTION: Clearwater County; Nez Perce County; Dworshak Dam; Dworshak Reservoir; Clearwater River
TYPE OF DATA: literature-derived
COMPUTER AND LANGUAGE: IBM 360; Fortran
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: Abnormally high mid-winter flows and releases ranging between 6,000 cfs and 34,000 cfs from Dworshak Dam reduced angler success during the 1974 spring steelhead season. Multi-level selector gates at Dworshak Dam reduced river temperature differences between the North Fork and main Clearwater River during 1974. Anglers harvested an estimated 975 steelhead during the spring steelhead season from 1 January to 15 April 1974. The critically low numbers of returning steelhead to Idaho waters in the fall of 1974 required emergency action by the Idaho Fish and Game Commission, and an emergency closure on the Clearwater River went into effect on 27 October. The abundance of residualized juvenile steelhead declined in the lower Clearwater River during 1974, and the harvest decreased 72% from 1973. There was a 28% decrease in the smallmouth bass harvest estimate in 1974. The harvest of 1,031 bass was the lowest harvest in the past 6 years. Spawning and rearing habitats in the lower Clearwater River have been dramatically modified by cooler releases from Dworshak Dam and by the removal of the Washington Water Power Dam. Non-game species continued to increase in their abundance and penetration into the North Fork drainages. Northern squawfish accounted for 5% of the total catch and were observed in Kelly Creek and Black Canyon for the first time by divers. Pacific lamprey parasitism on reservoir fish populations decreased to 4% in 1974, compared to 16% during 1973.
REFERENCES: Pettit, et al, 1975
ADDRESS: Mr. Steve Pettit
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NBIP ACCESSION NUMBER: ID/020

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INVESTIGATOR(S): Beingold, M.
AFFILIATION: Idaho Dept. of Fish and Game
TITLE: Spawning Ground Surveys
PURPOSE: To monitor chinook salmon spawning success (nest counts) annually in selected stream sections.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1950's
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major downward trend of spawning escapements of spring and summer chinook salmon in the Salmon River.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries

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ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: ONCORHYNCHUS TSHAWYTSCHA

ADDED KEYWORDS: chinook salmon; salmon;
escapements; dams; spawning; management
measures

PRIMARY PARAMETERS INVESTIGATED: numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nest counts; aerial nest counts

NUMBER OF SAMPLING SITES: 24

SAMPLING FREQUENCY: annual

STUDY SITE(S): ID

GEOGRAPHIC DESCRIPTION: Valley County; Lemhi
County; Custer County; Blaine County;
Salmon River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Annual counts of chinook salmon
spawning nests are made in selected stream
areas as an indicator of trends in salmon
spawning escapements in the Salmon River
drainage.

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NBIP ACCESSION NUMBER: ID/004

<300>

INVESTIGATOR(S): Ritchie, B.W.

AFFILIATION: Idaho Dept. of Fish and Game

TITLE: Moose Ecology Research-Idaho

PURPOSE: To determine food habits, movements,
mortality, range conditions, and other
factors affecting moose in Fremont and
Clark Counties, Idaho.

SPONSOR(S): Idaho Dept. of Fish and Game; FWS

SPONSOR CATEGORY: state government; federal
government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Moose population has
declined approximately 50 percent from
1953 to 1975.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: wildlife; forestry; range;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: ALCEA ALCEA

ADDED KEYWORDS: moose; population effects;
management measures

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; habitat characterization;
harvest; home range size; kill; mortality;
migratory patterns; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial surveys; tagging/observation;
direct observation; line intercepts

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): ID

GEOGRAPHIC DESCRIPTION: Fremont County; Clark
County

TYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Annual aerial surveys 1949 to 1974

indicated moose populations wintering in
Fremont County, Idaho, declined over 50
percent from 1953 to 1974. Present
population is estimated at 400 moose. This
project was initiated in 1969 to determine
factors limiting the moose population.

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TELEPHONE: (208) 458-4925

NBIP ACCESSION NUMBER: ID/012

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INVESTIGATOR(S): Welch, R.E.

AFFILIATION: FS

TITLE: Big Game Winter Range Study

PURPOSE: To monitor the condition and trend
of winter range utilized primarily by mule
deer, elk, and bighorn sheep in the Idaho
Primitive Area on the Big Creek Ranger
District of the Payette National Forest.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1954

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Vegetative condition and
ground cover have remained stable or
improved but browse species (CERCOCARPUS

LEDIFOLIUS and PURSHIA TRIDENTATA) are
decadent with little reproduction present.
This has been a concern for many years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; savanna; grassland;
mountain

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: wildlife; indicator

species; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs;
herbs; grasses

TAXA: CERCOCARPUS LEDIFOLIUS; PURSHIA

TRIDENTATA; ARTEMISIA TRIDENTATA;

CHRYSOTHAMNUS NAUSEOSUS; AGROPYRON

SPICATUM; FESTUCA IDAHOENSIS; BALSAMORHIZA

SAGITTATA; ERIOGONUM SPP; ODOCOILEUS

HEMIONUS; CERVUS CANADENSIS; OVIS

CANADENSIS

ADDED KEYWORDS: management measures; habitat
modification; curleaf mountain mahogany;
antelopes; bitterbrush; common sagebrush;
gray rabbitbrush; rubber rabbitbrush; tall
gray rabbitbrush; bluebunch wheatgrass;
Idaho fescue; arrowleaf balsamroot;
buckwheats; mule deer; elk; bighorn sheep

PRIMARY PARAMETERS INVESTIGATED: growth;
habitat characterization; mortality;
reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

standard environmental analysis procedure;
Parker 3-step transects; pellet group
counts; browse utilization studies

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: annual; irregular

STUDY SITE(S): ID

GEOGRAPHIC DESCRIPTION: Salmon River;
Middlefork Salmon River; Big Creek; Valley
County; Idaho County; Payette National
Forest; Idaho Primitive Area

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ABSTRACT: Concern has long been expressed for the condition and trend of big game winter range in the Idaho Primitive Area and potential overuse by mule deer and elk. The terrain is composed of steep, sharp ridges, and narrow canyons. Rock outcrops are common. Aspect, slope, and elevation vary greatly influencing vegetation type and resultant use by big game. At lower elevations south and west facing slopes are typically grassland with interspersed shrubs such as big sagebrush, rubber rabbitbrush, and bitterbrush. Lower ridgetops and rock outcrops frequently have stands of mountain mahogany. Ponderosa pine or Douglas fir occupy the north and east exposures. As elevation increases the Douglas fir becomes predominant on all aspects until moving into the spruce-fir zone at still higher elevations. Parker three step transects from 1954 thru 1975 showed an improvement in range condition. Overall vegetative condition is good on the key areas with soil condition fair. Browse condition is generally very poor and there is a conspicuous lack of seedling and young bitterbrush plants. Reproduction is no more successful within an enclosure. The fact that bitterbrush and mountain mahogany are as common as at present despite long concern is probably due to longevity and favorable conditions for reproduction during certain years.

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USFS

McCall, ID 83638

TELEPHONE: (208) 634-2255

NBIP ACCESSION NUMBER: ID/034

<302>

INVESTIGATOR(S): Winner, J.E.
AFFILIATION: Idaho Dept. of Water Resources
TITLE: Stream Channel Relocation on the South Fork of the Coeur d'Alene River
PURPOSE: To monitor effects and recovery of a relocated stream.
SPONSOR(S): Idaho Dept. of Water Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Benthic biomass and

diversity recovered rapidly. Fish populations decreased dramatically.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta

TAXA: GLOSSOSOMA SPP; EPHEMERELLA DODDSI;

SALMO CLARKI; SALVELINUS FONTINALIS;

COTTUS SPP; SALMO GAIARDNERI; ONCORHYNCHUS

KISUTCH; TREES, 9 SPECIES

ADDED KEYWORDS: caddisflies; mayflies; cutthroat trout; brook trout; sculpins; rainbow trout; coho salmon; stream relocation; channelization

PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; immigration; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; Surber sampler

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): ID

GEOGRAPHIC DESCRIPTION: Shoshone County;

South Fork Coeur d'Alene River

STATISTICS EMPLOYED: mean

ABSTRACT: In 1972, a 3,330 foot segment of the South Fork of the Coeur d'Alene River was relocated to permit construction of a settling pond for mineral processing effluent. Three types of structures were built in the new channel to create fish habitat. After one year, benthic populations were near pre-alteration levels, but fish populations were approximately 50 percent of pre-alteration levels. Easy access for fishing, reduction in habitat, or natural environmental factors may be responsible for the decline. Extremely high flows in January 1974 damaged several of the stream improvement structures and covered others with gravel. Improved construction and better location could prevent some of the problems in future projects.

REFERENCES: Idaho Dept. of Water Resources, 1974

ADDRESS: Mr. James Winner
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Statehouse Mail
Boise, ID 83702

TELEPHONE: (208) 384-2215

NBIP ACCESSION NUMBER: ID/036

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ILLINOIS

Standard Federal Region 5
Fish and Wildlife Service Region 3
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<303>

INVESTIGATOR(S): Cadwell, L.I.
AFFILIATION: Dept. of Biological Sciences,
Illinois State University
TITLE: Environmental Tritium from Selected
Sites in Illinois
PURPOSE: To determine relative concentrations
of tritium in environmental samples,
primarily biotic components including
vegetation and wildlife.
SPONSOR(S): Illinois State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No accumulation yet
observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
wildlife; radiological; recreation; water
quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
herbs
TAXA: SCIURUS NIGER; SYLVILAGUS SPP;
PHASIANUS COLCHICUS
ADDED KEYWORDS: pheasants; ring-necked
pheasants; rabbits; squirrels; cottontail
rabbits; fox squirrels; tritium;
radiation; nuclear power plants
NUMBER OF SAMPLING SITES: 2
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Dresden Nuclear Power
Plant
TYPE OF DATA: raw
ABSTRACT: None provided.
ADDRESS: Dr. Larry Cadwell
Biology Dept.
Illinois State University
Normal, IL 61761
TELEPHONE: (309) 483-2657
NBIP ACCESSION NUMBER: IL/029

<304>

INVESTIGATOR(S): Calhoun, J.C.
AFFILIATION: Illinois State Dept. of
Conservation
TITLE: Forest Game Investigations
PURPOSE: To monitor populations of
white-tailed deer, wild turkey, and ruffed
grouse.
SPONSOR(S): Illinois Dept. of Conservation
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1957
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in deer
statewide and increase and spread of
grouse and turkeys.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: ODOCOILEUS VIRGINIANUS; MELEAGRIS
GALLOPAVO; EONASA UNBELLUS
ADDED KEYWORDS: white-tailed deer; deer;

turkeys; ruffed grouse; grouse; management
measures; population effects
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; mortality;
natality; numbers; reproduction
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): IL
TYPE OF DATA: summarized
ABSTRACT: None provided.
ADDRESS: Mr. Jack Calhoun
Chief Staff Biologist
Illinois Dept. of Conservation
605 State Office Building
400 South Spring Street
Springfield, IL 62706
TELEPHONE: (217) 782-6385
NBIP ACCESSION NUMBER: IL/062

<305>

INVESTIGATOR(S): Danforth, W.F.
AFFILIATION: Dept. of Biology, Illinois
Institute of Technology
TITLE: Phytoplankton of Lake Michigan near
Chicago
PURPOSE: To determine phytoplankton dynamics
in Lake Michigan.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Sharp decrease in total
phytoplankton populations, but small
changes in relative species abundance in
1971-72.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: pollution control; water
quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: ASTERIONELLA SPP; FRAGILARIA SPP;
NAVICULA SPP; SYNEDEA SPP; TABELLARIA SPP;
MELOSIRA SPP; STEPHANODISCUS SPP; ANABAENA
SPP; GOMPHOSPHERA SPP; OSCILLATORIA SPP;
DINOBRYON SPP
ADDED KEYWORDS: diatoms; population effects;
habitat modification; models
PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
grab samples from filtration plant intake
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: daily
SUPPORTING DATA COLLECTED: climatological
data; water quality data
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Cook County; Lake
Michigan
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; modeling,
deterministic
ABSTRACT: Daily phytoplankton counts from the
coastal zone of Lake Michigan, obtained by
the Chicago water filtration plants, are
compiled and analyzed on a continuing
basis. Initial goals are to provide a
description of the present composition and
seasonal cycle of the phytoplankton
community and to identify temporal trends.
Future plans are to use these data in
conjunction with meteorological and
chemical data and the results of
laboratory studies of the dominant

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phytoplankters to identify
population-limiting factors, and to model
the population dynamics of the
phytoplankton community.
ADDRESS: Dr. William F. Danforth
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Illinois Institute of Technology
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Chicago, IL 60616
TELEPHONE: (312) 567-3486
NBIP ACCESSION NUMBER: IL/074

Cedar Glen Eagle Roost and at Kibbe Life
Science Station of Western Illinois
University. Studies on habitat
requirements for wintering birds in the
harsh environment were made including wind
chill factors, importance to flood plain
and islands, and the importance of natural
bowls in limestone surrounded by trees for
night roosts. Food habits were studied and
food items sampled and analyzed for
pesticides and heavy metals.
ADDRESS: Thomas C. Dunstan
Western Illinois University
Macomb, IL 61455
TELEPHONE: (309) 298-1546
NBIP ACCESSION NUMBER: IL/042

<306>

INVESTIGATOR(S): Dunstan, T.C.
AFFILIATION: Western Illinois University
TITLE: Wintering Population Census of Bald
Eagles along the Mississippi River
PURPOSE: To study population dynamics of bald
eagles wintering along the Mississippi
River from Hastings, Minnesota to Kentucky
with primary emphasis on Lock and Dam 19.
SPONSOR(S): Western Illinois University
Research Council
SPONSOR CATEGORY: teaching institution;
private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The population increased
from 66 birds in 1970-71 to 172 in 1974 at
Lock and Dam 19 and increased from 822 in
1970 to 1256 in 1974 along entire river.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
river
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: fisheries; wildlife;
indicator species; pollution control;
power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds
TAXA: HALIAETUS LEUCOCEPHALUS; DOROSOMA
CEPEDIANUM
ADDED KEYWORDS: bald eagles; eagles; gizzard
shad; shad; population effects; legal
regulation; heavy metals; pesticides
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; habitat characterization;
mortality; migratory patterns; numbers;
residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
census; dip net
NUMBER OF SAMPLING SITES: linear sample
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Hamilton County;
Mississippi River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance
ABSTRACT: Wintering populations of bald
eagles are monitored during the months of
Oct. through March along the Mississippi
River from Hastings, Minnesota to
Kentucky. Primary emphasis and detailed
study of wintering behavior, food habits,
migration times, and population shifts
during the winter were conducted at Lock
and Dam 19 near Hamilton, Illinois and

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INVESTIGATOR(S): Ebinger, J.E.
AFFILIATION: Botany Dept., Eastern Illinois
University
TITLE: Aquatic Vascular Plant Communities of
Illinois
PURPOSE: To determine the composition of the
aquatic vascular plant communities and to
analyze and compare the communities in
different types of aquatic environments.
SPONSOR(S): Eastern Illinois University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some changes in floristic
composition have been observed thus far.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: range; pollution control;
water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs
TAXA: CABOMBACEAE; CALLITRICHACEAE;
CERATOPHYLLACEAE; HALORAGACEAE;
HYDROCHARITACEAE; LEMNACEAE;
LENTIBULARIACEAE; NAIADACEAE;
NELUMBONACEAE; NYMPHACEAE; PONTEDERIACEAE;
POTAMOGETON SPP; SALVINIACEAE; CHARALES
ADDED KEYWORDS: aquatic plants; census
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field observation; quadrats
NUMBER OF SAMPLING SITES: 550
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated flora;
hydrological data; water quality data
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Wabash River;
Illinois River; Embarras River
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean; mode; median;
percentile
ABSTRACT: The investigation of numerous
aquatic habitats has extended the ranges
of many hydrophytes in Illinois.
Geographic locations and distribution as
well as county distribution are of major
concern.
REFERENCES: Dolbeare and Ebinger, 1974
ADDRESS: Dr. John Ebinger
Botany Dept.
Eastern Illinois University
Charleston, IL 61920
TELEPHONE: (217) 581-3525

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NBIP ACCESSION NUMBER: IL/048

<308>

INVESTIGATOR(S): Evers, R.A.
AFFILIATION: Herbarium, Illinois Natural History Survey
TITLE: Succession in Sand Prairies
PURPOSE: To study the plant succession from bare sand to prairie cover.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: unknown
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Prairie plants rapidly colonized the plowed sand area.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; grasses
ADDED KEYWORDS: prairies; succession; revegetation; colonization; habitat modification
PRIMARY PARAMETERS INVESTIGATED: distribution
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: irregular
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Whiteside County; Thomas-Fulton Scientific Study Area
TYPE OF DATA: raw
ABSTRACT: Three plots (each 10 x 10 m) were set out, one in unplowed prairie, one in plowed, and the third in a position that was partly unplowed and partly plowed. Species lists were made from 1968 to 1975 to show the succession of plants to a prairie cover.
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Section of Botany and Plant Pathology
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Natural Resources Bldg.
Urbana, IL 61801
TELEPHONE: (217) 333-6886
NBIP ACCESSION NUMBER: IL/021

<309>

INVESTIGATOR(S): Hiltibran, R.C.
AFFILIATION: Aquatic Biology Section, Natural History Survey
TITLE: Aquatic Plants: An Ecological Study in the Waters of Central Illinois
PURPOSE: To control aquatic plants chemically, to record aquatic plant infestations in several bodies of water, and to attempt to alter the aquatic plant complex in some instances.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1958
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been no noticeable changes in plant communities (except possible seasonal variations) in

spite of applications of herbicides.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; microorganisms; algae
TAXA: POTAMOGETON PECTINATUS; POTAMOGETON CRISPUS; POTAMOGETON POLIOSUS; POTAMOGETON PUSILLUS; MYRIOPHYLLUM EXALBESCENS; NAJAS GUADALUPENSIS; CHARA VULGARIS; MYRIOPHYLLUM SPICATUM; TYPHA LATIFOLIA; TYPHA ANGUSTIFOLIA; LEMNA MINOR; NAJAS FLEXILIS
ADDED KEYWORDS: pondweeds; sago pondweeds; curlyleaf pondweeds; leafy pondweeds; small pondweeds; milfoil; northern milfoil; chara; southern naiads; eurasian milfoil; cattails; narrow-leaf cattails; slender naiads; herbicides; aquatic plants; duckweeds; farm ponds
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct observation
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Champaign County; Coles County; Piatt County; Allerton Lake; Arrowhead Lake; Mansion Pond; Giffin Pond; Miller Pond; Brunkow Pond; Whetzel Pond
TYPE OF DATA: raw; summarized
ABSTRACT: The seasonal growth cycles of several species of aquatic plants were studied in an effort to successfully control the plant populations in a number of Illinois ponds. The various changes were described in detail, for each pond, as well as a summary, which indicated a few causal factors.
REFERENCES: Hiltibran, 1964; Hiltibran, 1970
ADDRESS: Dr. Robert C. Hiltibran
Section of Aquatic Biology
Illinois Natural History Survey
Natural Resources Bldg.
Urbana, IL 61801
TELEPHONE: (217) 333-6889
NBIP ACCESSION NUMBER: IL/043

<310>

INVESTIGATOR(S): Khan, M.A.Q.
AFFILIATION: Dept. of Biological Sciences, University of Illinois
TITLE: Effects of Insecticides on Aquatic Animals
PURPOSE: To study the toxicity of pesticides on populations of fresh water and marine animals and to assay detoxication enzymes in populations of these animals.
SPONSOR(S): University of Illinois; Velsicol Corp.
SPONSOR CATEGORY: teaching institution; private corporation
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Presence of populations more resistant to insecticides.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem

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MANAGEMENT FOCUS: environmental impact;
 fisheries; wildlife; pollution control
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 amphibia; fish; birds; mammals;
 invertebrates; crustacea; insecta; mollusca
 TAXA: LEPOMIS MACROCHIRUS; CARASSIUS AURATUS;
 PIMELOMETOPON PULCHRUM; PHYSA SPP; LYMAEA
 SPP; DAPHNIA SPP; GAMMARUS SPP;
 SINOCEPHALUS SPP
 ADDED KEYWORDS: basses; bluegills; trouts;
 goldfishes; sheepshead; drums; mullets;
 mussels; snails; crayfishes; cladocerans;
 mosquitoes; pigeons; chickens; yeasts;
 insecticides; pesticides; detoxification;
 enzymes; heavy metals; decapods;
 ostracods; dipterans; lepidopterans
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; kill; mortality; physiology;
 residues; toxicity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 field sampling; assay of toxicity and
 detoxication systems
 NUMBER OF SAMPLING SITES: 4
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna
 STUDY SITE(S): IL; FL
 GEOGRAPHIC DESCRIPTION: Dupage County (IL);
 Cook County (IL); St. Johns County (FL);
 Salt Creek (IL); Des Plaines River (IL);
 Matanza River (FL); St. Johns River (FL);
 Lake Michigan; Zion Power Station
 STATISTICS EMPLOYED: mean; analysis of
 variance; analysis of covariance;
 regression/correlation analysis
 ABSTRACT: Invertebrates and fish are
 extremely sensitive to insecticides. They
 possess low levels of detoxication
 enzymes. Certain populations of
 mosquitofish and minnows appear resistant
 (around forests, agricultural lands, and
 industrial plants).
 ADDRESS: Dr. M. A. Q. Khan
 Biology Dept.
 University of Illinois-Chicago
 Circle
 Chicago, IL 60680
 TELEPHONE: (312) 996-5449
 NBIP ACCESSION NUMBER: IL/033

<311>

INVESTIGATOR(S): Labisky, R.F.
 AFFILIATION: Illinois State Natural History
 Survey
 TITLE: Abundance and Harvest of Doves,
 Pheasants, Bobwhites, Squirrels, and
 Cottontails in Illinois
 PURPOSE: To document annual trends in
 abundance and harvest of the major species
 of small game in Illinois.
 SPONSOR(S): Illinois Natural History Survey;
 Illinois Dept. of Conservation
 SPONSOR CATEGORY: state government
 DATE OF INITIATION: 1954
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Of the six species
 studied, mourning dove numbers decreased,
 bobwhites increased, pheasant numbers
 fluctuated, gray and fox squirrel numbers
 have maintained a peak, and cottontails

have decreased and maintained a level
 lower than major peak.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 forest; deciduous; grassland

LEVEL(S) OF STUDY: population; region

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds; mammals

TAXA: ZENAIIDA MACROURA; PHASIANUS COLCHICUS;

COLINUS VIRGINIANUS; SCIURUS NIGER;

SCIURUS CAROLINENSIS; SYLVILAGUS FLORIDANUS

ADDED KEYWORDS: mourning doves; pheasants;

bobwhites; fox squirrels; gray squirrels;

eastern cottontail rabbits; doves; quails;

squirrels; rabbits

PRIMARY PARAMETERS INVESTIGATED:

distribution; harvest; kill; mortality;
 numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 census; questionnaires

NUMBER OF SAMPLING SITES: 73 census routes;
 150 sites

STUDY SITE(S): IL

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: mean; percentile;
 regression/correlation analysis

ABSTRACT: The project is intended to provide
 to hunters annual trends in abundance and
 harvest of six species of small game in
 Illinois. A report summarizes these trends
 and supplies a reference catalog of
 statistics for each of the species over a
 fourteen-year period.

REFERENCES: Preno and Labisky, 1971

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 Illinois Natural History Survey
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 Urbana, IL 61801

TELEPHONE: (217) 333-7513

NBIP ACCESSION NUMBER: IL/036

<312>

INVESTIGATOR(S): Labisky, R.F.
 AFFILIATION: Illinois State Natural History
 Survey
 TITLE: Distribution and Abundance of
 Pheasants in Illinois
 PURPOSE: To document temporal changes in the
 distribution and abundance of pheasants in
 Illinois.
 SPONSOR(S): Illinois Natural History Survey
 SPONSOR CATEGORY: state government
 DATE OF INITIATION: 1958
 PROJECT DURATION: unknown
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Pheasant abundance has
 decreased during the past 20 years.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 deciduous; grassland
 LEVEL(S) OF STUDY: population
 MANAGEMENT FOCUS: wildlife; indicator
 species; recreation
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds
 TAXA: PHASIANUS COLCHICUS
 ADDED KEYWORDS: nests; sodium; soil
 chemistry; pheasants; weather conditions;
 agriculture
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; harvest; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 counts
 NUMBER OF SAMPLING SITES: 350,000 mi. rural

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roads

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; soils

STUDY SITE(S): IL

TYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; percentile;
contingency table analysis

ABSTRACT: In Illinois and other midwestern states, populations of pheasants are characterized by discontinuous distribution and by variable abundance. Land use, calcium, and weather are commonly considered important influences on these characteristics. A multiple regression analysis indicated that a combination of three land use factors: (1) proportion of land in cultivated crops, (2) proportion of farms classified as cash-grain farms, and (3) proportion of cropland in hay exerted the greatest influence on pheasant distribution and abundance. Unfavorable weather is partially responsible, as adverse conditions probably occur less frequently with less severity and for shorter periods in the range occupied by pheasants than in the range not occupied by pheasants. It is unlikely that the establishment of self-maintaining pheasant populations on Illinois drift is prevented by a deficiency of calcium.

REFERENCES: Labinsky, et al, 1968; Labinsky, et al, 1964

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Urbana, IL 61801

TELEPHONE: (217) 333-7513

NBIP ACCESSION NUMBER: IL/037

<313>

INVESTIGATOR(S): Labisky, R.P.

AFFILIATION: Illinois State Natural History Survey

TITLE: Ecology of Pheasant Populations in Illinois

PURPOSE: To study the behavioral, spatial, and population characteristics of pheasants in an intensively cultivated region of east-central Illinois.

SPONSOR(S): Illinois Natural History Survey

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1956

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Unfavorable weather is partially responsible for year to year fluctuations of pheasants within their established range.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
deciduous; grassland

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: wildlife; indicator
species; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: PHASIANUS COLCHICUS

ADDED KEYWORDS: nests; weather conditions;

eggs; pheasants

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; diversity; emigration; growth;
habitat characterization; harvest; home
range size; immigration; kill; mortality;
natality; numbers; physiology;
productivity; reproduction; sex;
size/weight; stress; territory size
NUMBER OF SAMPLING SITES: 36 sq. mi. area
SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Ford County; McLean
County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis

ABSTRACT: The ecology of pheasant populations was studied on a 23,200 acre tract of farmland in east-central Illinois. Harvested and unharvested "tame hays", which occupied 7 and 3 percent of the land area, respectively, yielded 30 and 33 percent of all pheasant chicks hatched. As pheasant abundance increased, the nesting capacity of the environment declined. Reproductive efficiency was inversely related to density. Control of pheasant abundance is affected when the rate of clutch abandonment reaches the level at which it significantly depresses nest success.

REFERENCES: Labinsky, 1968; Labinsky, et al, 1964; Jones, et al, 1968

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NBIP ACCESSION NUMBER: IL/038

<314>

INVESTIGATOR(S): Larimore, R.W.

AFFILIATION: Illinois Natural History Survey

TITLE: Fishery of a Cooling Lake

PURPOSE: To evaluate the effects of waste heat from an electric generating plant on the sport fishery and model the aquatic ecosystem.

SPONSOR(S): Electric Power Research Institute

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Seasonal changes in fish distribution and production are related to thermal gradients.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; pollution control;
water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;
microorganisms; algae; protozoa

ADDED KEYWORDS: benthic organisms;

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phytoplankton; zooplankton; habitat modification; nuclear power plants; primary productivity; secondary productivity; thermal effluents; cooling lake; models
PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; distribution; diversity; growth; harvest; mortality; natality; productivity; reproduction; sex; size/weight
SAMPLING FREQUENCY: weekly; monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; water quality data
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Moultrie County; Christian County; Sangamon County; Sangchris Lake; Shelbyville Lake; Kincaid Lake
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: 360 Supac; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IL/022

<315>

INVESTIGATOR(S): Larimore, R.W.
AFFILIATION: Illinois Natural History Survey
TITLE: Chemical and Biological Studies of Lake Sangchris--A Thermally Altered Body of Water
PURPOSE: To determine the effects of waste heat on a lake ecosystem.
SPONSOR(S): Commonwealth Edison Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Secondary and primary production is seasonally influenced by the thermal regime.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; fish; invertebrates; crustacea; microorganisms; algae
ADDED KEYWORDS: benthic organisms; plankton; thermal effluents; primary productivity; secondary productivity
PRIMARY PARAMETERS INVESTIGATED: biomass; bod; distribution; growth; habitat characterization; productivity; stress
SAMPLING FREQUENCY: weekly; monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; water quality data
STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Sangamon County; Christian County
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360 Supac; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IL/023

<316>

INVESTIGATOR(S): Larimore, R.W.
AFFILIATION: Illinois Natural History Survey
TITLE: Water Surveillance of Lake Shelbyville, Carlyle Lake, and Rend Lake
PURPOSE: To monitor water quality and relate to aquatic communities.
SPONSOR(S): DOD
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Normal development of communities occurred in these new reservoirs.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; reservoir
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; microorganisms; bacteria; algae
ADDED KEYWORDS: benthic organisms; phytoplankton; zooplankton; impoundments; community development
PRIMARY PARAMETERS INVESTIGATED: biomass; bod; distribution; diversity; habitat characterization; numbers; productivity
NUMBER OF SAMPLING SITES: 33
SAMPLING FREQUENCY: weekly; monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; hydrological data; water quality data
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Moultrie County; Shelby County; Clinton County; Franklin County; Jefferson County; Rend Lake; Shelbyville Lake; Carlyle Lake
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: 360 Supac; FORTRAN
STATISTICS EMPLOYED: mean; mode; analysis of variance; regression/correlation analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IL/024

<317>

INVESTIGATOR(S): Page, L.E.
AFFILIATION: Illinois Natural History Survey
TITLE: Aquatic Malacostraca of Illinois

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PURPOSE: To determine the distribution, systematics, and ecological requirements of the Illinois species.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Comparison of present distributions with literature reports reveal extirpation of one species and decimation of others.

ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species; range; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea

TAXA: CRUSTACEA, 60 SPECIES

ADDED KEYWORDS: benthic organisms; decapods; amphipods; isopods; mysidaceans; population effects

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): minnow seine; dip net

NUMBER OF SAMPLING SITES: hundreds

SAMPLING FREQUENCY: irregular

STUDY SITE(S): IL

TYPE OF DATA: reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN

ABSTRACT: The entire state of Illinois is being canvassed with collections of aquatic Malacostraca being made in hundreds of rivers, streams, lakes, and ponds. Usually only one collection is made per locality, the object of the survey being to cover the whole of Illinois. When completed, the survey will provide information on what species are present, how to identify them, their distributions within the state, and what their important habitat requirements are. Some old data are available for Illinois and limited comparisons can be made on historical changes.

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NBIP ACCESSION NUMBER: IL/019

<318>

INVESTIGATOR(S): Paulson, G.A.
AFFILIATION: Illinois Nature Preserves
Commission

TITLE: Vegetation Sampling of Harlem Hills
Nature Preserve, Winnebago County, Illinois

PURPOSE: To monitor the vegetational changes as a result of various management practices (i.e. brush cutting, burning, and control of exotics).

SPONSOR(S): Illinois Nature Preserves
Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Varied disturbances have resulted in vegetational changes.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses

TAXA: PLANTS, 78 SPECIES

ADDED KEYWORDS: management measures; brush; exotic species; prairies

PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; habitat characterization; kill; numbers;

reproduction

NUMBER OF SAMPLING SITES: 80

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: soils; terrain

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Winnebago County;

Rock River Valley; Rockford

TYPE OF DATA: raw; summarized;

literature-derived

STATISTICS EMPLOYED: percentile

ABSTRACT: This project is concerned with continuous monitoring of changes in vegetation as a result of various management practices or lack of management of the prairie vegetation.

REFERENCES: Pell and Pell, 1956

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NBIP ACCESSION NUMBER: IL/014

<319>

INVESTIGATOR(S): Poulson, T.L.

AFFILIATION: University of Illinois-Chicago
Circle

TITLE: Population Regulation and Community
Structure in Cave Streams

PURPOSE: To determine differences in population (age structure) of cave fish of different evolutionary ages and community structure (diversity and dominance) in cave streams of different hydrological input patterns.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1956

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Long term ups and downs in cave fish populations were observed. Also, simpler communities were observed in streams with high flooding vigor.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; mountain; aquatic; freshwater; stream

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; invertebrates; crustacea

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TAXA: ANLLYOPSIS SPELAEA; TYPHLICHTHYS
SUBTERRANEUS; ANLLYOPSIS RGSAR;
CHOLOGASTER AGASSIZI; CAMBARUS BARTONI;
ORCONECTES PELLUCIDUS; ORCONECTES INEIMIS;
CAMBARUS FENEBROSUS; STYGOBROMUS SP;
CRANGONYX SP; ASELLUS STYGUS; GAMMARUS
MINUS

ADDED KEYWORDS: caves; life history;
management measures; floods; habitat
modification; decapods; isopods;
amphipods; copepods; platyhelminthes;
gastropods

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; immigration; natality;
numbers; physiology; productivity;
reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
census

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: seasonal; annual;
irregular

SUPPORTING DATA COLLECTED: associated fauna;
hydrological data

STUDY SITE(S): IN; KY; AR

GEOGRAPHIC DESCRIPTION: Spring Hill State
Park (IN); Mammoth Cave National Park
(KY); Cave Springs (AR); White River
drainage (IN); Green River (KY); Osage
River (AR); Interior Lowlands; Ozark
Mountains

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean;
regression/correlation analysis;
non-parametric analysis; serial
autocorrelations

ABSTRACT: Long term data are important for
assessing whether management, pollution,
or natural fluctuations are to be "blamed"
for changes. In aquatic systems, where
fish live to 20 years and crayfish to 50
years, slight habitat changes may be
crucial for the long-lived and
infrequently reproducing dominant species.
Evolutionary changes, if in isolated caves
or in replicate communities where patterns
of food input differ, give insights into
community persistence and resilience.

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NBIP ACCESSION NUMBER: IL/006

<320>

INVESTIGATOR(S): Rolfe, G.L.

AFFILIATION: Dept. of Forestry, University of
Illinois

TITLE: An Interdisciplinary Study of
Environmental Pollution by Lead and Other
Metals

PURPOSE: Evaluation of the input,
distribution, and effects of lead from
automotive exhausts in the environment.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increased concentration
of lead in trees.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
stream

LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insecta;
mollusca; annelida; plants; vascular
plants; trees; herbs; microorganisms;
bacteria

TAXA: MAMMALS, 14 SPECIES; BIRDS, 5 SPECIES;
AMPHIBIANS AND REPTILES, 5 SPECIES;
FISHES, 7 SPECIES; INVERTEBRATES, MORE
THAN 17 SPECIES; AQUATIC PLANTS, 3 SPECIES

ADDED KEYWORDS: heavy metals; pollution; air
pollution; lead; decapods; orthopterans;
hemipterans; dipterans; hymenopterans;
coleopterans

PRIMARY PARAMETERS INVESTIGATED: growth;
mortality; residues

SUPPORTING DATA COLLECTED: atmospheric
chemistry; hydrological data; soils

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Champaign County;
Saline Branch; Vermilion River; Boneyard
Creek

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis; modeling,
deterministic

ABSTRACT: The primary objective of the
project was to evaluate the input,
distribution, and effects of lead in the
environment. Project research teams are
investigating the current distribution of
lead from automotive exhausts within an 86
square-mile midwestern ecosystem in
east-central Illinois. The group is also
studying the fluxes of lead, the factors
controlling these fluxes, and the effects
of lead on ecosystem components other than
man. Much of the lead distribution study
has been completed. In the past year,
studies have concentrated on two areas:
(1) the potential effects of lead on plant
productivity, especially agricultural
crops, and (2) sources and transport
mechanisms of lead particulates, a human
health hazard, in urban dust. A
mathematical model is being developed to
predict effect of lead on corn and soybean
growth and yield. A risk/benefit analysis
for each of the above questions, (1) and
(2), will compare the energy-economic
benefits of utilizing lead additives in
gasoline with the associated risk of
adverse effects on human health or on
plant production.

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NBIP ACCESSION NUMBER: IL/052

<321>

INVESTIGATOR(S): Sanderson, G.C.

AFFILIATION: Section of Wildlife Research,

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Illinois Natural History Survey
TITLE: Illinois Raccoon Studies
PURPOSE: To follow age and sex ratios, body weights, and reproductive history of the Illinois raccoon populations.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population has remained at very high level for twenty-five years with few significant changes in parameters studied.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous; wetland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: PROCYON LOTOR
ADDED KEYWORDS: raccoons; agriecosystems; management measures
PRIMARY PARAMETERS INVESTIGATED: age; harvest; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collections
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Fulton County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IL/015

<322>

INVESTIGATOR(S): Schlesinger, R.C.
AFFILIATION: North Central Forest Experiment Station, FS
TITLE: Development of an Old Growth Upland Hardwood Stand
PURPOSE: To observe changes over time in an undisturbed, old growth upland hardwood stand.
SPONSOR(S): North Central Forest Experiment Station; FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1935
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Number and proportion of hard maples (ACER SACCHARUM, ACER NIGRUM, and ACER DABRATUM) is increasing.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: PLANTS, 31 SPECIES
ADDED KEYWORDS: succession; population effects; habitat modification; maples

PRIMARY PARAMETERS INVESTIGATED: diversity; growth; mortality; natality; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent plots
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: irregular
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Hardin County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: This old growth oak-hickory stand is located in the unglacial hill country of southern Illinois. A majority of the trees are either over 160 years old or between 80-100 years old. The older trees showed an abrupt increase in growth rate between 1880-1890, coinciding with the settlement of the hill country and the rapid expansion of the railway system. We assume that a major disturbance occurred about 1880, and that this disturbance was most likely a heavy cut for railroad ties. Since the purchase of the area in 1914 by the Forest Service, the stand has been protected from fire, grazing, and cutting.
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NBIP ACCESSION NUMBER: IL/049

<323>

INVESTIGATOR(S): Smith, P.W.
AFFILIATION: Illinois Natural History Survey
TITLE: The Fishes of Illinois
PURPOSE: Definitive state report on Illinois fishes with discussions of changes in distributional patterns and in abundance over a 100-year period and identification of causes of changes.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Enormous changes in aquatic environment resulting from agricultural practices, siltation, urbanization, and industrialization.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: organism; population; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 198 SPECIES
ADDED KEYWORDS: siltation; industrial chemicals; habitat modification
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Mississippi River Valley
TYPE OF DATA: summarized
ABSTRACT: Each of the 198 species accounts

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contain: the common and scientific name, skeleton synonymy (first usage of each name and name combination applied to the species in the Illinois literature), a diagnosis, a brief discussion of variation (citing Illinois subspecies if subspecies are recognized and the most recent published study of geographic variation), a short summary of the ecology of the species (habitat, food, reproduction, and references to life history studies), a statement on distribution (including changes in range and abundance and probable reasons for them), an illustration of the species, and a distribution map (for species known from five or more localities in Illinois). Note is made of the effects of pollutants and habitat changes in the aquatic environment.

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NBIP ACCESSION NUMBER: IL/003

<324>

INVESTIGATOR(S): Sparks, R.E.
AFFILIATION: Illinois Natural History Survey
TITLE: Bottom Fauna and Waterfowl Use, Pool
19, Mississippi River
PURPOSE: To provide a status report on bottom
fauna, and to assess impact of
environmental factors on bottom fauna.
SPONSOR(S): Illinois Dept. of Conservation;
Illinois Natural History Survey; FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Winterkill of fingernail
clams and reduction of benthic populations
due to waterfowl predation.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; invertebrates; crustacea; mollusca
TAXA: ANAS SPP; PELECYPODA
ADDED KEYWORDS: benthic organisms; fingernail
clams; clams; ducks; predation; census;
toxins; sediments; population effects;
weather conditions
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; growth; harvest; mortality;
numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ponar dredge; aerial census
NUMBER OF SAMPLING SITES: 7
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
water quality data
STUDY SITE(S): IL; IA
GEOGRAPHIC DESCRIPTION: Mississippi River;
Navigation Pool No. 19; Keckuk Pool
TYPE OF DATA: raw; reduced; summarized;

literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis
ABSTRACT: The bottom fauna of Navigation Pool
No. 19, Mississippi River, has been
sampled by means of a Ponar dredge once a
month during ice-free periods. Duck
populations are censused once a week from
an airplane during the spring and fall
migrations. Fingernail clams (Sphaeriidae)
form the bulk of the food organisms
available to diving ducks. Water
temperature appears to strongly influence
the magnitude and timing of clam growth
and reproduction, and decreased water
temperature in winter precipitates
mortality of large fingernail clams, few
of which survive over winter. There is
evidence from related studies that oxygen
demanding sediment in backwaters of the
Illinois River, a tributary of the
Mississippi, may be partly responsible for
a drastic decline in food organisms in the
Illinois, and there is circumstantial
evidence that old sludge beds in the
Mississippi may also have a detrimental
effect on food organisms. Duck predation
and fish predation in the spring reduced
the total biomass in some areas by up to
50 percent. Small clams which remain
buried in the mud may be vulnerable to
predation and constitute a reservoir
capable of rapidly repopulating the bottom
in areas where ducks congregate, providing
that factors such as temperature,
dissolved oxygen, substrate type, and
toxic substances allow clam survival,
growth, and reproduction. Water quality
and sediment quality are being determined,
as part of the ongoing sampling program.

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NBIP ACCESSION NUMBER: IL/039

<325>

INVESTIGATOR(S): Sparks, R.E.
AFFILIATION: Illinois Natural History Survey
TITLE: An Electrofishing Survey of the Fish
Populations of the Illinois River
PURPOSE: To relate changes in the fish
populations of the Illinois river to
environmental and pollutional changes.
SPONSOR(S): Illinois Natural History Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: A general decline in
commercial and sport fish populations
since 1959 occurred with temporary
resurgence in 1973-1974 due to high water
levels and dilution.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: FISHES, 35 SPECIES

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ADDED KEYWORDS: population effects; seasonal variations

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; seine; trapping; trawling

NUMBER OF SAMPLING SITES: 25

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Illinois River

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Because of their importance as unique resources, the Illinois River and its bottomland lakes were studied intensively by the Illinois State Laboratory of Natural History and its successor, the Natural History Survey, from 1874 to 1927. More recently, surveys of the fish populations of the river have been conducted regularly from the 1940's to the present. Various types of sampling gear have been employed in these surveys, for various purposes. For example, minnow seines were used regularly in midsummer to collect small fish and thereby gauge the spawning success of species which spawn in the spring. Hoop nets were used to collect large fish in backwaters and bottomland lakes. The present study concerns primarily the electrofishing surveys, which have been conducted regularly in the Illinois River in the fall, from 1959 through 1974.

REFERENCES: Sparks, et al, 1975

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Illinois Natural History Survey
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Urbana, IL 61801

TELEPHONE: (309) 543-3950

NBIP ACCESSION NUMBER: IL/040

<326>

INVESTIGATOR(S): Sparks, R.E.; Starrett, W.C.

AFFILIATION: Illinois Natural History Survey

TITLE: A Survey of the Mussels of the

Illinois River--A Polluted Stream

PURPOSE: To assess impact of pollution on

mussel fauna of the Illinois River.

SPONSOR(S): Illinois Natural History Survey

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Approximately 20 species of mussels have been eliminated from the Illinois River since the turn of the century due to the effects of pollution and construction of navigation dams.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river; lake

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: indicator species; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; mollusca

TAXA: UNIONIDAE

ADDED KEYWORDS: construction; impoundments; mussels; waste water

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; numbers; residues;

size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

crow's-foot bar; dredging; collection

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Illinois River

TYPE OF DATA: literature-derived

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: IL/041

<327>

INVESTIGATOR(S): Stahl, J.B.

AFFILIATION: Dept. of Zoology, Southern

Illinois University

TITLE: Ecology of Baldwin Lake

PURPOSE: To monitor the quality of the lake, as evidenced by temperature, chemistry, plankton, and especially bottom fauna.

SPONSOR(S): Illinois Power Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No major changes observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: organism; population;

community; ecosystem

MANAGEMENT FOCUS: environmental impact;

indicator species; water quality; power

generation

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insecta; microorganisms;

algae

TAXA: CHIRONOMIDAE

ADDED KEYWORDS: chironomids; fossil fueled

power plants; thermal effluents;

dipterans; benthic organisms; plankton

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna;

water quality data

STUDY SITE(S): IL

GEOGRAPHIC DESCRIPTION: Randolph County; Lake

Baldwin; Baldwin Power Station

TYPE OF DATA: raw

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: IL/012

<328>

INVESTIGATOR(S): Thomerson, J.E.

AFFILIATION: Dept. of Biology, Southern

Illinois University at Edwardsville

TITLE: Local Ichthyology Research Collection

PURPOSE: To retain fish collections from

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Standard Federal Region 5
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Illinois and Missouri, particularly St. Louis area.
SPONSOR(S): Biology Dept., Southern Illinois University-Edwardsville
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Local changes in faunal composition with season and over a period of years.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community; region
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 142 SPECIES
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; habitat characterization; immigration; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine; electroshocker; gill net; trammel net
NUMBER OF SAMPLING SITES: approximately 200
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): IL; MO
TYPE OF DATA: raw; summarized; literature-derived
ABSTRACT: The purpose of this project is the creation of a small systematic collection (about 3000 to 5000 lots) of fishes for taxonomic, distributional, and ecological research. Collections are made at many sites as resources permit. Collections are concentrated in the St. Louis region and other areas of Illinois and Missouri. Most collections are from small streams. Fishes are sorted, identified, stored by species, and catalogued.
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NBIP ACCESSION NUMBER: IL/051

<329>

INVESTIGATOR(S): Weaver G.T.; Robertson, P.A.
AFFILIATION: Forestry Dept., Southern Illinois University
TITLE: Regeneration of Chestnut Oak and Associated Species Following Timber Harvesting
PURPOSE: To assess the ability to regenerate following a disturbance.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: After one sampling following timber harvesting, chestnut oak is regenerating well mainly by sprouting.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs
TAXA: QUERCUS PRINUS; LIRIODENDRON
TULIPIPERA; QUERCUS ALBA; ACER SACCHARUM; QUERCUS VELUTINA; ACER RUBRUM; FAGUS GRANDIFOLIA
ADDED KEYWORDS: oaks; chestnut oaks; black oaks; maples; red maples; sugar maples; white oaks; clear cutting; american beeches; beeches; yellow poplars; regeneration; succession; logging
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plot sampling
NUMBER OF SAMPLING SITES: 52
SUPPORTING DATA COLLECTED: associated fauna; soils; terrain
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Union County; Atwood Ridge
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM; FORTRAN
STATISTICS EMPLOYED: mean; regression/correlation analysis; non-parametric analysis
ABSTRACT: The project is designed to identify environmental factors associated with distribution of chestnut oak in each of several disjunct populations in southern Illinois. The regeneration potential of these species under natural conditions and typical management practices is also being measured. A series of permanent plots have been established within the largest population, and inventories of vegetation taken both before and after stand regeneration by clearcutting. Preliminary results indicate that chestnut oak regenerates very well on drier slopes in natural stands (by seeds and sprouts) and also after clearcutting (by sprouting) in this disjunct population. Also its soil-site relations seem similar to those in more central portions of its range. Additional inventories will be completed on permanent plots to further assess regeneration over a period of years.
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NBIP ACCESSION NUMBER: IL/032

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INVESTIGATOR(S): Weaver, G.T.; Ashby, W.C.
AFFILIATION: Dept. of Forestry and Botany, Southern Illinois University
TITLE: Structural Dynamics of an Old Growth Upland Oak Hickory Forest Remnant in Unglaciated Southern Illinois
PURPOSE: To monitor structural changes over long periods of time in an undisturbed forest remnant.
SPONSOR(S): Southern Illinois University
SPONSOR CATEGORY: teaching institution

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DATE OF INITIATION: 1956
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major decreases in the importance of canopy-sized northern and black oaks have resulted from mortality. Canopy oaks are not regenerating.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs
TAXA: QUERCUS RUBRA; QUERCUS ALBA; QUERCUS VELUTINA; CARYA OVALIS; CARYA OVATA; CARYA GLABRA; CARYA CORNIFORMIS; ACER SACCHARUM; ASININA TRILOBA; ULMUS AMERICANA; ULMUS RUBRA
ADDED KEYWORDS: oaks; northern red oaks; white oaks; black oaks; hickory; shagbark hickories; bitternut hickorys; maples; sugar maples; pawpaws; elms; american elms; slippery elms; succession; virgin forests
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats
SUPPORTING DATA COLLECTED: soils
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Union County
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM; FORTRAN
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: This project was initiated to monitor structural changes in an old-growth forest remnant which has remained relatively unchanged due to timber harvesting. Dead trees are not removed and regeneration is by natural processes only. The first survey was completed for trees > 30 cm dbh in 1956. All stems > 6.6 cm dbh were inventoried in 1957. Subsequent inventories will be completed at approximately 10 year intervals. Results to date indicate that oaks, the canopy dominants, are declining in numbers and sugar maple and shagbark hickory are increasing in importance in the canopy. Fires have been excluded from the stand for at least 125 years. Changes in drainage (soil) may be associated with increases in sugar maple.

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<331>

INVESTIGATOR(S): Zales, W.M.
AFFILIATION: Botany Dept., Joliet Junior College
TITLE: Bryophyte Distribution in Northeastern Illinois
PURPOSE: To record changes in species composition and community structure.
SPONSOR(S): Joliet Junior College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An elimination of native species and increase of weed species after urbanization.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous; grassland; wetland; aquatic; freshwater; stream; lake
LEVEL(S) OF STUDY: community; region
MANAGEMENT FOCUS: endangered species; environmental impact; indicator species
ORGANISMS, MAJOR TYPES: plants; non-vascular plants; mosses
ADDED KEYWORDS: phenology; succession; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; habitat characterization; immigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: irregular over entire range
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated flora; terrain
STUDY SITE(S): IL
GEOGRAPHIC DESCRIPTION: Cook County; Will County; Grundy County; Kankakee; Lake County
TYPE OF DATA: raw
STATISTICS EMPLOYED: percentile
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IL/018

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Fish and Wildlife Service Region 3
(SEE ALSO 365, 478, 486, 689, 695)

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INVESTIGATOR(S): Cope, J.B.
AFFILIATION: Earlham College, Joseph Moore
Museum
TITLE: Life History and Status of Indiana
Bat, MYOTIS SODALIS
PURPOSE: To learn more about the habits of
this endangered species.
SPONSOR(S): FWS; Earlham College
SPONSOR CATEGORY: federal government;
teaching institution
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Greatly reduced
population from 15,000 to about 1,500 in
1974-75.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species;
indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: MYOTIS SODALIS
ADDED KEYWORDS: indiana bats; population
effects; management measures
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; habitat
characterization; home range size; kill;
mortality; migratory patterns; numbers;
reproduction; sex; size/weight; stress;
territory size
NUMBER OF SAMPLING SITES: 1-12
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): IN
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: IN/006

<333>

INVESTIGATOR(S): Frey, D.G.
AFFILIATION: Dept. of Zoology, Indiana
University
TITLE: Distribution and Population Biology of
the Chydorid Cladocerans
PURPOSE: To determine the distribution of
chydorid cladocerans in space and time,
the controlling or associated factors, the
dynamics of populations and the seasonal
shift in mode of reproduction.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1954
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Holocene species and
communities have responded to climate,
fluctuations in water level, and other
stresses, including eutrophication.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community; region

MANAGEMENT FOCUS: environmental impact; water
quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea
TAXA: EURYCERCUS SPP; CAMPTOCERCUS SPP;
ACROPERUS SPP; KURZIA SPP; ALONOPSIS SPP;
ALONA SPP; ALONELLA SPP; GRAPTOLEBERIS
SPP; RHYNCHOTALONA SPP; TRETOCEPHALA SPP;
CHYDORUS SPP; ANCHISTROPUS SPP; PLEUROXUS
SPP; DUNHEVEDIA SPP; DADYA SPP; MONOSPILUS
SPP; EURYALONA SPP; LEYDIGIA SPP;
OXYURELLA SPP

ADDED KEYWORDS: paleontology; eutrophication;
parthenogenesis; population effects;
weather conditions

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; habitat
characterization; mortality; natality;
numbers; reproduction; sex; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
cores; screened nets; Whiteside sampler
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: continuous; seasonal;
monthly; annual; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
water quality data

STUDY SITE(S): IN; NH; MI; FL; ME; NH
GEOGRAPHIC DESCRIPTION: Europe
TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; multivariate analysis

ABSTRACT: The relative abundance of species
in the chydorids under stable conditions
corresponds closely to the MacArthur
broken-stick model. Departures from the
predicted distribution indicate
environmental stress from whatever cause,
one of which is eutrophication. The
species have been morphologically and
ecologically stable over at least the past
100,000 years. Short-term fluctuations in
population size and community structure
and their causes are being investigated,
along with the regional and latitudinal
strategy governing the shift in mode of
reproduction from parthenogenesis to
gamogenesis. The taxonomy of the North
America species is gradually being
resolved.

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NBIP ACCESSION NUMBER: IN/017

<334>

INVESTIGATOR(S): Pelouquin, R.L.
AFFILIATION: Dept. of Biology, Purdue
University
TITLE: Analysis of Wolf Lake Ecosystem
PURPOSE: To determine the water quality of
Wolf Lake in general and its effects upon
species of algae, bacteria, and higher
species; and to determine the level of
Wolf Lake eutrophication and sources.
SPONSOR(S): Purdue University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes

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CHANGE(S) OBSERVED: In the channel and its opening into the lake, the level of nitrates and phosphates is relatively high indicating a high degree of eutrophication. The level of oxygen is not very high, but relative to the oxygen values, BOD is high. There is a considerable amount of emergent plant growth or macrophyte growth.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; lake

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; indicator species; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; plants; vascular plants; herbs;

microorganisms; bacteria; algae; protozoa

ADDED KEYWORDS: eutrophication; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: BOD;

distribution; diversity; habitat

characterization; numbers; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

BOD bottles

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora;

hydrological data; water quality data

STUDY SITE(S): IN; IL

GEOGRAPHIC DESCRIPTION: Lake County (IN);

Cook County (IL); Wolf Lake

TYPE OF DATA: raw

ABSTRACT: This is a class project. The formal project is awaiting approval for support by EPA. The following observations have been made: the level of nitrates and phosphates is relatively high indicative of a high degree of eutrophication. Oxygen values not very high, but relative to the oxygen values BOD was high. Considerable amounts of emergent plant growth or macrophyte plant growth were present. These observations are more characteristic of the channel and its opening into the lake.

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NBIP ACCESSION NUMBER: IN/001

<335>

INVESTIGATOR(S): Randolph, J.C.

AFFILIATION: School of Public and

Environmental Affairs, Indiana University

TITLE: Lake Monroe Land Suitability Study

PURPOSE: To provide information regarding the terrestrial and aquatic characteristics of the Lake Monroe region, assess those characteristics in terms of their implications for various uses, and delineate the institutional arrangements that have responsibilities in the Lake Monroe watershed and define the scope of their authority.

SPONSOR(S): Indiana State Planning Office

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Phosphates and nitrogen were lower in 1974 than previously reported. Increase in turbidity occurred from 1971 to 1974 from added phytoplankton or nonbiological particulate matter.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; forestry; indicator species; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

amphibia; reptiles; fish; birds; mammals;

plants; vascular plants; trees;

microorganisms; algae

TAXA: LEPOMIS MACROCHIRUS; PERCA FLAVESCENS;

MICROPTERUS SALMOIDES; MORONE

MISSISSIPPIENSIS; CYPRINUS CARPIO; LEPOMIS

MICROLOPHUS; POMOXIS ANNULARIS; POMOXIS

NIGROMACULATUS

ADDED KEYWORDS: management measures;

eutrophication; aquatic plants; bluegills;

yellow perch; largemouth basses; yellow

basses; carps; redear sunfish; white

crappies; black crappies; bullheads;

plankton

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; diversity; growth; habitat

characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

bore holes; outcrop observation;

fieldmapping; air photos; transect;

literature scan; Kemmerer sampler;

plankton net; Clarke-Bumpus trawl

NUMBER OF SAMPLING SITES: 56,000, 10-acre

cells

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: climatological

data; hydrological data; soils; terrain;

water quality data

STUDY SITE(S): IN

GEOGRAPHIC DESCRIPTION: Monroe County; Brown

County; Jackson County; Lawrence County;

Salt Creek; White River; Lake Monroe

TYPE OF DATA: raw; reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: CDC 6600; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;

percentile; modeling, deterministic

ABSTRACT: The Lake Monroe study describes the

area's geology, terrestrial and aquatic

ecology, current land use, and the

institutional framework determining

political and legal jurisdiction over the

area. A geologic description of the area

is given, and the non-material

characteristics of each of the area's

geologic subdivisions is outlined; these

are then related to such land-use factors

as on-site septic disposal, foundation and

excavation condition, slope stability, and

ground water. The Lake Monroe area forests

and wildlife and their management are

considered. The influence of forests in

regulating runoff and erosion is

discussed. The study describes the

physical and chemical properties of the

lake itself and the potential damage that

might result from increased phosphate

input. Current land uses of the

surrounding area are mapped and questions

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of land development, zoning, and land-use change are considered. Finally, federal, state, and local agencies having powers bearing on the planning and development of the Lake Monroe region are listed and their roles described.

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NBIP ACCESSION NUMBER: IN/026

<336>

INVESTIGATOR(S): Whitaker, J.C.
AFFILIATION: Life Sciences Dept., Indiana State University
TITLE: Effects of Heated Effluent on Aquatic Resources of White River at Petersburg, Indiana
PURPOSE: To determine effects of heated water upon fish and invertebrates of the White River at Petersburg, Indiana.
SPONSOR(S): Indianapolis Power and Light
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been fluctuations, but no major changes have been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles; fish; invertebrates; crustacea; insecta
TAXA: HYBOGNATHUS NUCHALIS; DROSOMA CEPEDIANUM; CARPIODES SP; NCTROPIS SPILOPTERUS; PINEPHALES VIGILAX; LEPOMIS MACROCHIRUS; LEPOMIS MEGALOTIS; MICROPTERUS PUNCTULATUS; NCTROPIS ATHERINOIDES; NOTROPIS BLENNIUS

ADDED KEYWORDS: fossil fueled power plants; spotfin shiners; silvery shiners; bullhead minnows; river carpsuckers; emerald shiners; grizzard shad; long-ear sunfishes; spotted basses; river shiners; steelcolor shiners; thermal effluents; habitat modification; population effects; benthic organisms

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration; growth; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; seines; fish traps
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): IN
GEOGRAPHIC DESCRIPTION: Pike County; Knox County; White River

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: Data were gathered from June, 1971 through October, 1972, as part of continuing studies initiated to determine the effects of heated water on aquatic resources of the White River at Petersburg, Indiana. The heated effluent is discharged into the river by an electric generating station of the Indianapolis Power and Light Company. Principal effort was on the distribution and abundance of smaller fish and invertebrates. A primary concern was to determine if the heated water affected the food habits, external parasites, or reproduction of the fishes. Sampling was continued through the winter to determine effects of heated discharge during the colder parts of the year because previously most effort was expended in the summer when high temperatures would be critical.

REFERENCES: Whitaker, et al, 1973

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NBIP ACCESSION NUMBER: IN/016

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IOWA

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(SEE ALSO 324, 569, 573, 1014)

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INVESTIGATOR(S): Bulkley, R.V.
AFFILIATION: FWS
TITLE: A Study of the Effects of Stream Channelization and Bank Stabilization on Warm Water Sport Fish in Iowa
PURPOSE: To measure effects of stream alteration on fish and fish-food organisms.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Gross deterioration in habitat of fish and invertebrates as result of stream channeling.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta
TAXA: ICTALURUS PUNCTATUS; ICTALURUS MELAS; LEPOMIS CYANELLUS; LEPOMIS MACROCHIRUS; MICROPTERUS SALMOIDES; POMOXIS ANNULARIS; POMOXIS NIGROMACULATUS; ESOM LUCIUS; STIZOSTEDION VITREUM; STIZOSTEDION CANADENSE; PYLODICTUS OLIVARIS; CYPRINUS CARPIO; CARPIODES SP; ICTIOBUS SP; NOTROPIS SP; HYBOBOSIS SP; SEMOTILUS SP; DOROSOMA CEPEDIANUM; CATOSTOMUS SP; HYPENTELIUM SP; NOTURUS FLAVUS; HIODON TERGUISUS; APLODINOTUS GRUNNIENS; MOXOSTOMA SP
ADDED KEYWORDS: habitat modification; channelization; channel catfishes; black bullheads; green sunfishes; mayflies; caddisflies
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; drift nets
NUMBER OF SAMPLING SITES: 32
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): IA
GEOGRAPHIC DESCRIPTION: Soldier County; Nishnabotna County; Maple County; Iowa County; Des Moines County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Four types of bank stabilization structures installed mainly for highway protection--revetments, retards, permeable jetties, and impermeable jetties--were studied during the summer and fall of 1974 to determine their impact upon game fish habitat in Iowa streams. No significant differences ($P=0.99$) were found in mean body length or abundance of channel catfish (ICTALURUS PUNCTATUS), black bullhead (ICTALURUS MELAS), and green sunfish (LEPOMIS CYANELLUS) between structured and non-structured sections of stream. Unusually high water during the sampling period may have allowed fish to remain dispersed throughout the streams rather than concentrating in the deeper

pools at or near some of the stabilization structures, as might be expected in a drier year. Rock revetments and impermeable jetties fostered the growth of some invertebrates (primarily mayflies and caddisflies). These invertebrates were also found in a large percentage of game fish stomachs examined. Revetments, which presented the most rock surface for invertebrate colonization, had the greatest impact on invertebrate abundance. A long rock jetty, extending far enough into the stream to produce a scour hole, would combine most of the advantages noted in the structures studied. From the standpoint of habitat improvement, rock seems superior to steel as a construction material, and structures which cause the formation of scour holes superior to those which do not deepen the stream.

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NBIP ACCESSION NUMBER: IA/009

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INVESTIGATOR(S): Hegstad, G.D.
AFFILIATION: Dept. of Biology, Northwestern College
TITLE: Old Field Secondary Succession at Northwestern College Field Station
PURPOSE: To study secondary succession on a floodplain bordering the Floyd River in northwestern Iowa with studies on a small tract planted with native prairie grass.
SPONSOR(S): Northwestern College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Expected transition from weedy annuals toward perennial forbs and characteristic floodplain forest species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland; aquatic; freshwater; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: PLANTS, 104 SPECIES
ADDED KEYWORDS: succession; population effects; species introduction
PRIMARY PARAMETERS INVESTIGATED: habitat characterization; growth; immigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats; collections; traps
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): IA
GEOGRAPHIC DESCRIPTION: Sioux County; Floyd River
TYPE OF DATA: summarized
ABSTRACT: In the spring of 1969 a five acre tract of cultivated floodplain bordering the Floyd River in northwestern Iowa was set aside as a wildlife area. Natural old field secondary succession has been occurring since 1969. In the spring of 1969 a small portion of the area was seeded with locally collected tall grass prairie seeds. In 1973 and 1974 a number

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of weedy seedlings were planted to expedite the diversity of food producing plants for animal life. Plant checklists were made of the vascular plants in 1969, 1972, 1974, and 1975. A partial checklist of small mammals was made in fall of 1968 and 1969. In 1972, thirty-five prairie species were evident from the 1969 seeding of prairie seeds. Through natural succession, twenty-one species had become naturally established by 1972. By 1975 a total of one hundred four different species had been found in the area. Smartweeds to ragweeds to goldenrods to asters have been successive dominants with boxelder and reed canary grass becoming increasingly established. The last two will likely have to be controlled. The area is sectioned into a permanent grid system of quadrats 20 meters square. Walking trails have been made. Continued studies will be made in the area of plant succession and the small plot of planted prairie. Breeding bird population and small mammal population studies will hopefully be made in the years ahead.

REFERENCES: Hegstad, 1974

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NBIP ACCESSION NUMBER: IA/020

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INVESTIGATOR(S): Mayhew, J.
AFFILIATION: Iowa Conservation Commission
TITLE: Production of O-Age Fish at Lake Rathbun
PURPOSE: To develop a predictive model for O-age fish by identifying the physical and biological factors that control the abundance of O-age fish.
SPONSOR(S): Iowa Conservation Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: O-age fish production is affected by two factors: reservoir flushing rate and water temperature.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta
TAXA: DOROSOMA CEPEDIANUM; POMOXIS ANNULARIS; POMOXIS NIGRONACULATUS; LEPOMIS MACROCHIRUS; COPEPODA; CLADOCERA
ADDED KEYWORDS: gizzard shad; black crappies; white crappies; bluegills; impoundments; reservoir flushing; shad; crappies
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; growth; mortality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standardized meter net tows; net plankton tows
NUMBER OF SAMPLING SITES: 9

SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms
STUDY SITE(S): IA
GEOGRAPHIC DESCRIPTION: Appanoose County; Rathbun Reservoir; Lake Rathbun
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360-370 OS; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; modeling, deterministic
ABSTRACT: O-age fish populations were sampled for 14 weeks in Rathbun Reservoir from 1971-1975 to develop a model of fish production. Concomitant data, including zooplankton fish-food abundance, water temperature, water storage volume, turbidity, and flushing rate were used in the model to determine their effects on production. Simple linear modeling showed flushing rate and water temperature were the most important parameters and were also intraclass correlated. Flushing rate and water temperature were negatively correlated with production and positively correlated with zooplankton fish-food abundance.
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NBIP ACCESSION NUMBER: IA/023

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INVESTIGATOR(S): Merkley, W.B.
AFFILIATION: Dept. of Biology, Drake University
TITLE: Ecological Impact of Large Main-Stem Reservoirs on Downstream Biota
PURPOSE: To determine the effects that two large reservoirs and a large metropolitan area have on the water quality and biota of the Des Moines River, Iowa.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A reduction in numbers of macrobenthos with a reduction in species diversity occurs downstream from the reservoir.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca
TAXA: PLECOPTERA, 6 SPECIES; EPHEMEROPTERA, 10 SPECIES; DIPTERA, 5 SPECIES; TRICHOPTERA, 8 SPECIES; COLEOPTERA, 3 SPECIES; BENTHIC ORGANISMS, 10 SPECIES
ADDED KEYWORDS: impoundments; species diversity; secondary productivity; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): substrate samplers
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data;

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water quality data

STUDY SITE(S): IA

GEOGRAPHIC DESCRIPTION: Des Moines River;

Raccoon River

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: analysis of variance

ABSTRACT: The Army Corps of Engineers is in the final stages of a three-phase flood control project on the Des Moines River. When it is completed, the project will consist of two large main stream dams on either side of the city of Des Moines. The ecological impact of this arrangement is being evaluated by examining the macroinvertebrate community. This evaluation includes: (1) an examination of the structure of the community, (2) biomass and productivity estimates, and (3) analysis of species diversity indices. Macroinvertebrate samples are being taken above and below the city and the reservoirs using a float device from which barbeque baskets containing ten concrete spheres are suspended. Samples are taken monthly in such a way as to prevent loss of organisms from the spheres.

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NBIP ACCESSION NUMBER: IA/001

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INVESTIGATOR(S): Whitson, P.D.

AFFILIATION: Dept. of Biology, University of Northern Iowa

TITLE: Small Mammal Census: University of Northern Iowa Prairie Preserve

PURPOSE: To determine small mammal population dynamics in a tallgrass prairie under reconstruction from an abandoned field.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1972

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction in density and diversity of small mammals following seeding and subsequent development of prairie.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: wildlife; indicator

SPECIES: range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: MICROTUS PENNSYLVANICUS; PEROMYSCUS

MANICULATUS; BLARINA BREVICAUDA; MUS

MUSCULUS

ADDED KEYWORDS: meadow voles; deer mice; house mice; mice; short-tailed shrews; population effects; habitat modification; succession; shrews

PRIMARY PARAMETERS INVESTIGATED: diversity; home range size; numbers; sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

mark-recapture; live traps

NUMBER OF SAMPLING SITES: 1-100 traps

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated flora;

climatological data; soils

STUDY SITE(S): IA

GEOGRAPHIC DESCRIPTION: Black Hawk County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: IA/015

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INVESTIGATOR(S): Whitson, P.D.

AFFILIATION: University of Northern Iowa

TITLE: Vegetation Census: University of

Northern Iowa Prairie Preserve

PURPOSE: To determine composition and biomass of vascular plants in a tallgrass prairie under reconstruction from an abandoned field.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction in diversity

and increase in grass (perennial) biomass.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: indicator species; range;

resource planning

ORGANISMS, MAJOR TYPES: plants; vascular

plants; herbs; grasses

TAXA: ANDROPOGON GERARDI; SORGHASTRUM NUTANS;

BROMUS SPP.; ANDROPOGON SCOPARIUS;

BOULETELOUA CURTIPENDULA; TRIPOLIUM

PRATENSE; PANICUM VIRGATUM; SETARIA SPP.

MEDICAGO SATIVA

ADDED KEYWORDS: big bluestems; little

bluestems; switchgrasses; indian grasses;

sideoats grasses; foxtails; bromegrasses;

habitat modification; succession

PRIMARY PARAMETERS INVESTIGATED: biomass; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

clip plots; composited litter

NUMBER OF SAMPLING SITES: 20

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;

climatological data; soils

STUDY SITE(S): IA

GEOGRAPHIC DESCRIPTION: Black Hawk County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: None provided.

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Standard Federal Region 7
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INVESTIGATOR(S): Bellah, R.G.
AFFILIATION: Bethany College
TITLE: Forest Succession on the Republican River Floodplain in Clay County, Kansas
PURPOSE: To study floodplain forest succession.
SPONSOR(S): Kansas State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1967
PROJECT DURATION: unknown
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: The willows and cottonwoods were the first species to appear after the alluvium emerged. These were succeeded by the elm, ash, boxelder, mulberry, and hackberry.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: forestry; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: TREES, 10 SPECIES; HERBS AND SHRUBS, 21 SPECIES
ADDED KEYWORDS: succession; floodplains; willows; cottonwoods; american elms; hackberry; green ashes; red mulberries; boxelders; elms; hackberry; ashes; mulberries
PRIMARY PARAMETERS INVESTIGATED: age; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plot method
NUMBER OF SAMPLING SITES: 40
SUPPORTING DATA COLLECTED: climatological data; soils; terrain
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Clay County; Republican River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: On the Republican River floodplain in Clay County, Kansas, 39 forest stands were plot sampled in 1968. *SALIX INTERIOR* (sandbar willow), *S. AMYGDALOIDES* (almondleaf willow), and *POPULUS DELTOIDES* (cottonwood) appeared the first or second year after alluvium was exposed above water level. *SALIX INTERIOR* rarely persisted more than 10 years, *S. AMYGDALOIDES* not more than 30 years, and *P. DELTOIDES* about a century. Young of these species did not survive in established stands. After about 100 years, dominant trees included *ULNUS AMERICANA* (American elm), *CELTIS OCCIDENTALIS* (common hackberry), *FRAXINUS PENNSYLVANICA* (green ash), *MORUS RUBRA* (red mulberry), and *ACER NEGUNDO* (boxelder). No stand had attained climax, but *CELTIS OCCIDENTALIS* and *ULNUS AMERICANA* would likely have been dominants. *CELTIS* may be the sole dominant in the future now that Dutch elm disease has entered the area. *POLYGONUM LAPATHIFOLIUM*, *AMBROSIA TRIFIDA*, and *CONYZA CANADENSIS* were the most common herbs in young stands. *GALIUM APARINE* had a frequency of 20% in young stands and over 70% in stands more than 30 years old. *RHUS RADICANS* and *PARTHENOCISSUS QUINQUIPOLIA* were absent in young but

common in old stands.
REFERENCES: Bellah and Hulbert, 1974
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NBIP ACCESSION NUMBER: KS/012

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INVESTIGATOR(S): Dove, G.R.
AFFILIATION: Dept. of Biology, Friends University
TITLE: Comparative Age-Size, Abundance and Condition of Channel Catfish in the Arkansas River North and South of Wichita, Kansas
PURPOSE: To study the effects of effluents from municipal and industrial point sources on channel catfish.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There are observable differences in size and condition of fish from the areas above and below the city.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: *ICTALURUS PUNCTATUS*
ADDED KEYWORDS: channel catfishes; fishkills; industrial chemicals; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; size/weight; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Sedwick County; Big Arkansas River; Little Arkansas River; Wichita Valley Center; Flood Control Canal
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: There has been acute and chronic degradation of the Arkansas River and its tributaries in Sedgwick Co., Kansas. Both flora and fauna of this drainage have been drastically affected as there have been seventeen major fishkills in this area since 1958. This area has been polluted with industrial caustics and phenolic compounds. We are attempting to see if there are correlations between locality (site), water quality, channel catfish age-size, weight-length, general condition of fish, and odor and taste of fish.
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NBIP ACCESSION NUMBER: KS/013

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INVESTIGATOR(S): Ferguson, G.W.
AFFILIATION: Dept. of Biology, Texas
Christian University
TITLE: Demography, Population Regulation, and
Evolution in a Peripheral Population of a
Prairie Swift Lizard
PURPOSE: Long-term monitoring of a small
isolated lizard population to compare
degree of fluctuation with that of control
populations.
SPONSOR(S): Texas Christian University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population crash in
second year of study with slow recovery
until present. Population is adjacent to
new construction.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles
TAXA: SCELOPORUS UNDULATUS
ADDED KEYWORDS: lizards; behavior patterns;
population effects; fecundity; mortality
rates; construction; habitat modification
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
mortality; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; quadrats
NUMBER OF SAMPLING SITES: 24
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
terrain
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Pottawattomie County
TYPE OF DATA: summarized
STATISTICS EMPLOYED: regression/correlation
analysis
ABSTRACT: Using demographic techniques, the
seasonal and sexual variations in
mortality rate in an isolated Kansas
population of the lizard SCELOPORUS
UNDULATUS were measured over a single
year-long generation. The effects of
density and relatively larger size on
probability of survival and of female
density on fecundity were evaluated also.
Hypotheses of environmental regulating and
limiting factors concerning the role of
social behavior in regulation of numbers
are presented with suggestions of
experimental tests of these hypotheses.
REFERENCES: Ferguson and Bohlen, 1972
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NDIP ACCESSION NUMBER: TX/002

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INVESTIGATOR(S): Fitch, H.S.
AFFILIATION: University of Kansas
TITLE: Succession on a Natural Area: The
University of Kansas Natural History

Reservation

PURPOSE: To trace succession of plant
communities and associated changes in
populations of selected common species of
animals.
SPONSOR(S): University of Kansas
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1948
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Transition from
pastureland, cultivated field, and
tallgrass prairie to oak-hickory forest.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles; mammals; plants; vascular
plants; trees; shrubs; herbs; grasses
TAXA: MICROTUS OCHROGASTER; PEROMYSCUS
MANICULATUS; REITHRODONTOMYS MONTANUS;
SYLVILAGUS FLORIDANUS; EUMECES
BREVILINEATUS; CNEIDOPHORUS; OPHISAURUS
VENTRALIS; AGKISTRODON CONTORTRIX; COLUBER
CONSTRUCTOR; THAMNOPHIS; DIADOPHUS
PUNCTATUS
ADDED KEYWORDS: prairie voles; deer mice;
white-footed mice; plains harvest mice;
mice; cottontail rabbits; rabbits;
short-lined skinks; racerunners; glass
lizards; copperheads; blue racers; garter
snakes; ring-neck snakes; snakes;
succession; population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; home
range size; mortality; natality; numbers;
reproduction; sex; size/weight; territory
size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live-trapping
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Douglas County;
Jefferson County
TYPE OF DATA: raw; literature-derived
STATISTICS EMPLOYED: mean
ABSTRACT: Vegetation surveys were made in
1952 and 1964 and resampling is planned
for 1976. In each sampling, composition
and density of vegetation was recorded on
50 or 100 plots on each of a large number
of relatively homogeneous subdivisions of
the 590 acre reservation. The animal
species have been studied separately with
intensive sampling over periods of 1 to 17
years for different kinds. For each
species the study area or areas were
somewhat different, but all study plots
have been within the area of the
vegetation surveys.
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NDIP ACCESSION NUMBER: KS/005

<347>

INVESTIGATOR(S): Hays, H.A.
AFFILIATION: Dept. of Biology, Kansas State
College

KANSAS

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TITLE: Small Mammal Census

PURPOSE: To study fluctuations of small
mammal populations over long period of
time, 1950 to present.

SPONSOR(S): FI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1950

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Populations do fluctuate
with usually a direct correlation with
extreme prolonged weather conditions.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

ADDED KEYWORDS: weather conditions;
population effects

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; diversity; habitat

characterization; reproduction; sex;

size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
snap traps

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data

STUDY SITE(S): KS

TYPE OF DATA: raw; summarized

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: KS/009

<348>

INVESTIGATOR(S): Hulbert, L.C.

AFFILIATION: Dept. of Biology, Kansas State
University

TITLE: Ecological Studies of Kansas Grasslands

PURPOSE: To record vegetation composition by
coverage of each species of vascular
plant, and to assess changes over time due
to treatment, weather, and succession.

SPONSOR(S): Kansas Agricultural Experiment
Station

SPONSOR CATEGORY: state government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: In shortgrass plains of
western Kansas much change was found due
to fire plus drought. In wetland areas
changes are less.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland; wetland

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact;
indicator species; range

ORGANISMS, MAJOR TYPES: plants; vascular

plants; shrubs; herbs; grasses

ADDED KEYWORDS: weather conditions;

succession; grazing; management measures;
fires; drought

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
canopy coverage estimates

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: annual

STUDY SITE(S): KS

GEOGRAPHIC DESCRIPTION: Clark County; Morton
County; Hamilton County; Scott County;
Hodgeman County; Geary County; Logan County

TYPE OF DATA: raw

ABSTRACT: The objectives are to assess slow
successional changes over many years in
undisturbed ecosystems, and to provide
documentation of existing vegetation in
undisturbed and grazed or otherwise
manipulated grasslands. The study has been
hampered by lack of time, low funding, and
particularly by difficulty in finding
areas undisturbed by man for long periods
so comparisons with manipulated systems
can be made. No summary of the data has
yet been made.

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NBIP ACCESSION NUMBER: KS/015

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INVESTIGATOR(S): McGregor, R.L.

AFFILIATION: University of Kansas; State
Biological Survey

TITLE: Inventory of Vascular Plants of Kansas

PURPOSE: To determine number of species,
abundance, distribution, and possible
economic and scientific importance.

SPONSOR(S): University of Kansas

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1954

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction of habitat and
abundance of species, spread of introduced
species, and location of species
previously unknown in area.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; shrubs; herbs; grasses

TAXA: PLANTS, 1800 SPECIES

ADDED KEYWORDS: species introduction; habitat
modification; population effects; census

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration;
habitat characterization

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): KS

TYPE OF DATA: reduced

ABSTRACT: The project was designed to locate
all taxa of vascular plants in Kansas and
to determine habitat preference,
abundance, distribution, and introduction
by continuous monitoring.

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NBIP ACCESSION NUMBER: KS/021

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KANSAS

Standard Federal Region 7
Fish and Wildlife Service Region 6
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INVESTIGATOR(S): Spencer, D.L.
AFFILIATION: Div. of Biological Sciences,
Emporia State College
TITLE: Radiotelemetry Studies of Cottontail
Rabbits and Coyotes
PURPOSE: To determine population densities,
home ranges, mortality, and longevity of
cottontail rabbits in east central Kansas.
SPONSOR(S): Kansas Forestry, Fish and Game
Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Rabbits appear abundant
in spring and summer, but are not
available for hunting in fall and winter
because of: (1) predation, particularly
by coyotes and raptorial birds (hawks and
owls); and (2) a pronounced die-off from
tularemia during the last two winters.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses
TAXA: CANIS LATRANS; SYLVILAGUS FLORIDANUS
ADDED KEYWORDS: coyotes; cottontail rabbits;
rabbits; population dynamics
PRIMARY PARAMETERS INVESTIGATED: age; habitat
characterization; home range size;
mortality; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
capture; mark; release; roadside counts;
radiomonitoring
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Lyon County; Chase
County; Morris County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance; analysis of
covariance
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: KS/010

<351>

INVESTIGATOR(S): Sperry, T.M.
AFFILIATION: Dept. of Biology, Kansas State
University
TITLE: Ecological Interactions of a
Single-Station Urban Environment
PURPOSE: To determine natural ecological
interactions which may occur under urban
conditions.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1950

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: While a decrease in
biotic species (plant and animal) has
occurred, a much larger number persist
than anticipated.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; deciduous; savanna; grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates;

amphibia; reptiles; birds; mammals;

invertebrates; insects; plants; vascular

plants; trees; shrubs; herbs; non-vascular

plants; mosses; microorganisms; fungi;

algae

TAXA: PLANTS, 400 SPECIES; BIRDS, 185

SPECIES; MAMMALS, 20 SPECIES

ADDED KEYWORDS: habitat modification; strip

mining

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat

characterization; immigration; migratory

patterns; numbers

NUMBER OF SAMPLING SITES: variable, all

within one acre

SAMPLING FREQUENCY: continuous; daily

SUPPORTING DATA COLLECTED: climatological

data; soils; terrain

STUDY SITE(S): KS

GEOGRAPHIC DESCRIPTION: Crawford County

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: non-parametric analysis

ABSTRACT: There has been some reintroduction

of native plants, but the emphasis has

been on natural establishment and

persistence of native species following

restoration of natural environment of an

old strip-mined area in an urban

environment. In 25 years lists of some 400

native vascular plants, 185 species of

birds, 20 species of mammals, and

corresponding numbers of other groups,

have been recorded as occurring naturally

on this one-acre urban plot.

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NBIP ACCESSION NUMBER: KS/017

<352>

INVESTIGATOR(S): Terman, M.R.
AFFILIATION: Dept. of Biology, Tabor College
TITLE: The Ecology of MICROTUS OCHROGASTER
and SIGMODON HISPIDUS: Competitive
Relationships
PURPOSE: To determine the nature of an
alleged competitive interaction.
SPONSOR(S): Tabor College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuations of SIGMODON
populations correspond with disappearances
of MICROTUS populations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; mammals

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Fish and Wildlife Service Region 6
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TAXA: SIGMODON HISPIDUS; MICROTUS OCHROGASTER
ADDED KEYWORDS: cotton rats; prairie voles;
voles; rats; hispid cotton rats;
competition; population effects; models
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; emigration; habitat
characterization; home range size;
immigration; mortality; natality; numbers;
reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live trapping; laboratory simulation arenas
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
terrain
STUDY SITE(S): KS
GEOGRAPHIC DESCRIPTION: Marion County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: PDP-8; DEC; BASIC
STATISTICS EMPLOYED: mean; median;
percentile; contingency table analysis;
non-parametric analysis
ABSTRACT: An alleged negative interaction
between MICROTUS OCHROGASTER and SIGMODON
HISPIDUS was examined in the laboratory.
SIGMODON proved to be the dominant animal,
and excluded MICROTUS from confined areas
except when dense cover was provided.
Movements of MICROTUS were reduced by a
free-ranging SIGMODON but not by a
confined one. Frequency of interspecific
contact apparently was responsible for
negative interactions. A model that
emphasizes frequency of interspecific
contact (PIC) explains the probable
relationship between MICROTUS OCHROGASTER
and SIGMODON HISPIDUS. A variation of this
model might explain the phenomenon of
competitive exclusion in all myomorph
rodents.
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NBIP ACCESSION NUMBER: KS/023

<353>

INVESTIGATOR(S): Zimmerman, J.L.
AFFILIATION: Dept. of Biology, Kansas State
University

TITLE: Grassland Bird Populations on Kunza
Prairie

PURPOSE: To compare bird populations in
tallgrass prairie between unburned and
annually burned sites.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Breeding bird species
diversity and density are lower in burned
sites.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; grasses

TAXA: STURNELLA MAGNA; AGELAIUS PHOENICEUS;
MOLOTHRUS ATER; SPIZA AMERICANA;
AMMODRAMUS SAVANNAHUS

ADDED KEYWORDS: prescribed burning;
population effects; meadowlarks;
red-winged blackbirds; brown-headed
cowbirds; dickcissels; grasshopper
sparrows; species diversity; fires

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; migratory
patterns; numbers; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
census; Emken transect method

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): KS

GEOGRAPHIC DESCRIPTION: Geary County; Flint
Hills

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: There are two interrelated
objectives of this study: (1) to determine
bird species diversity and density
throughout the year in tall grass prairie,
and (2) to compare these parameters
between unburned and annually burned
sites. The study began during the breeding
season of 1973. Preliminary results
indicate a higher density of breeding
species in unburned prairie, but several
years of data will be necessary to
determine if this difference is real.

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NBIP ACCESSION NUMBER: KS/014

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KENTUCKY

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Fish and Wildlife Service Region 4
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INVESTIGATOR(S): Batch, D.L.
AFFILIATION: Dept. of Biological Sciences,
Eastern Kentucky University
TITLE: Determining the Effects of Contour
Strip Mining on Watershed Values --
Leatherwood Creek and Bear Branch
Watersheds, Breathitt County, Kentucky
PURPOSE: To collect quantitative and
qualitative data to be used to evaluate
the effects of strip mining on the water
resources of small Appalachian watersheds
in Eastern Kentucky (fishes and
macrobenthic organisms).
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: NO
CHANGE(S) OBSERVED: Changes in diversity and
reproductive potential of macrobenthic and
fish populations in both watersheds
occurred and changes correlated with
increased sediments in stream flow and
deposition in stream channel.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea
TAXA: CAMBARUS BARTONI; ORCONECTES JUVENILIS;
STENOEMA SFF; EPHEMERELLA; PERLESTA;
BOYERIA; TIPULA; ACRONEURIA; DIPLECTRONA;
HYDROPSYCHE; CHEUMATOPSYCHE; HELICUS;
PSEPHENUS; CORYDALIUS; ISONYCHIA; HALPLUS;
ISOGENUS; PELTOPERLA; EPEORIS;
PARLEOPTOPHLEBIA; NEMOURA; LANTHUS;
PENTANEURA
ADDED KEYWORDS: strip mining; siltation;
sediments; watersheds; benthic organisms;
stoneflies; mayflies; turbidity; cheek
chubs; emerald darters; crayfishes;
salamanders; decapods; plecopterans;
ephemeropterans; trichopterans;
coleopterans; dipterans; odonatanans;
megalopterans
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seines; Surber sampler
NUMBER OF SAMPLING SITES: 6 stations in
Leatherwood Creek; 6 stations in Bear
Branch
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Breathitt County;
Leatherwood Creek; Bear Branch; North Fork
Kentucky River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The main objectives of the study
were: (1) to determine the fishes present
in a polluted versus an unpolluted stream,
(2) to monitor the effects of strip mining
on the fishes and bottom fauna, and (3) to
monitor recovery, if any. The study
demonstrated a low-level of acid-mine

water effluence but a high level of
siltation and turbidity originating from
intensive erosion of the spoil banks.
Fishes were progressively eliminated from
headwaters downstream, or forced to
emigrate downgrade. Benthic food organisms
were reduced in numbers and kinds by at
least 90 per cent. Reproduction in darters
and minnows was curtailed by siltation,
either by the prevention of mating or by
kill-off of fry and eggs. SEMOTILUS
ATROMACULATUS was resistant to silt and
turbidity pollution probably because of
the fish's feeding habits i.e., since the
diet consists largely of terrestrial-type
insects or aquatic ones taken from the
surface. Studies in the same area two
years later showed that continued
siltation from strip mine operations had
prevented the recovery of fish populations
in those streams. All species reported for
Leatherwood Creek had been forced
downstream and 6 of those species were now
absent. Two other species were missing
from both streams. Populations of
SEMOTILUS ATROMACULATUS were on the
increase, perhaps because of the removal
of competing species.

REFERENCES: Branson and Batch, 1974; Branson
and Batch, 1972

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NRIP ACCESSION NUMBER: KY/023

<355>

INVESTIGATOR(S): Birge, W.J.
AFFILIATION: School of Biological Sciences,
University of Kentucky
TITLE: Embryopathic Effects of Waterborne and
Sediment-Accumulated Cadmium, Mercury and
Zinc on Reproduction and Survival of Fish
and Amphibian Populations in Kentucky
PURPOSE: To study comparative embryopathic
effects of heavy metals to eggs and
embryos of fish and amphibian species.
Effects on reproduction and survival will
be quantified in natural populations of
metals remobilized from bottom sediments
and compared to accumulated tissue levels.
SPONSOR(S): University of Kentucky Water
Resources Research Institute
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Sediment metal release
correlated with decreasing survival of
aquatic embryos and accumulation of metals
in tissues.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; reservoir
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; indicator species;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish
TAXA: SALMO GAIRDNERI; ICTALURUS PUNCTATUS;
CARASSIUS AURATUS; MICROPTERUS SALMOIDES;
RANA PIPIENS
ADDED KEYWORDS: rainbow trouts; channel

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catfishes; goldfishes; largemouth basses;
basses; trouts; catfishes; frogs;
sediments; heavy metals; embryos; eggs;
cadmium; mercury; zinc; teratology
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; diversity; growth; kill;
mortality; numbers; productivity;
reproduction; residues; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observations
NUMBER OF SAMPLING SITES: several areas
selected because of wide variation in
suspected pollution sources
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Payette County;
Franklin County; Scott County; Jessamine
County; Woodford County; Kentucky River
Drainage System
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis
ABSTRACT: Studies are being made on the
comparative embryopathic effects of
cadmium, mercury and zinc, administered
via different pathways, to eggs and
embryos of the leopard frog, channel
catfish, black and white bass. Emphasis is
placed on quantifying effects on
reproduction and survival in natural
populations of metals remobilized from
bottom sediments and/or accumulated above
environmental levels in fish and amphibian
eggs. Measurements are being made on the
binding capacity of spawned eggs and
accessory gels to ascertain their ability
to concentrate metals above background
levels. Fish and amphibian embryos are
being cultured on metal-containing natural
and artificial sediments to determine the
extent to which sediment-accumulated
metals are remobilized to exert
embryopathic effects. Embryos are examined
for possible use as "indicator organisms"
to monitor effects of sediment-accumulated
toxins upon water quality. A survey is
being made on selected Kentucky
impoundments and rivers to correlate metal
content of water, sediments and fish
gonadal tissues. We quantitate the degree
to which, prior to spawning, gonadal eggs
and sperm concentrate metals above
tolerable environmental levels, and
determine the subsequent effects of
gonadal-accumulated metals upon
reproductive potential and survival of
fish populations.
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NBIP ACCESSION NUMBER: KY/024

<356>

INVESTIGATOR(S): Birge, W.J.
AFFILIATION: Dept. of Biology, University of
Kentucky
TITLE: Sensitivity of Vertebrate Embryos to
Heavy Metals as a Criterion of Water
Quality
PURPOSE: Use of fish and amphibian eggs and
embryos as bioindicator organisms for
evaluating water quality and correlating
this information with independent
ecological parameters of 11 different
rivers and streams.
SPONSOR(S): ONBT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decreasing density and
diversity of fish populations with
increasing pollution, due to heavy metals.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; reservoir
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; forestry; indicator
species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish; birds
TAXA: SALMO GAIARDNERI; ICTALURUS PUNCTATUS;
CARASSIUS AURATUS; MICROPTERUS SALMOIDES;
GASTROPHRYNE CAROLINENSIS; RANA GRYLLO;
BUFO PUNCTATUS; Hyla chrysocephala; Hyla
squirella
ADDED KEYWORDS: rainbow trouts; channel
catfishes; goldfishes; largemouth basses;
leopard frogs; narrow mouthed toads; pig
frogs; red-spotted toads; southern gray
treefrogs; squirrel treefrogs; embryos;
heavy metals; bioassay; teratology; frogs;
trouts; catfishes; basses; toads; cadmium;
lead
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; diversity; growth; habitat
characterization; kill; mortality;
numbers; productivity; reproduction;
residues; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation
NUMBER OF SAMPLING SITES: 11
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Payette County;
Franklin County; Scott County; Jessamine
County; Woodford County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: WATFIV; FORTRAN IV
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis
ABSTRACT: Chick, amphibian, and fish embryos
were evaluated as bioassay and
bioindicator organisms. Embryonic stages
are used to evaluate the toxicity of
particular metallic or metal-containing
trace contaminants and as bioindicators to
monitor the quality of natural water
resources. Concerning the toxic effects of
mercury, cadmium and lead, the "embryonic
stage" appears to constitute the critical

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"sensitive link" in the vertebrate life cycle. The reproductive potential of vertebrate populations may be severely restricted (e.g., embryonic mortality) by such pollutants at trace levels which may not prove hazardous to adult animals, and environmental standards based on tolerance levels for adults may not provide adequate protection for sensitive developmental stages.

REFERENCES: Birge, et al, 1974; Birge, et al, 1975

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NBWP ACCESSION NUMBER: KY/025

<357>

INVESTIGATOR(S): Birge, W.J.
AFFILIATION: Dept. of Biology, University of Kentucky

TITLE: Lethal and Teratogenic Effects of Metallic Pollutants on Embryogenesis and the Use of Vertebrate Embryos as Sensitive Indicators of Environmental Quality

PURPOSE: Develop bioassay systems to quantify effects of heavy metals on natural fish and amphibian populations.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decreased hatchability of embryos occurred with various levels of metal pollution. Accumulation of metals occurred in adult fish exposed to chronic metal levels and subsequent reduction of reproductive potentials.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; fish

TAXA: SALMO GAIRDNERI; ICTALURUS PUNCTATUS; CARASSIUS AURATUS; MICROPTERUS SALMOIDES; GASTROPHRYNE CAROLINENSIS; RANA GRYLIO; BUFO PUNCTATUS; Hyla chrysocephala; Hyla squirella

ADDED KEYWORDS: rainbow trouts; channel catfishes; goldfishes; largemouth basses; leopard frogs; narrow mouthed toads; pig frogs; red-spotted toads; southern gray treefrogs; squirrel treefrogs; embryos; heavy metals; bioassay; teratology; frogs; toads; catfishes; trouts; cadmium; lead; arsenic; mercury

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; habitat characterization; kill; mortality; numbers; productivity; reproduction; residues; stress; toxicity; fecundity; hatchability

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observations; collection

NUMBER OF SAMPLING SITES: fish exposure chambers

SAMPLING FREQUENCY: daily;

SUPPORTING DATA COLLECTED: associated fauna; water quality data

STUDY SITE(S): KY

GEOGRAPHIC DESCRIPTION: Payette County; Franklin County; Scott County; Woodford County; Frankfort National Fish Hatchery Ponds

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: WATFIV; FORTRAN IV

STATISTICS EMPLOYED: mean; mode; median;

percentile; analysis of variance;

regression/correlation analysis;

contingency table analysis; multivariate analysis

ABSTRACT: Concerning the toxic effects of cadmium, lead and mercury, the embryonic stage appears to constitute the critical "sensitive link" in the vertebrate life cycle. Reproductive potential of vertebrate populations may be severely restricted, through the production of embryonic mortality and teratogenesis, by trace levels of metallic pollutants which are sublethal to adult animals. Environmental standards based on tolerances of adult forms likely do not provide adequate protection for sensitive developmental stages. Results of this investigation further indicate that vertebrate embryos are particularly suited for use as sensitive bioassay and bioindicator organisms with which to: (1) determine reliable protective limits for environmental trace contaminants, and (2) monitor the quality of environmental resources.

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NBWP ACCESSION NUMBER: KY/026

<358>

INVESTIGATOR(S): Branson, B.A.

AFFILIATION: Eastern Kentucky University

TITLE: Effects of Strip-Pine Silt on Small-Stream Fishes

PURPOSE: To determine the effect of silt on small-stream fish populations, that is, how silt causes extirpation through interference with reproductive success.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Drastic reduction in fish and benthic organisms occurred.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: endangered species;

environmental impact; fisheries; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta

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TAXA: SEMOTILUS ATRONACULATUS; CAMPOSTOMA
ANOMALUM; EBICYNBA BUCCATA; NOTROPIS
ARDENS; NOTROPIS CHRYSOCEPHALUS; NOTROPIS
PHOTOGENIS; NOTROPIS VOLUCHELLUS;
PINEPHALES NOTATUS; NOCOMIS MICROPOGON;
HYPENTELIUM NIGRICANS; PERCINA MACULATUM;
ETHEOSTOMA SPP

ADDED KEYWORDS: siltation; strip mining;
population effects; creekchubs;
stonerollers; silverjaw minnows; rosefin
shiners; striped shiners; silver shiners;
mimic shiners; bluntnose minnows

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; kill; numbers;
reproduction; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field monitoring; collection

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data

STUDY SITE(S): KY

GEOGRAPHIC DESCRIPTION: Breathitt County
ABSTRACT: Continued siltation from strip mine
operations in 2 streams tributary to the
North Fork of the Kentucky River has
prevented the recovery of fish populations
in those streams. All species reported
from Leatherwood Creek in 1972 have been
forced downstream, and 6 of those species
are now absent from that stream. Two other
species are now missing from both streams.
Populations of SEMOTILUS ATRONACULATUS
apparently are on the increase, perhaps
because of the removal of competing
species.

REFERENCES: Branson, et al, 1974
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NBIP ACCESSION NUMBER: KY/018

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INVESTIGATOR(S): Budde, M.L.
AFFILIATION: Dept. of Biology, Thomas More
College.

TITLE: Entrainment and Fish Impingement at
W.C. Beckjord Electric Plant

PURPOSE: To determine whether relationships
exist between power plant operations and
population levels of bacteria, algae,
zooplankton, and fish.

SPONSOR(S): Cincinnati Gas and Electric Co.
SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No significant effect of
the power plant on the biota and on the
physical-chemical factors were detected.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact; water
quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;

microorganisms; bacteria; algae; protozoa
TAXA: ALGAE, 26 GENERA; BACTERIA, 32 GENERA;
FUNGI, 1 GENUS

ADDED KEYWORDS: fossil fueled power plants;
chlorine; dissolved oxygen; entrainment;
impingement; copepods; cladocerans;
rotifers; nauplii; nematodes;
oligochaetes; gastrotrichs; tardigrades;
thermal effluents

PRIMARY PARAMETERS INVESTIGATED: bod;
distribution; diversity; mortality;
numbers; productivity; residues;
size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plankton nets; Kemmerer samplers;
hoopnets; electroshocking gear

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated
microorganisms; water quality data

STUDY SITE(S): OH; KY

GEOGRAPHIC DESCRIPTION: Campbell County (KY);
Clermont County (OH); Ohio River; Twelve
Mile Creek

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: percentile

ABSTRACT: Studies were made during 1971-1974
to determine the effects of the W.C.
Beckjord Electric Plant on the biota of
the Ohio River below the plant. There was
some upset of the plankton populations
resulting from hot water discharge. Mixing
and dispersal of the comparatively small
volume of cooling water into the much
larger volume of the river is rapid and
recovery is approached in terms of
temperature, dissolved oxygen levels, and
plankton populations some 600 yards below
the plant. This rapid recovery may serve
to negate the effects of the hot water
discharge. The algae were predominantly
diatoms and green algae, indicating a
quality of water well-suited to support
life. The absence of many blue-green algae
is a strong indication that the thermal
effect of the plant is one of calcification
and not pollution. Efforts were made to
compare the effects of chlorinated
discharge and non-chlorinated discharge on
the plankton populations. The highest
residual chlorine concentration recorded
was 0.042 ppm, approximately the lower
tolerable criteria listed for sensitive
fish. It was felt that chlorinated
discharge had little, if any, more effect
on the plankton populations than
non-chlorinated discharge. Another study
compared the numbers and species of fish
affected by the intake screens to the
general fish types found at large in the
same section of the Ohio River above and
below the plant. Smaller fish species were
found trapped on the screens while large
species and specimens were not affected.
The comparative numbers trapped did not
seem to alter the overall population of
fish in the Ohio River at this level of
stream flow.

REFERENCES: Budde, 1971; Bryant and Budde,
1972; Bryant and Budde, 1973; Budde, 1974

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NBIP ACCESSION NUMBER: KY/004

<360>

INVESTIGATOR(S): Covell, C.V.
AFFILIATION: Dept. of Biology, University of Louisville
TITLE: Mosquito Survey, Jefferson County, Kentucky
PURPOSE: To monitor mosquito populations in Jefferson County, Kentucky.
SPONSOR(S): Louisville-Jefferson County Dept. of Public Health
SPONSOR CATEGORY: county government
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None observed beyond those expected.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: CULEX PIPIENS
ADDED KEYWORDS: mosquitoes; population effects; management measures; dipterans
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): larval sampling by dipping; light traps
NUMBER OF SAMPLING SITES: numerous; 6 for light traps
SAMPLING FREQUENCY: continuous; seasonal; weekly
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Jefferson County
TYPE OF DATA: summarized
ABSTRACT: Mosquito larval and adult samples are collected in Jefferson County, Kentucky, between March and October each year to assess numbers and flight periods of the species present. The abundance of CULEX PIPIENS is of primary interest, as it is the presumed vector of St. Louis Encephalitis which first broke out in 1956 and was present in 1975. Data is reported to the Louisville-Jefferson Co. Dept. of Public Health each year.
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<361>

INVESTIGATOR(S): Howell, H.
AFFILIATION: Science Div., Asbury College
TITLE: Some of the Effects of Domestic Sewage Discharged into Hickman and Jessamine Creeks in Jessamine County, Kentucky
PURPOSE: To determine the extent of the incomplete domestic sewage treatment the cities of Lexington, Nicholasville, and Wilmore were having on the streams of Jessamine County.

SPONSOR(S): Asbury College; Jessamine County Fiscal Court

SPONSOR CATEGORY: teaching institution; county government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gained concrete evidence of the pollution of both streams. The W. Hickman plant began operation in 1972 and the Wilmore plant in 1975. Conditions have improved. Nicholasville's situation has worsened.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; forestry; indicator species; resource planning; pollution control; water quality; power generation; right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; reptiles; fish; birds; invertebrates; crustacea; insecta; plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria; fungi; algae; protozoa

TAXA: RHINICETHYS ATRATULUS; NOTROPIS SP;

ETHEOSTOMA, 5 SPECIES; CAMPOSTOMA

ANANOLUS; MICROPTERUS DOLOMIEUI; COTTUS

CAROLINAE; JUSTICIA AMERICANA; BENTHIC

ORGANISMS, 20 ORDERS

ADDED KEYWORDS: stonerollers; smallmouth basses; darters; sculpins; species diversity; water willows; waste water; benthic organisms; sewage treatment; basses

PRIMARY PARAMETERS INVESTIGATED:

distribution; kill; mortality; numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard methods; Surber square-foot sampler; minnow seine

NUMBER OF SAMPLING SITES: 18

SAMPLING FREQUENCY: weekly; irregular

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): KY

GEOGRAPHIC DESCRIPTION: Jessamine County;

Hickman Creek; Jessamine Creek

STATISTICS EMPLOYED: mean; percentile; contingency table analysis; non-parametric analysis

ABSTRACT: A six-week study was made in the summer of 1971 as an initial effort to determine the extent of pollution the three sewage disposal plants in Jessamine Creeks. The rapid population increase in Lexington and nearby municipalities, this initial study should furnish a basis of comparison for future investigations. Eighteen collecting stations were established in riffle areas of Hickman and Jessamine Creeks, the coliform bacteria, and macro-invertebrate population, fish population, and chemical water quality of each riffle area were studied. Hickman Creek's flow is augmented by approximately 3,100,000 gallons/day from one of the City of Lexington's sewage disposal plants, and Jessamine Creek's flow by 500,000 gallons/day from the cities of Nicholasville and Wilmore. The Lexington and Wilmore facilities are greatly overloaded. Chemical analyses were slanted more toward finding out the fluctuations of phosphates, sulfates, and nitrates.

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Water disappearing through limestone faults posed investigational problems. Hickman Creek showed evidences of pollution for a greater distance downstream than did Jessamine. Clean water indicator organism diversity was higher in lower Jessamine than in lower Hickman; this was particularly true for darters and Plecoptera. Jessamine Creek was also supporting limited game fishing.

REFERENCES: Howell, 1967; Howell (in press)

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INVESTIGATOR(S): Howell, J.F.
AFFILIATION: Morehead State University
TITLE: Environmental Impact of a Coal Washing Plant in Clay County, Kentucky
PURPOSE: To inventory and monitor the biota and water quality of the area and to formulate an environmental impact statement.
SPONSOR(S): South Mississippi Electric Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: None to date, but monitoring will continue even if not sponsored.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; stream
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; crustacea; insecta; plants; vascular plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: coal; coal preparation; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): stations; literature research
NUMBER OF SAMPLING SITES: 5+
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry; climatological data; soils; terrain; water quality data
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Lick Fork Creek; Red Bird Creek; Gardner Coal Washing Plant; Clay County
TYPE OF DATA: raw; literature-derived
STATISTICS EMPLOYED: mean; mode; percentile
ABSTRACT: This project was undertaken to assess the environmental impact of a coal washing plant on the immediate environment of Gardner, Kentucky. The project includes an inventory of plants, aquatic

invertebrates, terrestrial and aquatic vertebrates, and water quality necessary to determine the quantity and quality of life surrounding the area. Also included is an assessment of topographic, sociological, geomorphological, atmospheric, and economic conditions. Follow-up studies are also planned.

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INVESTIGATOR(S): Kuehne, R.A.
AFFILIATION: Dept. of Biology, University of Kentucky
TITLE: Evaluation of Recovery in a Polluted Creek after Installation of New Sewage Treatment Procedures
PURPOSE: To determine water quality improvement and speed and extent of animal repopulation of a creek formerly polluted with sewage.
SPONSOR(S): University of Kentucky Water Resources Research Institute; OWRT
SPONSOR CATEGORY: teaching institution; federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Physical-chemical changes were rapid with only minor oxygen sag persisting. Biological recovery was slower and incomplete.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; fisheries; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; microorganisms; bacteria
TAXA: FISHES, 22 SPECIES
ADDED KEYWORDS: waste water; eutrophication; species diversity; benthic organisms; sewage treatment
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization
NUMBER OF SAMPLING SITES: 11
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Fayette County; Jessamine County; Hickman Creek
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: mean
ABSTRACT: Response of Hickman Creek near Lexington, Kentucky to alleviation from serious sewage pollution was studied from January, 1973 through July, 1974. Wastes are now handled from an efficient secondary treatment facility and four sequential polishing lagoons before chlorination and discharge to West Hickman branch. Physico-chemical tests gave no strong indication of residual pollution effects at the start of the study, approximately six months after the treatment facility opened. At low flow a slight oxygen sag, probably associated

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with algal growth in the lagoons, persists downstream from the outfall. Mean values for turbidity, nitrates, and COD are somewhat higher at the outfall than at eleven stations within the basin. Orthophosphates are considerably higher in lagoon discharge than elsewhere in the system, which gains some phosphate from bedrock. While the lagoons place some oxygen demand on West Hickman in the form of unicellular algal growth, they can and do receive surges of input that cannot be accommodated in the treatment plant. They would serve as a buffer to the stream in case of operational malfunction, which could overwhelm the small stream at low flow. The lagoons provide some benefits of tertiary treatment.

REFERENCES: Ruehne, 1975

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NBIP ACCESSION NUMBER: KY/016

<364>

INVESTIGATOR(S): Neff, S.E.

AFFILIATION: Water Resources Laboratory,
University of Louisville

TITLE: Ecological Reconnaissance Prior to and
During Impoundment of the Salt River,
Kentucky

PURPOSE: To determine seasonal variations in
physical, chemical, and biological aspects
of Salt River ecosystem.

SPONSOR(S): OWRT

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decreased efficiency of
treatment plants with concurrent reduction
of fauna, and detrimental effects of
flooding on biota.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
stream; river

LEVEL(S) OF STUDY: organism; population;
community; region

MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; forestry;
indicator species; resource planning;
pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; microorganisms;
algae

TAXA: ALGAE, 88 SPECIES; PTERIDOPHYTA, 3
SPECIES; PLANTS, 350 SPECIES; BENTHIC
ORGANISMS, 81 SPECIES; FISHES, 92 SPECIES

ADDED KEYWORDS: drift; sediments; turbidity;
habitat modification; ferns; waste water;
floods; natural catastrophe; benthic
organisms; management measures; decapods;
trichopterans; dipterans; coleopterans

PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity; habitat
characterization; harvest; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seines; electroshocking gear; Surber
sampler; transect samples; drift samples;
dip nets

NUMBER OF SAMPLING SITES: 38 for fish; 30 for
invertebrates

SAMPLING FREQUENCY: weekly; monthly; annual;
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; soils; terrain; water
quality data

STUDY SITE(S): KY

GEOGRAPHIC DESCRIPTION: Spencer County;
Anderson County; Mercer County; Boyle
County; Salt River; Beech Fork River;
Chaplin River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: HP 2000C; IBM 360/40;

BASIC; FORTRAN

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
non-parametric analysis

ABSTRACT: Permanent collecting stations have
been established at 67 sites throughout
the Salt River, Beech Fork, and Chaplin
River drainages. Turbidities increase
quickly as flow and runoff increase, and
subside quickly when the rain stops.
Suspended solids range up to 1,700
mg/liter in high turbidities and vary
considerably as a result of local spates.
Water chemistry generally reflects the
limestone nature of the substrate and the
physico-chemical characteristics of a
typically healthy limestone stream. Bottom
organisms are abundant and diverse, more
than 300 different benthic organisms have
been identified to date. Drift samples
exhibit extremely high densities ranging
from 0.1 to 28 organisms per cubic meter
of discharge, with as many as 315,000
organisms passing the same point during
peak drift activity. Species diversity of
caddisflies was calculated for 85
quantitative samples. The greatest numbers
emerge at dusk with sex ratios about 1:1.
Few changes have occurred in the
sociocconomic aspects of the study. The
only major change involved an upward
revision of the amount of land needed for
a recreational area from about 200 acres
to about 4,300 acres.

REFERENCES: Hoyt, et al, 1970; Resh, et al,
1971; Krumholz, 1971; Resh, 1974; Resh, et
al, 1974; Bacon and Neff, 1974; Krumholz
and Neff, 1974; Resh, 1975; Krumholz and
Neff, 1975

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NBIP ACCESSION NUMBER: KY/013

<365>

INVESTIGATOR(S): Pearson, W.D.

AFFILIATION: Water Resources Laboratory,
University of Louisville

TITLE: Hematological Parameters of Freshwater
Fishes

PURPOSE: Establish normal hematological
parameters for native fishes and effects
of pollutants on these parameters.

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SPONSOR(S): University of Louisville
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Hematocrits, red and white blood counts, white blood count differentials, hemoglobin content, red blood count morphology, pH, oxygen, carbon dioxide, and plasma protein changes were observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: LEPOMIS CYANELLUS; LEPOMIS MACROCHIRUS; LEPOMIS NEGALOTIS; LEPISTOSTEUS OSSEUS; NOTROPIS ARDENS; NOTROPIS CORNUTUS; MICROPTERUS DOLOMIEUI; MICROPTERUS SALMOIDES; STIZOSTEDION CANADENSE
ADDED KEYWORDS: acid mine water; habitat modification; mining; bluegills; hematology
PRIMARY PARAMETERS INVESTIGATED: distribution; physiology; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine; gill net; angling; electrofishing gear
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): KY; IN
GEOGRAPHIC DESCRIPTION: Jefferson County (IN); Trimble County (KY); Ohio River
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, deterministic
ABSTRACT: Surveys of the hematological parameters of fishes of Kentucky are in progress. We are interested in establishing normal value ranges for common and rare fishes, determining effects of disease and important pollutants on these parameters, and developing applications of hematology in monitoring effluents which contain pollutants at sub-lethal concentrations.
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NBIP ACCESSION NUMBER: KY/019

<366>

INVESTIGATOR(S): Poulson, T.L.
AFFILIATION: Dept. of Biological Sciences,
University of Illinois-Chicago Circle
TITLE: Terrestrial Subcommunities in Caves of Central Kentucky Karst
PURPOSE: To determine the natural fluctuations in subcommunities in order to understand persistence and resilience in

the face of man-induced changes.
SPONSOR(S): NSF; NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1965.
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population densities of dominants in simpler subcommunities have fluctuated as much as 100 times but in more complex subcommunities, only population structure has changed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; non-vascular plants; fungi; microorganisms; bacteria
TAXA: ARACHNIDA, 20 SPECIES; DIPLOPODA, 4 SPECIES; CHILOPODA, 2 SPECIES; INSECTA, 24 SPECIES
ADDED KEYWORDS: population effects; succession; caves; isopods; coleopterans; collembolans; orthopterans; acarines; diplopods; gastropods; pseudoscorpions; arachnids; dipterans
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; emigration; growth; habitat characterization; immigration; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): permanent quadrats; direct observation; pitfall traps; bait traps
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: seasonal; weekly; monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; soils
STUDY SITE(S): KY
GEOGRAPHIC DESCRIPTION: Edmondson County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis; non-parametric analysis; serial autocorrelations
ABSTRACT: Studies are being conducted to determine the rules that govern community structure by (1) observing natural, unmanipulated subcommunities over long periods of the (generation times, 4 mo. to 2 yrs.); and (2) to test hypotheses resulting from such observations by field manipulative experiments, microcosm studies, and determination of species life history, bioenergetics, and foraging using both field and laboratory data. A major aspect of the multiple hypotheses being tested is that food, rigor, and risk affect species adaptations and that these act, along with biotic interactions, to determine community structure.
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INVESTIGATOR(S): Robinson, T.S.

AFFILIATION: Dept. of Biology, University of Louisville

TITLE: Investigation of Effect of Reduction and Changes in Available Habitat on Terrestrial Animals in Land Between the Lakes National Recreation Area

PURPOSE: Determine the effects of the general stresses of overcrowding on free-ranging small mammal populations brought about by reduction in area rather than increases in reproduction.

SPONSOR(S): TVA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Spectacular changes in distribution and density of three species of small mammals occurred along with changes in reproduction.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: PEROMYSCUS LEUCOPUS; MUS MUSCULUS; MICROTUS OCHROGASTER

ADDED KEYWORDS: house mice; meadow voles; white footed voles; habitat modification; mice; voles; islands

PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; emigration; immigration; kill; mortality; natality; numbers; reproduction; sex; size/weight; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): grid snap trapping; autopsy

NUMBER OF SAMPLING SITES: 50

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain

STUDY SITE(S): KY; TN

GEOGRAPHIC DESCRIPTION: Trigg County (KY); Lyon County (KY); Stewart County (TN); Tennessee River; Cumberland River; Sabine River; Lake Barkley

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

analysis of variance;

regression/correlation analysis;

multivariate analysis

ABSTRACT: A three-year study of free ranging small mammal populations in an isolated strip of land lying between the banks of the lower Tennessee and lower Cumberland rivers was conducted both before and after impoundment of the Cumberland River forming Lake Barkley, and consequently reducing the terrestrial habitat by approximately 25%. Of the three dominant species of small mammals occupying the area before spatial reduction, the floodplain-inhabiting house mouse (*MUS MUSCULUS*) was pushed to extinction, the meadow-inhabiting meadow vole (*MICROTUS OCHROGASTER*) was little affected, and the forest dwelling white-footed mouse (*PEROMYSCUS LEUCOPUS*) moved into the meadows and floodplain following a population eruption. Concomitant changes in size of adrenal glands, reproductive success, age classes, and frequency of helminth infestation were recorded.

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LOUISIANA
Standard Federal Region 6
Fish and Wildlife Service Region 4
(SEE ALSO 238, 239, 267, 502, 505, 785, 902)

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INVESTIGATOR(S): Beck, L.T.
AFFILIATION: Louisiana Cooperative Fishery
Unit, Louisiana State University
TITLE: The Macroinvertebrates Associated with
Water Hyacinths in the Atchafalaya Basin,
Louisiana
PURPOSE: Monthly changes in fauna in two
habitat types, monitor diurnal changes in
water quality, life history notes on
dominant organisms.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
CHANGE(S) OBSERVED: Water hyacinth root
systems are preferred during periods of
summer stagnation (i.e. oxygen depletion).
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; river; lake
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta; annelida
TAXA: PORIFERA; BRYOZOA; PLATYHELMINTHES;
NEMATODA; OLIGOCHAETA, 10 SPECIES;
HIRUDINEA; CRUSTACEA, 20 SPECIES; INSECTA,
50 SPECIES
ADDED KEYWORDS: water hyacinths; benthic
organisms; habitat modification;
population effects
PRIMARY PARAMETERS INVESTIGATED: diversity;
habitat characterization; migratory
patterns; numbers; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
dipnet grab sampler; Ekman dredge;
Hydrolab; Martek hydrological monitoring
equipment (IN SITU)
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Iberville Parish;
Atchafalaya River; Bayou Sorrel Oilfields
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 360; SASS
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
multivariate analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: LA/085

<369>

INVESTIGATOR(S): Bryan, C.F.
AFFILIATION: FWS
TITLE: Limnological Survey of the Atchafalaya
Basin
PURPOSE: Describe seasonal changes in
physiochemical characteristics, describe
seasonal changes in aquatic biota, and
develop a management plan for the water

within the basin.
SPONSOR(S): FWS; COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Temporal changes were
less predictable than spatial changes and
changes with alterations in river stage
have more impact than changes in season or
temperature.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; lake; marine; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; recreation;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; annelida; microorganisms;
bacteria; algae
TAXA: PHYTOPLANKTON, 100 SPECIES; HYDROZOA, 2
SPECIES; DEER SP; ROTIFERA, 5 SPECIES;
CRUSTACEA, 130 SPECIES; INSECTA,
NUMEROUS; FISHES, 70 SPECIES
ADDED KEYWORDS: management measures; river
stages; phytoplankton; zooplankton;
benthic organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration;
habitat characterization; mortality;
migratory patterns; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nets; dredges; grabs; seines;
electrofishing gear; poisons
NUMBER OF SAMPLING SITES: 20 (regular); more
than 100 (irregular)
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; water
quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: St. Landry Parish;
Point Coupee Parish; St. Martin Parish;
Iberville Parish; Iberia Parish; St. Mary
Parish; Atchafalaya River
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360; SASS
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis
ABSTRACT: This project attempts to describe
temporal and spatial changes in water
quality, phytoplankton, zooplankton,
benthos and fishes in the Atchafalaya and
East Cote Blanche Bays. It is also
concerned with a description of the
principal freshwater and estuarine
microhabitats in relation to the life
histories of the basin's recreationally
and commercially important aquatic
organisms, and with natural phenomena
associated with annual watering and
dewatering of the swamps.
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NBIP ACCESSION NUMBER: LA/060

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Standard Federal Region 6
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INVESTIGATOR(S): Chabreck, R.H.
AFFILIATION: Dept. of Forestry, Louisiana
State University
TITLE: Cooperative Surveys of the American
Alligator
PURPOSE: To determine population trends in
the American alligator.
SPONSOR(S): Louisiana Agricultural Experiment
Station
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population stable in some
areas but increasing in others.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; lake; reservoir; marine; coastal;
estuarine
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: endangered species;
wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles
TAXA: ALLIGATOR MISSISSIPPIENSIS
ADDED KEYWORDS: alligators; legal regulation;
management measures
PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
night count
NUMBER OF SAMPLING SITES: 136
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data
STUDY SITE(S): TX; LA; MS; AL; FL; GA; SC
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The survey was implemented in 1971
to determine annual population trends of
the American alligator. Survey lines were
established through the major portion of
the alligators' range and were counted
annually. Cooperators from federal and
state agencies, universities, and private
citizens participated; and in 1975, 136
lines were surveyed for a total distance
of 1,392 miles. During that survey, 4,833
alligators were observed.
REFERENCES: Chabreck, 1976
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NBIP ACCESSION NUMBER: LA/089

<371>

INVESTIGATOR(S): Davis, B.J.
AFFILIATION: Dept. of Zoology, Louisiana Tech
University
TITLE: The Effects of Kraft Paper Mill Waste
Water on Populations of Benthic
Macroinvertebrates
PURPOSE: To determine originally which
organisms were excluded from the stream
and how far downstream it is required for
them to return to the community, and
secondly to determine the effects of a
lime clarification process established at

the plant.

SPONSOR(S): Continental Can Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Due to the installation
of the lime clarification process, water
has become much clearer. But increases in
other physiochemical parameters have
apparently extirpated some species and
moved them further downstream.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
mollusca; shellfish; annelida
ADDED KEYWORDS: waste water; sewage
treatment; habitat modification;
population effects; species diversity;
benthic organisms; succession
PRIMARY PARAMETERS INVESTIGATED: diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Kimmerer water sampler; Ponar dredge
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Lincoln County;
Jackson County; Winn County; Dugdemona
Bayou
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: modeling, deterministic
ABSTRACT: The Continental Can Company at
Hodge, Louisiana is a kraft papermill that
sometimes uses the sulfite process. The
wash water from the paper rolls is placed
in a continuous flow through oxidation
system that releases about 13 MGD into a
small stream. The cooking liquors are
placed in a holding pond and released only
during the high-water period. Since the
Company was going to engage in a massive
expansion project, they desired to have
information on the water quality in the
stream and information on its effect on
the aquatic biota. Base-line data was
accumulated during 1970-1971 and during
the installation of the pollution
abatement systems in 1972. The problems
encountered with the abatement system
(lime clarification) primarily in
conjunction with a series of oxidation
ponds caused an increase in the specific
conductance in wastewater released into
the stream. This has caused the
extirpation of a few forms of
invertebrates, primarily crustaceans. The
general trend within the stream is that
the species diversity is rather high at
the station above the plant's outfall
where they approach 0 and then generally
increase in a downstream direction for
about 30 miles depending on the season and
the amount of rainfall in the area.
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NBIP ACCESSION NUMBER: LA/002

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INVESTIGATOR(S): Goertz, J.W.
AFFILIATION: Dept. of Zoology, Louisiana Tech University
TITLE: Survey of Nesting Birds in North Louisiana
PURPOSE: To survey the number of species nesting in the area, the number nesting, extent of the nesting season, reproductive variation among individuals and species, and nesting success.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decreased number of large nesting raptors and increased numbers of nesting Icteridae and others.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; wetland; aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: BIRDS, 112 SPECIES; PASSERIFORMES
ADDED KEYWORDS: raptors; natural introductions; population effects; wood ducks; ducks; nesting
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; mortality; natality; numbers; productivity; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nest tagging
NUMBER OF SAMPLING SITES: hundreds of sites have been examined
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora; terrain
STUDY SITE(S): LA
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; percentile
ABSTRACT: A survey of nesting birds is being conducted in north Louisiana (1963 to 1975 and continuing). An analysis of variation in habitat, reproductive variation, and the extent of the nesting season are the principal types of data being collected. To date (1975), more than 7000 nests of 112 species have been surveyed for biological data. Some data have been published, several papers are in press, and additional data are being analyzed for publication.
REFERENCES: Strange, et al, 1971; Goertz and Rutherford, 1971; Taylor and Goertz, 1964; Goertz and Mowbray, 1970; Goertz and Mowbray, 1969; Mowbray and Goertz, 1972
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NBIP ACCESSION NUMBER: LA/005

<373>
INVESTIGATOR(S): Graves, J.B.
AFFILIATION: Dept. of Entomology, Louisiana State University
TITLE: Pesticide Contamination of the Environment and its Significance
PURPOSE: To determine the extent of environmental contamination by pesticides and to develop a continuing monitoring system.
SPONSOR(S): Louisiana Agricultural Experiment Station
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A decrease in environmental contamination by persistent pesticides such as DDT, dieldrin, and endrin.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; crustacea; insecta
TAXA: PORPHYRULA MARTINICA; GALLINULA CHLOROPUS; ANAS PLATYRHYNCHOS; PROCAMBARUS CLARKI; ICTALURUS PUNCTATUS; DIATRAEA SACCHARALIS; LISSORHOPTERUS ORYZOPHILUS
ADDED KEYWORDS: pesticides; DDT; DBE; dieldrin; eggshells; crayfishes; ducks; gallinules; decapods; coleopterans; ephemeropterans
PRIMARY PARAMETERS INVESTIGATED: growth; reproduction; residues; sex; toxicity
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Tensas River; Mermentau River; Bayou Chevreuil; Bayou Courtableau; Six-mile Creek
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: A great mass of information has been accumulated on residues of chlorinated hydrocarbon pesticides in food and feed crops and in soils. Much less is known about the organophosphorus and carbamate insecticides which are rapidly replacing the more persistent materials. Comparatively little information is available to show how extensively and to what levels environments which have not been treated directly are contaminated with chlorinated hydrocarbon pesticides. It has been recently demonstrated that some populations of many species of fish and other wildlife have accumulated appreciable quantities of chlorinated hydrocarbon insecticides in fat and other tissues. Little information is available as to the status of organophosphorus and carbamate insecticides on this point. The possibility exists that the gradual replacement of chlorinated hydrocarbons with other insecticides will alleviate the residue problem. On the other hand, more serious problems may develop. Studies to show the amounts of these residues in the environment, where they occur, their

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source, and whether or not their presence creates a hazard to man, his domestic animals, and species of fish and other wildlife must be undertaken.
REFERENCES: Epps, et al, 1967; Hendrick, et al, 1966; Hendrick, et al, 1965; Hyde, et al, 1974; Fowler, et al, 1971; Bonner, et al, 1965; Graves, et al, 1969; Pinley, et al, 1974; Hyde, et al, 1973; Carter, et al, 1972

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NBIP ACCESSION NUMBER: LA/012

<374>

INVESTIGATOR(S): Hackbarth, W.P.
AFFILIATION: Louisiana Tech University
TITLE: Establishment of Seedlings at Intervals After Clearing and Selective Cutting Areas of Various Sizes
PURPOSE: To study reestablishment of species bordering areas cleared of large trees at intervals up to fifteen years on various sizes of cleared areas.
SPONSOR(S): Barksdale Air Force Base; USAF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes from small understory species' predominance to seedlings of overstory species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: indicator species; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: ACER RUBRUM; QUERCUS SPP; ULMUS AMERICANA; SMILAX SPP; RUBUS SPP; VITIS SPP
ADDED KEYWORDS: red maples; oaks; elms; white elms; maples; american elms; greenbriers; catbriers; brambles; grapes; succession; adaptation; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; growth; habitat characterization; immigration; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Bossier City County; Red River; Barksdale Air Force Base
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: analysis of variance
ABSTRACT: Uniform age stands on the margins of clearance areas were indicative that sprouts from the roots of trees removed from the area or those of the same species remained in the forest bordering the clearing. Other species found in the

bordering forests were found in increasing amounts within the cleared areas as time interval to time of sampling increased in length.

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NBIP ACCESSION NUMBER: LA/079

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INVESTIGATOR(S): Juneau, C.L.
AFFILIATION: Louisiana Wildlife and Fisheries Commission
TITLE: A Study of the Seabob (XIPHOPEUS KROYERI) in Louisiana
PURPOSE: To determine seasonal occurrences and relative abundance and distribution and correlate these data with hydrological observations and to relate these with industry.
SPONSOR(S): NMFS; State of Louisiana
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes observed concerning above parameters.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; shellfish
TAXA: XIPHOPEUS KROYERI
ADDED KEYWORDS: seasonal variations; seabobs; population effects; shrimp; management measures; decapods
PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; size/weight; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines; plankton nets; other trawls
NUMBER OF SAMPLING SITES: 37
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data; terrain
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Jefferson County; Cameron County
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis
ABSTRACT: Seabobs are apparently available for commercial harvest each year, but the fishery is not fully utilized due to poor understanding of its general life cycle, movements, and abundance. Some utilization of this species takes place when higher priced penaeid shrimp are less abundant.

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Investigations of seasonal occurrence, abundance, distribution, and hydrological factors that may affect seabob populations and consequent production will complement the entire shrimp industry. With this information, management guidelines can be established.

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NBIP ACCESSION NUMBER: LA/058

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INVESTIGATOR(S): Lantz, K.E.
AFFILIATION: Louisiana Wildlife and Fisheries
Commission
TITLE: Largemouth Bass Studies in Toledo Bend
Reservoir
PURPOSE: Evaluate the annual spawning success
and survival of young-of-year largemouth
bass as related to seasonal water
withdrawals from Toledo Bend Reservoir.
SPONSOR(S): Louisiana Wildlife and Fisheries
Commission; FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Possible delayed
spawning in spring, 1975, was associated
with rapid drop in reservoir.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; recreation;
power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: MICROPTERUS SALMOIDES
ADDED KEYWORDS: largemouth basses;
impoundment; spawning; mortality rates;
hydroelectric power plants; basses
PRIMARY PARAMETERS INVESTIGATED: age; growth;
harvest; numbers; habitat
characterization; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seine; electrofishing gear; angling
NUMBER OF SAMPLING SITES: 50
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data
STUDY SITE(S): LA; TX
GEOGRAPHIC DESCRIPTION: Sabine County (LA);
DeSoto County (LA); Shelby County (TX);
Sabine County (TX); Newton County (TX);
Sabine River; Toledo Bend Reservoir
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis
ABSTRACT: The Sabine River Authority desires
a water management plan that will satisfy
the needs of the fisheries resources as
well as hydroelectric needs of the area.
This study will evaluate the annual spring
spawning success and survival of
young-of-year largemouth bass (one of the

most sought out sport fish in the lake) as
related to seasonal water withdrawals for
hydroelectric generation. Results of this
study along with planned future
limnological and other fish species
studies will be used in making
recommendations to the regulating
authority concerning a water management
plan.

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NBIP ACCESSION NUMBER: LA/043

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INVESTIGATOR(S): Linscombe, R.G.
AFFILIATION: Fur Division, Louisiana State
Wildlife and Fisheries Commission
TITLE: Fur Animal Population Level Inventory;
Life History Studies and Specific Fur
Animals
PURPOSE: To measure fur animal population
fluctuations by marsh type, by specific
areas of the coast, and by time period;
and to collect basic life history data.
SPONSOR(S): Louisiana State Wildlife and
Fisheries Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The nutria populations
climbed tremendously after their
introduction in 1938, especially
1955-1959. The numbers are now levelling
off.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs
TAXA: MYOCASTOR COYPU
ADDED KEYWORDS: coypu rat; nutrias; muskrats;
river otters; otters; minks; raccoons;
species introduction; population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; productivity; harvest; home
range size; mortality; reproduction;
residues; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
harvest data; aerial inventory; animal
carcass inspection; telemetry
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated flora;
climatological data; hydrological data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Louisiana Gulf Coast
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance
ABSTRACT: The nutria appeared on the scene
about 1938, and as a result of escapes and
releases became established throughout
coastal Louisiana. Many animals were
transplanted to different areas of the
state because of false beliefs describing
the nutria as a controller of undesirable
aquatic plants like water hyacinth. The
population peaked at an estimated 20
million during the years 1955 through
1959. The impact of this tremendous

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upsurge of numbers of nutria on other animals in the coastal region was immeasurable, but the change was obvious. Agricultural interests were up in arms, muskrat numbers were declining, and the trapper was convinced the nutria was to blame. Hurricane Audrey in 1957 and the freeze of the winter of 1962 were nature's controls on the expanding population. Millions died as a result of these natural phenomena. In spite of this, their population continued to increase. By the time of the 1960-61 trapping season the nutria accounted for 39.9 percent and the muskrat contributed 53.6 percent of the total Louisiana catch of furbearing animals. The next year was the turning point with the nutria catch posting a 53.1 percent versus the muskrat with 36.8 percent. Since that season, the annual take has never fallen below one million pelts. The greatest production to date was during the 1968-69 season when 1,754,028 pelts were harvested in the state. The meat of this furbearer is also valuable. Several million pounds are sold each year to mink ranchers for mink food and to the federal government to be used to raise sterile screwworm larvae for the screwworm eradication program in the Southwest. The nutria, in just a few short decades, has become the backbone of the multi-million dollar Louisiana fur industry.

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NBIP ACCESSION NUMBER: LA/046

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INVESTIGATOR(S): Mushinsky, H.R.; Hobrard, J.J.

AFFILIATION: Dept. of Zoology and Physiology,
Louisiana State University

TITLE: Behavioral Ecology and Population
Dynamics of Water Snakes in Louisiana

PURPOSE: The objectives include uncovering
the biological mechanisms that allow six
species of water snakes to coexist and to
determine the distributional patterns and
dynamics of these and related snakes.

SPONSOR(S): Louisiana State University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Species diversity and
density fluctuates with water level.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; lake

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: indicator species;
radiological; pollution control; water
quality; right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles

TAXA: MATRIX RHOMBIPERA; MATRIX CYCLOPION;
MATRIX PASCIAIA; MATRIX ERYTHROGASTER;
REGINA GRAHAM; REGINA RIGIDA

ADDED KEYWORDS: snakes; turtles; frogs; hylid
frogs; ranid frogs; water snakes; green
water snakes; plain-bellied watersnakes;
population effects; predators; prey

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; habitat characterization; home
range size; migratory patterns; natality;
numbers; reproduction; sex; size/weight;
territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark-recapture techniques; stomach content
analysis

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
water quality data

STUDY SITE(S): LA

GEOGRAPHIC DESCRIPTION: Ascension Parish;
Alligator Bayou; Spanish Lake

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: IBM 360; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
analysis of covariance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: During the past 16 months over 500
water snakes have been observed in a 3
kilometer study area along a bayou in
southeast Louisiana. Over 40% have been
captured, marked, processed, and released.
Individual movements, population
diversity, and density are closely
associated with water fluctuations.
Seasonal and daily activity patterns as
well as food and habitat partitioning all
appear to be influential in the
coexistence of these six closely related
species.

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NBIP ACCESSION NUMBER: LA/046

<379>

INVESTIGATOR(S): Pearson, H.A.

AFFILIATION: FS

TITLE: Range Management Research

PURPOSE: To evaluate vegetation responses to
timber and range management practices and
devise methods for proper multiple use of
resources.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1963

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Understory forage
decreases as tree density increases.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: wildlife; forestry; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses

TAXA: ANDROPOGON GERARDI; ANDROPOGON

LOUISIANA

Standard Federal Region 6
Fish and Wildlife Service Region 4
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SCOPARIUS; PINUS PALUSTRIS; ANDROPOGON
TENER; ANDROPOGON DIVERGENS; PINUS
ELLIOTTII; MYRICA CERIFERA; ANDROPOGON
SUBTENUIS; ANDROPOGON TERNATUS;
ANDROPOGON VIRGINICUS; HELIANTHUS
ANGUSTIFOLIUS; CHRYSOPSIS GRAMINIFOLIA
ADDED KEYWORDS: bluestems; big bluestems;
little bluestems; longleaf pines; pines;
slender bluestems; pinehill bluestems;
slash pines; waxmyrtles; fineleaves;
paintbrushes; broomsedges; swamp
sunflowers; sunflowers; grassleaf
goldasters; goldasters; management
measures; grazing; prescribed burning;
regeneration; logging; cattle
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; growth; habitat characterization;
productivity; reproduction; sex;
size/weight
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): LA; AR
GEOGRAPHIC DESCRIPTION: Red River; Calcasieu
River; Palustris Experimental Forest
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis
ABSTRACT: A cover of young longleaf or slash
pines increased protein and phosphorus,
and decreased nitrogen-free extract in
herbage on pine-bluestem range. Under
protection from grazing, the proportion of
big bluestem in the herbage stand
increased more on forested than cutover
land. Herbage decreased about 15 lb/acre
for every 1 square foot increase in pine
basal area. Neither light nor moderate
grazing by cattle affected establishment
of planted or seeded pines or survival to
age 5 years. Heavy grazing of plantings
resulted in 124 fewer trees per acre than
on the ungrazed control, with the losses
well distributed. Survival of seeded
stands was unaffected by heavy
utilization. Grazing had no clearcut
effect on height growth of pines to age 5.
However, yields started to decline when
the young pines were about age 9.
REFERENCES: Pearson, et al, 1971; Grelen,
1974; Wolters, 1973; Pearson and Whitaker,
1974
ADDRESS: Mr. Henry A. Pearson
Alexander Forestry Center
2500 Shreveport Highway
Pineville, LA 71360
TELEPHONE: (318) 445-6511 ext. 373
NBIP ACCESSION NUMBER: LA/028

<380>

INVESTIGATOR(S): Poirrier, M.A.
AFFILIATION: Dept. of Biological Sciences,
University of New Orleans
TITLE: Environmental Factors Affecting the
Distribution of Epifaunal Invertebrates in
Lake Pontchartrain
PURPOSE: To determine the impact of adverse
water quality upon aquatic organisms in

Lake Pontchartrain, Louisiana.
SPONSOR(S): OWRT; Louisiana Water Resources
Research Institute
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Effects of salinity and
storm-water discharge include effects on
epifauna, increased nutrients, and
increased coliform population.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake; marine; estuarine
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: endangered species;
indicator species; pollution control
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
mollusca; shellfish; annelida;
microorganisms; bacteria
TAXA: BENTHIC ORGANISMS, 17 SPECIES
ADDED KEYWORDS: sponges; hydroids; oysters;
worms; nudibranches; barnacles; copepods;
isopods; amphipods; decapods; mides; mud
crabs; flatworms; gastropods; dredging;
waste water; coliform bacteria
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; kill; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
millipore filter; transects; Secchi disk
NUMBER OF SAMPLING SITES: 25
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna;
water quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Orleans Parish;
Jefferson Parish; St. Tammany Parish;
Tchefuncte River; Lake Pontchartrain
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: multivariate analysis
ABSTRACT: Studies showed that the
distribution and relative abundance of
estuarine epifaunal invertebrates can be
used to detect the effects of different
water conditions upon aquatic life.
Intrusion of higher salinity water from
the Inner Harbor Navigation Canal and
discharge from outfall canals,
particularly those west of the Yacht
Harbor, are affecting epifaunal
associations in the southern sector of the
lake. As in prior studies, there is
evidence that outfall canals discharge
plant nutrients, coliform bacteria, and
other substances into the lake. A computer
principal components analysis was
performed on invertebrate
frequency-of-occurrence data and water
quality data.

REFERENCES: Poirrier and Rogers, 1975
ADDRESS: Dr. Michael A. Poirrier
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Lakefront
New Orleans, LA 70122
TELEPHONE: (504) 288-3161 ext. 310
NBIP ACCESSION NUMBER: LA/016

<381>

INVESTIGATOR(S): Poirrier, M.A.
AFFILIATION: Dept. of Biological Sciences,
University of New Orleans

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LOUISIANA

Standard Federal Region 6

Fish and Wildlife Service Region 4

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<381> CONT.

TITLE: Studies of Fresh-Water Sponges of the United States

PURPOSE: To collect and identify fresh-water sponges and determine environmental factors which control their distribution.

SPONSOR(S): University of New Orleans

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in species composition in many habitats has been noted.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river; lake;

reservoir; marine; estuarine

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: endangered species; indicator species

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea

TAXA: SPONGILLA, 25 SPECIES

ADDED KEYWORDS: sponges; fresh-water sponges; poriferans; waste water; sewage treatment

PRIMARY PARAMETERS INVESTIGATED: distribution

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection

NUMBER OF SAMPLING SITES: 250

SAMPLING FREQUENCY: monthly; annual; irregular

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): LA

TYPE OF DATA: reduced

ABSTRACT: Many populations of fresh-water sponges were monitored in Louisiana and other states to determine variation in seasonal occurrences and habitat-induced population changes. This work was conducted mainly in 1965 but additional data have been obtained since that time. Changes in species composition in many habitats have been noted. Distributional data are available for about 20 states.

REFERENCES: Poirrier and Rogers, 1975

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WDIP ACCESSION NUMBER: LA/017

<382>

INVESTIGATOR(S): Sager, D.R.

AFFILIATION: Louisiana Cooperative Fishery

Unit, Louisiana State University

TITLE: Freshwater Phytoplankton of the

Atchafalaya River Basin, Louisiana

PURPOSE: To document the phytoplankton community of the Atchafalaya River Basin, to monitor seasonal and spatial changes in the communities, and to relate certain physico-chemical parameters to the river and swamp phytoplankton.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The annual flood is the overriding factor, inundating all

habitats. As the water levels lower, habitats differentiate and phytoplankton changes result.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; lake

LEVEL(S) OF STUDY: organism; community; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; resource planning; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae; protozoa

TAXA: ALGAE, 77 GENERA

ADDED KEYWORDS: phytoplankton; swamps; floods; habitat modification; natural catastrophe; primary productivity; chlorophylls

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): subsurface water grabs

NUMBER OF SAMPLING SITES: 14

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; hydrological data; water quality data

STUDY SITE(S): LA

GEOGRAPHIC DESCRIPTION: Iberia County; St. Martin County; St. Mary County; Duck Lake; Flat Lake; Shaw Island Lake; Buffalo Cove Lake; Lake Fausse-Pointe; Atchafalaya River

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: SAS

STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis

ABSTRACT: Samples for phytoplankton were taken from August, 1973 to March, 1975. Five divisions of phytoplankton (Chlorophyta, Euglenophyta, Chrysophyta, Pyrrophyta, and Cyanophyta) were found to be comprised of 76 genera. Of these genera, only 10 occurred in over 40 per cent of the samples. The Chrysophytes were the most abundant (greater than 45 per cent of overall cell count abundance), but the Chlorophytes had the most genera (36). Annual flooding was found to be the most important influence on the phytoplankton community of the lower Atchafalaya River Basin causing all habitats to be similar during high water; but as water levels fell and habitats differentiated, the community structure in each habitat became unique to the existing parameters of that habitat.

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TELEPHONE: (504) 388-6051

WDIP ACCESSION NUMBER: LA/032

<383>

INVESTIGATOR(S): Smith, E.R.

AFFILIATION: SCS

TITLE: Evaluation of a Leveed Louisiana Marsh

PURPOSE: To evaluate the vegetation changes in a leveed marsh.

SPONSOR(S): SCS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

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Standard Federal Region 6
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PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: The marsh vegetation changed from a predominantly salt marsh community to one of a freshwater type, accompanying this was an increase in ducks, geese, and furbearers and also an improvement in cattle grazing.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; herbs
TAXA: HERBS, 50 SPECIES
ADDED KEYWORDS: grazing; cattle; habitat modification; levees
PRIMARY PARAMETERS INVESTIGATED: diversity; growth; habitat characterization; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transects
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Cameron Parish; Mermentau River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: In the spring of 1961, the Mermentau Mineral and Land Company requested that the Gulf Coast Soil and Water Conservation District assist in developing a soil and water conservation plan on the Company's 7,475-acre tract in Cameron Parish, Louisiana. The purpose of having such a plan was to improve the area for both cattle and wildlife. After the plan had been operating for five years, the Soil Conservation Service restudied the area in 1967 to determine: (1) condition of the 14 water-control structures, (2) changes in soil salinity after exclusion of tidal water, (3) vegetation changes, (4) methods used in operating structures, (5) benefits to landowner from installing the water-control system, and (6) harmful effects from installation. Another objective of the study was to locate a series of permanent transects for future vegetative evaluations.
REFERENCES: Smith, 1970; Smith, 1962
ADDRESS: Edward R. Smith
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Soil Conservation Service
Alexandria, LA 71301
TELEPHONE: (318) 448-3421 ext. 254
NBIP ACCESSION NUMBER: LA/033

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INVESTIGATOR(S): Stickle, W.B.
AFFILIATION: Dept. of Zoology and Physiology,
Louisiana State University
TITLE: Biotic Composition and Heavy Metal
Distribution in the Calcasieu Estuary of
Louisiana
PURPOSE: Seasonal changes in species
composition and abundance of zooplankton,

fish, and macroinvertebrates are being determined. Heavy metal distribution in the water, sediments, and fauna are also being determined.

SPONSOR(S): Petroleum Refiners Environmental Council of Florida
SPONSOR CATEGORY: state government; private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal changes in zooplankton composition are related to river discharge rate.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; shellfish; annelida
TAXA: THORACICA; RHIZOCEPHALA; STOMATOPODA; CUNACEA; AMPHIPODA; DECAPODA; COPEPODA; CTENOPHORA; PLATYHELMINTHES; RHYNCHOCEROLA; ECTOPROCTA; ANNELIDA; ECHINODERMATA; DIPTERA; PORIFERA; COELENTERATA; FISHES, 25 SPECIES; BENTHIC ORGANISMS, 25 SPECIES
ADDED KEYWORDS: cadmium; mercury; lead; zooplankton; seasonal variations; heavy metals; secondary productivity; copper; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; emigration; immigration; numbers; productivity; residues; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Van Dorn bottles; bongo nets; otter trawls; dredges; Peterson grabs
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Cameron County; Calcasieu County; Calcasieu River; Charles Lake; Calcasieu Lake
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean; median; regression/correlation analysis
ABSTRACT: The Calcasieu estuary study, funded by the Petroleum Refiners Environmental Council of Louisiana, was undertaken in June, 1974. The two main objectives of the study are: (1) to determine the abundance and distribution of animal species in the estuary, throughout the year; and (2) to determine the distribution of chromium, lead, copper, and mercury in the water, sediments and fauna of the estuary on a seasonal basis. When these two objectives are met and integrated, we will have a better understanding of the fate of heavy metal discharge into the Calcasieu estuarine system.
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Baton Rouge, LA 70803
TELEPHONE: (504) 388-1132
NBIP ACCESSION NUMBER: LA/023

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 Standard Federal Region 6
 Fish and Wildlife Service Region 4
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INVESTIGATOR(S): Sullivan, V.I.
 AFFILIATION: Dept. of Biology, University of Southwestern Louisiana
 TITLE: Effects of Burning on Marsh Communities of Southwestern Louisiana
 PURPOSE: To determine effects of burning on marsh communities in southwestern Louisiana.
 SPONSOR(S): PI
 SPONSOR CATEGORY: private individuals
 DATE OF INITIATION: 1975
 PROJECT DURATION: one year or less
 PROBABLE CONTINUATION: unknown
 CHANGE(S) OBSERVED: In unburned areas, flowering of some plants was delayed.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; estuarine
 LEVEL(S) OF STUDY: community
 MANAGEMENT FOCUS: environmental impact; wildlife
 ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; herbs
 TAXA: JUNCUS ROEMERIANUS; SPARTINA CYNOSUROIDES; SPARTINA PATENS; SPARTINA ALTERNIFLORA; SCIRPUS OLNEYI; PHRAGMITES COMMUNIS
 ADDED KEYWORDS: prescribed burning; fires; population effects; management measures; muskrats
 PRIMARY PARAMETERS INVESTIGATED: biomass
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats
 NUMBER OF SAMPLING SITES: 7
 SUPPORTING DATA COLLECTED: terrain
 STUDY SITE(S): LA
 GEOGRAPHIC DESCRIPTION: Vermilion Parish; Vermilion Bay; Red Fish Point
 TYPE OF DATA: raw
 STATISTICS EMPLOYED: analysis of variance
 ABSTRACT: The marshes of southwestern Louisiana are routinely burned annually to encourage the colonization by SCIRPUS OLNEYI, a favorite food of muskrats. A part of Red Fish Point, a state wildlife refuge in Vermilion Bay, has been set aside to keep unburned for as long as possible and this is adjacent to a similar area to be burned as usual. We are harvesting above ground, one-half meter square quadrats in SCIRPUS OLNEYI, JUNCUS ROEMERIANUS, SPARTINA PATENS, and SPARTINA CYNOSUROIDES communities in both burned and unburned sections. Only seven sampling sites are used since SCIRPUS OLNEYI does not occur in well-developed communities in unburned areas. The plant material is harvested bimonthly and dried to constant weight, then weighed. Sampling was begun in July, 1975 and will proceed throughout the year.
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 University Avenue
 Lafayette, LA 70501
 TELEPHONE: (318) 233-3850 ext. 260
 NBIP ACCESSION NUMBER: LA/053

<386>

INVESTIGATOR(S): Valentine, J.M.

AFFILIATION: FWS
 TITLE: Evaluation of Colonial Bird Nesting Environments
 PURPOSE: To design management program to improve nesting environments of colonial birds (define nesting environment and inventory methods to determine populations nesting effort).
 SPONSOR(S): FWS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1969
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Loss of land due to hurricanes and nest destruction due to storms.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
 LEVEL(S) OF STUDY: population; community; ecosystem
 MANAGEMENT FOCUS: wildlife; recreation
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; herbs
 TAXA: LARUS ATRICILLA; STERNA FUSCA; STERNA ALBIFRONS; THALASSEUS MAXIMUS; THALASSEUS SANDVICENSIS; HYDROPROGNE CASPIA
 ADDED KEYWORDS: natural catastrophe; hurricanes; management measures; gulls; laughing gulls; terns; least terns; sooty terns; royal terns; sandwich terns; caspian terns; habitat modification; islands
 PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial survey
 SAMPLING FREQUENCY: seasonal
 SUPPORTING DATA COLLECTED: associated flora
 STUDY SITE(S): LA
 GEOGRAPHIC DESCRIPTION: Plaquemines County; North Island; Curlew Island; Chandeleur Island Chain
 TYPE OF DATA: summarized
 ABSTRACT: A trip was made 19-20 June 1975 to survey the nesting colonial bird population. I estimated 20,000 to 30,000 flightless young sandwich tern, and 5,000 royal tern young on Curlew Island, Chandeleurs. About 110 black skimmer nests were found at several sites. Laughing gull nests (2,000) were found mainly on North Island. Sixteen adult sooty terns were seen on Curlew Island with eight nests.
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 FWS
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 Lafayette, LA 70502
 NBIP ACCESSION NUMBER: LA/084

<387>

INVESTIGATOR(S): Walker, B.T.
 AFFILIATION: Louisiana Wildlife and Fisheries Commission
 TITLE: Evaluation of Striped Bass Introduction in Freshwater Reservoirs
 PURPOSE: To determine if voluntary spawning and hatching of striped bass will occur, to determine the extent of survival and growth of introduced striped bass, and to determine foods eaten by adult striped bass.
 SPONSOR(S): State of Louisiana; FWS
 SPONSOR CATEGORY: state government; federal government

LOUISIANA

Standard Federal Region 6
Fish and Wildlife Service Region 4
(CONTINUED)

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DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Good survival and reproductive system development have occurred.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MORONE SAXATILIS
ADDED KEYWORDS: striped basses; survival; species introduction; rotenone
PRIMARY PARAMETERS INVESTIGATED: distribution; growth; mortality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; trammel nets; monofilament gill webbing; rotenone sampling; drag seines
SUPPORTING DATA COLLECTED: Total standing crop samples in D'Arbonne Lake
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: D'Arbonne Lake; Toledo Bend Reservoir
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: None provided.
ADDRESS: Mr. Bobby T. Walker
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District II
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Ouachita Station
Monroe, LA 71201
TELEPHONE: (318) 343-4045
NBIP ACCESSION NUMBER: LA/072

<388>

INVESTIGATOR(S): Whelan, T.
AFFILIATION: Coastal Studies Institute,
Louisiana State University

TITLE: Hydrocarbon Stress in a Chronically Polluted Oil Field in South Louisiana
PURPOSE: Identify and measure pathways of petroleum transport and degradation in a marine food chain, water, and sediments.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Microbial degradation of oil in sediments was extensive during 0-30 years.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; plants; grasses; microorganisms; bacteria
ADDED KEYWORDS: hydrocarbons; oil spills; food chains; sediments
PRIMARY PARAMETERS INVESTIGATED: residues; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; sampling; coring
NUMBER OF SAMPLING SITES: 16
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated microorganisms; climatological data; hydrological data; soils; water quality data
STUDY SITE(S): LA
GEOGRAPHIC DESCRIPTION: Lafourch Parish
TYPE OF DATA: raw; literature-derived
STATISTICS EMPLOYED: regression/correlation analysis
ABSTRACT: None provided.
ADDRESS: Dr. T. Whelan
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Louisiana State University
Baton Rouge, LA 70803
TELEPHONE: (504) 388-2327
NBIP ACCESSION NUMBER: LA/050

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MAINE

Standard Federal Region 1
Fish and Wildlife Service Region 5
(SEE ALSO 236, 333, 434, 435, 441, 446, 589,
590, 657, 733)

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INVESTIGATOR(S): Arsenault, R.P.
AFFILIATION: Maine Dept. of Inland Fisheries
and Wildlife
TITLE: Winter and Summer Creel Censusing
PURPOSE: To estimate angler use of censused
lakes and angler catch of certain game
fish species.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A continuous increase in
angler trips on all waters has occurred on
each census, and a continuous increase in
catch with less effort is documented.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: SALMO TRUTTA; SALMO SALAR; SALVELINUS
NAMAYCUSH; ESOM NIGER; MICROPTERUS
SALMOIDES; MICROPTERUS DOLOMIEUI
ADDED KEYWORDS: brown trouts; atlantic
salmon; lake trouts; chain pickerels;
largemouth basses; smallmouth basses;
management measures; trouts
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; growth;
harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
creel census; angler interviews; angler
creel cards
NUMBER OF SAMPLING SITES: 20 lakes
SAMPLING FREQUENCY: continuous; seasonal;
daily
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Androscoggin County;
Cumberland County; York County; Oxford
County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: We gather data concerning angler
use and catch on lakes in southern Maine
for fishery management purposes,
principally.
ADDRESS: Mr. Richard Arsenault
Box 570
Rt. #1
Scarborough, ME 04074
NBIP ACCESSION NUMBER: ME/010

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INVESTIGATOR(S): Chute, R.M.
AFFILIATION: Dept. of Biology, Bates College
TITLE: Lake Studies
PURPOSE: To characterize various freshwater
lakes in the southern third of the state
of Maine, with special emphasis on
historical/cultural impact on eutrophic
status.
SPONSOR(S): State of Maine
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972

PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased eutrophication
and sedimentation due to shoreline
alteration and cultural activity.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
ecosystem
MANAGEMENT FOCUS: recreation; resource
planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; algae
ADDED KEYWORDS: eutrophication; sediments;
benthic organisms; habitat modification
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain; water quality
data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Cumberland County;
Oxford County; Androscoggin County
TYPE OF DATA: raw; reduced
COMPUTER AND LANGUAGE: MIDAS
ABSTRACT: None provided.
ADDRESS: Dr. Robert M. Chute
Biology Dept.
Bates College
Lewiston, ME 04240
TELEPHONE: (207) 784-8333
NBIP ACCESSION NUMBER: ME/036

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INVESTIGATOR(S): Courtesanich, D.L.
AFFILIATION: Maine Dept. of Environmental
Protection
TITLE: Downstream Effects of Chlorinated
Sewage Effluents
PURPOSE: To study the effects of chlorinated
effluents on several trophic levels in
streams.
SPONSOR(S): Maine Dept. of Environmental
Protection
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Chlorinated effluents
were observed to inhibit colonization at
low concentrations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; stream;
river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;
microorganisms; algae
ADDED KEYWORDS: benthic organisms; chlorine;
waste water; sewage treatment; periphyton;
primary productivity; species diversity
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark recapture; electrofishing gear;
Surber sampler; artificial substrate
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual;
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Franklin County;
Cumberland County; Kennebec County; Sandy

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River; Tommy Brook; Toqus Stream
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: The effects of chlorinated
secondary sewage effluent were measured at
several trophic levels. Estimates of fish
and benthic macroinvertebrate populations
and distribution were made above and below
treatment plant discharges in streams of
various size. Periphyton productivity was
also monitored at selected sites.
Accompanying data on chlorine
concentrations and other effluent
characteristics was provided.
ADDRESS: David Courtemanch
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Augusta, ME 04333
TELEPHONE: (207) 289-3527
NBIP ACCESSION NUMBER: ME/030

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INVESTIGATOR(S): Crowell, K.L.
AFFILIATION: Dept. of Biology, St. Lawrence
University
TITLE: Species Diversity of Insular Mammals
of the Gulf of Maine
PURPOSE: To monitor fluctuations of insular
mouse populations, and to determine
genetic composition of populations and
changes in time.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Population density,
extinction and colonization, genetic
composition, and heterozygosity.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; aquatic;
marine; coastal
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: MICROTUS PENNSYLVANICUS; PEROMYSCUS
MANICULATUS; CLETHRIONOMYS GAPPERI
ADDED KEYWORDS: meadow voles; red-backed
voles; voles; deer mice; mice; population
effects; islands; genetics; species
introduction
PRIMARY PARAMETERS INVESTIGATED: emigration;
immigration; mortality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live trapping; capture-recapture analysis;
electrophoresis
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Hancock County;
Penobscot Bay
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: multivariate analysis;
modeling, deterministic
ABSTRACT: The frequency and means of
colonization and extinction on small
islands were monitored. Two- and

three-species systems of small rodents
established by experimental introduction
are studied with respect to population
density, demographic parameters,
interspecific interactions, and habitat
selection. The distribution of mammals on
the larger islands of the area has been
determined and analyzed in terms of
effects of island area and distance.

REFERENCES: Crowell, 1972
ADDRESS: Dr. Kenneth L. Crowell
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St. Lawrence University
Canton, NY 13617
TELEPHONE: (315) 379-5297
NBIP ACCESSION NUMBER: NY/053

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INVESTIGATOR(S): Davis, R.B.
AFFILIATION: University of Maine
TITLE: Impact of Urbanization on New England
Lake--Diatom Section
PURPOSE: To assess the impact of land-use on
the quality of lake waters in New England,
short cores and sediment diatom
stratigraphies are analyzed in conjunction
with historic data.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Even in lakes where no
obvious signs of cultural eutrophication
are present, land uses during past 200
years have had an impact on water quality.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: population; community;
ecosystem; region
MANAGEMENT FOCUS: environmental impact;
indicator species; recreation; water
quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: diatoms; sediments;
paleolimnology; eutrophication
PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: hydrological data;
terrain; water quality data
STUDY SITE(S): RI; CT; MA; VT; NH; ME
GEOGRAPHIC DESCRIPTION: Beach Pond; Columbia
Lake; Loshaway Lake; Granite Lake; Seymore
Lake; Long Pond
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: analysis of covariance;
regression/correlation analysis;
multivariate analysis
ABSTRACT: One lake in each New England state
was cored. Diatom stratigraphic analysis
is performed on sections from zero to 300
years before present. Biochemical
parameters are also sampled. Diatom and
geochemical stratigraphies are correlated
with land-use histories to assess impact
of land-uses on lake water quality. Time
stratigraphic markers include pollen
associated with vegetational change.
ADDRESS: Dr. Ronald Davis
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University of Maine
Orono, ME 04473
TELEPHONE: (207) 581-7040
NBIP ACCESSION NUMBER: ME/027

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INVESTIGATOR(S): Dearborn, R.G.
AFFILIATION: Bureau of Forestry, Maine Dept. of Conservation
TITLE: Forest Insect and Disease Study
PURPOSE: To determine annual fluctuations in the populations of forest insects and their relation, if any, to damage.
SPONSOR(S): FS; Maine Dept. of Conservation
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1941
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Overall insect population fluctuations are changing.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: environmental impact; forestry
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; plants; vascular plants; trees; shrubs
ADDED KEYWORDS: spruce budworms; parasites; european spruce sawfly
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): tree beating; light traps
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): ME
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The Forest Insect Survey is attempting to show what insects are present on each species of tree, their relative numbers from year to year, the stages and time each is present, and so far as practical, their relationship to the trees and to one another.
REFERENCES: Brover, 1953; Staff, 1968
ADDRESS: Richard G. Dearborn
Maine Dept. of Conservation
Entomology Lab.
50 Hospital St.
Augusta, ME 04330
TELEPHONE: (207) 289-2431
NBIP ACCESSION NUMBER: ME/019

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INVESTIGATOR(S): Dow, R.L.
AFFILIATION: Dept. of Marine Resources, Augusta, ME
TITLE: Climatic Cycles and the Relative Abundance of Commercially Important Marine Species
PURPOSE: To develop precise methods of predicting relative abundance of commercially important marine species by utilizing sea temperature information from the Boothbay Harbor, Maine monitoring site.
SPONSOR(S): Maine Dept. of Marine Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1949
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Depending upon relation to range of occupation, commercial species

fluctuate by factors ranging from 2 to 20,000.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; resource planning; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; shellfish
TAXA: HOMARUS AMERICANUS; PLACOPECTEN MAGELLANICUS; MYA ARENARIA; MERCENARIA MERCENARIA; CRASSOSTREA VIRGINICA; GLYCERA DIBRANCHIATA; HEREIS VIRENS; PANDALUS BOREALIS; CARCINUS MAENAS
ADDED KEYWORDS: green crabs; crabs; lobsters; soft clams; hard clams; clams; bloodworms; sandworms; worms; shrimp; oysters; climate; management measures
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; habitat characterization; harvest; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): catch records; population samplings
SAMPLING FREQUENCY: monthly; annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Gulf of Maine
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; median; percentile; regression/correlation analysis
ABSTRACT: Alternating periods of increasing and decreasing commercially important marine and estuarine species abundance and availability associated on a time basis with corresponding climatic cycles are becoming more evident and more precisely delineated with the continuing accumulation of historic information on northern Gulf of Maine species.
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State House Annex
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TELEPHONE: (207) 289-2291
NBIP ACCESSION NUMBER: ME/011

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INVESTIGATOR(S): Dow, R.L.
AFFILIATION: Maine Dept. of marine resources
TITLE: Ecological Evaluation of Oil Spill Sites
PURPOSE: To determine more precisely the lethal and sublethal effects of shellfish fractions of spilled oil on commercially important invertebrate marine species.
SPONSOR(S): Maine Dept. of Marine Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1952
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been extensive shellfish mortality associated with No. 2 fuel, oil, and JP 5.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca; shellfish; microorganisms; bacteria

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TAXA: MYA ARENARIA
ADDED KEYWORDS: oil spills; isoprenoids;
standing crop; inventories; softshell
clams; clams
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; growth; kill; mortality;
natality; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standing crop inventories
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Gulf of Maine
TYPE OF DATA: raw; summarized
ABSTRACT: Major oil spills on the Maine
Coast, occurring as early as 1963,
continue to adversely effect the growth
and survival of the soft-shell clam, MYA
ARENARIA.
REFERENCES: Dow and Hurst, 1975; Dow, 1975;
Mayo, et al, 1974
ADDRESS: Robert Dow
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State House Annex
Augusta, ME 04330
TELEPHONE: (207) 289-2291
NBIP ACCESSION NUMBER: ME/012

<397>

INVESTIGATOR(S): Graham, J.J.
AFFILIATION: Fisheries Research Station,
Dept. of Marine Resources, Maine
TITLE: Population Dynamics of Larval Fishes
PURPOSE: To predict recruitment of herring to
Maine fishery, and to determine changes in
population processes governing recruitment.
SPONSOR(S): Maine Dept. of Marine Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Larval mortality was
highest in autumn, lower in winter, and
lowest in spring. Mortality in winter
usually varied with larval condition and
determined the subsequent level of spring
standing crop.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea
TAXA: CLUPEA HARENGUS
ADDED KEYWORDS: herrings; larvae;
recruitment; tycho plankton; population
effects
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; emigration; growth;
immigration; mortality; migratory
patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
tidal nets; Boothbay depressor trawls
NUMBER OF SAMPLING SITES: estuarine, 8;
coastal, 36
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: current systems;
temperature; salinity
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Sheepscot River

Estuary; Sullivan Harbor; Gulf of Maine
STATISTICS EMPLOYED: mode
ABSTRACT: Project phases include: (1)
determines rates of larval population
processes such as migration, mortality,
and growth; (2) applies these
determinations annually to forecasting for
the commercial herring fishery and
evaluating the coastal zone of Maine as a
nursery ground; (3) determines the
possible competitive relations between
pelagic larvae and tycho plankton, those
organisms that are either swept up off the
bottom or ascend into the current at
night; and (4) obtains sufficient sampling
precision and accuracy to measure standing
crops of larval fishes and tycho plankton
through the development of experimental
field designs.
REFERENCES: Graham and Davis, 1971; Graham,
et al, 1972
ADDRESS: Dr. Joseph Graham
Dept. of Marine Resources
West Boothbay Harbor, ME 04575
TELEPHONE: (207) 633-5572 ext. 57
NBIP ACCESSION NUMBER: ME/008

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INVESTIGATOR(S): Krouse, J.S.
AFFILIATION: Maine Dept. of Marine Resources
TITLE: Lobster Tagging Study
PURPOSE: To determine: (1) possible movement
and/or migration patterns of legal-sized
lobsters (81mm or more carapace length);
(2) total, fishing, and natural mortality
rates of Maine lobsters; and (3) growth of
lobsters that shed and retain their tag.
SPONSOR(S): State of Maine; NMFS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tentative results
indicate that a majority of the lobsters
moved in a westerly direction toward shore.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
region
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; shellfish
TAXA: HOMARUS AMERICANUS
ADDED KEYWORDS: lobsters; decapods; migration
rates; molting
PRIMARY PARAMETERS INVESTIGATED: emigration;
growth; immigration; mortality; migratory
patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
fishermen recapture
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous
STUDY SITE(S): ME
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: analysis of covariance;
regression/correlation analysis
ABSTRACT: To make assessments of movement,
mortality, and growth of American
lobsters, 2,884 legal-sized lobsters were
tagged and liberated at three sites along
the Maine coast. Each lobster was tagged
with a spurious tag (designed to be
retained through a molt) and a secondary
tag which was secured around the lobster's

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claw (to provide tag retention information). To encourage fisherman cooperation, a five dollar reward was offered for the return of lobsters with tag(s) intact. Five months after release, about 70 percent of the tagged lobsters had been returned. Although it is too early to reach definite conclusions, most of the recaptured lobsters had moved in a westerly inshore direction. One lobster travelled almost 40 miles on a southwesterly course while a few lobsters moved 10 to 12 miles in an easterly direction.

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NBIF ACCESSION NUMBER: ME/024

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INVESTIGATOR(S): Langer, P.D.
AFFILIATION: Dept. of Biology, University of Scranton
TITLE: The Ecology, Behavior, and Population Dynamics of Three Coexisting Species of Chitons (Mollusca: Polyplacophora) from Northern New England
PURPOSE: To study the ecology, behavior, and population dynamics of three polyplacophorans.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal variations in diet and population density occurred.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; region
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates: mollusca
TAXA: TONICELLA MARMOREA; TONICELLA RUBRA; ISCHNOCHITON ALBUS
ADDED KEYWORDS: chitons; population effects; predation; seasonal variations
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; emigration; habitat characterization; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Washington County; York County; Cape Neddick Nubble; Deep Cove
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance
ABSTRACT: Of the three aspects studied, the parameters which were considered are as follows: ecology habitat descriptions; predation; population distributions; size

distributions, population density; the role of predation in population structure determination; encrusting organisms; morphological variations; biology-intra-specific diet analysis between sites, interspecific diet analysis; gonad morphology (limited); breeding season determinations (gonal index) and sex ratios; behavior-habitat selection, activity patterns; and homing behavior. Most data were collected by repetitive quadrat samplings at 1.5 meter intervals from mean low water to 13.5 meters, on a monthly basis. There were also supplemental samplings at other sites.

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Linden St.
Scranton, PA 18510
TELEPHONE: (717) 961-7514
NBIF ACCESSION NUMBER: PA/054

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INVESTIGATOR(S): Scott, M.
AFFILIATION: Maine Dept. of Environmental Protection
TITLE: Limnological Data Report for the Maine Dept. of Environmental Protection - U.S. Geological Survey Lake Studies Project
PURPOSE: To provide a baseline of data on 43 Maine lakes during a three year period. A limnological survey of physical, chemical, and biological data is being made.
SPONSOR(S): Maine Dept. of Environmental Protection; USGS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Algal populations change with respect to chlorophyll and bacterial counts.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates: crustacea; insecta; mollusca; plants; vascular plants; herbs; microorganisms; bacteria; algae; protozoa
TAXA: ALGAE, 40 SPECIES
ADDED KEYWORDS: aquatic plants; blue-green algae; green algae; desmids; golden-brown algae; diatoms; dinoflagellates; euglenoids; waste water; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Secchi disc; core sampling
NUMBER OF SAMPLING SITES: 43 lakes, several stations per lake
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; hydrological data; water quality data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Cumberland County; Androscoggin County; Franklin County; Kennebec County; Hancock County; Washington County; Penobscot County; Piscataquis County; Aroostook County

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TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: STORET
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: The report contains physical, chemical, and biological information collected on 43 Maine lakes during the 1974 calendar year. Methods for the collection and analysis of the hydrologic data are outlined. Physical characteristics listed include drainage area, surface area, surface elevation, volume, maximum depth, mean depth, epilimnion depth, epilimnion volume, and length of shoreline. Water-quality analyses are listed for up to 27 parameters on the lake sample sites and 3 parameters on flowing tributaries. Biological analyses include phytoplankton data for 35 of the study lakes and bacterial data on selected tributaries.

REFERENCES: Cowing and Scott, 1975

ADDRESS: Mr. Matthew Scott
Dept. of Environmental Protection
State House
Augusta, ME 04333

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NBIP ACCESSION NUMBER: ME/032

<401>

INVESTIGATOR(S): Spencer, H.E.
AFFILIATION: Maine Dept. of Inland Fisheries and Wildlife
TITLE: Migratory Game Bird Research
PURPOSE: To obtain necessary facts concerning migratory birds in Maine as a basis for sound management programs.

SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The statewide kill has been declining since 1970 as have man-days of effort.

ECOSYSTEM OR BIOHE TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream; river; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; ecosystem

MANAGEMENT FOCUS: environmental impact; wildlife; range; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; plants; vascular plants; shrubs; herbs

TAXA: AIX SPONSA; AYTHYA COLLARIS; ANAS RUBRIPES; LOEHODYTES CUCULLATUS; BUCEPHALA

ADDED KEYWORDS: census; management measures; ducks; black ducks; wood ducks; ring-necked ducks; goldeneyes; hooded mergansers; eiders

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; harvest; kill; mortality; migratory patterns; numbers

SAMPLING FREQUENCY: seasonal; annual;

irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): ME

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: The statewide kill has been declining since 1970 as have man-days of effort. Several factors undoubtedly contributed to this decline. Among these are: reduced waterfowl populations, increased cost of the Migratory Bird Stamp, restricted seasons and bag limits, and perhaps, reduced per capita disposable income. Past studies have shown all or any of these factors may cause reduced hunting pressure and lowered harvests. Conversely the long-term (1934-1973) trend in hunting pressure, as reflected by Duck Stamp Sales and hunting license sales is upward. There seems to be no reason to believe that the long-term trend will change and a slight increase will likely occur by 1990.

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NBIP ACCESSION NUMBER: ME/002

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INVESTIGATOR(S): Stark, D.A.
AFFILIATION: Division of Entomology, Bureau of Forestry, Maine Dept. of Conservation
TITLE: Spruce Budworm Biological Evaluation
PURPOSE: To monitor spruce budworm populations and rate of parasitism as a basis for spray projects.

SPONSOR(S): Maine Dept. of Conservation

SPONSOR CATEGORY: state government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There was a reduction in spruce budworm larval populations, an increase in the rate of parasitism, and a prevention of spruce-fir mortality.

ECOSYSTEM OR BIOHE TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact; forestry

ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; plants; vascular plants; trees; microorganisms; viruses; bacteria; fungi

TAXA: CHORISTONEURA FUMIFERANA

ADDED KEYWORDS: spruce budworms; parasitism; pesticides; dipterans; hymenopterans; lepidopterans; management measures; biological control; spruces; firs

PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; emigration; growth; immigration; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

sample from midcrown fir foliage

NUMBER OF SAMPLING SITES: 1500

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; climatological data

STUDY SITE(S): ME

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; median;

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Fisheries Research Station
West Boothbay Harbor, ME 04575
TELEPHONE: (207) 633-5572
NBIP ACCESSION NUMBER: ME/014

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percentile; analysis of variance
ABSTRACT: None provided.
ADDRESS: Douglas A. Stark
Div. of Entomology
Dept. of Conservation
17 Hospital St.
Augusta, ME 04330
TELEPHONE: (207) 289-2431
NBIP ACCESSION NUMBER: ME/021

<403>

INVESTIGATOR(S): Thomas, J.C.
AFFILIATION: State of Maine Dept. of Sea and
Shore Fisheries
TITLE: An Analysis of the Commercial Lobster
(HOMARUS AMERICANUS) Fishery Along the
Coast of Maine, August 1966 through
December 1970
PURPOSE: To derive management recommendations
from a study of population dynamics of the
American lobster along the Maine coast.
SPONSOR(S): NMFS; Maine Dept. of Sea and
Shore Fisheries
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Declining catch per unit
of effort values due to over-exploitation
of the resource.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; shellfish
TAXA: HOMARUS AMERICANUS
ADDED KEYWORDS: lobsters; population effects;
legal regulation; decapods
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; harvest; immigration;
mortality; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
probability sampling
NUMBER OF SAMPLING SITES: 153
SAMPLING FREQUENCY: seasonal; daily; monthly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): ME
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: mean; mode; median;
analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis;
non-linear estimation; modeling,
deterministic; serial autocorrelations
ABSTRACT: Some life history information and
detailed catch and effort data from
probability sampling of the commercial
catch of lobsters was used to estimate a
biological minimum size of 89 mm carapace
length for maximum sustainable yield. In
view of this recommendation, the maximum
size regulation of 127 mm carapace length
is unnecessary.
REFERENCES: Thomas, 1973; Krouse, 1973
ADDRESS: Mr. James Thomas
Dept. of Marine Resources

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INVESTIGATOR(S): Walton, C.J.
AFFILIATION: Maine Dept. of Marine Resources
Research Laboratory
TITLE: Population Biology and Management of
Anadromous Alewives
PURPOSE: To define biological characteristics
of alewife stocks in coastal Maine waters.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Cyclic fluctuations in
populations and distribution of alewives,
blueback herring, shad, and some other
coastal species.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake;
reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
fisheries; indicator species; range;
resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ALOSA PSEUDOHARENGUS; ALOSA AESTIVALIS;
ALOSA SAPIDISSIMA
ADDED KEYWORDS: alewives; shad; blueback
herrings; herrings; management measures;
population effects; spawning
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; harvest; home range
size; immigration; kill; mortality;
migratory patterns; natality; numbers;
productivity; reproduction; sex;
size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
random sampling
NUMBER OF SAMPLING SITES: 32
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
terrain; water quality data
STUDY SITE(S): ME
GEOGRAPHIC DESCRIPTION: Gulf of Maine
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; mode; median;
analysis of variance;
regression/correlation analysis;
non-parametric analysis; modeling,
deterministic
ABSTRACT: The project consists of gathering
maximal data on population biology and
behavior of anadromous alewives and
related species. These data are correlated
with habitat and environmental changes to
define the parameters of this species
ecological niches. The ultimate objective
is the development of management programs
based upon a complete comprehension of the
biology of this species. Data on other
species is gathered and recorded (although
not analyzed) at the same time.
ADDRESS: Clement J. Walton
Dept. of Marine Resources

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Standard Federal Region 1
Fish and Wildlife Service Region 5
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Research Laboratory
West Boothbay Harbor, ME 04575
TELEPHONE: (207) 633-5572 ext. 38
NBIP ACCESSION NUMBER: ME/009

<405>

INVESTIGATOR(S): Welch, W.R.
AFFILIATION: Maine Dept. of Marine Resources
TITLE: The Relationship of Fluctuations in Green Crab Populations to Increased Water Temperature and Resulting Decrease in Soft Clam Populations in New England Coastal Waters
PURPOSE: To monitor principal hydrological and meteorological variables and to investigate association of data with changes in range and abundance of marine animals.
SPONSOR(S): Maine Dept. of Marine Resources; FWS; NMFS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1953
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is an approximately 20-year cycle in green crab populations with greatest abundance associated with highest water temperatures.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; region
MANAGEMENT FOCUS: fisheries; indicator species; range; resource planning
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; shellfish
TAXA: CARCINUS MAENAS; MYA ABEENARIA
ADDED KEYWORDS: green crabs; crabs; softshell clams; clams; population effects; predator-prey relationships; decapods
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; harvest; immigration; kill; mortality; migratory patterns; natality; numbers; physiology; reproduction; sex; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standardized traps; one man-hour search time in intertidal zone
NUMBER OF SAMPLING SITES: 20 plus
SAMPLING FREQUENCY: monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data
STUDY SITE(S): ME
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean
ABSTRACT: CARCINUS MAENAS, when abundant, is an extremely serious predator of the commercial softshell clam (MYA ABEENARIA) in New England. Its abundance and consequent scarcity of clams in southwestern Maine and northern Massachusetts was noted by fishermen and random investigators in the 1930's. In the 1950's the same occurrence was well documented by federal and state investigations, but was much more serious

and extensive affecting even the Canadian provinces of New Brunswick and Nova Scotia. Both occurrences coincided with periods of elevated water temperatures, the one in the 1950's being extremely warm. With the recent warm period through the mid-1970's, we are witnessing and investigating a third increase in crab abundance and are now seeing the disastrous effects of this increase on the clam population. Investigation is now aimed at determining the threshold conditions of temperature which foster greatly increased numbers of crabs upon increase and greatly diminished numbers upon decrease; and also at determining the threshold conditions of crab abundance which seriously reduce clam populations upon increase and allow adequate clam survival upon decrease.

REFERENCES: Welch, 1968; Welch, 1968
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Fisheries Research Station
West Boothbay Harbor, ME 04575
TELEPHONE: (207) 633-5572 ext. 60
NBIP ACCESSION NUMBER: ME/022

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INVESTIGATOR(S): Woodward, W.L.
AFFILIATION: Maine Dept. of Inland Fisheries and Wildlife
TITLE: Distribution and Abundance of the Microsporidian GLUGEA HERTWIGI in Rainbow Smelt in Maine
PURPOSE: To ascertain the distribution and total infection of GLUGEA HERTWIGI in smelt and important fish for the fisheries of the State of Maine.
SPONSOR(S): Maine State Dept. of Inland Fisheries and Wildlife
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Found in more waters than expected.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem; region
MANAGEMENT FOCUS: fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; microorganisms; protozoa
TAXA: GLUGEA HERTWIGI; OSNERUS MORDAX
ADDED KEYWORDS: rainbow smelts; smelts; morbidity; parasites; microsporidians
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; emigration; growth; habitat characterization; kill; mortality; numbers; physiology; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): fishing; gill nets
NUMBER OF SAMPLING SITES: 200 plus
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; climatological data; water quality data
STUDY SITE(S): ME
TYPE OF DATA: raw
ABSTRACT: Collection of rainbow smelt was made to examine for existence of GLUGEA HERTWIGI. Collection of associated fish life was also made to ascertain if growth and survival is affected by fluctuation in

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smelt population. Examination may or may not show existence of G. HERTWIGI. Appropriate observations and recommendations are made. Fluctuation of smelt populations does not necessarily mean G. HERTWIGI is present. Some waters found with smelt infected with G. HERTWIGI

have very high populations of smelt, indicating an unusual situation. Monitoring will be continued to document extent of G. HERTWIGI infection.

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NBIP ACCESSION NUMBER: ME/013

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MARYLAND

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INVESTIGATOR(S): Boone, J.G.
AFFILIATION: Maryland State Dept. of Natural Resources
TITLE: Estuarine Fish Recruitment Survey
PURPOSE: To determine the relative annual abundance and distribution of estuarine fishes for management recommendations.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuations in year-class strength of important Chesapeake Bay fishes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MORONE SAXATILIS; MORONE AMERICANA; ALOSA SAPIDISSIMA; LEIOSTOMUS XANTHURUS; MICROPOGON UNDULATUS; ALOSA PSEUDOHARENGUS; ALOSA AESTIVALIS
ADDED KEYWORDS: striped basses; basses; white perches; perches; american shad; shad; spots; atlantic croakers; croakers; bluefishes; alewives; blueback herrings; herrings; seasonal variations; recruitment; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines
NUMBER OF SAMPLING SITES: 28
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): MD
GEOGRAPHIC DESCRIPTION: Potomac River; Nanticoke River; Choptank River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
ADDRESS: Mr. Joseph G. Boone
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Maryland Dept. of Natural Resources
Taves State Office Bldg.
580 Taylor Ave.
Annapolis, MD 21401
TELEPHONE: (301) 367-5363
NBIP ACCESSION NUMBER: MD/001

<408>

INVESTIGATOR(S): Casey, J.P.
AFFILIATION: Maryland Dept. of Natural Resources
TITLE: Marine Finfish Project
PURPOSE: To quantitatively and qualitatively monitor fish populations in response to seasonal, natural, and artificially created factors; to take the annual inventory; to assess fish predictions; and to monitor effects of dredge-fill and dead-end canals on fish stocks.
SPONSOR(S): Maryland Fisheries Administration
SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been a disappearance of most mature shrimp in 1975, an influx of lizardfish in 1973, and a use of dredge holes and dead-end canals by finfish from 1973-1975.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; region

MANAGEMENT FOCUS: environmental impact; fisheries; range; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca; shellfish

TAXA: CRABS, 7 SPECIES; SHRIMP, 3 SPECIES; FISHES, 92 SPECIES

ADDED KEYWORDS: dredging; decapods; canalization; crabs; shrimp

PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; emigration; growth; habitat characterization; immigration; migratory patterns; numbers; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines; trawls

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; water quality data

STUDY SITE(S): MD; DE

GEOGRAPHIC DESCRIPTION: Worcester County
TYPE OF DATA: raw; summarized

ABSTRACT: The project was established to inventory, identify, and monitor finfish of the oceanside bays of Maryland and adjacent ocean waters, as well as their movements, habits, size-age, and other related data. The information was then used to annually assess fish stocks for predictive and protective purposes, monitor environmental changes brought about by coastal development, and assist with data, the protection of wetlands deemed valuable. The project performed further functions as related to the policy and needs of fisheries management.

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Wye Mills, MD 21679

TELEPHONE: (301) 827-8612

NBIP ACCESSION NUMBER: MD/012

<409>

INVESTIGATOR(S): Colwell, R.R.
AFFILIATION: University of Maryland
TITLE: Microbial Ecology of Coastal and Ocean Environments
PURPOSE: To develop a data bank on marine and estuarine microorganisms, including systematics.
SPONSOR(S): NSF; EPA; ONR; NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal distributions of microorganisms have been documented and association with environmental parameters

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noted.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; resource
planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; invertebrates; crustacea;
microorganisms; viruses; bacteria; fungi;
algae; protozoa

ADDED KEYWORDS: seasonal variations;
population effects; weather conditions
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard field sampling techniques
NUMBER OF SAMPLING SITES: 3 major; 20 minor
SAMPLING FREQUENCY: continuous; seasonal;
monthly; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; water
quality data
STUDY SITE(S): MD; DE; VA; DC; NC; SC; GA; FL
GEOGRAPHIC DESCRIPTION: Chesapeake Bay;
Atlantic coast; Tierra del Fuego; South
America

TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 370; PDP 10; PL/1;
COBOL; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis; modeling,
deterministic

ABSTRACT: More than 200 papers have been
published on the work we have accomplished
in our studies on the microbial ecology of
the Chesapeake Bay, and in the
southeastern Atlantic Ocean. We have
determined seasonal abundances of given
bacterial species and association of
bacterial species with components of the
ecosystem. Relationships to salinity,
temperature, pressure, and other
parameters have also been studied.

ADDRESS: Rita E. Colwell
Microbiology Dept.
University of Maryland
College Park, MD 20742
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NBIP ACCESSION NUMBER: MD/021

<410>

INVESTIGATOR(S): Cory, R.L.
AFFILIATION: USGS
TITLE: Epifauna of Smithsonian Pier, Rhode
River, Maryland
PURPOSE: To describe the seasonal and annual
variations in species composition,
abundance, and biomass and their
relationships to changes in water quality.
SPONSOR(S): USGS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Annual cycles of
abundance and biomass were established and
the effects of tropical storm Agnes
documented.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: indicator species; water
quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; mollusca;
annelida

TAXA: CORDILOPHORA SP; STILOCHUS SP;
VICTORELLA SP; BACHIDONTES SP; NEREIS SP;
POLYDORA SP; BALANUS SPP; LEPTOCHELIA SP;
COROPHIUM SP; GAMMARUS SPP; RITHROPANOEUS
SP

ADDED KEYWORDS: barnacles; oysters;
population effects; weather conditions;
amphipods; bryozoans; natural catastrophe

PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; growth; habitat
characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
colorlith

NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: hydrological data;
water quality data

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Anne Arundel County;
Rhode River

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; mode; median;
percentile

ABSTRACT: Four species dominated the
epifauna: the barnacle, the oyster worm,
the amphipod, and the mossy bryozoan. B.
IMPROVISUS set from May through December,
with peaks in May and June; P. LIGNI from
April through November with peaks in July
and August; C. LACUSTRE was collected
every month with peaks in June; and V.
PAVIDA attached from May through November
with high abundance June through
September. Biomass accumulations ranged
from 0 to 592 g/(meter squared) (day to the
thirtieth) ash free dry weight. June was
the usual month of greatest biomass
accumulation.

ADDRESS: Mr. Robert Cory
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Edgewater, MD 21037
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NBIP ACCESSION NUMBER: MD/005

<411>

INVESTIGATOR(S): Faust, H.A.
AFFILIATION: Chesapeake Bay Center for
Environmental Studies, Smithsonian
Institution
TITLE: A Quantitative Study of Pathogenic
Bacteria from Diffuse Sources at the
Chesapeake Bay
PURPOSE: To measure quantitatively the degree
of contamination of fecal coliforms,
STREPTOCOCCI, and SALMONELLAE to the
environment from diffuse sources of rural
areas on a seasonal basis affected by land
use types, nutrients, and sediments.
SPONSOR(S): NSF; SI
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years

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PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A rural watershed contributed substantial quantities of pathogens to the estuary.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; deciduous; wetland; aquatic; freshwater; stream; marine; estuarine
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; bacteria
TAXA: ESCHERICHIA COLI; STREPTOCOCCUS SPP; SALMONELLA SPP
ADDED KEYWORDS: pathogens; waste water; coliform bacteria; seasonal variations; management measures; sewage treatment
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard methods
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated microorganisms; atmospheric chemistry; climatological data; hydrological data; soils; terrain; water quality data
STUDY SITE(S): MD
GEOGRAPHIC DESCRIPTION: Anne Arundel County; Muddy Creek; Rhode River; Chesapeake Bay
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis; non-linear estimation
ABSTRACT: The project objective is to determine the relative impact of pathogenic bacteria from diffused sources on the quality of the Chesapeake Bay estuarine environment and to provide a basis for recommendation of management practices for more efficient sewage treatment control. Specific objectives are: (1) to measure the degree of contamination of total coliforms, fecal coliforms, fecal streptococci and salmonellae to the environment from rural areas as affected by storm water runoff, (2) to establish the abundance of these bacteria on a seasonal basis affected by land use types per unit of watershed area, (3) to correlate the numbers of above bacteria to total load and concentrations of nutrients (organic and mineral particulates) delivered to the estuary on a seasonal basis, (4) to evaluate the effects of tide on the bacterial levels of the Rhode River estuary, and (5) to establish the pathogenic bacterial levels for two additional multiple-use watershed-estuarine systems.
ADDRESS: Dr. Maria Faust
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Edgewater, MD 21037
TELEPHONE: (301) 798-4424 ext. 56
NDIP ACCESSION NUMBER: MD/022

<412>

INVESTIGATOR(S): Faust, M.A.
AFFILIATION: Chesapeake Bay Center for Environmental Studies, Smithsonian Institution
TITLE: Comparison of Bacterial and Algal Utilization of Orthophosphate in an Estuarine Environment
PURPOSE: To define the role of bacteria and algae in orthophosphate uptake in an estuarine environment.
SPONSOR(S): SI
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Orthophosphate uptake by algae was high only in the summer months, whereas P-uptake by bacteria was high throughout the year.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: microorganisms; bacteria; algae
ADDED KEYWORDS: seasonal variations; orthophosphates; phosphorus; nutrients; eutrophication
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): size fractionations; sampling
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated microorganisms
STUDY SITE(S): MD
GEOGRAPHIC DESCRIPTION: Anne Arundel County; Rhode River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: Bacterial utilization of orthophosphate in an estuarine environment has been differentiated from algal utilization by using flow filters of varied pore size. Examination by light microscopy showed that most of the bacterial population passed through a 5.0 micron filter, whereas most algae were retained. In all experiments, bacterial and algal cell numbers and biomass were estimated. P-uptake by algae and bacteria was closely correlated with cell biomass. P-uptake by algae was high only in the summer months, whereas P-uptake by bacteria was high throughout the year. Neither algal nor bacterial P-uptake, however, was correlated with temperature or dissolved orthophosphate, total organic phosphate or total phosphate concentrations. Cell biomass of algae at a given time had a high correlation with dissolved organic phosphate levels in the prior two weeks of sampling ($r = 0.830$) and a low correlation in the following two weeks of sampling ($r = 0.0005$). Algal cell numbers had a high correlation with bacterial cell numbers ($r = 0.950$). The biomass of algae and bacteria also had a high correlation ($r = 0.902$). The rate of P-uptake from the water by algae and bacteria varied with the season and with the species composition of the natural population.

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Standard Federal Region 3
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NBIP ACCESSION NUMBER: MD/023

<413>

INVESTIGATOR(S): Faust, M.A.
AFFILIATION: Chesapeake Bay Center for
Environmental Studies, Smithsonian
Institution
TITLE: Effect of Physical Parameters on the
IN SITU Survival of ESCHERICHIA COLI MC-6
in an Estuarine Environment
PURPOSE: To study the survival of fecal
coliform bacteria in an estuary.
SPONSOR(S): SI
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Temperature is the most
important factor in predicting fecal
coliform survival in an estuary. Survival
is the longest in November and shortest in
the summer months.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: indicator species;
pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms;
bacteria
TAXA: ESCHERICHIA COLI
ADDED KEYWORDS: fecal coliforms; waste water;
coliform bacteria
PRIMARY PARAMETERS INVESTIGATED: kill;
numbers; physiology; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard methods
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; daily; weekly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MD
GEOGRAPHIC DESCRIPTION: Anne Arundel County;
Rhode River; Smithsonian Institution Pier;
Chesapeake Bay
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: regression/correlation
analysis; multivariate analysis
ABSTRACT: Survival of bacteria is closely and
negatively correlated with increasing
water temperature. It is suggested that
water temperature is the most important
factor in predicting fecal coliform
survival from point and non-point sources
in assessing water quality in an estuarine
ecosystem. Survival of E. COLI MC-6 of
fecal origin in an estuarine environment
as affected by time, water temperature,
dissolved oxygen, salinity, and
montmorillonite in diffusion chambers has
been elucidated. Several IN SITU physical
parameters were recorded simultaneously
and viable cell numbers estimated. The
survival of the bacteria varied
seasonally. Survival was longest in
November and shortest in the summer

months. Montmorillonite addition extended
the T 1/2 of cells by 40 percent over the
T 1/2 of cells in Rhode River water alone.
The effect of this clay was not
significantly greater between 50-1000
ug/ml montmorillonite concentrations.

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NBIP ACCESSION NUMBER: MD/024

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INVESTIGATOR(S): Hindman, L.J.
AFFILIATION: Maryland State Dept. of Natural
Resources
TITLE: Seaduck Survey
PURPOSE: To determine the timing and location
of southward migration of seaducks and to
help reduce harvest on major waterfowl
species.
SPONSOR(S): FWS; Maryland Dept. of Natural
Resources
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Seaduck hunting provided
additional recreation for waterfowl
hunters and reduced hunting pressure on
major harvest species. In 1974, peak
numbers of migrating seaducks were reduced.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: MELANITTA PERSPICILLATA; OIDEMIA NIGRA;
CLANGULA HYEMALIS; MELANITTA DEGLANDI;
BRANTA CANADENSIS
ADDED KEYWORDS: scoters; seaducks; ducks;
oldsquaws; loons; brants; management
measures; tidal zones
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration;
immigration; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
ground surveys; aerial surveys
NUMBER OF SAMPLING SITES: 53
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
water quality data
STUDY SITE(S): MD
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: This job objective is to determine
the timing and location of southward
migration of seaducks, to help provide
additional recreation for the waterfowl
hunter, and to help reduce harvest on
major waterfowl species. The first seaduck
survey in 1965 showed that Maryland had
excellent populations of seaducks,
specifically oldsquaw and scoters. That
survey made it possible for Maryland to
open its deepwater areas to seaduck
hunting and to be included in the Atlantic
Flyway's special seaduck season in 1966.
Subsequent surveys showed that the seaduck
hunting zone could be enlarged without
affecting populations of non-target
species of waterfowl. The seaduck hunting

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zone is continually refined in order to provide additional recreation to the waterfowl hunter and to help reduce hunting pressure on major harvest species by turning hunters' attention toward seaduck hunting rather than hunting regular duck species.

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NBIP ACCESSION NUMBER: MD/058

<415>

INVESTIGATOR(S): Hindman, L.J.
AFFILIATION: Maryland State Dept. of Natural Resources
TITLE: Periodic Canada Goose Inventory
PURPOSE: To determine the size and annual and seasonal distribution of the Atlantic Flyway's Canada goose populations.
SPONSOR(S): FWS; Maryland Dept. of Natural Resources
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1961
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in Canada goose populations and change in distribution in Atlantic flyway.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: DRANTIA CANADENSIS; CYGNUS SPP; AYTHYA SPP
ADDED KEYWORDS: canada geese; geese; whistling swans; canvasback ducks; snow geese; blue geese; scaup ducks; brants; redhead ducks; ducks; management measures
PRIMARY PARAMETERS INVESTIGATED: distribution; emigration; habitat characterization; immigration; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys
NUMBER OF SAMPLING SITES: 33
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; water quality data
STUDY SITE(S): MD
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The objective is to determine optimum harvest regulations for the Atlantic Flyway's Canada goose populations through periodic surveys of their distribution and abundance during the fall migration and on the wintering grounds. Conforming to the objectives of the U.S. FWS and the Atlantic Flyway's Canada Goose committee, all States and Canadian Provinces, where possible, have made

periodic surveys of the Canada goose throughout its range. These surveys will run for periods of three years and omitted or reduced in numbers for periods of 3-5 years, depending upon the status of the species with regard to harvest or changes in habitat.

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NBIP ACCESSION NUMBER: MD/059

<416>

INVESTIGATOR(S): Hindman, L.J.
AFFILIATION: Maryland State Dept. of Natural Resources
TITLE: Winter Waterfowl Inventory
PURPOSE: To regulate the waterfowl harvest, partially through determination of species distribution and abundance. To determine annual changes in size of species populations.
SPONSOR(S): FWS; Maryland Dept. of Natural Resources
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1951
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in Canada goose populations; but decrease in dabbling duck, canvasback, and redhead populations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: BIRDS, 28 SPECIES
ADDED KEYWORDS: diving ducks; dabbling ducks; seaducks; redhead ducks; canvasback ducks; ducks; management measures
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys
NUMBER OF SAMPLING SITES: 33
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; water quality data
STUDY SITE(S): MD
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The objective is to determine waterfowl species populations and distribution during the period of least movement on the wintering grounds and to determine annual changes in species population sizes. Harvest regulations for waterfowl are based in part on species population levels. The winter waterfowl inventory is the only survey from which population data are obtained for Canada geese and black duck populations. The accuracy of this survey is often questionable, especially when many species are estimated simultaneously, consequently, surveys of Canada geese and swans are now made separately from that of

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ducks in the primary Canada goose
concentration areas.

REFERENCES: Wigfield, et al, 1975

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NBIP ACCESSION NUMBER: MD/060

<417>

INVESTIGATOR(S): Hindman, L.J.

AFFILIATION: Maryland State Dept. of Natural Resources

TITLE: Muskrat House Den Survey

PURPOSE: To help determine the effects of
waterfowl management practices upon
muskrat populations and the effect of
muskrat populations on waterfowl
distribution and abundance.

SPONSOR(S): Maryland Dept. of Natural Resources; FWS

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Muskrat house numbers
increased on all management areas surveyed
in 1975.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;
marine; estuarine

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: wildlife; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: ONDATRA ZIBETHICUS; MYOCASTOR COYPOS

ADDED KEYWORDS: muskrats; management
measures; competition; population effects;
nutrias

PRIMARY PARAMETERS INVESTIGATED:
distribution; harvest; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial survey; fur harvest figures; ground
survey

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Dorchester County;

Somerset County; Wicomico County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: percentile

ABSTRACT: This job objective is to help
determine the effects of waterfowl
management practices upon muskrat, ONDATRA
ZIBETHICUS, populations and the effects of
muskrat populations on waterfowl
distribution and abundance. Muskrat
eat-outs, dens, and houses affect the
distribution and abundance of waterfowl.
Conversely, muskrat numbers are affected
by certain waterfowl management practices.
The surveys conducted here may help answer
some of the problems involved with
managing the two kinds of wildlife on the

same area.

REFERENCES: Wigfield, et al, 1975

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NBIP ACCESSION NUMBER: MD/061

<418>

INVESTIGATOR(S): Mason, W.T.

AFFILIATION: Interstate Commission on the Potomac River

TITLE: Potomac River Basin Baseline Water Quality Monitoring Network

PURPOSE: To coordinate state (DC, Maryland,
Pennsylvania, Virginia, and West Virginia)
basin water quality monitoring for 55
stations, according to (surface) physical,
chemical, and biological evaluation.

SPONSOR(S): FWS; District of Columbia; State of Maryland; State of Virginia; State of Pennsylvania; State of West Virginia

SPONSOR CATEGORY: state government; federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The demise of aquatic
life resources in the urbanized segments
of the basin is due to STP discharges,
heavy sediments, and acid mine drainage.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;
freshwater; stream; river; reservoir;
marine; estuarine

LEVEL(S) OF STUDY: population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; indicator species;
radiological; range; recreation; resource
planning; pollution control; water
quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish; birds; invertebrates;
crustacea; insecta; shellfish; plants;
non-vascular plants; microorganisms;
bacteria; fungi; algae; protozoa

ADDED KEYWORDS: coliform bacteria; total
coliform; waste water; strip mining;
siltation; acid mine water; species
diversity; dipterans; ephemeropterans

PRIMARY PARAMETERS INVESTIGATED: biomass;
bod; distribution; diversity; habitat
characterization; harvest; immigration;
kill; numbers; productivity; reproduction;
residues; stress; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
APHA standard methods; EPA chemical and
biological methods; U.S. Bureau of
Standards Pesticides Analytical Methods;
Ponar grabs

NUMBER OF SAMPLING SITES: 55

SAMPLING FREQUENCY: monthly; quarterly; annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; soils

STUDY SITE(S): DC; MD; PA; VA; WV
GEOGRAPHIC DESCRIPTION: Potomac River;
Shenandoah River; Monocacy River

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 360; EPA Storet

STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance;

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regression/correlation analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: This project mandates that all states maintain a water quality monitoring network for the physical, chemical, and biological parameters, and that the states report to Congress annually. The National Commission on Water Quality (NCWQ) likewise is to prepare a status report to Congress. Compliance monitoring is a necessity for each discharger to the nation's waters. In accomplishing these tasks, the states, NCWQ, and EPA have gathered considerable biological data related to pollutional stresses.
REFERENCES: Mason, 1974; Mason, et al, 1975
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NBIP ACCESSION NUMBER: MD/006

<419>

INVESTIGATOR(S): O'Dell, C.J.
AFFILIATION: Maryland Dept. of Natural Resources - Fisheries Administration
TITLE: Survey of Anadromous Fish Spawning Areas
PURPOSE: To identify spawning runs and areas for anadromous fish species in the Chesapeake Bay drainage and to inventory dams and other stream blockages.
SPONSOR(S): NOAA; Maryland Dept. of Natural Resources - Fisheries Administration
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a decline in shad populations and yearly fluctuations in other anadromous fish populations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; microorganisms; algae
TAXA: ALOSA MEDIOCRIS; ALOSA SAPIDISSIMA; ALOSA AESTIVALIS; ALOSA PSEUDOHARENGUS; MORONE SAXATILIS; MORONE AMERICANA; PERCA FLAVESCENS
ADDED KEYWORDS: yellow perches; white perches; yellow basses; spawning; dams; habitat modification; perches; basses; shad; spawning
PRIMARY PARAMETERS INVESTIGATED: distribution; migratory patterns; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sampling
NUMBER OF SAMPLING SITES: 1 to 5 sites per stream or river
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated fauna; water quality data

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Chesapeake Bay

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: contingency table analysis

ABSTRACT: Six years of rapid biological inventory has provided documentation of the principal anadromous fish spawning streams in the two major spawning areas of Maryland and a basis for protection and improvement of stream resources. Stream obstructions were located with physical dimensions and status regarding fish passage were recorded. Pollution sources and other problem situations were investigated and referred for corrective action. Wetlands under 5 acres were recorded.

REFERENCES: Maryland Dept. of Natural Resources, 1975 (received 1975)

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NBIP ACCESSION NUMBER: MD/017

<420>

INVESTIGATOR(S): Reese, J.G.

AFFILIATION: PI

TITLE: Mute Swan Study

PURPOSE: To monitor nest success and population expansion of this exotic species in Chesapeake Bay, to neck collar mark and resight as many swans as possible to aid monitoring, and to determine the mute swan's potential as a menace.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decreasing populations of aquatic vegetation, lowering of tributary water quality, and rapidly increasing population of this exotic species as a result of excellent nest success.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; range

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: CYGNUS OLOR

ADDED KEYWORDS: mute swans; swans; exotic

species; nests; population effects;

species introduction; population density;

eggs; whistling swans; canada geese;

geese; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; emigration; home range size; immigration; mortality; natality; numbers; productivity; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

marking; coded neck collars; visiting nests

NUMBER OF SAMPLING SITES: 60 nestings

SAMPLING FREQUENCY: continuous; weekly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Queen County; Annes County; Talbot County; Dorchester County; Eastern Bay; Choptank River; Chesapeake Bay

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TYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: One or two mated pairs of pinioned mute swans (CYGNUS OLOR) escaped from impoundments along tributaries of east central Chesapeake Bay in 1962. These feral swans and their offspring have bred successfully in the wild each year since and increased in numbers to about 151 during the last decade. In the past 7 years, the breeding pairs hatched 54 percent of their eggs, fledged 86 percent of their young, and achieved 80 percent nesting success. This has caused a rapid population increase which presents waterfowl biologists with new problems in management. Ecological implications are undetermined.

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NBIP ACCESSION NUMBER: MD/003

<421>

INVESTIGATOR(S): Reese, J.G.

AFFILIATION: PI

TITLE: Reproductive Success of Chesapeake Bay Ospreys

PURPOSE: To determine all the factors influencing osprey nest success, to explore techniques suitable for managing nesting ospreys, and to inform and solicit the public for cooperation and understanding in protecting ospreys.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1963

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Poor reproductive success in fish-eating birds, lowered water quality, decrease in fish species diversity, increased environmental contamination, and increased human disturbance to wildlife.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine

LEVEL(S) OF STUDY: population; ecosystem; region

MANAGEMENT FOCUS: wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: PANDION HALIAETUS

ADDED KEYWORDS: ospreys; fish-hawks; Pandionids; nesting behavior; habitat modification; species diversity

PRIMARY PARAMETERS INVESTIGATED:

distribution; mortality; natality;
numbers; productivity; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nest counts

NUMBER OF SAMPLING SITES: 200-250 annually

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Talbot County; Queen Annes County; Dorchester County; Choptank River; Eastern Bay

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Nest success was determined for 330 osprey nesting attempts along Eastern Bay, Maryland, from 1966 through 1974. Young were fledged in 45 percent of the nesting attempts on offshore structures and in only 24 percent of the attempts in trees. The average number of young fledged per active nest was 0.71. This average is among the poorest in the country. It is appreciably lower than that of adjacent areas studied in the Chesapeake Bay, and it is well below the ratio estimated to be necessary for population stability. Known causes for loss of nests, eggs, and young are documented.

REFERENCES: Reese, 1969; Reese, 1970; Reese, 1975 a,b

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NBIP ACCESSION NUMBER: MD/004

<422>

INVESTIGATOR(S): Robbins, C.S.

AFFILIATION: Migratory Bird and Habitat Research Laboratory, FWS

TITLE: Winter Bird Survey of Central Maryland

PURPOSE: To detect annual changes in populations of wintering songbirds and measure influences of weather conditions on these populations.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1970

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Major year-to-year changes occurred in winter distribution of northern finches.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous

LEVEL(S) OF STUDY: organisms; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; indicator species;
range; recreation; resource planning;
right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: BIRDS, 90 SPECIES

ADDED KEYWORDS: passerines; woodpeckers; population density; weather conditions

PRIMARY PARAMETERS INVESTIGATED:

distribution; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transects

NUMBER OF SAMPLING SITES: 46

SAMPLING FREQUENCY: daily

SUPPORTING DATA COLLECTED: terrain

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Ann Arundel County;
Baltimore County; Frederick County; Howard County; Montgomery County; Prince George County

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: IBM 360/65; RPG

STATISTICS EMPLOYED: mean

ABSTRACT: A method for monitoring changes in winter bird populations was tested in central Maryland in the winters of 1970, 1971, and 1972. A systematic sample of 41 transects was established to sample an

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area of 6150 sq. km. Each transect, located at the center of a standard 7 1/2-minute topographic map, was 8 km in length and approximately square in shape. Coverage began at local sunrise on any one day from 15 January to 15 February, and was completed in exactly 4 hours. Birds seen or heard within one-fourth mile (0.40) km were recorded separately for each hour, and those identified at a greater distance were entered in a separate column. The mean number of species per route was 29. Ten species showed a statistically significant change from 1970 to 1971 and 8 from 1971 to 1972. The Winter Bird Survey results were compared with the results from the Audubon Society's Christmas Bird Count in the same area. Close correlation was found between the two surveys, but in general the Winter Bird Survey totals are higher except for species that frequent feeding trays and those that are conspicuous along roadsides. The Winter Bird Survey method shows much promise as a means of world-wide monitoring of bird populations. It is urged that field tests be conducted on other continents.

REFERENCES: Robbins and Bystrak, 1974

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NBIP ACCESSION NUMBER: MD/015

<423>

INVESTIGATOR(S): Scott, R.F.
AFFILIATION: Maryland Dept. of Natural
Resources - Fisheries Administration
TITLE: Shellfish Program - Soft Clam Project
PURPOSE: To monitor sizes and conditions of
soft clam populations in Chesapeake Bay
and its tributaries to determine
harvesting management programs and
procedures.

SPONSOR(S): State of Maryland

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Harvesting is now allowed
in areas designated as non-productive
oyster bottom thus possibly indicating
reversibility of designation.

ECOSYSTEM OR BIOHE TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: invertebrates;
mollusca; shellfish

TAXA: MYA ARENARIA; RANGIA CUNEATA

ADDED KEYWORDS: management measures; mud
clams; clams

PRIMARY PARAMETERS INVESTIGATED:

distribution; growth; harvest; mortality;
natality; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hydraulic soft clam dredge

NUMBER OF SAMPLING SITES: all known clam areas

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Chesapeake Bay and
tributaries

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: percentile

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: MD/016

<424>

INVESTIGATOR(S): Speir, H.J.

AFFILIATION: Maryland Dept. of Natural
Resources - Fisheries Administration

TITLE: Channelization Evaluation

PURPOSE: To investigate the effects of
channelization on the stream ecosystems of
the Atlantic Coastal Plain of Maryland.

SPONSOR(S): Maryland Fisheries and Bureau
Sport Fisheries Wildlife

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Fish populations recover
quickly after channelization of small
streams. Benthic invertebrates also
quickly recolonize channelized streams.

ECOSYSTEM OR BIOHE TYPE(S): aquatic;
freshwater; streamLEVEL(S) OF STUDY: community; ecosystem;
region

MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; resource
planning; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta

TAXA: FISHES, 29 SPECIES

ADDED KEYWORDS: channelization; habitat
modification; population dynamics; benthic
organisms; rotenone; isopods; amphipods
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; immigration; numbers;
toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seines; electroshocking gear; Peterson
dredge

NUMBER OF SAMPLING SITES: 67

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data;
soils; terrain; water quality data

STUDY SITE(S): MD

GEOGRAPHIC DESCRIPTION: Worcester County;
Wiconico County; Caroline County; Somerset
County; Choptank River; Nanticoke River;
Pocomoke River

TYPE OF DATA: reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis

ABSTRACT: None provided.

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Eastern Regional Office

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NBIP ACCESSION NUMBER: MD/026

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MARYLAND

Standard Federal Region 3
Fish and Wildlife Service Region 5
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INVESTIGATOR(S): Stotts, V.D.
AFFILIATION: Maryland Wildlife Administration
TITLE: Waterfowl Investigation (W-45-R)
PURPOSE: To provide information necessary to the management of waterfowl, their habitat, and their uses.
SPONSOR(S): Maryland Wildlife Administration
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Black ducks down, Canada geese up, and decline in submerged vegetation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; wildlife; recreation; resource planning; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; crustacea; insects; plants; vascular plants; herbs
TAXA: BIRDS, 30 SPECIES
ADDED KEYWORDS: mallard ducks; black ducks; gadwall ducks; teals; ducks; management measures; muskrats; canada geese; geese
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; harvest; mortality; migratory patterns; numbers;

physiology; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct counts; estimates; transects; point sampling
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): MD
GEOGRAPHIC DESCRIPTION: Calvert Cliffs Power Station
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile; contingency table analysis; non-linear estimation
ABSTRACT: Annual inventories of waterfowl distribution and numbers on State management areas are conducted to determine each areas status in the State's overall management program. Data are also taken on the success or failure of management practices and the effect of such factors as muskrats and hunters on waterfowl distribution and numbers. This survey complements a muskrat-house survey and a hunter-ucco survey on the State areas. Breeding population estimates on and near State management areas include 263 mallards, 1,580 black ducks, 214 gadwall and 1,552 blue-winged teal.
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HBIP ACCESSION NUMBER: MD/049

MASSACHUSETTS

Standard Federal Region 1
Fish and Wildlife Service Region 5
(SEE ALSO 393, 610, 639, 733, 740, 844)

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INVESTIGATOR(S): Art, H.W.
AFFILIATION: Center for Environmental Studies, Williams College
TITLE: Permanent Plot Studies in the Hopkins Memorial Forest
PURPOSE: To assess the longterm changes in forested ecosystems and to determine causal relationships for patterns in those changes.
SPONSOR(S): Williams College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1935
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Land use patterns and effects on successional changes in a primarily northern hardwood forest.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; forestry; indicator species; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs
TAXA: ACER SACCHARUM; FAGUS GRANDIFOLIA; QUERCUS RUBRA; BETULA PAPYRIFERA; ACER RUBRUM
ADDED KEYWORDS: succession; sugar maples; maples; red maples; paper birches; birches; american beeches; beeches; oaks; northern red oaks
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; numbers; productivity; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): tree layer census; subordinate vegetation density; plots
NUMBER OF SAMPLING SITES: 325
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; soils; water quality data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Berkshire County; Birch Brook
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 1130; FORTRAN IV
ABSTRACT: The U.S. Forest Service laid out a system of 325 1/4 acre permanent plots in the 2000 acre Hopkins Memorial Forest in 1935. Every tree greater than 0.5 in. dbh was tallied and measured to the nearest inch. Several trees in each plot had heights measured and increment cores taken for diameter growth determinations. Subordinate vegetation (woody and herbaceous species) were tallied in 10 millacre plots in each quarter acre plot. The forest reverted to Williams College in 1968. In 1971-72, the plots were resurveyed in an identical manner to the Forest Service. Both sets of data have been computerized. In addition, we are in the process of determining the land use history and land ownership history of each parcel of land in the Forest to determine the role of past land uses in present forest composition and successional trends.

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NBIP ACCESSION NUMBER: MA/020

<427>

INVESTIGATOR(S): Atena, J.
AFFILIATION: Dept. of Biology, Boston University
TITLE: The Effects of Sublethal Levels of Heat and Oil on the Behavior of Aquatic Animals
PURPOSE: To understand the basic mechanisms of interference of oil with aquatic animal behavior when temperature is one of the variables.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1976
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Heat interferes with social behavior in the catfish. Oil and heat have similar effects on the snail studied.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; shellfish
TAXA: HOMARUS AMERICANUS; NASSARIUS OBSOLETUS; ICTALURUS NEBULOSUS
ADDED KEYWORDS: lobsters; brown bullheads; catfishes; salt marsh mud snails; snails; oil; behavior patterns; hydrocarbons; thermal effects; gastropods; decapods
PRIMARY PARAMETERS INVESTIGATED: behavior
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
SAMPLING FREQUENCY: daily
STUDY SITE(S): MA
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: percentile; analysis of variance; non-parametric analysis
ABSTRACT: This project is concerned with the study of sublethal effects of oil at different temperatures on the behavior of the "screening" species, NASSARIUS OBSOLETUS. This snail has proven to be a good (i.e. fast) screen for the lobster but not for the catfish, at least with regard to temperature effects. The results of past experiments on sublethal effects of petroleum hydrocarbons on aquatic animals have recently been reviewed and hypotheses for testing proposed. Plans now are to begin tests which may lead to an understanding of basic mechanisms of interference of oil with aquatic animal behavior, in which temperature will remain one of the variables. Twenty degrees C will be used as reference temperature and No. 2 fuel oil and its fractions as reference oil.
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NBIP ACCESSION NUMBER: MA/079

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MASSACHUSETTS
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INVESTIGATOR(S): Atema, J.
AFFILIATION: Dept. of Biology, Boston University
TITLE: Sublethal Effects of Oil on Behavior and Chemical Senses of Marine Animals
PURPOSE: To determine behavior response for detection of sublethal levels of stress due to No. 2 fuel oil and its fractions, and to investigate possible interaction mechanisms by which petroleum hydrocarbons interfere with marine animal behavior.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1976
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Interference with feeding and pre-feeding behavior in HOMARUS, and decrease in alarm reaction in NASSARIUS.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; shellfish
TAXA: HOMARUS AMERICANUS; NASSARIUS OBSOLETUS
ADDED KEYWORDS: oil; lobsters; salt marsh mud snails; decapods; gastropods
PRIMARY PARAMETERS INVESTIGATED: behavior
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct observation
SAMPLING FREQUENCY: daily
STUDY SITE(S): MA
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: percentile; analysis of variance; non-parametric analysis
ABSTRACT: Behavior bioassays are proposed as the most sensitive and ecologically relevant measures of environmental stress. No. 2 fuel oil has been selected as a chemical stress agent for its potential toxicity, for existing background on its effects, and for its relevance to North East Coastal shipping. In-depth studies of feeding and social behavior will be undertaken on lobsters in different life stages, and on feeding and alarm behavior of mud snails. Both animals are of ecological importance for the coastal and salt marsh ecosystems respectively, while the lobster is of great economic value. Our work may make it possible to arrive at functional levels of safety to protect the inshore marine environment. The basic philosophy and experimental procedures for this work have been developed in earlier investigations.
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<429>

INVESTIGATOR(S): Bowen, V.T.
AFFILIATION: Chemistry Dept., Woods Hole

Oceanographic Institution
TITLE: Radioelement Studies in the Oceans
PURPOSE: Using the changes with time of the spatial distributions of longer-lived isotopes from nuclear testing, we are studying the time constants and relative geochemical importance of the processes moving elements into and through the marine hydrosphere.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1961
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal changes in species and abundance of planktonic Acantharia and Foraminifera in northeastern United States coastal waters. Changes in organic content of transuranic elements or other fallout nuclides do not closely parallel changes in water concentration.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: indicator species; radiological; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca; microorganisms; algae; protozoa
TAXA: ACANTHARIA
ADDED KEYWORDS: habitat modification; species diversity; radionuclides; plankton; foraminiferans; cesium; plutonium; strontium; cadmium; iron; beryllium; ruthenium; zirconium; niobium; curium; promethium
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): hydrostations
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data
STUDY SITE(S): MA
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; median
ABSTRACT: Using the changes with time of the spatial distributions of longer-lived isotopes from nuclear testing, we are studying the time constants and relative geochemical importance of the processes moving elements into and through the hydrosphere. Our biological investigations seek to determine the uptake and turnover of specific radionuclides in biota and the effect of the biota in redistributing radioisotopes. Pathways of atmospheric circulation and the processes of delivery of fallout to the sea surfaces are examined. Radionuclides and stable elements are measured in water, aerosols, biota, and sediments. Radiochemical separations are followed by low-level beta counting for isotopes such as Sr-90, Cd-109m, Cs-137, or Pu-147, by low level photon counting (proportional counting) for Fe-55, by alpha spectrometry for Pu-238, -239, and 240, Am-241, Cm-244, or by gamma spectrometry (Ge-Li) for Be-7, Ru-106, Zr-Nb-95, or the like. Pu-241 is

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measured by alpha counting of the daughter Am-241. Relevant stable elements are measured by emission spectrometry, neutron activation, atomic absorption, or suitable wet chemical methods. A good deal of effort is going into determining the distributions of transuranic elements among sediment fractions of different particle size or chemical composition. Careful attention is being given to the species specificity, or ecological correlations, of biological uptake and internal distribution of transuranic nuclides.

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NBIP ACCESSION NUMBER: MA/072

<430>

INVESTIGATOR(S): Burk, C.J.
AFFILIATION: Dept. of Biological Sciences,
Smith College
TITLE: Ecological Studies of Marsh Vegetation
in Disturbed Stream Environments
PURPOSE: To determine the effects of
disturbance, including oil spillage,
industrial pollutants, herbicide
application, nutrient enrichment, and
impoundment on marsh vegetation in short
river ecosystems.
SPONSOR(S): Water Resources Research Center,
University of Massachusetts
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Total coverage and
diversity were found to be lower in all
zones of marshes affected by industrial
pollution, oil spillage, or cultural
eutrophication than in less disturbed
marshes along each stream.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; lake
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
indicator species; resource planning;
pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
TAXA: ELODEA NUTTALLII; POTAMOGETON CRISPUS;
WOLFFIA COLUMBIANA; CABONBA CAROLINIANA
ADDED KEYWORDS: pondweeds; water meal;
fanworts; eutrophication; oil spills;
marshes; species diversity; exotic
species; industrial chemicals; aquatic
plants
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; habitat
characterization; immigration; mortality;
numbers; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrat analyses; floristic surveys
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora;

climatological data; hydrological data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Hampshire County;
Hampden County; Franklin County;
Connecticut River; Mill River; Manhan River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; regression/correlation analysis
ABSTRACT: Although pollution has become a
subject of great national concern, its
effects upon natural systems are poorly
understood and the extent to which these
systems recover when pollution is removed
is virtually unknown. In Western
Massachusetts, mill rivers provide
excellent outdoor laboratories in which to
study water pollution and its
consequences. The term "mill river" is
generic, having been applied by the
settlers in many communities to the
principal stream on which mills and mill
dams were constructed. Hence, within a
half hour's drive from Northampton, one
may encounter separate streams, each named
Mill River, in Northampton, Hatfield, and
Amherst, as well as a Sawmill River in
Montague. Each of these streams was, at
one time, a series of impoundments linked
by stretches of flowing water. With the
decline of industrialization, many of the
dams maintaining these impoundments have
been neglected while land use within the
watersheds has affected the nature of the
streams in different ways.
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NBIP ACCESSION NUMBER: MA/041

<431>

INVESTIGATOR(S): Cole, C.F.
AFFILIATION: University of Massachusetts
TITLE: Biology of the Rainbow Smelt, OSMERUS
MORDAX (MITCHELL) in the Parker River,
Massachusetts
PURPOSE: To collect data on reproduction,
development, population dynamics, and
spawning migrations of smelt.
SPONSOR(S): Massachusetts Div. of Marine
Fisheries
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Population size
fluctuation occurs between years.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: OSMERUS MORDAX
ADDED KEYWORDS: rainbow smelts; smelts;
spawning; management measures; population
effects
PRIMARY PARAMETERS INVESTIGATED: age; growth;
mortality; migratory patterns;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard hydrological collection
procedures; standard collection gear for
fish

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SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): MA

GEOGRAPHIC DESCRIPTION: Essex County; Parker
River; Georgetown

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: CDC Cyber 74

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: This study includes data on
seasonal gonad maturation, behavior of
adults on spawning sites, estimation of
egg production, and monitoring the growth
and distribution of larvae and juveniles.
A second part of the study emphasizes
population dynamics and the effects of
winter sport fishery on the population.
Such information is essential for
decision-making on management of the
population, which is under pressure by
sport and bait fishermen.

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NBIP ACCESSION NUMBER: MA/052

<432>

INVESTIGATOR(S): Cole, C.F.

AFFILIATION: University of Massachusetts

TITLE: Investigation of the Anadromous
Alewife (ALCSA PSEUDOHARENGUS) Population
in the Parker River, Massachusetts

PURPOSE: To investigate the biology,
migratory behavior, population dynamics,
and environmental parameters influencing
the migration of alewife in the Parker
River, Massachusetts and to use the
findings of the biological investigations
as a basis for conceptualizing and
constructing a mathematical model and
computer simulation of the population.

SPONSOR(S): NMFS; Massachusetts Div. of
Marine Fisheries

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The number of migrating,
spawning adults fluctuates and is
dependent upon recruitment and strength of
the various participating year classes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; lake; marine; estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: fisheries; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea

TAXA: ALOSA PSEUDOHARENGUS

ADDED KEYWORDS: alewives; zooplankton;
population effects; spawning; feeding
habits; juveniles; population effects;
models

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; emigration; growth;
immigration; mortality; migratory

patterns; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
counting and collecting; seines; gill
netting; plankton net tows; tagging and
recapture; solar incident radiation data
NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: seasonal; daily;
SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms; hydrological
data

STUDY SITE(S): MA

GEOGRAPHIC DESCRIPTION: Essex County; Parker
River; Rock Pond; Pentucket Pond

TYPE OF DATA: reduced; summarized

COMPUTER AND LANGUAGE: CDC Cyber 74; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;

analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis; modeling,
deterministic

ABSTRACT: The overall project is an effort to
observe, measure, and describe as
quantitatively as possible the spawning
migration of the adult alewife, ALOSA
PSEUDOHARENGUS, in this small river
system; and the freshwater development and
seaward return of the young-of-the-year.
The biological studies include migration
data, data on zooplankton species
composition of spawning ponds, data on
numbers of adult spawners and juveniles
returning down river, and data on feeding
habits of juveniles. Also a mathematical
model describing the spawning run is under
development. The early years of this study
had provided quantitative data on upstream
migration numbers and rate of movement and
indicated some environmental factors
correlated with movement. Based on
preliminary data, the form of the model
has been devised.

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NBIP ACCESSION NUMBER: MA/053

<433>

INVESTIGATOR(S): Davis, P.W.

AFFILIATION: Dept. of Biology, Fitchburg
State College

TITLE: Ashby Bird Observatory

PURPOSE: To assess local and migratory bird
populations as possible indicators of
environmental change.

SPONSOR(S): Fitchburg State College

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1971

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Influx of more southerly
birds has occurred.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: endangered species;

wildlife; indicator species; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: BIRDS, 110 SPECIES

ADDED KEYWORDS: habitat modification;
seasonal variations

PRIMARY PARAMETERS INVESTIGATED: age;

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distribution; diversity; growth; habitat
characterization; home range size;
migratory patterns; natality; numbers;
reproduction; sex; size/weight; territory
size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
capture nets; mist nets; direct
observation; banding
NUMBER OF SAMPLING SITES: 20 to 40
SAMPLING FREQUENCY: daily;
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Middlesex County
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: Mist nets are operated in a grid to
sample habitats. Alternate nets
north-south and east-west are set to
assess possible feeding drift during
migration. The grids permit some estimate
of home range. The nets are operated all
day during migration and sunrise to sunset
during breeding season.
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NBIP ACCESSION NUMBER: MA/018

<434>

INVESTIGATOR(S): Dodge, W.E.
AFFILIATION: FWS
TITLE: Colonial Nesting Seabird Survey--Cape
Elizabeth, Maine to Southern Chesapeake
Bay, Virginia
PURPOSE: To inventory colonial nesting
seabirds to species, numbers and location,
and to develop historical trends.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seabird population
(breeding) changes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact;
wildlife; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: OCEANODROMA LEUCORHOA; PHALACROCORAX
AURITUS; SOMATERIA MOLLISSIMA; CEPHUS
GRYLE; LARUS ARGENTATUS; LARUS ATRICILLA;
LARUS MARINUS; GELOCHELIDON NYLOTICA;
HYDROPROGNE CASPIA; STERNA DOUGALLII;
STERNA HIRUNDO; STERNA FORSTERI;
THALASSEUS MAXIMUS; STERNA PARADISAEA;
BYNCHOPS NIGER; ANDEA HERODIAS; NYCTICORAX
NYCTICORAX; PLEGADIS FALCINELLUS
ADDED KEYWORDS: population effects; nests;
management measures; petrels; cormorants;
eiders; guillemots; gulls; terns;
skimmers; herons; ibises; islands
PRIMARY PARAMETERS INVESTIGATED:
distribution; natality; numbers;
reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
cooperative surveys; literature search;

field cooperators

NUMBER OF SAMPLING SITES: 8; all coastal
islands and estuaries in area
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: associated flora;
terrain
STUDY SITE(S): ME; NH; CT; MA; NY; NJ; DE;
MD; VA
GEOGRAPHIC DESCRIPTION: Chesapeake Bay; Block
Island
TYPE OF DATA: raw; summarized
ABSTRACT: This study surveys and inventories
colonial-nesting sea birds along the
Atlantic seaboard from Block Island, Rhode
Island to the southern limit of Chesapeake
Bay, Virginia. Records of other federal,
state, and private agencies as well as
selected individuals are utilized to
establish locations and population trends
of colonial sea birds. Main objectives
include (1) locate by species within the
designated area, colonial-nesting seabirds
by coordinates, (2) estimate totals by
species in each colony, (3) define nesting
chronology through field observation and
data collected by others, and (4)
establish population trends for each
species.
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NBIP ACCESSION NUMBER: MA/014

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INVESTIGATOR(S): Drury, W.H.
AFFILIATION: Massachusetts Audubon Society
TITLE: Studies of Seabirds in the Gulf of
Mexico
PURPOSE: To monitor changes in breeding
populations; to investigate interactions
among seabird species; and to investigate
the biology of food species.
SPONSOR(S): Massachusetts Audubon Society;
National Audubon Society; FWS
SPONSOR CATEGORY: societies and other
organizations; federal government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Some species are
increasing and others decreasing. Herring
gulls and great black-backed gulls are
central bird problems.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; aquatic;
marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
region
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; wildlife;
indicator species; recreation; resource
planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds
TAXA: LARUS ARGENTATUS; PHALACROCORAX
AURITUS; LARUS MARINUS; SOMATERIA
MOLLISSIMA; PTERODROMA ARCTICA; CEPHUS
GRYLE; OCEANODROMA LEUCORHOA; STERNA SPP
ADDED KEYWORDS: herring gulls; double-crested
cormorants; great black-backed gulls;
common eiders; common puffins; black
guillemots; leach's petrels; terns;
management measures

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PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; mortality;
natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
population estimates; direct counts;
mark-recapture
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): MA; NH; ME
GEOGRAPHIC DESCRIPTION: Gulf of Maine
TYPE OF DATA: raw; literature-derived
STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis;
multivariate analysis
ABSTRACT: This study of seabirds in the Gulf
of Maine has involved the following: (1)
regional surveys of seabird populations
between 1962 and 1973 which seemed to
indicate that the extraordinary population
growth and range expansion of large gulls
during the last 75 years may be
stabilizing and the tern population is
decreasing, (2) studies of factors
influencing reproductive success in
herring gulls within colonies and between
colonies, (3) studies of factors resulting
in decline of tern population and
preparation of management recommendations,
and (4) a literature review of major
seabird population trends.
REFERENCES: Drury and Kadlec, 1974; Drury,
1973
ADDRESS: William H. Drury
College of the Atlantic
Bar Harbor, ME 04609
TELEPHONE: (617) 256-9500
NBIF ACCESSION NUMBER: MA/U448

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INVESTIGATOR(S): Fairbanks, R.B.
AFFILIATION: Massachusetts Div. of Marine
Fisheries
TITLE: Marine Ecology Studies Related to the
Operation of Pilgrim Station
PURPOSE: To identify and evaluate any effects
of power plant operation upon marine
resources in the vicinity of Rocky Point,
Plymouth, Massachusetts.
SPONSOR(S): Boston Edison Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None that can be related
to power plant operation.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: organism; community; region
MANAGEMENT FOCUS: environmental impact;
fisheries; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; shellfish;
plants; vascular plants; herbs; grasses;
microorganisms; algae
TAXA: CHONDROS CRISPUS; HOMARUS AMERICANUS;
PSEUDOPLEURONECTES AMERICANUS
ADDED KEYWORDS: winter flounders; flounders;
lobsters; nuclear power plants; red algae;
decapods

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; growth; harvest;
home range size; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
catch sample; otter trawl; gill nets;
tagging
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Plymouth County;
Pilgrim Nuclear Power Station; Cape Cod Bay
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV -
G Level
STATISTICS EMPLOYED: mean; percentile;
analysis of variance; analysis of
covariance; regression/correlation
analysis; non-parametric analysis
ABSTRACT: Overall program objective is the
detection and evaluation of long-term
fluctuations in important resource levels
in the vicinity of Pilgrim Station.
Diversity indices including
Shannon-Weaver, Brillman and Species
Richness are being calculated as
expressions of finfish community
structure. Lobster catch and CHONDROS
landing statistics are being generated
over gridded areas to serve as the basis
for examining changes in commercial
harvests. A tagging program is providing
information on lobster growth and movement.
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Heritage Professional Bldg.
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Sandwich, MA 02563
TELEPHONE: (617) 888-1155
NBIF ACCESSION NUMBER: MA/034

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INVESTIGATOR(S): Forster, R.A.
AFFILIATION: Massachusetts Audubon Society
TITLE: Block Survey of Breeding Birds
PURPOSE: To determine the range of all
breeding bird species in Massachusetts.
SPONSOR(S): Massachusetts Audubon Society;
Massachusetts Div. of Fisheries and
Wildlife
SPONSOR CATEGORY: societies and other
organizations; state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Expansion and decline in
breeding birds and their range.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland;
wetland; aquatic; freshwater; stream;
river; lake; reservoir; marine; coastal;
estuarine
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 166 SPECIES
ADDED KEYWORDS: census; breeding birds;
population effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization
NUMBER OF SAMPLING SITES: 989
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): MA

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TYPE OF DATA: raw

ABSTRACT: This five year project (1974-78) is designed to map the breeding bird distribution in each of 989 blocks of the U.S. Geological Survey map of Massachusetts. In 1974 a total of 166 species was confirmed as breeding in the state. Once a species is known to breed in a block, no further information is needed for the entire five year period.

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NBIP ACCESSION NUMBER: MA/049

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INVESTIGATOR(S): Godfrey, P.J.

AFFILIATION: Dept. of Botany, University of
Massachusetts

TITLE: The Biological Effects of Recreational
Vehicles on Coastal Systems

PURPOSE: To examine the effects produced by
driving on a number of communities of the
Cape Cod area within the Cape Cod National
Seashores.

SPONSOR(S): NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction and disturbance
of animal populations, reduction of
biomass in plant populations, and recovery
with cessation of impact.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; marine; coastal

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: endangered species;

environmental impact; wildlife;

recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; invertebrates; shellfish; plants;

vascular plants; shrubs; herbs; grasses;

microorganisms; algae; bacteria

TAXA: ANEMOPHILA BREVILIGULATA; SPARTINA

ALTERNIFLORA; SPARTINA PATENS; SALICORNIA

SPP; HUDSONIA TOMENTOSA; ABCTOSTAPHYLOS

UVA-URSI; DESCHAMPSIA FLEXUOSA; STERNA

ALBIFRONS; MYA ARENARIA

ADDED KEYWORDS: recreational vehicles;
habitat modification; beachgrasses; sand
dunes; salt marshes; terns; oysters;
beaches; least terns

PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity; growth;
habitat characterization; mortality;
natality; numbers; productivity;
reproduction; stress

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; associated

microorganisms; climatological data;

hydrological data; soils; terrain

STUDY SITE(S): MA

GEOGRAPHIC DESCRIPTION: Barnstable County;

Cape Cod National Seashore

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; analysis of

variance; regression/correlation analysis

ABSTRACT: The effects of off-road vehicle
traffic on dunes, beaches, and salt
marshes within the Cape Cod National
Seashore are being investigated. Studies
are also being conducted on fresh water
ponds within seashore boundaries. Study
sites are being mapped to examine changes
in their geomorphology, and dyed sand
experiments are being undertaken to
determine the movements of material under
the wheels of vehicles. Biomass of plants
is being determined for both pre-impact
and post-impact and recovery will be
monitored. Tern populations subjected to
disturbance will be monitored to determine
what effect, if any, the presence of
vehicles and people have on the birds'
success in raising young.

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Botany Dept.

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Amherst, MA 01002

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NBIP ACCESSION NUMBER: MA/023

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INVESTIGATOR(S): Klekowski, E.J.

AFFILIATION: Botany Dept., University of
Massachusetts

TITLE: Detection of the Presence and Origin
of Mutagenic Pollutants by the

Determination of Chromosomal Damage in
Riparian Fern Populations

PURPOSE: To develop "in-situ" bioassay
systems for mutagenic water pollutants.

SPONSOR(S): OWRT

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Chromosomal and genetic
mutations in fern populations.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact;

indicator species; water quality

ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs

TAXA: OSMUNDA REGALIS; ONOCLEA SENSIBILIS

ADDED KEYWORDS: royal ferns; sensitive ferns;

ferns; mutagenesis; genetics;

pteridophytes; population effects

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

chromosomes screened for "2-break"
aberrations; meiotic products screened for
lethal genes

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: hydrological data;
water quality data

STUDY SITE(S): MA

GEOGRAPHIC DESCRIPTION: Otter River; Millers

River; Connecticut River; Erving (MA);

Baldwinville (MA)

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;

percentile; regression/correlation

analysis; contingency table analysis

ABSTRACT: The intent of this research is the
development of an inexpensive and readily
used bioassay for mutagens in aquatic
environments. The bioassay system is based

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upon measurements of mutational load in riparian populations of the fern *OSMUNDA REGALIS*. The Millers and Otter Rivers in western Massachusetts will be intensively monitored for mutagenic activity as unpublished data indicate that mutagens may be present. The origin and nature of these mutagens will be investigated.
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Amherst, MA 01002
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NBIP ACCESSION NUMBER: MA/031

<440>

INVESTIGATOR(S): Larson, J.S.
AFFILIATION: Dept. of Forestry and Wildlife Management, University of Massachusetts
TITLE: Social Behavior of Beaver
PURPOSE: To document social behavior by sex and age classes and to obtain data on under-ice and night activity patterns.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in numbers and location of beaver colonies on Prescott Peninsula, 1968 to present.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream; reservoir
LEVEL(S) OF STUDY: organisms; population; community
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs
TAXA: *CASTOR CANADENSIS*
ADDED KEYWORDS: age classes; beavers; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; home range size; immigration; numbers; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; radiotelemetry; aerial photography; census
NUMBER OF SAMPLING SITES: 1 site; 30 colonies
SAMPLING FREQUENCY: daily; annual
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Franklin County; Quabbin Reservoir
TYPE OF DATA: raw
ABSTRACT: The basic objectives are to document behavior, division of labor, and activity patterns of beaver, based on known age and sex. As a by-product of this activity, we have documented the increase and spread of beavers on Prescott Peninsula and monitor this on at least an annual basis. We have initiated monitoring of behavior using radiotelemetry.
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Amherst, MA 01002

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NBIP ACCESSION NUMBER: MA/028

<441>

INVESTIGATOR(S): MacIsaac, D.B.
AFFILIATION: Massachusetts Div. of Marine Fisheries
TITLE: Monitoring of Northern Shrimp Resources to Assess the Effectiveness of Shrimp Management by Closed Season
PURPOSE: To gauge the efficiency of closing the shrimp fishery to limit the catch to 5 million lbs. and stabilize the declining shrimp stocks at 10.4 million lbs.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: There is either a decline or a stabilization of the shrimp population.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; shellfish; annelida
TAXA: *PANDALUS BOREALIS*
ADDED KEYWORDS: northern shrimp; pink shrimp; shrimp; management measures; recruitment; carideans; legal regulation
PRIMARY PARAMETERS INVESTIGATED: age; biomass; growth; harvest; mortality; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): commercial vessel samples; interview of captains; carapace measurement
NUMBER OF SAMPLING SITES: 14
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): ME; MA; NH
GEOGRAPHIC DESCRIPTION: Jeffreys Basin; Scantum Basin; Middlebank; Gloucester; Portland
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: We are monitoring the northern shrimp fishery so that significant data is available upon which to base meaningful management and regulation of the fishery. Data collected assist the Northern Shrimp Scientific Committee in management decisions.
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Salem, MA 01970
TELEPHONE: (617) 745-3113
NBIP ACCESSION NUMBER: MA/066

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INVESTIGATOR(S): Michael, A.D.
AFFILIATION: Woods Hole Marine Biological Laboratory
TITLE: Long Term Effects of an Oil Spill at West Palmouth, Massachusetts
PURPOSE: To monitor the recovery of the benthos at Wild Harbor following an oil

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spill.

SPONSOR(S): American Petroleum Institute
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Very gradual replacement of opportunistic species by species more indicative of a healthy benthos.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca
TAXA: BENTHIC ORGANISMS, 67 SPECIES
ADDED KEYWORDS: oil spills; benthic organisms; sediments; hydrocarbons; amphipods; polychaetes; isopods; coelenterates
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; kill; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Van Veen grab
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: monthly
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Sandwich County; Buzzard's Bay; Wild Harbor
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance; analysis of covariance; multivariate analysis
ABSTRACT: A small spill of No. 2 fuel oil occurred near Wild Harbor, Massachusetts, in September 1969. The benthic fauna of the Wild Harbor Marsh, boat basin, and offshore area was sampled through the fourth and fifth years after the spill (1973, 1974). Sediment samples were analyzed for the presence of petroleum hydrocarbons. Gas chromatography produced evidence of hydrocarbons typical of weathered fuel oil in the sediments of the marsh, boat basin, and two offshore stations. The numbers of benthic species at the offshore stations and the marsh were slightly, but significantly, lower than those found at control stations. Population densities were similar to control areas for the offshore stations but not in the case of the marsh. The boat basin was still heavily affected. Some stations were characterized by the presence of opportunistic species. The recovery process in terms of the total benthos has leveled off, but there was evidence for further recovery during the course of the study.
REFERENCES: Michael, et al, 1975
ADDRESS: Dr. Allan Michael
Woods Hole Oceanographic Institution
Woods Hole, MA 02543
TELEPHONE: (617) 548-3705
NBIP ACCESSION NUMBER: MA/009

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INVESTIGATOR(S): Michael, A.D.
AFFILIATION: Marine Biological Laboratories,
Woods Hole, MA

TITLE: Benthic Biological Studies Related to Operation of Pilgrim Station
PURPOSE: To evaluate the effect of the thermal discharge upon the marine benthic ecosystem in the immediate vicinity of the Pilgrim Nuclear Power Station.

SPONSOR(S): Boston Edison Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None observed to date.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; microorganisms; algae
TAXA: BENTHIC ORGANISMS, 200 SPECIES; ALGAE, 125 SPECIES
ADDED KEYWORDS: thermal effluents; nuclear power plants; benthic organisms; intertidal zones; subtidal zones; tides
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): suction device; box corer
NUMBER OF SAMPLING SITES: 12 sites and three sub samples at each site
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Plymouth County; Pilgrim Nuclear Power Station; Cape Cod Bay
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: percentile; multivariate analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: MA/017

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INVESTIGATOR(S): Nisbet, I.C.T.
AFFILIATION: Massachusetts Audubon Society
TITLE: Studies of Terns Breeding in Massachusetts
PURPOSE: To monitor changes in breeding populations of terns in Massachusetts, to study factors controlling reproductive success, and to develop and test management methods.
SPONSOR(S): Massachusetts Audubon Society
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Continuous decline in populations of 4 species although there appears to be fluctuating (but probably increasing) reproductive success.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: endangered species; wildlife; indicator species; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

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TAXA: STERNA HIRUNDO; STERNA PARADISAEA;
STERNA DOUGALLII; STERNA ALLIFRONS
ADDED KEYWORDS: common terns; arctic terns;
roseate terns; least terns; terns; habitat
modification; predation; islands.
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; growth; natality;
numbers; reproduction; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
direct counts; marking-recapture
NUMBER OF SAMPLING SITES: 9 study sites plus
regional survey
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): MA
TYPE OF DATA: raw; literature-derived
ABSTRACT: The four species of terns (STERNA
SPP) that nest in Massachusetts were
greatly reduced in numbers by human
persecution in the late 19th century,
increased under protection to reach peak
numbers between 1920 and 1950, but are now
decreasing again. One factor that has
probably contributed to the decline is
that the offshore islands formerly
preferred by the terns have been occupied
by gulls, and other islands have become
unsuitable for other reasons, so that the
terns are now nesting on inshore islands
or on the mainland where they are
vulnerable to human disturbance,
pollution, and predation. For the common
tern some evidence suggests that breeding
success is now generally lower than in the
past: this is believed to reflect local
food shortage.
ADDRESS: Dr. I.C.T. Nisbet
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TELEPHONE: (617) 259-9500 ext. 219
NBIP ACCESSION NUMBER: MA/047

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INVESTIGATOR(S): Reed, R.J.
AFFILIATION: Massachusetts Cooperative
Fishery Research Unit; FWS
TITLE: American Shad Spawning
PURPOSE: To provide sufficient information on
migrating and spawning adults of the
American shad, ALOSA SAPIDISSIMA, and on
the eggs and young-of-the-year to permit
assessment of the effects of present and
projected power developments and effects
of mitigating devices such as fishways.
SPONSOR(S): FWS; Massachusetts Div. of
Fisheries and Wildlife; Northeast
Utilities; New England Power
SPONSOR CATEGORY: federal government; state
government; private corporation
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: General increase in
number of spawning adult shad passed up
the Holyoke Dam fishlift. Reduction in
size of young-of-the-year shad juveniles
growing in the study area.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; resource planning;
power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: ALOSA SAPIDISSIMA

ADDED KEYWORDS: american shad; hydroelectric
power plants; impoundments; population
effects; migration rates; thermal
effluents; pumped storage

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; habitat characterization;
immigration; mortality; migratory
patterns; natality; numbers; reproduction;
sex; size/weight; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
counting; collection; seining; scale
samples; tracking plankton nets

NUMBER OF SAMPLING SITES: 7 major sites; fish
tracking in entire river run Holyoke Dam
to Vernon Dam

SAMPLING FREQUENCY: seasonal; daily;
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): MA

GEOGRAPHIC DESCRIPTION: Hampden County;
Hampshire County; Franklin County;
Connecticut River

TYPE OF DATA: reduced; summarized.
COMPUTER AND LANGUAGE: CDC Cyber 74; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; multivariate analysis

ABSTRACT: This long standing and diverse
project covers the following areas:
effects of hydroelectric pump storage
intake and discharge on shad migration,
importance of various factors affecting
orientation and movement of migrating
shad, production of shad eggs as related
to total potential egg production, drift
characteristics of natural and artificial
eggs, effects of lactic acid levels in
blood due to stress in fish lift, food
habits of juvenile fish, migratory
behavior below dam and after passage over
fish lift, and effect of elevated thermal
history on growth and development of fish
eggs.

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Research Unit
Holdsworth Hall
Amherst, MA 01002
TELEPHONE: (413) 545-2011
NBIP ACCESSION NUMBER: MA/051

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INVESTIGATOR(S): Russell, I.J.
AFFILIATION: Boston College
TITLE: Fundamental Studies in Fallout
Formation Processes and Biological
Availability of Fission Products to Forest
Trees
PURPOSE: Will forests survive a nuclear war?
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Steady state for Cs-137
existed in forest settings. Periodic
fluctuations occurred with atmospheric

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sources for Ce-144, Ru-106, Nb-95,
Sb-125, and Mn-54.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact;
forestry; radiological
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs
TAXA: QUERCUS SPP; ACER SPP; FAGUS SPP;
BETULA SPP; PINUS STROBUS; POPULUS SPP
ADDED KEYWORDS: oaks; maples; beeches;
birches; white pines; poplars; air
pollution; radioactive fallout; radiation
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
whole-tree sectioning; age-graded tissue
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous; irregular
SUPPORTING DATA COLLECTED: atmospheric
chemistry; climatological data;
hydrological data
STUDY SITE(S): MA; ME
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: Measurements of radionuclide
content in whole trees during the
1969-1972 period have provided scale
factors for estimating the dose delivered
to tree communities as a result of nuclear
testing to date. These scale factors can
be used to provide measures of internal
and external dose to trees per unit of
radioactivity introduced into the northern
hemisphere stratosphere according to the
pattern of the 3 megaton Chinese tests. To
date these factors apply only to the New
England area. Further measurements of a
similar nature to those performed in this
work will be required to extend the
scaling model to other climatic regimes.
The rare earth nuclides are found to be
the most significant contributors to beta
dose received by meristematic tissue. The
Ce-144/Pr-144 pair alone may deliver an
infinity dose of 0.1e rad per megaton
equivalent of stratospheric source, where
e is the fraction of beta decay energy
absorbed by young tissue. We estimate that
6e rads have been delivered to one and two
year twig tissue of the white pine in New
England by Ce-144/Pr-144 from the
1961-1962 U.S.-U.S.S.R. test series/Pr-144.
REFERENCES: Russell, 1974
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TELEPHONE: (617) 969-0100
NBIP ACCESSION NUMBER: MA/070

<447>

INVESTIGATOR(S): Schopf, T.J.M.
AFFILIATION: Geophysical Sciences Dept.,
University of Chicago
TITLE: Speciation in the Sea
PURPOSE: To follow gene frequencies in marine
populations.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Gene frequencies change
with changes in water temperature.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea
TAXA: SCHIZOPORELLA ERRATA; SCHIZOPORELLA
UNICORNUS
ADDED KEYWORDS: coelomates; ectoproctans;
moss animals; genetics; seasonal
variations; genotypes
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrophoresis; histochemical staining
NUMBER OF SAMPLING SITES: 15
SAMPLING FREQUENCY: annual
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Cape Cod
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: The use of proteins as markers for
specific genes has revealed that local
populations of ectoprocts routinely have
as much genetic variability as any other
organism, and can be significantly
genetically differentiated over distances
as short as 15 km, provided that the few
species so far examined are typical for
the phylum. SCHIZOPORELLA ERRATA is
sessile and has larvae that live only
hours. On a purely local scale, the
spatial distribution of gene frequencies
and genotypes appears random in most
comparisons. In addition, genotypes and
gene frequencies remained relatively
stable after the passage of a year. Over a
distance of 1000 km from the southern edge
of the Acadian Faunal Province through the
Virginian Faunal Province and into the
Carolinian Faunal Province, from 80 to 89
percent of the sampled genome is
identical. That is, genetic polymorphism
stands at 1 of the 9 well-established loci
(11 percent) and an estimated 2 of 10
total loci in pooled material from 9
localities. The proportion of alleles at
the single, clearly polymorphic locus
(Lap-3) varies directly as a function of
environmental temperature measured at the
warmest time of the year.
REFERENCES: Gooch and Schopf, 1971 a,b;
Schopf, 1974; Schopf, 1972; Schopf and
Gooch, 1970
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NBIP ACCESSION NUMBER: IL/013

<448>

INVESTIGATOR(S): Tamarin, R.H.
AFFILIATION: Dept. of Biology, Boston
University
TITLE: Population Biology of Island and
Mainland Voles
PURPOSE: To investigate dispersal and
population regulation.
SPONSOR(S): NIH
SPONSOR CATEGORY: federal government

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DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A lack of density cycles in island species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species; radiological; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: MICROTUS BREWERI; MICROTUS PENNSYLVANICUS; PEROMYSCUS LEUCOPUS; BLARINA BREVICAUDA
ADDED KEYWORDS: beach voles; meadow voles; white-footed mice; short-tailed shrews; soricids; cricetids; genetics; islands; rodents; population density; voles; shrews; nuclear power plants
PRIMARY PARAMETERS INVESTIGATED: age; behavior; emigration; growth; habitat characterization; home range size; immigration; mortality; natality; numbers; physiology; reproduction; sex; size/weight; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live-trapping
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Nantucket County; Plymouth County; Barnstable County; Pilgrim Nuclear Power Station
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; median; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis; modeling, deterministic; modeling, stochastic; serial autocorrelations
ABSTRACT: The importance of dispersal to vole populations has been amply demonstrated through fencing experiments. If a two acre enclosure (0.8 Ha) is too small for normal vole demography, then at what size will the demographic machinery perform unhindered? Perhaps size is not the only requirement, but also marginal habitat for dispersal (the concept of a "dispersal sink" by Lidicker). To approach the problem of a functional population unit, I have been studying the beach vole, MICROTUS BREWERI, on a one square mile island off the coast of Cape Cod, Massachusetts. The beach vole is endemic to this island and has been isolated for at least 2,000 years. The island contains marginal habitat of open sand dune and marsh which could function as a "Dispersal Sink". In addition, the square mile of area is at least two orders of magnitude larger than a two acre enclosure, yet still of a manageable size. We are also

examining the major hypotheses of density regulation in this population. The results of three years of data-taking are available.

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NBIP ACCESSION NUMBER: MA/001

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INVESTIGATOR(S): Taylor, J.K.
AFFILIATION: Dept. of Biology, Westfield State College
TITLE: Westfield River Watershed Project
PURPOSE: To monitor aquatic life changes in Westfield River.
SPONSOR(S): HEW
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: As water pollutants change, the phytoplankton changes qualitatively and quantitatively.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; growth; habitat characterization; immigration; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: 14
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: climatological data; hydrological data
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Hampden County; Hampshire County; Westfield River
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: MA/065

<450>

INVESTIGATOR(S): Wilce, B.T.
AFFILIATION: Dept. of Botany, University of Massachusetts
TITLE: Marine Benthic Ecology Studies
PURPOSE: To monitor the benthic algae at selected stations on shore and in the sublittoral zone to determine if above-ambient-temperature discharge into the sea affects the benthos.
SPONSOR(S): Boston Edison Co.
SPONSOR CATEGORY: private corporation
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Benthos is clearly perturbed in immediate area of the

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effluent discharge while control areas do not show differences.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organisms; population; community
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; power generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: ALGAE, 160 SPECIES
ADDED KEYWORDS: thermal effluents; benthic organisms; nuclear power plants; intertidal zones
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; mortality; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): stations; transects; SCUBA
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): MA
GEOGRAPHIC DESCRIPTION: Plymouth County; Rocky Point; Pilgrim 1 Power Station
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance
ABSTRACT: The benthic algal populations of

the shore and in the sublittoral in the vicinity of Plymouth, Massachusetts have been monitored for the past 13 months. This program has been funded for the coming three years. The major objective of the program is to determine if the heated effluent from the Pilgrim 1 nuclear generator is affecting benthic algal populations, their "normal" development, colonization, distribution, and the biology of the individual plant. Plant populations along a transect in the immediate vicinity of the effluent are compared with those along three other transects at increasing distances from the source of heated water. The results of the first year have established a basis of information concerning the attached algae to which subsequent qualitative and quantitative data can be compared. Perturbation of plant populations does occur in the immediate vicinity of the heated effluent water. The areas in which these effects are noticeable have been mapped in terms of varying degrees of intensity. Thus far, similar effects have not been detected at the control stations.

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NBIP ACCESSION NUMBER: MA/012

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INVESTIGATOR(S): Beaver, D.L.
AFFILIATION: Dept. of Zoology, Michigan State University

TITLE: Avian Populations on a Terrestrial Waste Water Disposal Site

PURPOSE: To follow the long term effects of waste water effluent on bird populations in forest and field habitats.

SPONSOR(S): Michigan State University Institute of Water Research

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Nothing due to waste water to date.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: BIRDS, 46 SPECIES

ADDED KEYWORDS: waste water; sewage treatment; sewage treatment; secondary treatment; habitat modification

PRIMARY PARAMETERS INVESTIGATED: biomass; numbers; sex; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): line transect

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: seasonal; weekly

SUPPORTING DATA COLLECTED: associated flora; water quality data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Ingham County

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The long term effect of spray irrigation of secondary effluent on avian populations is the primary goal of this research. Methods of census follow established procedures. The terrestrial site is divided into four areas. Within each area, census routes are established so as to cover representative habitats inside and outside of the areas sprayed. These include oldfield, shrub land, and woodland habitat. Other habitats, such as marshes are included in the census route where possible.

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NBIP ACCESSION NUMBER: MI/028

<452>

INVESTIGATOR(S): Brown, R.T.

AFFILIATION: Dept. of Biological Sciences, Michigan Technological University

TITLE: Air Pollution, Furnace Fuel, and Lichen Growth

PURPOSE: To correlate air pollution, furnace fuel, and lichen growth.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: With the change from coal to gas furnaces, lichens have begun to grow.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; deciduous

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact;

indicator species; pollution control; power generation

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; non-vascular plants; lichens

TAXA: LICHENS, 15 SPECIES

ADDED KEYWORDS: air pollution; fly ash;

management measures; fossil fueled power plants; coal; natural gas

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; growth;

immigration; numbers; toxicity

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Houghton County;

Keweenaw Peninsula; Portage Lake;

Michigan Technological University Power

Station; Lake Superior

TYPE OF DATA: reduced

STATISTICS EMPLOYED: modeling, deterministic

ABSTRACT: By sampling the snow in March with a Mount Rose snow sampler, I was able to measure an accumulation of pollution for the entire winter, since the snow does not melt until spring. I ran a survey line from lake level to the 900 ft. level, taking samples at ten or less equidistant points. At each point, in the vicinity of a sugar maple tree, four snow samples were taken and combined. The lichen cover on the sugar maple tree was estimated in 1970 at breast height (4 1/2 ft.), using a 25 X 25 cm flexible square divided into 100 equal sized sub-squares. In the laboratory, each combined snow sample was melted and the water equivalent depth recorded. Before filtering, twigs, seeds, leaves, and other large pieces were removed and the remaining particulate matter consisting mostly of soot and fly ash was dried and weighed. The measurements were all made to the east and south of the heating plant within the city limits of Houghton and over the same course in 1970 and 1973. In addition, lichen estimates were taken on sugar maples growing close to the waterway at intervals up to six miles northwest of the heating plant.

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NBIP ACCESSION NUMBER: MI/057

<453>

INVESTIGATOR(S): Urbisch, P.H.

AFFILIATION: Dept. of Biological Sciences, Michigan Technological University

TITLE: Effects of Gamma Radiation on Lichens

PURPOSE: To determine the effects of acute and chronic gamma radiation on lichens, particularly CLADONIA SYLVATICA and PARMELIA SULCATA.

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SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Certain lichens are affected more by radiation than others. Effects are not noted until one year after irradiation-usually needs a growing season to manifest the damage.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: radiological
ORGANISMS, MAJOR TYPES: plants; non-vascular plants; lichens; microorganisms; fungi; algae
TAXA: CLADONIA SYLVATICA; PARMELIA SULCATA
ADDED KEYWORDS: management measures; radiation effects
PRIMARY PARAMETERS INVESTIGATED: growth; kill; mortality; physiology; reproduction; stress
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: daily; weekly; monthly; annual
SUPPORTING DATA COLLECTED: associated flora; atmospheric chemistry
STUDY SITE(S): MI; WI
GEOGRAPHIC DESCRIPTION: Keweenaw County; Houghton County; Enterprise Radiation Forest
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: UNIVAC 1100; FORTRAN
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: After receiving up to 1,000 Krad of acute gamma radiation, CLADONIA SYLVATICA was not macroscopically damaged. Few algal cells were damaged (less than 10 percent) and respiration continued at the same level as non-irradiated podetia. However, P32 uptake was affected, dropping to one-half that of the non-irradiated control. Isolated C. SYLVATICA algae were more susceptible to acute gamma radiation (LD100-100Krad) than when in association with the lichen-forming fungus. Field studies showed that lichens (C. SYLVATICA and PARMELIA SULCATA) evidenced macroscopic damage if, after being irradiated the thalli were allowed to go through a growing season. Microscopically, both fungal and algal components appeared normal until the growth period was about half over, then both components appeared to produce a melanin pigment and the hyphal strands coalesced. The lichen itself turned brown and began to crumble. A qualitative study of lichen acids suggested that some of these acids disappeared as the radiation level increased. A quantitative analysis of usnic acid indicated that gamma radiation had no direct effect. However, a preliminary examination of irradiated C. SYLVATICA podetia, which had been through a growth period, indicated a pronounced decrease of usnic acid.
REFERENCES: Ertisch and Kalosis, 1973; Pullum

and Erbsch, 1972
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NBIP ACCESSION NUMBER: MI/058

<454>

INVESTIGATOR(S): Eshenroder, R.L.
AFFILIATION: Michigan Dept. of Natural Resources
TITLE: Assessment of Fish Stocks in the Michigan Waters of Northern Lake Huron
PURPOSE: To conduct annual surveys of fish populations in these waters for management purposes.
SPONSOR(S): Michigan Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An increase occurred in whitefish, salmon, brown trout, splake, and lake trout; but a decline in chubs and perch was observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: STIZOSTEDION VITREUM; SALMO TRUTTA; ONCORHYNCHUS KISUTCH; ONCORHYNCHUS TSHAWYTSCHA; PERCA FLAVESCENS; PROCOPIUM CYLINDRACEUM
ADDED KEYWORDS: walleyes; brown trouts; trouts; whitefishes; yellow perches; coho salmon; chinook salmon; salmon; smelts; suckers; round whitefishes; management measures; perches
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; harvest; mortality; natality; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; trawl
NUMBER OF SAMPLING SITES: 50
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Huron; Saginaw Bay
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV H
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: This is an annual fisheries survey effort in which prescribed areas in Lake Huron north of Saginaw Bay are sampled with gill nets and trawl on a prearranged schedule. Field work was done between April and September. Data are recorded on coded data sheets, key punched in the fisheries research offices in Ann Arbor, and computerized summaries and analyses are furnished to the station. Scale reading is done at the field station. Some monitoring of the commercial fishery is also done.
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NBIP ACCESSION NUMBER: MI/031

<455>

INVESTIGATOR(S): Frykberg, W.B.; Goodnight, C.J.
AFFILIATION: Dept. of Biology, Western Michigan University
TITLE: Limnological Investigation of the Muskegon County, Michigan, Wastewater Storage Lagoons
PURPOSE: To investigate the limnology of two 850 acre lagoons filled with both industrial and municipal wastewater, emphasizing the biological aspects of these lagoons.
SPONSOR(S): EPA; Western Michigan University
SPONSOR CATEGORY: federal government; teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Various changes occurred in both the number and type of biota through the first year. The second year of study will help determine if these changes are seasonal or due to succession.
ECOSYSTEM OR BIOHE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; microorganisms; algae; protozoa
TAXA: CHIRONOMIDAE, 8 SPECIES; COPEPODA, 8 SPECIES; CLADOCERA, 4 SPECIES; ROTIFERA, 3 SPECIES; ALGAE, 30 SPECIES; PROTOZOA, 30 SPECIES
ADDED KEYWORDS: waste water; benthic organisms; lagoons; zooplankton; chlorophylls; sewage treatment; management measures; copepods; cladocerans; dipterans; ciliophorans; mastigophorans; sarcodinans; lagoons
PRIMARY PARAMETERS INVESTIGATED: biodiversity; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): EPA methods
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Muskegon County
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: The limnology of two 850-acre wastewater storage lagoons was investigated from September 1973, shortly after the initial filling, through August 1974. Special emphasis was placed upon the biological aspects of these lagoons. During the period of study, the East Lagoon received most of the wastewater, while the West Lagoon received mostly land drainage and seepage water. Due to these

different waters in each lagoon, differences in most of the parameters were apparent between the two lagoons. Chironomid larvae comprised virtually all of a scant benthic population in both lagoons, with different dominant genera in each body of water. The dominant zooplankton in the East Lagoon were cyclopoid copepods, with CYCLOPS VERNALIS the most common form, while calanoid copepods and DAPHNIA were dominant in the West Lagoon. The number of zooplankton per liter consistently remained higher in the East Lagoon than in the West Lagoon. The green algae were the most common phytoplankton in both lagoons, with different dominant genera in each. Chlorophyll a and primary productivity were measured, and numerous physical-chemical parameters were also investigated.

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NBIP ACCESSION NUMBER: MI/026

<456>

INVESTIGATOR(S): Galbraith, M.G.
AFFILIATION: Institute for Fisheries Research, Michigan Dept. of Natural Resources
TITLE: Productivity of Small Lakes Stocked with Rainbow Trout—Especially as Related to Population Dynamics of DAPHNIA
PURPOSE: To determine how soon in the progressive deterioration of trout lakes DAPHNIA become overcropped and what parameters for sampling DAPHNIA are easiest to use to detect the deterioration.
SPONSOR(S): FWS; Michigan Dept. of Natural Resources
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Several lakes are examined routinely. In one lake there has been a change in water clarity.
ECOSYSTEM OR BIOHE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; indicator species; recreation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta
TAXA: DAPHNIA PULEX; DAPHNIA RETROCURVA; DAPHNIA SP; CHAOBORUS
ADDED KEYWORDS: trouts; rainbow trouts; water fleas; management measures; plankton; zooplankton; copepods; cladocerans; dipterans
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Wisconsin type plankton net
NUMBER OF SAMPLING SITES: 30
SAMPLING FREQUENCY: continuous; seasonal; monthly; annual
SUPPORTING DATA COLLECTED: climatological data; water quality data
STUDY SITE(S): MI

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GEOGRAPHIC DESCRIPTION: Schoolcraft County;
Marquette County; Delta County;
Montmorency County; East Fish Lake;
Johnson Lake; Sporley Lake; Camp 7 Lake;
Clear Lake; Bear Lake
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis
ABSTRACT: Treatment of small lakes to
eliminate stunted or trash fish, and
subsequently managing them for rainbow
trout has been a common practice among
fisheries managers in Michigan. There are
some 218 lakes stocked with rainbow trout
each year. Over 75 per cent of these lakes
are less than 250 acres in area.
Typically, these lakes are stocked every
year, and during the first few years after
treatment, they provide excellent fishing.
Soon trout survival and fishing quality
abruptly decline, despite continued
stocking. Once survival and fishing
quality decline, continued stocking of
fish is useless and poor economics.
Studies indicate that the abundance of
large DAPHNIA is related to both the
survival of rainbow trout and the quality
of fishing. A fish manager could quickly
appraise the trout population by sampling
the zooplankton for large DAPHNIA. The
success of the trout stocking program
could be assessed and stocking either
reduced or increased. The more frequently
a lake is checked, the sooner its
deterioration can be detected. If detected
before deterioration has progressed too
far, steps may be taken to maintain good
quality fishing over a longer period of
time than is now possible.
ADDRESS: Mr. M.G. Galbraith, Jr.
Institute for Fisheries Research
University Museum Annex
Ann Arbor, MI 48104
TELEPHONE: (313) 663-1858
NBIP ACCESSION NUMBER: MI/023

<457>

INVESTIGATOR(S): Grant, J.
AFFILIATION: Michigan Dept. of Natural
Resources
TITLE: Primary Monitoring Network-Biological
PURPOSE: Annual assessment of river water
quality above and below major discharge
areas using biological communities.
SPONSOR(S): Michigan Dept. of Natural
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Documented are
effectiveness of pollution abatement
programs and progress in state.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; stream; river
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
indicator species; recreation; resource
planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; insecta;
microorganisms; algae
ADDED KEYWORDS: waste water; management
measures; effluents; periphyton;
phytoplankton; zooplankton; benthic
organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
artificial substrates; Ponar grabs; litter
grabs; floating glass slides
NUMBER OF SAMPLING SITES: 43
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data
STUDY SITE(S): MI
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: None provided.
ADDRESS: James Grant
Bureau of Water Management
Dept. of Natural Resources
Mason Bldg.
Lansing, MI 48926
TELEPHONE: (517) 373-0927
NBIP ACCESSION NUMBER: MI/102

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INVESTIGATOR(S): Haas, R.C.
AFFILIATION: Michigan Dept. of Natural
Resources
TITLE: Assessment of Fish Stocks in the
Michigan Waters of Lake Erie, Lake St.
Clair, Lower Lake Huron, and Saginaw Bay
PURPOSE: To conduct annual surveys of fish
populations in these waters for management
purposes.
SPONSOR(S): Michigan Dept. of Natural
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuations in yellow
perch and walleye stocks.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: PERCA FLAVESCENS; STIZOSTEDION VITREUM;
MICROPTERUS DOLOMIEUI; MORONE CHRYSOPS;
ESOX MASQUINONGY; ICTALURUS PUNCTATUS
ADDED KEYWORDS: yellow perches; perches;
walleyes; smallmouth basses; white basses;
basses; muskellunge; channel catfishes;
catfishes; drums; sunfishes; suckers;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; growth; harvest;
mortality; migratory patterns; natality;
numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; trawls; trapnets
NUMBER OF SAMPLING SITES: 15
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Huron; Lake
Erie; Lake St. Clair
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV H
STATISTICS EMPLOYED: mean; analysis of

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variance; regression/correlation analysis
ABSTRACT: This is an annual fisheries survey effort in which prescribed areas in the above-named lakes are fished on a pre-arranged schedule. Field data are recorded on coded data sheets, key-punched in the fisheries research offices in Ann Arbor, and computerized summaries and analyses are furnished to the field biologists. Field work is done between April and November. Scale reading is done at the station. Some monitoring of the commercial fishery in Saginaw Bay and Lake Erie also is done.

ADDRESS: Robert C. Haas
Lake St. Clair Fish Station
33135 S. River Rd.
Mt. Clemens, MI 48043

TELEPHONE: (313) 465-4771
NBIP ACCESSION NUMBER: MI/034

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INVESTIGATOR(S): Hunter, R.D.
AFFILIATION: Biological Sciences, Oakland University
TITLE: Physiological Ecology of Freshwater Pulmonate Molluscs
PURPOSE: To determine factors which influence the quantity of calcium carbonate deposited in snail shells.
SPONSOR(S): Oakland University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A decreased density of HELISOMA ANCEPS in certain lakes has been observed.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca
TAXA: HELISOMA ANCEPS; PHYSA GYRINA; PHYSA INTEGRA
ADDED KEYWORDS: carbonates; shells; population effects
PRIMARY PARAMETERS INVESTIGATED: physiology; size/weight
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Oakland County; Macomb County; Long Lake; Stony Creek Lake; Bald Mountain Lake
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: The purpose of this work is to examine the relationship between calcium deposition in the shells of molluscs and the calcium concentration in the environmental water for a variety of populations of the freshwater pulmonate snails, PHYSA GYRINA, PHYSA INTEGRA and HELISOMA ANCEPS. Fifteen populations of P. GYRINA from environments having calcium concentrations of 18.4-161 mg Ca/l show

shell calcium levels of 0.56-1.53 mg Ca/mg tissue dry wt. A plot of the means of these populations shows that for P. GYRINA, there is apparent regulation of the amount of shell calcium per mg tissue dry weight over the entire range of environmental calcium levels studied. Ten populations of P. INTEGRA from environments ranging from 22.8-107.6 mg Ca/l, show shell calcium levels of 1.03-4.70 mg Ca/mg tissue dry wt. A plot of these data suggests that in waters of less than 60 mg Ca/l greater amounts of calcium are put into the shell as the environmental calcium decreases. Thirteen populations of H. ANCEPS from environments ranging from 3.2-127.2 mg Ca/l, show shell calcium levels of 0.95-4.5 mg Ca/mg tissue dry wt. When plotted the means of these populations seem to indicate some regulation at environmental calcium concentrations above 70 mg Ca/l. However, below 70 mg Ca/l a compensation like that of P. INTEGRA seems to occur except in very soft water (less than 13 mg Ca/l) where shell calcium is approximately 1.6 mg Ca/mg tissue dry wt.

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Rochester, MI 48063
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NBIP ACCESSION NUMBER: MI/013

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INVESTIGATOR(S): Keller, M.
AFFILIATION: Michigan Dept. of Natural Resources
TITLE: Assessment of Fish Stocks in the Michigan Waters of Lake Michigan
PURPOSE: To conduct annual surveys of fish populations for management purposes.
SPONSOR(S): Michigan Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuations in yellow perch, whitefish, and alewife, decline in chubs, and increases in lake trout and salmon.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALVELINUS NAMAYCUSH; ALOSA PSEUDOHARENGUS; PROSOPOM CYLINDRACEUM; PERCA FLAVESCENS; ONCORHYNCHUS KISUTCH; ONCORHYNCHUS Tshawytscha
ADDED KEYWORDS: lake trouts; trouts; whitefishes; chubs; yellow perch; perch; coho salmon; chinook salmon; salmon; alewives; smelts; round whitefishes; management measures
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; harvest; mortality; natality; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; trawl

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NUMBER OF SAMPLING SITES: 70
SUPPORTING DATA COLLECTED: water temperature
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Michigan
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 370; FORTRAN IV H
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis
ABSTRACT: This is an annual fisheries survey
in which prescribed areas are fished on a
pre-arranged schedule. There is some
monitoring of the commercial fishery. Data
are analyzed and summarized by computer at
the fish research offices in Ann Arbor.
Field work is done between April and
November. Scale reading is done at the
station.

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Charlevoix, MI 49720
TELEPHONE: (606) 547-2914
NBIP ACCESSION NUMBER: MI/032

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INVESTIGATOR(S): Kevern, N.R.
AFFILIATION: Dept. of Fisheries and Wildlife,
Michigan State University
TITLE: Ecology of the Red Cedar River
PURPOSE: To monitor man's impact on the
productivity and population dynamics of
organisms in the stream. Thirty to forty
subprojects are involved.

SPONSOR(S): EPA; OWRT; Agricultural
Experiment Station

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1954

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Shifts in species
dominance and subsequent recovery of some.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; crustacea; insecta;

mollusca; annelida; microorganisms;

bacteria; algae; protozoa

TAXA: MICROORGANISMS, 29 SPECIES;

INVERTEBRATES, 319 SPECIES; FISHES, 123

SPECIES; PLANTS, 3 SPECIES

ADDED KEYWORDS: primary productivity;

secondary productivity; drift; nutrients;

heavy metals; benthic organisms; copper;

nickel; zinc; sewage treatment; diatoms;

basses; phosphorus; dissolved oxygen;

coliform bacteria; minnows; darters;

amphipods; decapods; ephemeropterans;

hemipterans; trichopterans; coleopterans;

dipterans

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;

habitat characterization; numbers;

productivity; residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

nets; dredges; artificial substrate
NUMBER OF SAMPLING SITES: usually 5 - 10;
varies with subproject
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Ingham County;

Livingston County; Red Cedar River

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: CDC

STATISTICS EMPLOYED: mean; mode; median;

analysis of variance; analysis of

covariance; regression/correlation

analysis; multivariate analysis

ABSTRACT: The Red Cedar River, a warm-water
stream which drains a portion of the
south-central part of the lower peninsula
of Michigan, has been investigated. Some
thirty to forty subprojects have produced
considerable data on this area. Chemical,
physical, hydrological, and cultural data
have been collected on the urbanizing Red
Cedar River watershed. The subprojects
have involved substrates, drift material,
and the effect of heavy metals on the
ecology. Fish species and composition,
dynamics of the fish population, responses
of the fish community to differing levels
of perturbation and enrichment, and growth
of fish in relation to habitat and volume
of flow have been studied.

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NBIP ACCESSION NUMBER: MI/062

<462>

INVESTIGATOR(S): Kraft, K.J.

AFFILIATION: Dept. of Biology, Michigan
Technical University

TITLE: Macroinvertebrates of Eight Streams in
Marquette County, Michigan

PURPOSE: To monitor invertebrate communities
in 8 streams potentially affected by iron
mining operations of Cleveland-Cliffs Iron
Co. and associated companies.

SPONSOR(S): Cleveland-Cliffs Iron Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1968

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No major changes observed
to date in streams studied.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

fisheries; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; insecta; mollusca

TAXA: BENTHIC ORGANISMS, 107 SPECIES

ADDED KEYWORDS: benthic organisms; mining;

heavy metals; iron; spoil; habitat

modification; tailings; species diversity

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

artificial substrate

NUMBER OF SAMPLING SITES: 15 to 19

SAMPLING FREQUENCY: seasonal; monthly

SUPPORTING DATA COLLECTED: hydrological data

STUDY SITE(S): MI

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GEOGRAPHIC DESCRIPTION: Marquette County;
Escanaba River

TYPE OF DATA: raw

ABSTRACT: Sampling of the benthic macroinvertebrates of several Marquette County streams was begun in 1968. These streams provide process water for iron ore plants or receive water from iron ore tailings basins. The objective of the study is to identify adverse effects of these uses so that corrective measures can be attempted. Hardware cloth containers of rocks are placed on the bottom for 30 days, then removed, and organisms washed out. Organisms are identified to genus and preserved. Diversity indices are calculated using Brillouins formula.

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Dept. of Biological Sciences
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Houghton, MI 49931

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NBIP ACCESSION NUMBER: MI/018

<463>

INVESTIGATOR(S): Lagler, R.P.
AFFILIATION: School of Natural Resources,
University of Michigan

TITLE: Fishes of the Great Lakes Region
PURPOSE: To determine insofar as possible original distribution and subsequent changes.

SPONSOR(S): University of Michigan
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1945
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Disappearance of species and reduction of range in others with successes and failures of accidental and intentional introductions.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: environmental impact: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: FISHES, 200 SPECIES

ADDED KEYWORDS: habitat modification;
management measures; species introduction;
waste water; piscicides

PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seine; gill netting; chemofishing
NUMBER OF SAMPLING SITES: approaching 1000
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data
STUDY SITE(S): MI; CN

GEOGRAPHIC DESCRIPTION: Lake Michigan

TYPE OF DATA: raw; literature-derived

STATISTICS EMPLOYED: distribution maps

ABSTRACT: Re-entry of fishes into the Great Lakes basin from glacial refugia established a rich and varied fauna. Over time this fauna changed due to exploitation, incursions of exogenous

species via canals, and accidental and intentional introductions of several species. In addition, changing patterns of land use along with agricultural, industrial, and domestic pollution have brought about shifts in sub-basin faunas with segments of some stream systems now being depauperate. Synthesis of accumulated information, some original and some in the records of the Michigan Department of Natural Resources and in the University's Museum of Zoology, await both scheduling and funding. Meanwhile, data accumulation proceeds as before.

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Fisheries, Forestry, and Wildlife
Ann Arbor, MI 48109
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NBIP ACCESSION NUMBER: MI/073

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INVESTIGATOR(S): Massey, A.; Tierney, D.;
Pattyn, R.

AFFILIATION: Michigan Dept. of Natural
Resources

TITLE: Inland Lake Self-Help Program

PURPOSE: To obtain annual baseline trophic level data on Michigan's inland lakes.

SPONSOR(S): Michigan Dept. of Natural
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: After initial data collection, 13 percent of the lakes were termed oligotrophic, 48 percent mesotrophic, and 39 percent were eutrophic due to natural and cultural processes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake; reservoir

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

ADDED KEYWORDS: phytoplankton; primary

productivity; chlorophyll a; management

measures; eutrophication; waste water

PRIMARY PARAMETERS INVESTIGATED: productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Secchi disc; phytoplankton (chlorophyll)
sampler

NUMBER OF SAMPLING SITES: varies

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): MI

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: The program revolves around a central theme - that is, the annual amount of nutrients (phosphorus and nitrogen) reaching a lake is responsible for the rate of eutrophication. These nutrients act as fertilizers and are responsible for an increase in the quantity of algae and aquatic plants in the water. In general, as the annual quantity of nutrients entering a lake increases, there usually follows a corresponding increase in the amount of algae and a decrease in the transparency of the water. The Self-Help Program monitors the "size" of the algal population by determining the chlorophyll a concentration and water transparency.

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The necessary equipment (Secchi disc, calibrated line, and sample bucket) was constructed by association personnel following plans provided by the Bureau of Water Management. The Secchi disc was used to measure transparency (clarity). Twice the depth of the Secchi disc reading was termed the euphotic zone. This is the part of the lake where there is adequate light for plant growth. After the euphotic zone was determined, a composite water sample from it was collected for chlorophyll A analysis with the sample bucket. The sample was preserved with 10-15 drops of a supersaturated solution of magnesium carbonate before shipment to the analytical laboratory at the University of Michigan Biological Station.

REFERENCES: Staff, 1975; Tierney, et al, 1975

ADDRESS: Albert Massey
Bureau of Water Management
Dept. of Natural Resources
Mason Bldg.
Lansing, MI 48926

TELEPHONE: (517) 373-8000
NBIP ACCESSION NUMBER: MI/103

<465>

INVESTIGATOR(S): Megard, R.O.
AFFILIATION: Dept. of Ecology, University of Minnesota

TITLE: Growth Processes of Planktonic Algae
PURPOSE: To analyze rates of photosynthesis and nutrition of natural populations of planktonic algae.

SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes of algal abundance in response to pollution abatement.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: blue-green algae; plankton; phytoplankton; population effects; primary productivity; phosphorus; algal blooms; sewage treatment

PRIMARY PARAMETERS INVESTIGATED: biomass; growth; numbers; physiology; productivity.
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection; experiments IN SITU

NUMBER OF SAMPLING SITES: many
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Hennepin County; Lake Minnetonka; Shagawa Lake

TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; modeling, deterministic

ABSTRACT: Population densities, rates of photosynthesis, and phosphorus nutrition of planktonic algae in Lake Minnetonka and Shagawa Lake have been monitored since

1970. Algal abundance has decreased 50% in largest basin of Lake Minnetonka since sewage effluents were diverted out of the lake in 1972. Attenuation of subsurface light and effects of intracellular phosphorus on rates of photosynthesis by units of algal populations are currently being studied.

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St. Paul, MN 55108
TELEPHONE: (612) 373-7983
NBIP ACCESSION NUMBER: MN/038

<466>

INVESTIGATOR(S): Mikula, E.J.
AFFILIATION: Michigan Dept. of Natural Resources

TITLE: Waterfowl Surveys
PURPOSE: To determine waterfowl use of specific areas.

SPONSOR(S): Michigan Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1950's

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Observed redistribution of waterfowl use and also, decline of some species.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; lake

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: ANATIDAE

ADDED KEYWORDS: ducks; geese; swans; seasonal variations; population effects; habitat modification

PRIMARY PARAMETERS INVESTIGATED: distribution; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial surveys

NUMBER OF SAMPLING SITES: 1-10

SAMPLING FREQUENCY: seasonal; weekly; monthly; annual; irregular

STUDY SITE(S): MI

TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: percentile

ABSTRACT: None provided.

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Lansing, MI 48923

TELEPHONE: (517) 373-1263
NBIP ACCESSION NUMBER: MI/097

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INVESTIGATOR(S): Homot, W.T.
AFFILIATION: Dept. of Biology, Lakehead University

TITLE: Effects of Sustained Yield Harvest on the Population Dynamics and Production of Crayfish in Two Small Trout Lakes

PURPOSE: To measure the effects of exploitation on the production, population dynamics, and bioenergetics of previously unexploited crayfish populations with emphasis on their biotic response to such stress.

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SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Changes in reproduction and recruitment.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; plants; vascular plants; trees; shrubs; microorganisms; fungi; algae
TAXA: ORCONECTES VIRILIS
ADDED KEYWORDS: northern crayfishes; crayfishes; management measures; population effects; odonates; decapods
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; habitat characterization; harvest; mortality; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): baited traps; bottom samples; transects
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; terrain; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Otsego County; North Twin Lake; West Lost Lake; Pigeon River State Forest
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; regression/correlation analysis; modeling, deterministic
ABSTRACT: Populations of crayfish were subjected to exploitation in two trout lakes after data had been gathered on their production and population dynamics for five years. After a three-year period of sustained yield harvest, the fishing effort was increased fourfold in one of the two lakes (West Lost) for two successive years while effort in the other lake (North Twin) was not changed. The result in West Lost was an increase in yield, yet distortions in the age structure of the catch. Decrease in growth and recruitment occurred, suggesting overharvest. Some of the decreased recruitment was attributed to habitat fluctuation. During the harvest period (5 years), there was an apparent decrease in the relationship between egg production and female density and the stock recruitment relationship. This affected recruitment and production in both lakes.
ADDRESS: Walter T. Monot
Lakehead University
Thunder Bay, Ontario, CN
TELEPHONE: (807) 345-2121 ext. 277
NBIP ACCESSION NUMBER: CN/001

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INVESTIGATOR(S): Moran, R.J.

AFFILIATION: Houghton Lake Wildlife Research Station

TITLE: Monitoring of Deer Populations

PURPOSE: To monitor changes in deer populations in response to various levels of habitat disturbance (forest treatment: cutting, burning, etc.).

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Planned disturbance or manipulation of cover on 48,000 acres of public forest land.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; deciduous

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: ODOCOILEUS VIRGINIANUS

ADDED KEYWORDS: white-tailed deer; deer; prescribed burning; clear cutting; habitat modification; logging.

PRIMARY PARAMETERS INVESTIGATED: diversity; harvest; natality; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

pellet group surveys; counts; deer kill

NUMBER OF SAMPLING SITES: 8

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Roscommon County;

Kalkaska County; Lake County

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; mode; median;

analysis of variance;

regression/correlation analysis

ABSTRACT: Spring pellet group surveys showed overwinter populations of 40-50 deer per square mile on the 25% units and about 100 deer per square mile on the 3.5% Big Spring Unit. Track count surveys indicated high fawn production in 1973 with correspondingly high deer populations in 1974, followed by what may be lower production and a leveling off of populations in 1975. Populations of 10-12 deer per square mile were indicated for M-18 and 9-Mile units; the other units had about 20 deer per square mile. Hunting pressure rose in 1974 and approached 50 hunters per square mile on the Lake County areas. Total legal kill was 260 bucks per square mile. At this point in time, the kill, number of deer seen, and deer populations reflect the pre-development characteristics of the unit to produce deer rather than the level of habitat disturbance exerted. It will require long-term continuation of this work to successfully evaluate the impact of forest disturbance.

REFERENCES: Moran, 1975

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NBIP ACCESSION NUMBER: MI/037

<469>

INVESTIGATOR(S): Mozley, S.C.

AFFILIATION: Great Lakes Research Div.,

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University of Michigan
TITLE: Benthos Studies in Environmental
Monitoring of Lake Michigan near the Cook
Nuclear Plant
PURPOSE: To quantify changes in abundance and
composition of benthic macroinvertebrates
and distinguish plant-related from
extraneous changes in Lake Michigan.
SPONSOR(S): American Electric Power Corp.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Three-fold, year-to-year
fluctuations in population maximums have
occurred before operations. No documented
operational effects have occurred to date.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
indicator species; power generation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
mollusca; annelida
TAXA: SPHAERIUM STRIATUM; CHIRONOMIDAE;
PONTOPOREIA AFFINIS; STYLOBILUS
HERINGIANUS; TUBIFICIDAE; NAIDIDAE;
PISIDIUM SPF; SPHAERIUM NITIDIUM
ADDED KEYWORDS: nuclear power plants; benthic
organisms; thermal effluents; amphipods;
mysidaceans; dipterans; entrainment
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; growth; numbers;
reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ponar grab; elutriation device; corer;
plankton net
NUMBER OF SAMPLING SITES: 45
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data;
soils; terrain; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Berrien County; Cook
Nuclear Power Plant; Lake Michigan
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: ANDAHL 470/U; MIDAS
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis
ABSTRACT: Collections with 0.35-mm screens
showed that younger stages of many
macroinvertebrates and small species of
Naididae and Chironomidae are
under-represented in regular survey data,
particularly at depths less than 16 m.
Nocturnal drift appeared to be an
important factor in zoobenthic composition
at depths less than 16 m. Entrainment
studies showed that significant but
unpredictable heterogeneities occur in the
intake forebay of the Cook Plant, making
estimation of the numbers of entrained
zoobenthos very imprecise. Many entrained
animals appeared to originate on riprap
installed near the plant to suppress
erosion of the lake bottom, or at the
intake structure.
REFERENCES: Mozley, 1975; Mozley and Winnel,
1975

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NBIP ACCESSION NUMBER: MI/089

<470>

INVESTIGATOR(S): Parejko, R.A.
AFFILIATION: Dept. of Biology, Northern
Michigan University
TITLE: Chlorinated Hydrocarbons in Lake
Superior Fish
PURPOSE: Quantitation of chlorinated
hydrocarbons in Lake Superior fish over
time.
SPONSOR(S): OWBT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Overall levels of DDT and
analogs are decreasing; PCB levels
decreasing; and chlordane is being
detected now (not previously in fish).
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; region
MANAGEMENT FOCUS: fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: SALVELINUS NEMAYCUSH; ONCORHYNCHUS
KISUTCH; ONCORHYNCHUS TSHAWYTSCHA;
ONCORHYNCHUS GORBUSCHA; ANARRICHAS LUPUS
ADDED KEYWORDS: pesticides; lake trouts; coho
salmon; chinook salmon; pink salmon;
whitefishes; salmon; trouts; DDT; aroclor;
PCB; mirex; dieldrin; chlordane
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; residues; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 3-4
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): MI; WI; MN; CN
GEOGRAPHIC DESCRIPTION: Lake Superior
TYPE OF DATA: reduced
STATISTICS EMPLOYED: mean; percentile;
analysis of variance
ABSTRACT: Polychlorinated hydrocarbons used
as pesticides and as industrial chemicals
have been recognized as being ecologically
significant compounds since they are
metabolically quite recalcitrant, and thus
tend to accumulate in various global
ecosystems. Generally the higher trophic
level organisms, such as birds, fish, and
some marine and terrestrial animals,
contain increased concentrations of
chlorinated hydrocarbons. Studies have
indicated that some fish taken from the
Great Lakes possess chlorohydrocarbon
pesticide residue concentrations in excess
of 5.0 ppm--the interim administrative
limit for DDT in food set by the United
States Food and Drug Administration.
Recently, polychlorinated biphenyls (PCBs)
usually identified as aroclor and the
pesticide mirex have been identified in
Lake Ontario fish. Fish taken from Lake
Erie have also been found to be
contaminated with PCBs, DDT, and dieldrin.
Lake Michigan and Lake Superior salmonid
fish have likewise been reported to

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contain DDT and dieldrin.
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NBIP ACCESSION NUMBER: MI/015

<471>

INVESTIGATOR(S): Peterson, R.O.
AFFILIATION: Dept. of Biological Sciences,
Michigan Technological University
TITLE: Ecology of Wolves and Moose in Isle
Royale National Park, Michigan
PURPOSE: To monitor the wolf and moose
populations in Isle Royale National Park
and to assess the ecological factors
affecting this predator-prey system.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1958
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Successional changes in
the forest have reduced the food supply
for moose over the last 17 years,
resulting in lower calf production and
survival and increased predation by wolves.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: CANIS LUPUS; ALCE ALCE
ADDED KEYWORDS: timber wolves; moose;
population effects; predators; prey;
mortality rates; malnutrition; islands;
beavers; wolves
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; home range size;
kill; mortality; natality; numbers;
territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; census; field examination
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Keweenaw County; Lake
Superior; Isle Royale National Park
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN IV
STATISTICS EMPLOYED: mean; percentile;
contingency table analysis
ABSTRACT: Wolves rely entirely on moose and
beaver as prey species on 210 square mile
Isle Royale National Park, an island in
Lake Superior. Prior to the natural
establishment of wolves in the late
1940's, moose increased to high levels and
occasionally died in great numbers from
malnutrition. Wolves prey on moose calves
and beaver during the non-winter months
and kill both adult and calf moose in
winter. Predation has eliminated
significant direct mortality from
malnutrition among moose. During the
period of study (1958-74), the wolf
population has averaged 23 in mid-winter,

with the moose population at about 1000.
Wolf predation on adult moose is very
selective and concentrates on moose older
than seven years of age. The maximum age
attained by male moose was 15 1/2 years,
while females have survived to 19 1/2
years. Slightly lower survival of males is
attributed to greater incidence of
arthritis and malnutrition in this sex.
The annual turnover in the adult segment
of the moose population is estimated at
about 13%. Forest succession has reduced
the winter food supply for moose, and,
combined with a series of severe winters
from 1969 to 1972, resulted in increased
malnutrition. Calf production and survival
declined in the late 1960's and early
1970's, and calves born from 1969 through
1971 were stunted and suffered
developmental retardation. Those age
classes were heavily preyed upon by wolves
as young adults. The net effect of the
above changes was to increase the winter
food supply of the wolf population. A
doubling of the beaver population in the
1960's provided more prey for wolves in
the non-winter months. Subsequent to an
increase in their food supply, the
territory of the single large wolf pack
present in the late 1960's was reduced in
size. A second large pack appeared in
1971, and a third in 1974. The population
in 1975 was 41 wolves, the highest wolf
density occurring naturally in any area of
the world.

REFERENCES: Wolfe, et al, 1973; Peterson, et
al, 1974

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NBIP ACCESSION NUMBER: MI/038

<472>

INVESTIGATOR(S): Reed, P.C.
AFFILIATION: Dept. of Biological Sciences,
Kent State University
TITLE: Wastewater Application at Different
Rates to Old-Field Units in Michigan-An
Ecological Assessment
PURPOSE: To evaluate the usefulness of
old-field units (natural) in renovating
secondary effluent.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some reduction in species
numbers, increased production, nutrient
accumulation, and altered specific growth
rates.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses
TAXA: AGROPYRON REPENS; SOLIDAGO SPP; ASTER
SPP; LINNARIA SPP
ADDED KEYWORDS: waste water; nutrients; spray
systems; management measures; sewage
treatment

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PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; distribution; diversity; growth; harvest; numbers; productivity; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): clip-quadrats
NUMBER OF SAMPLING SITES: 60; 5 areas with 12 samples per area
SUPPORTING DATA COLLECTED: atmospheric chemistry; climatological data; soils; terrain; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Ingham County; Felton Drain; Herron Creek; East Lansing
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Five areas, three treatment and two control, were selected on the Michigan State University Water Quality Management Site for evaluation in acceptance of spray effluent. Area 21 had received a treatment of 2 inches per week during the winter months and this was continued, while area 23 received 2 inches per week and area 21 received 4 inches per week. Variables assessed were effluent quality, plant production, plant productivity, specific growth rates, and nutrient accumulation regarding carbon, hydrogen, nitrogen, and phosphorus. This evaluation is used to direct further management practices.
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NBIP ACCESSION NUMBER: OH/039

<473>

INVESTIGATOR(S): Richardson, C.J.
AFFILIATION: School of Natural Resources, University of Michigan
TITLE: The Effects of Sewage Effluent on a Freshwater Wetlands in Central Michigan
PURPOSE: To study the effects of nutrient additions on productivity, biogeochemical cycling, and species diversity in a wetland.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in productivity, nutrient transfers between compartments, and mortality of some species. Litter acts as a nutrient sink.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; invertebrates; insects; plants; vascular plants; shrubs; herbs; grasses; microorganisms; bacteria; algae
TAXA: CHAMAEDAPHNE CALYCOLATA; BETULA PUMILA; CAREX SPP; SALIX SPP; PLANTS, 21 SPECIES
ADDED KEYWORDS: leatherleaf; bog birches;

sedges; willows; habitat modification; sewage treatment; management measures; decomposition; waste water
PRIMARY PARAMETERS INVESTIGATED: biomass; bog; growth; harvest; numbers; physiology; toxicity
NUMBER OF SAMPLING SITES: 150
SUPPORTING DATA COLLECTED: associated flora; atmospheric chemistry; climatological data; hydrological data; soils; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Roscommon County; Muskegon River; Houghton Lake
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: The slow rate of subsurface water movement (about 30 cm per day), the high denitrification rates for waterlogged soils, the high nutrient sorption capacity of organic litter and peat soils, and nutrient uptake by some plant species all indicate that a peatland ecosystem has potential as a biological filter for plant nutrients. Definite long-term results of nutrient additions to the wetland ecosystem are yet unknown. The exact nature and extent of these changes are being tested in a large scale use of the peatland as an effluent disposal site. However, much of the evidence of our fertilization studies indicates that growth of some species will be enhanced, tissue nutrient concentrations will be increased, a few species (aster and some grasses) may be adversely affected, and the litter and organic soil will function as a nutrient sink. However, all wetlands do not function the same ecologically, and they undergo change in response to perturbations according to their individual structural and functional latitudes. Thus the conclusion that these natural filtering systems offer at least a short-term solution for removing a limited amount of nutrient input may only be applicable to peatland systems.
REFERENCES: Richardson, et al, 1975
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NBIP ACCESSION NUMBER: MI/100

<474>

INVESTIGATOR(S): Richardson, C.J.
AFFILIATION: School of Natural Resources, University of Michigan
TITLE: Effects of Land Use on Mineral Cycling in a Northern Michigan Watershed
PURPOSE: Effects of land use, development, and agriculture on water quality (lake and groundwater) in northern lower Michigan.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973

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PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes in water quality depending on land use.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland; aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: ecosystem; region
MANAGEMENT FOCUS: environmental impact; forestry; resource planning; water quality
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; microorganisms; algae; protozoa
ADDED KEYWORDS: habitat modification; groundwater; sewage treatment
PRIMARY PARAMETERS INVESTIGATED: biodiversity; productivity; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Standard EPA procedures
NUMBER OF SAMPLING SITES: 100+
SAMPLING FREQUENCY: seasonal; weekly; quarterly; annual
SUPPORTING DATA COLLECTED: atmospheric chemistry; climatological data; hydrological data; soils; terrain; water quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Emmet County; Cheboygan County; Douglas Lake
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM; Amdahl; FORTRAN
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; multivariate analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: Results of the lake comparisons, ground water sampling, and wetland study are used to evaluate impacts of land-use patterns and urbanization. Baseline data from this research will be useful for future planning and decision making concerning sewage treatment, water supply alternatives, minimum land parcel sizes, and optimum population densities.
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NBIP ACCESSION NUMBER: MI/101

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INVESTIGATOR(S): Ryel, L.A.
AFFILIATION: Michigan Dept. of Natural Resources
TITLE: Kirtland's Warbler Census
PURPOSE: To monitor the breeding population of Kirtland's Warblers, to keep abreast of the status of the species, and to evaluate the responses to management practices.
SPONSOR(S): Michigan Dept. of Natural Resources; FS; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1951
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Population appears to be approximately stable.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: endangered species; forestry; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: DENDROICA KIRTLANDII
ADDED KEYWORDS: kirtland's warblers; warblers; management measures
PRIMARY PARAMETERS INVESTIGATED: habitat characterization; mortality; natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): singing male counts
NUMBER OF SAMPLING SITES: 30
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): MI
TYPE OF DATA: raw; summarized; literature-derived
ABSTRACT: This is part of the Recovery Plan for the Kirtland's Warbler for which the primary objective is to reestablish a self-sustaining wild K. Warbler population throughout its known former range at a minimum level of 1,000 pairs by: (1) developing suitable nesting habitats, (2) protect the warbler on its winter range and migration route, (3) reduce key factors affecting the reproduction and survival, (4) monitor the nesting population and reproductive success, and (5) reintroduce the warblers into apparent suitable habitat outside its known range.
REFERENCES: Ryel, 1975
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NBIP ACCESSION NUMBER: MI/065

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INVESTIGATOR(S): Schneider, J.C.
AFFILIATION: Michigan Dept. of Natural Resources
TITLE: Pilot Study on Muskegon River Walleyes
PURPOSE: To determine status of stock, factors limiting abundance, and to recommend management procedures for restoration.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Preliminary indications are a drastic decline in the Muskegon River walleye population in the last 20 years.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: STIZOSTEDION VITREUM
ADDED KEYWORDS: management measures; census;

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valleyes

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; growth; mortality;
migratory patterns; natality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nets; electrofishing gear

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Muskegon County;
Muskegon River; Muskegon Lake; Nawaygo
County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Walleye runs diminished during the last 30 years when the fish populations of the Great Lakes underwent drastic change. Only a few walleye stocks have maintained their abundance. The causes for the declines are poorly understood. Generally the blame has been assigned to over-fishing, lamprey predation, pollution, or the alewife. Data needed for the management of stock in the Muskegon River include: origin, movement, absolute abundance, spawning areas, survival of eggs and fry, and limiting factors. Quantitative sampling will be difficult because of the size, depth, and velocity of the Muskegon River. Consequently, a one-year pilot study was undertaken to determine the feasibility of intensive research.

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NBIP ACCESSION NUMBER: MI/014

<477>

INVESTIGATOR(S): Sloan, N.F.

AFFILIATION: Michigan Technological University

TITLE: Impact of Intensive Logging on a
Songbird Population

PURPOSE: To determine what modifications are necessary to maintain a high bird density in an area of active forestry practices.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: An increase in density of bluebirds was observed.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: wildlife; forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; invertebrates; insects; plants;
vascular plants; trees

TAXA: SIALIA SIALIS; CORISTOCNEURA PINUS

ADDED KEYWORDS: bluebirds; biological
control; jackpine budworms; nesting sites;
lepidopterans

PRIMARY PARAMETERS INVESTIGATED: mortality;
natality; numbers; territory size

NUMBER OF SAMPLING SITES: 29

SUPPORTING DATA COLLECTED: associated fauna;
climatological data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Baraga County

TYPE OF DATA: raw

COMPUTER AND LANGUAGE: UNIVAC

ABSTRACT: A grid was established at Little Lake on the Baraga Planes that radiates in the four cardinal directions. One line is a control with no modification, and one has nest boxes located at seven points along the line. One has watering devices. One has water and nest boxes. Population densities were monitored with mist nets at each of the seven locations and event recorders on the nest boxes and watering devices. A separate grid was established to specifically study the bluebird. Boxes were placed at densities of one to eight per acre.

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NBIP ACCESSION NUMBER: MI/019

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INVESTIGATOR(S): Smith, B.R.

AFFILIATION: FWS

TITLE: Sea Lamprey Control

PURPOSE: To suppress populations of parasitic sea lampreys sufficiently to allow the return of viable fisheries in the Great Lakes.

SPONSOR(S): Great Lakes Fishery Commission;
FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1950

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Reduction of sea lamprey population more than 95 percent when compared with precontrol populations.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater: stream: river: lake

LEVEL(S) OF STUDY: organisms; population;

community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;

fisheries; range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: PETROMYZON MARINUS

ADDED KEYWORDS: sea lampreys; management
measures; habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution;

diversity; growth; habitat

characterization; home range size; kill;

mortality; migratory patterns; natality;

numbers; reproduction; sex; size/weight;

stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

electric barriers; shockers; larvicides;

collection; fyke net

SAMPLING FREQUENCY: seasonal; daily; annual;

irregular

SUPPORTING DATA COLLECTED: associated fauna;

climatological data; hydrological data;

water quality data

STUDY SITE(S): MN; MI; WI; IN; IL; OH; PA; NY

GEOGRAPHIC DESCRIPTION: Lake Superior; Lake
Michigan; Lake Huron; Lake Ontario; Lake
Erie

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TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 370; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis

ABSTRACT: All phases of the parasitic sea
lamprey were monitored throughout the
Great Lakes to evaluate the effectiveness
of selective chemical toxicants used in
the control program and to determine the
frequency of larvicide applications. Sea
lamprey control was accomplished by
application of larvicides to habitat of
the larval sea lamprey.

REFERENCES: Hardisty and Potter(eds), 1971;
Smith, 1974

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NBIP ACCESSION NUMBER: MI/054

capture-recapture; direct observation
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Huron; Lake
Michigan; South Manitou Island; High
Island; Ile aux Galets; Green Island; Bird
Island

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: IBM 360/67; FORTRAN
STATISTICS EMPLOYED: mean; percentile;
analysis of variance

ABSTRACT: The periodic changes in Great
Lakes' water levels significantly
influence the amount of nesting space
available to larids. Changes in site
tenacity, reproductive success,
distribution, and other behavioral and
ecological patterns are being compared
during changes in water level.

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NBIP ACCESSION NUMBER: IL/008

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INVESTIGATOR(S): Southern, W.E.
AFFILIATION: Dept. of Biological Sciences,
Northern Illinois University
TITLE: Ecology and Behavior of Great Lakes
Region Larids

PURPOSE: To determine the response of larids
to changing water levels, to ascertain
habitat requirements and social
interactions, and to outline seasonal
patterns of distribution.

SPONSOR(S): Northern Illinois University;
American Museum of Natural History

SPONSOR CATEGORY: teaching institution; museum
DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: In the mid-1960's there
was a marked low in water cycle and ample
breeding sites which resulted in
population increase, now the reverse is
true.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; resource
planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: LARUS DELAWARENSIS; LARUS ARGENTATUS;
HYDROPROGNE CASPIA; STERNA HIRUNDO

ADDED KEYWORDS: gulls; terns; ring-billed
gulls; herring gulls; water levels;
nesting sites; common terns; weather
conditions; habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; habitat characterization; home
range size; immigration; mortality;
migratory patterns; natality; numbers;
reproduction; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
banding; marking techniques;

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INVESTIGATOR(S): Southern, W.E.
AFFILIATION: Dept. of Biological Sciences,
Northern Illinois University
TITLE: Development of a Gull Management Plan
for South Manitou Island

PURPOSE: To identify decimating factors and
recommend solutions to problem.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gull populations
decreased due to human disturbances,
increased to higher proportions, and now
have low success because of foxes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; recreation;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: LARUS DELAWARENSIS; LARUS ARGENTATUS

ADDED KEYWORDS: gulls; foxes; predation

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
habitat characterization; immigration;
kill; mortality; natality; numbers;
reproduction; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; counts; plot census

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: South Manitou Island;
Lelanau County; Lake Michigan

TYPE OF DATA: raw; reduced; summarized;
literature-derived

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Standard Federal Region 5
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STATISTICS EMPLOYED: mean; percentile;
analysis of variance
ABSTRACT: Gulls on South Manitou have had
declining reproductive success during a
period when 'Great Lakes' populations have
been increasing. Factors responsible for
the decline will be identified and
management recommendations will be
formulated to remedy the existing
situation. The resulting plan will include
guidelines for the use of the existing
colonies as interpretative centers in a
National Lakeshore.
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NBIP ACCESSION NUMBER: IL/009

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INVESTIGATOR(S): Stauffer, T.H.
AFFILIATION: Michigan Dept. of Natural
Resources
TITLE: Coho Salmon and Steelhead Trout in
Lake Superior
PURPOSE: To determine populations and growth
of juvenile trout and salmon in Lake
Superior tributaries and to assess effect
of newly-introduced coho on native stream
trout.
SPONSOR(S): Michigan Dept. of Natural
Resources; FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Juvenile steelhead trout
populations are unchanged (1967-74), and
juvenile coho salmon populations are
increasing (1967-74).
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; stream; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: SALMO GAIEDNERI; ONCORHYNCHUS KISUTCH;
ONCORHYNCHUS GORBUSCHA
ADDED KEYWORDS: steelhead trouts; trouts;
coho salmon; salmon; pink salmon; species
introduction; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; numbers
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Superior
tributaries
TYPE OF DATA: raw; summarized
ABSTRACT: Annual population estimates of age
0 and I steelhead and coho were made in
1000 ft. sections of five Lake Superior
tributaries during 1967-1974. Age 0 and I
steelhead averaged 2000 and 200,
respectively, per 1000 ft. of stream. Age
0 and I coho averaged 500 and 20,
respectively, per 1000-ft. of stream.

Steelhead populations appear stable, while
coho populations are increasing
erratically.
REFERENCES: Wagner and Stauffer, 1975
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Marquette, MI 49855
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NBIP ACCESSION NUMBER: MI/012

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INVESTIGATOR(S): Tarapchak, S.J.
AFFILIATION: NOAA; Great Lakes Environmental
Research Lab
TITLE: Phytoplankton Nutrient Competition
PURPOSE: To determine major nutrient
interactions-competition causing seasonal
succession of phytoplankton.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in phytoplankton
species succession, primary production,
and species growth kinetics in Lake
Michigan plankton succession have occurred.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
radiological; pollution control; water
quality
ORGANISMS, MAJOR TYPES: microorganisms;
bacteria; algae
ADDED KEYWORDS: phytoplankton; succession;
primary productivity; population effects;
nutrients; autoradiography; phosphorus;
algal blooms; grazing
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; numbers;
physiology; productivity; residues
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data; water
quality data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Michigan
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: CDC/6600
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
modeling, deterministic; modeling,
stochastic
ABSTRACT: We are striving to find the factors
that determine mechanisms underlying
phytoplankton species succession,
especially interactions leading to the
development of blue-green algal blooms.
Investigations are carried out in the
field using autoradiographic techniques
for carbon and phosphorus assimilation and
in the laboratory in model systems.
Zooplankton grazing is measured
simultaneously.
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Ann Arbor, MI 48104
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NBIP ACCESSION NUMBER: MI/096

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INVESTIGATOR(S): Thompson, W.L.
AFFILIATION: Dept. of Biology, Wayne State University
TITLE: Fish Collecting (Part of a Course in Vertebrate Natural History)
PURPOSE: To demonstrate to students fish-collecting techniques and to sample a small stream.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A reduction in diversity of fishes and change of predominant species have been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: NOTROPIS CORNUTUS; NOTROPIS STRAMINEUS; CATOSTOMUS COMMERSONI; SEMOTILUS ATRONACULATUS; RHINICHTHYS ATRATULUS; LEPOMIS GIBBOSUS; ANABLOPLITES RUPESTRIS; ETHEOSTOMA SPP; HADEOPTERUS MACULATUS
ADDED KEYWORDS: silting; habitat modification; siltation; construction
PRIMARY PARAMETERS INVESTIGATED: diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; soils
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Oakland County; Rouge River; Franklin Creek
TYPE OF DATA: raw
ABSTRACT: As real estate development has proceeded, the bottom has become heavily silted and the stream charged with organic pollutants. Fish fauna has shifted from mostly NOTROPIS CORNUTUS with some NOTROPIS STRAMINEUS and ETHEOSTOMA SPP to almost entirely NOTROPIS STRAMINEUS with ETHEOSTOMA very rare.
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Detroit, MI 48202
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NBIP ACCESSION NUMBER: MI/020

<484>

INVESTIGATOR(S): Vanderploeg, H.A.
AFFILIATION: Great Lakes Environmental Research Lab
TITLE: Zooplankton Grazing in Southern Lake Michigan
PURPOSE: To determine the effects of grazing by the entire zooplankton assemblage on individual species of phytoplankton.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1976
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Changes in zooplankton and phytoplankton concentration observed at weekly intervals, June-November.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; algae
TAXA: COPEPODA
ADDED KEYWORDS: succession; phytoplankton; zooplankton; copepods; zooplankton grazing; primary productivity; secondary productivity; models
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; mortality; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): water bottles; c-14 primary productivity
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: Associated flora; hydrological data
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Michigan
TYPE OF DATA: summarized
STATISTICS EMPLOYED: modeling, deterministic
ABSTRACT: Our purpose is to develop an adequate general expression for food selection by zooplankton, and to determine selectivity coefficients for different species of Great Lakes zooplankton. Predicting the seasonal succession of phytoplankton and zooplankton is one of the more important theoretical and applied problems in biological limnology. Requisite for solving this problem is an adequate dynamic expression of zooplankton grazing.
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NBIP ACCESSION NUMBER: MI/099

<485>

INVESTIGATOR(S): Wallner, W.E.
AFFILIATION: Dept. of Entomology, Michigan State University
TITLE: Insect Defoliators and Insect Parasitoids and Predators Associated with Michigan Hardwood Forests
PURPOSE: To characterize interactions between beneficial and phytophagous hardwood defoliating insects and their abundance and population dynamics.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population dynamics indicated significant changes in density of HETEROCAMPA MATEO and its parasitoids.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: forestry; recreation
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta; plants; vascular plants; trees
TAXA: HETEROCAMPA MATEO; DIRADOPS BETHUNEI;

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PHOBACAMPE CLESIOCAMPE; CARABIDAE;
ICHTHEUMONIDAE; TACHINIDAE
ADDED KEYWORDS: management measures;
population effects; defoliation;
predators; parasites; lepidopterans;
dipterans; hymenopterans
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; soils
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake County;
Nianistee County; Newaygo County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis
ABSTRACT: We seek to identify and
characterize the abundance and interaction
of phytophagous hardwood defoliating
insects and beneficial parasitoids and
predators and to develop sampling schemes
to predict population trends and establish
developmental rates for correlation with
environmental monitoring devices. This is
a long term project with the end-point
being pest management of native and,
perhaps, introduced hardwood defoliating
insects.
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NBIP ACCESSION NUMBER: MI/051

<486>

INVESTIGATOR(S): Willford, W.A.
AFFILIATION: Great Lakes Fishery Laboratory
TITLE: Contaminant Dynamics
PURPOSE: To determine the identity, severity,
distribution, and changing trends in
contaminants found in lake fish; to
develop an analytical methodology for
determining these contaminants; and to
evaluate the effectiveness of past
enforcement actions in reducing the
contamination.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1927
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Concentrations of mercury
and DDT have declined since 1970, while
PCB's have remained constant since 1972.
Lead is under study.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ONCORHYNCHUS KISUTCH; STIZOSTEDION

VITREUM; HYBOPSIS SPP

ADDED KEYWORDS: management measures;
walleyes; trouts; coho salmon; salmon;
bloater chubs; chubs; mercury; DDT; PCB;
lead; pesticides; contaminants; population
effects
PRIMARY PARAMETERS INVESTIGATED: residues
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MI; WI; IL; IN
GEOGRAPHIC DESCRIPTION: Lake Michigan; Lake
St. Clair
ABSTRACT: Average mercury concentrations in
selected species of Lake St. Clair fish
were shown to have declined 58-78 percent
since 1970. Of the species and sizes of
fish tested, only walleye remain above the
FDA guideline of 0.5 ppm mercury. The
previously detected declines in average
DDT residues in Lake Michigan lake trout,
coho salmon, and bloater chubs were shown
to be continuing with average
concentrations down 48-79 percent since
1970. Residues of PCB's in Lake Michigan
fish, however, were found to have remained
essentially unchanged since 1972
suggesting either an inadequacy in current
regulatory controls or a difference in the
environmental dynamics of PCB'S as
compared to DDT and mercury. Laboratory
analyses associated with a survey of lead
in Great Lakes fishes were completed.
ADDRESS: Wayne A. Willford
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TELEPHONE: (313) 995-3331; FTS 994-3237
NBIP ACCESSION NUMBER: MI/077

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INVESTIGATOR(S): Wright, A.T.
AFFILIATION: Michigan Dept. of Natural
Resources
TITLE: Assessment of Fish Stocks in the
Michigan Waters of Lake Superior
PURPOSE: To collect population and harvest
data for management purposes.
SPONSOR(S): Michigan Dept. of Natural
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A recovery of lake trout
and a decline in herring and chub stocks
has been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: SALVELINUS MAYNARDI
ADDED KEYWORDS: lake trouts; herrings; chubs;
whitefishes; smelts; salmon; management
measures
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; growth; harvest;
mortality; natality; numbers; sex;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; trawl
NUMBER OF SAMPLING SITES: 40
STUDY SITE(S): MI
GEOGRAPHIC DESCRIPTION: Lake Superior
TYPE OF DATA: summarized

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COMPUTER AND LANGUAGE: IBM 370;FORTRAN IV H
STATISTICS EMPLOYED: mean;
regression/correlation analysis

ABSTRACT: This is an annual fisheries survey effort in which selected areas are fished with gill nets and trawl in various parts of Lake Superior. Some monitoring of the commercial fishery also is done. Field work is done between May and November. Data are recorded on coded data sheets, key punched in the fisheries research offices in Ann Arbor, and computerized summaries and analyses are furnished to station biologists. Scale reading is done at the field station.

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NBIP ACCESSION NUMBER: MI/033

<488>

INVESTIGATOR(S): Wujek, D.E.

AFFILIATION: Dept. of Biology, Central

Michigan University

TITLE: Phytoplankton Studies on the Lakes of

Isabella County, Michigan

PURPOSE: To establish baseline data for future reference.

SPONSOR(S): Local Lake Associations; Central Michigan University

SPONSOR CATEGORY: societies and other organizations; teaching institution

DATE OF INITIATION: 1961

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: An increase in algal numbers and shift in species composition has been observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
region

MANAGEMENT FOCUS: water quality

ORGANISMS, MAJOR TYPES: microorganisms;

viruses; algae

TAXA: DIATOMS, 82 SPECIES

ADDED KEYWORDS: plankton; phytoplankton;

eutrophication; diatoms

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; numbers

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated flora;

water quality data

STUDY SITE(S): MI

GEOGRAPHIC DESCRIPTION: Isabella County;

Charlevoix County; Chippewa River;

Isabella Lake; Coldwater Lake; Geneserath Lake

TYPE OF DATA: raw; literature-derived

COMPUTER AND LANGUAGE: FORTRAN IV

STATISTICS EMPLOYED: multivariate analysis

ABSTRACT: This study has consisted of analyses of plankton diatom populations to determine their proportional abundance, their seasonal variation, and the differences in population densities at various stations in relation to water quality. Further studies have been concerned with qualitative and quantitative analysis of the seasonal and vertical distribution of plankton diatoms and the possible relation of plankton diatom periodicity to the environment at the time of sampling. Results seem to indicate that in plankton, diatom populations volume is probably a better criterion than total numbers for evaluating productivity. Productivity increased as temperatures decreased until ice formation occurred.

REFERENCES: Wujek, 1967; Wujek, 1966

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NBIP ACCESSION NUMBER: MI/017

MINNESOTA

Standard Federal Region 5
Fish and Wildlife Service Region 3
(SEE ALSO 333, 470, 478, 569, 671, 674, 902, 934)

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INVESTIGATOR(S): Boelter, D. H.
AFFILIATION: North Central Forest Experiment Station, PS
TITLE: Maintenance and Improvement of the Quality and Quantity of Water Yields from Northern Forest Lands
PURPOSE: To determine how to use and manage northern conifer-hardwood forests, including bogs so that the quality and quantity of water yields are maintained at acceptable levels or improved.

SPONSOR(S): PS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in vegetation following timber harvest (both upland and peatland) and prescribed burning are being noted.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; plants; vascular plants; trees; shrubs; herbs; non-vascular plants; mosses
TAXA: BETULA Papyrifera; POPULUS TRENULOIDES; POPULUS GRANDIDENTATA; ABIES BALSAMEA; ALNUS RUGOSA; SPHAGNUM SPP; HYDNUM SPP; PICEA GLAUCA; PICEA MARIANA; LARIX LARICINA; PINUS RESINOSA; PINUS BANKSIANA; ERICACEAE; CAREX SPP; ERIOPHORUM SPP; CORYLUS AMERICANA

ADDED KEYWORDS: prescribed burning; herbicides; management measures; logging; impoundments; paper birches; birches; trembling aspens; aspens; bigtooth aspens; white spruces; spruces; balsam fir; firs; black spruces; tamaracks; red pines; pines; jack pine; cotton grasses; sphagnum mosses; feather mosses; speckled alders; american hazels; alders

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; harvest; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): surveys

NUMBER OF SAMPLING SITES: varies with each specific study

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; soils; water quality data

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Itasca County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis

ABSTRACT: Forest cultural practices (including thinning, timber harvesting, fertilization, use of herbicide, and prescribed burning) are studied to determine their effect on the water resources of northern conifer-hardwood forests. Of special concern are the complex associations of uplands and bogs

common to these forests. Methods were developed for sampling and analyzing both surface and subsurface flows from treated areas and for minimizing undesirable impacts. Sewage disposal studies are made on organic soils and adjacent upland sites to determine if these sites can be used for waste disposal without impairing the quality of the associated water and other resources. Wetland impoundments developed for wildlife habitat or other purposes are monitored and management techniques developed to minimize their effect on water quality factors such as temperature and nutrient content.

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NBIP ACCESSION NUMBER: MN/005

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INVESTIGATOR(S): Geis, J. L.
AFFILIATION: Minnesota Dept. of Natural Resources-Fish and Wildlife Environment Section

TITLE: Effect of Thermal Discharge from Prairie Island Nuclear Generating Plant on Fish Populations and Sport Fishing on Mississippi River near Red Wing, Minnesota
PURPOSE: To determine the effects of the thermal discharge from the Northern States Power Company's Prairie Island Nuclear Generating Plant on the total fish community and sport fishery on the Mississippi River and its backwaters near Red Wing, Minnesota.

SPONSOR(S): Minnesota Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: None observed to date.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river; lake

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: fisheries; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: FISHES, 60 SPECIES

ADDED KEYWORDS: thermal effluents; nuclear power plants

PRIMARY PARAMETERS INVESTIGATED: age; diversity; emigration; growth; harvest; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; gill net; trap net; minnow seine; trawl; larval tow

NUMBER OF SAMPLING SITES: 5 sections with numerous sampling sites in each

SAMPLING FREQUENCY: seasonal; daily; weekly

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Goodhue County; North Lake; Sturgeon Lake; Prairie Island Nuclear Generating Plant; Mississippi River

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median; percentile; regression/correlation analysis; non-parametric analysis

ABSTRACT: This study consists of a fish population study and a creel survey. The purpose is to determine the effects of the thermal discharge from the Northern States

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Power Company's Prairie Island Nuclear Generating Plant on the total fish community and sport fishery on the Mississippi River and its backwaters near Red Wing, Minnesota. The creel survey is being conducted to assess sport fishing success, pressure, and harvest before and after the plant begins operation.

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NBIP ACCESSION NUMBER: MN/023

<491>

INVESTIGATOR(S): Hibbard, E.A.
AFFILIATION: Northern States Power Company
TITLE: Terrestrial Ecology Monitoring near Sherburne County Generating Plant
PURPOSE: To obtain pre-operational data and operational data on terrestrial ecology of the Sherburne County Generating Plant, Becker, Minnesota.

SPONSOR(S): Northern States Power Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: None yet observed.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; savanna; grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; wildlife; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals

ADDED KEYWORDS: ground squirrels; blood; air pollution; fossil fueled power plants

PRIMARY PARAMETERS INVESTIGATED: diversity; home range size; numbers; physiology

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Kendeigh's spot map census method; road and walking transect; live trapping and tagging; serological examination; electrophoresis

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated flora; soils

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Sherburne County; Wright County

TYPE OF DATA: raw; reduced

ABSTRACT: This study was made to evaluate the effects of the Sherburne County Generating Plant operation on the terrestrial ecology of the immediate environs. Birds were sampled by various censuses and territories of breeding males ascertained. To accumulate population and physiological data as indicators of environmental stress, a qualitative analysis of mammal species on the site was made. Concomitant with this was a study of the physiological health of these small mammals. Investigations were also made of the effects of stack emissions and metropolitan air mass on vegetation.

Emphasis was placed on the chemistry of precipitation and its effect on vegetation.
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NBIP ACCESSION NUMBER: MN/019

<492>

INVESTIGATOR(S): Hopwood, A.J.

AFFILIATION: Dept. of Biology, St. Cloud State University

TITLE: The Environmental Impact of Power Production on the Mississippi River at Becker and Monticello, Minnesota

PURPOSE: Pre-operational and operational studies on river biota relative to discharge water from two power plants, one nuclear, one coal-fired.

SPONSOR(S): Northern States Power Co.

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There are higher numbers of trichoptera and diptera, but lower numbers of ephemeroptera in the heated zone. Heat attracts game fish.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; crustacea;

insecta; mollusca; microorganisms; algae

TAXA: PLANTS, 7 SPECIES; AQUATIC PLANTS, 8

SPECIES; INSECTA 24 GENERA; FISHES, 37

SPECIES; BIRDS, 2 SPECIES; TURTLES, 3

SPECIES; ALGAE, 14 SPECIES

ADDED KEYWORDS: fossil fueled power plants; mortality rates; nuclear power plants;

thermal effluents; benthic organisms; feeding habits; swallows; decapods;

amphipods; isopods; coal; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; bod; distribution;

diversity; habitat characterization;

numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): artificial substrates; electrofishing

gear; seine; trapnet; handnet

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: weekly; monthly

SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data;

water quality data

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Wright County; Mississippi River

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis

ABSTRACT: The thermal effects of the nuclear power plant at Monticello, Minnesota were

assessed by comparing postoperational (1971-1972) data to baseline data

(1968-1971) on the Mississippi River.

Macroinvertebrate samples from artificial substrates placed upstream were compared

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to those from the heated zone downstream. Trichopteran biomass increased, but ephemeropterans and dipterans decreased in the heated zone. Significant responses to heated water were observed for trichoptera in the July-October period, ephemeroptera were most affected in the May-August period, and dipterans declined significantly during September through November. The number of species was not affected by the heat. Growth rates of macroinvertebrate groups in upstream and downstream areas were not significantly different in four of seven 35-day cycles observed. The trichopteran seasonal cycle showed higher peaks of numbers and depressed peaks of weights in the heated zone, but the overall pattern was the same in heated and unheated areas. Cycles of ephemeropterans and dipterans had depressed summer peaks in the heated zone and the general pattern was disrupted, especially in the spring and early summer. Flow characteristics caused the heated water to remain along the bank from the point of discharge to about 3 miles downstream. A comparison of the number of fish caught by electrofishing along the opposite sides of the river showed that black crappies, smallmouth bass, and walleyes were more numerous on the heated side, and were often attracted to the discharge canal from adjacent areas of the river. Rough fish were generally indifferent to the heated water in most areas, but carp were more attracted by the discharge canal than other species. Normal movements of minnows and other population characteristics seemed unaffected by the temperature rise. Food studies of the shorthead redhorse, carp, and the minnows and darters showed that the carp ate CLADOPHYTES when it was available, but were more opportunistic than the other species which were generally insectivorous. Fish in the heated water had a lower percentage of stomachs containing food than the same species in unheated areas, but the sample size was insufficiently large to test the significance of the difference. Effects of the power plant upon other organisms, such as birds, have been minor.

REFERENCES: Hopwood, 1974

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NBIP ACCESSION NUMBER: MN/021

<493>

INVESTIGATOR(S): Huver, C.W.

AFFILIATION: Museum of Natural History,

University of Minnesota

TITLE: A Systematic Inventory of the Fishes of the St. Croix River in Relation to Water Quality

PURPOSE: To develop an inventory of the species of fishes of the St. Croix and to

study their distribution in relation to water quality.

SPONSOR(S): Clean Air Clean Water, Unlimited; National Wildlife Federation; The Sport Fishing Institute

SPONSOR CATEGORY: societies and other organizations

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There is a higher water temperature and slightly decreased water quality as a result of power plant operation; decreases in walleye, smallmouth bass, northern pike, and sauger; but a major increase in white bass population; and high mercury levels in gamefish (some) in vicinity of the coal-fired plant.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river

LEVEL(S) OF STUDY: organism; population; community; region

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; recreation; pollution control; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: STIZOSTEDION VITREUM; STIZOSTEDION CANADENSE; MICROPTERUS DOLOMIEUI; ESOX LUCIUS; ROCCUS CHRYSOPS

ADDED KEYWORDS: walleyes; saugers; smallmouth basses; northern pikes; white basses; habitat modification; heavy metals; thermal effluents; fossil fueled power plants; coal; basses

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines; fishermen

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): MN; WI

GEOGRAPHIC DESCRIPTION: Washington County; Chicago County; Pine County; St. Croix River; Lake St. Croix; Allen S. King Steam-Electric Generating Plant; Stillwater Sewage Plant; Bayport Sewage Plant; Hudson Sewage Plant

TYPE OF DATA: raw; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile; analysis of variance

ABSTRACT: An application was submitted on August 5, 1964 by the Northern States Power Company requesting a permit from the Minnesota Water Pollution Control Commission and the Commissioner of Conservation to remove a maximum of 700 cfs of St. Croix River water for cooling purposes in a steam electric generating power plant at Oak Park Heights, Minnesota. The water used for condenser cooling will be returned to the river with an approximate temperature rise of 17 degrees F in the summer, and a rise of 30 degrees F in the winter. The expected maximum generating capacity of the Allen S. King Generating Plant, Unit No. 1, is 610,000 kilowatts. The plant will utilize a coal-fired boiler with a rated capacity of 250 tons of coal per hour which will produce 3,850,000 pounds of steam per hour. Ash production will be 48,000 pounds per hour. The ash will be converted into slag and conveyed by diverted river water

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into storage silos and ultimately used as landfill. A permit was granted on May 12, 1965 allowing ash-transport water to be released into Lake St. Croix along with heated effluent. The release is now under study.

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NBIP ACCESSION NUMBER: MN/041

<494>

INVESTIGATOR(S): Mech, L.D.
AFFILIATION: Div. of Cooperative Research, FWS
TITLE: Ecology and Behavior of the Eastern
Timber Wolf (CANIS LUPUS) in Northeastern
Minnesota

PURPOSE: To determine natality, survival,
mortality, density, population trends,
spatial organization, regulating factors,
predator-prey relations, spatial
interactions, and natural history of wolf
populations.

SPONSOR(S): FWS; FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The wolf population in
the 1000 sq. mi. study area in northeast
Minnesota has declined each year since
1969, and in the 1974-75 winter, the
population was down 58 percent from the
1969 level.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: endangered species; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; trees

TAXA: CANIS LUPUS

ADDED KEYWORDS: eastern timber wolves;
wolves; deer; moose; beavers; predation;
succession; territoriality; population
effects

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; home range size;
immigration; kill; mortality; migratory
patterns; natality; numbers; physiology;
productivity; reproduction; sex;
size/weight; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
telemetry; radiotracking; aerial surveys;
live-trapping; observation; blood sampling

NUMBER OF SAMPLING SITES: 1000 sq. mi. area
SAMPLING FREQUENCY: seasonal; daily; weekly;
annual

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Cook County; St.
Louis County; Lake County; Superior
National Forest

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Studies on the ecology of the
timber wolves (CANIS LUPUS) inhabiting the
Superior National Forest of northeastern
Minnesota are important because: (1) the
main population of this subspecies of wolf
in the United States occurs in Minnesota,
with probably fewer than 50 other
individuals remaining elsewhere in this
country (The subspecies, therefore, has
been declared "endangered" by the U.S.
Secretary of the Interior); (2) the
ecologically sound management of the wolf
depends on knowledge of wolf numbers,
densities, and population trends; and (3)
the 3,000 sq. mi. of federally-owned land
contained within the forest boundaries
represents a large part of wolf range
under public control. The observed
decrease in mean pack size in the wolf
population is linked closely to a general
decline in numbers of deer that is
occurring throughout not only northeastern
Minnesota, but also throughout midnorthern
and northeastern U.S. and south-central
and southeastern Canada, apparently caused
by maturing forests and an increasing
predominance of conifers. Maintenance of
peak wolf numbers on the forest depends
primarily on restoration of higher
densities of deer, which in turn depends
on the rejuvenation of maturing forests.

REFERENCES: Mech, 1972; Mech, 1973; Mech,
1974; Ballengerghie and Mech, 1975; Mech
and Bander, 1973; Seal, et al, 1975; Mech,
et al, 1971

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NBIP ACCESSION NUMBER: MN/041

<495>

INVESTIGATOR(S): Niemi, G.J.
AFFILIATION: Dept. of Biology, University of
Minnesota

TITLE: The Effect of Habitat Disturbance on

Bird Composition in Northeastern Minnesota

PURPOSE: To document both quantitatively and
qualitatively the precise breeding bird
population changes which take place as a
result of habitat disturbance. To
initiate multiple habitat measurements and
correlation to species' territories and
predict multiple species changes as a
result of habitat structure alteration
using multivariate analysis.

SPONSOR(S): University of Minnesota-Duluth;

FS; North Central Experiment Station

SPONSOR CATEGORY: teaching institution;

federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Habitat alteration (fire
and logging) naturally reduces the
complexity of the habitat and,
subsequently, reduces the number of
available niches to bird species, thus
causing decreased diversity and abundance
of birds.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland

LEVEL(S) OF STUDY: organism; population;
community

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MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; indicator species;
range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; trees;
shrubs

TAXA: ZONOTRICHIA ALBICOLLIS; MELOSPIZA
MELODIA; OPOBORNIS PHILADELPHIA; DENDROICA
PENNSYLVANICA; COLAPTES SPECIES; TURDUS
MIGRATORIUS; HYLOCICHLA PUSLESCENS;
TYRANNUS TYRANNUS; VIREO OLIVACEUS;
TROGLODYTE AEDON

ADDED KEYWORDS: white-throated sparrows; song
sparrows; sparrows; mourning warblers;
chestnut-sided warblers; warblers;
flickers; robins; vireos; kingbirds;
red-eyed vireos; house wrens; fires;
logging; habitat modification; models
PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity; habitat
characterization; home range size;
numbers; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
territory mapping; transects

NUMBER OF SAMPLING SITES: 287

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
terrain

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: St. Louis County

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: CDC 3200; FORTRAN

STATISTICS EMPLOYED: mean; analysis of
covariance; regression/correlation
analysis; multivariate analysis; modeling,
stochastic

ABSTRACT: The results of this work depict the
consistent habitat parameters associated
with the breeding territories of ten
species of birds. These important
parameters can be used in wildlife
management to insure perpetuation of a
species by promotion of a habitat type, to
ecologically obtain knowledge on resource
division between closely related species,
or to obtain insight into the parameters
which are important to the species
survival and thus simplify further study
at the species level. The overall
significance in the practical application
of this technique is to provide wildlife
managers, foresters, game managers, etc.
with a systematic method for predicting
multiple species changes as a result of
land use changes. For example, what are
the species changes resulting from forest
fire, clear-cut logging, selective
logging, urbanization, road development,
etc.? These are all factors which alter
vegetation structure and thus species
niche requirements. The techniques to
derive these predictions are currently
complex and theoretical; however, with
increased training of personnel in
multivariate analysis, increased
capabilities of the computer, field
testing of the model, and further analysis
of the technique will simplify the
practical aspect. Data collected in the
field can easily be punched onto data

cards, run through standardized computer
programs, and analyzed to predict species
occurrence or non-occurrence in given
habitats.

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NBIP ACCESSION NUMBER: MN/030

<496>

INVESTIGATOR(S): Swain, W.R.
AFFILIATION: University of Minnesota, Duluth
School of Medicine

TITLE: Persistent Organic and Heavy Metal
Residues in Western Lake Superior Fish and
Invertebrate Populations

PURPOSE: To sample and study the sport,
forage fishes, and indicator species in
Lake Superior for persistent organic
compounds and trace metals.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Five new organic
compounds never before found in Lake
Superior were identified.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; lake

LEVEL(S) OF STUDY: organism; region

MANAGEMENT FOCUS: fisheries; indicator
species; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca

TAXA: FISHES, 32 SPECIES

ADDED KEYWORDS: industrial chemicals; heavy
metals; pesticides; decapods; gastropods;
point sources

PRIMARY PARAMETERS INVESTIGATED: residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nets; SCUBA; commercial fish samples

NUMBER OF SAMPLING SITES: 113

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated
microorganisms

STUDY SITE(S): MN; WI; MI

GEOGRAPHIC DESCRIPTION: Lake Superior

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: STORET

STATISTICS EMPLOYED: mean

ABSTRACT: A study was conducted to determine
the effect of point source pollution in
Lake Superior on the game and forage fish
found therein. As a result five compounds
previously unknown to Lake Superior were
identified. Levels of seventeen non-ionic
persistent organic compounds and nine
trace metals were found in whole and
skinless filet fish captured by nets and
SCUBA diving primarily.

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NBIP ACCESSION NUMBER: MN/033

<497>

INVESTIGATOR(S): Swain, W.R.
AFFILIATION: University of Minnesota, Duluth

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School of Medicine
TITLE: Long Term Monitoring of Zooplankton in Lake Superior
PURPOSE: To observe populations and migratory habits of zooplankton in Western Lake Superior.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in zooplankton species from oligotrophic forms to eutrophic forms.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea
TAXA: MYXIS SPP; DAPHNIA SPP; DIAPYCNUS SPP
ADDED KEYWORDS: eutrophication; pollution; population effects; opossum shrimps; copepods; zooplankton
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets
NUMBER OF SAMPLING SITES: 7-10
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MN; WI
GEOGRAPHIC DESCRIPTION: Lake Superior
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; median
ABSTRACT: Studies have been conducted since 1967 to assess the changes in zooplankton populations. Populations have shifted from oligotrophic forms to eutrophic forms. Samples have been collected during the spring, summer, and fall from along the north shore of Minnesota and the western end of the lake.
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NBIP ACCESSION NUMBER: MN/034

<498>

INVESTIGATOR(S): Wanek, W.J.
AFFILIATION: Dept. of Biology, Bemidji State University
TITLE: A Continuing Study of the Ecological Impact of Snowmobiling in Northern Minnesota
PURPOSE: To monitor changes in the soil physical environment, soil microbe activity, and the structure and composition of plant communities where snowmobiles travel.
SPONSOR(S): Minnesota Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Snowmobiling lowers the

soil temperature, depresses microbe activity, and kills a variety of herbaceous and woody plants.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; recreation; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria; fungi
TAXA: MEDICAGO SATIVA; PICEA GLAUCA; PINUS RESINOSA; DICEPTRA CUCULLARIA; ARISAEMA TRIPHYLLUM; POPULUS TREMULOIDES
ADDED KEYWORDS: agriculture; recreational vehicles; white spruces; norway pines; alfalfa; dutchman's breeches; jack-in-the-pulpit; trembling aspens; spruces; pines; aspens
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; mortality; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sample plots
NUMBER OF SAMPLING SITES: 15
SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly; annual;
STUDY SITE(S): MN
GEOGRAPHIC DESCRIPTION: Cass County; Beltrami County; Hubbard County
TYPE OF DATA: raw; summarized; literature-derived
COMPUTER AND LANGUAGE: MERITS (MECC); BASIC
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: The project was conducted to study the environmental effects of snowmobiling on the flora of northern Minnesota. A control plot (no vehicular contact) was set up and compared with several plots subjected to varying degrees of snowmobile use. The damage resulting corresponded directly to the amount of use by the snowmobiles. The more heavily used sample plots showed more intense deterioration than the plots that had light use.
REFERENCES: Wanek, 1972; Wanek, 1973; Wanek and Potter, 1974
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NBIP ACCESSION NUMBER: MN/007

<499>

INVESTIGATOR(S): Waters, T.P.
AFFILIATION: Dept. of Entomology, Fisheries and Wildlife, University of Minnesota
TITLE: Production of a Stream Trout Population
PURPOSE: To determine annual production of stream trout as affected by floods or other disturbances on a continuing basis.
SPONSOR(S): Minnesota Agricultural Experiment Station
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The brook trout population recovered substantially after the floods. The rainbow trout population was introduced after the flood, and was permanently established.
ECOSYSTEM OR BIOME TYPE(S): aquatic;

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freshwater; stream

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fishTAXA: SALVELINUS FONTINALIS; SALMO GAIRDNERI;
SALMO TRUTTAADDED KEYWORDS: rainbow trouts; floods;
siltation; brown trouts; brook trouts;
standing crop; trouts; primary productivityPRIMARY PARAMETERS INVESTIGATED: age;
biomass; growth; mortality; natality;
numbers; productivity; reproduction;
size/weightDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear

NUMBER OF SAMPLING SITES: 1

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MN

GEOGRAPHIC DESCRIPTION: Valley Creek

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The brook trout (SALVELINUS
FONTINALIS) population in Valley Creek,
Minnesota, recovered from heavy flood
damage in 1965-66 in terms of standing
crop, growth, and production rates over a
period of 4 to 5 years. Standing crops of
brook trout increased numerically by
20-fold from a low of 498/ha in 1966 to
10,882/ha in 1969, and in biomass by

6-fold from 25kg/ha in 1966 to a maximum
of 148 kg/ha in 1970. Growth rate early in
the recovery period was high due to the
low density of trout but decreased in
successive years as fish density
increased. Annual production was about
50kg/ha during the flood years but
increased during the recovery years to a
maximum of 167 kg/ha in 1969. Cohort
production for the 1965 year class, the
one most seriously affected by the floods,
was about 15 kg/ha, whereas cohort
production for the 1968 year class, the
last one that could be completely followed
in this study, was about 190 kg/ha. After
the floods, rainbow trout (SALMO
GAIRDNERI) immigrated into the study
section from downstream, although variable
in year class strength, the rainbow
contributed substantially to total
salmonid standing crop and annual
production in some years. It has
apparently become permanently established,
even after total recovery of the brook
trout population.

REFERENCES: Elwood and Waters, 1969; Hanson
and Waters, 1974

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NBIP ACCESSION NUMBER: MN/032

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(SEE ALSO 91, 236, 238, 239, 267, 279, 370, 785)

<500>

INVESTIGATOR(S): Arner, D.H.
AFFILIATION: Mississippi Dept. Wildlife and Fisheries
TITLE: Effects of Channelization on Fisheries, Limnology, and Furbearers in the Luxapalila River
PURPOSE: To determine the effects of channelization on physical and chemical parameters, aquatic organisms, fish, and the furbearers associated with the river.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Reduced numbers of aquatic invertebrates, beaver, and muskrat occurred in the old and new channelized segments as compared to the unchannelized.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; mammals; invertebrates; crustacea; insecta; microorganisms; algae
TAXA: PLANKTON, 20 SPECIES; BENTHIC ORGANISMS, 14 ORDERS; FISHES, 96 SPECIES; PROCYON LOTOR; DIDELPHIS VIRGINIANA; MUSTELA VISON; ONDATRA ZIBETHICUS; CASTOR CANADENSIS
ADDED KEYWORDS: channelization; population effects; muskrats; beavers; plankton; channel catfishes; raccoons; opossums; minks; species diversity; benthic organisms
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines; electroshocking gear; plankton sampler; Surber sampler; hand net; live trapping; conibear traps
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): MS; AL
GEOGRAPHIC DESCRIPTION: Luxapalila River
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: percentile; analysis of variance
ABSTRACT: Biological data collected over a period of two years from an old channelized segment, an unchannelized segment, and a newly channelized segment of the Luxapalila River in Mississippi revealed the following: There were no evident differences in water quality between the three segments with the exception of turbidity which is higher in the newly channelized segment. The number of plankton organisms was higher in the newly channelized segment, possibly due to influence of sewage. Species diversity of macroinvertebrates and fish was much greater in the unchannelized segment than the channelized segment. Average weight of largemouth bass was much greater in the unchannelized than either of the channelized segments. Utilization of an

expanding habitat created by annual flooding is indicated by the number of species of game fish collected behind the levees and the preponderance of terrestrial invertebrates found in their stomachs. Indices of abundance of furbearers associated with the river were obtained by night lighting, sign count, and trapping. Muskrat and beaver, the species most commonly associated with an aquatic habitat, were far more numerous in the unchannelized segment than in either the old or new channelized segments.

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NBIP ACCESSION NUMBER: MS/013

<501>

INVESTIGATOR(S): Christmas, J.Y.
AFFILIATION: Gulf Coast Research Laboratory
TITLE: Fisheries Assessment and Monitoring
PURPOSE: To establish an ongoing fishery assessment and monitoring program in Mississippi territorial waters, provide a data base for management decisions, and develop sampling procedures for all life stages.
SPONSOR(S): Mississippi Marine Conservation Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal, annual, and areal changes occurred in relative abundance, growth, and migration of exploited and potentially exploitable species.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: fisheries; indicator species; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; mollusca
TAXA: MOLLUSCA, 3 SPECIES; CRUSTACEA, 14 SPECIES; FISHES, 126 SPECIES
ADDED KEYWORDS: management measures; plankton; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; emigration; growth; harvest; 1; migratory patterns; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plankton nets; seines; trawls
NUMBER OF SAMPLING SITES: 41
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): MS
GEOGRAPHIC DESCRIPTION: Harrison County; Jackson County; Hancock County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: Monthly biological samples are collected at fixed stations in Mississippi territorial waters with a variety of

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sampling gear. Numbers, size, development stage, sex and gonad condition (for some species), and biomass are recorded. Salinity, water temperature, dissolved oxygen concentration, and habitat type are routinely determined when samples are collected. Additional sampling is done on a weekly basis at some stations and in selected seasons, twice weekly at other locations. Plankton samples and larval fishes are archived for further study. Detailed study is limited to exploited or potentially exploitable species.

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NBIP ACCESSION NUMBER: MS/032

<502>

INVESTIGATOR(S): Jackson, J.A.
AFFILIATION: Dept. of Zoology, Mississippi State University
TITLE: Distribution and Status of the Red-Cockaded Woodpecker (*DENDROCOPOS BOREALIS*), an Endangered Species
PURPOSE: To determine precise distribution and quantify present status of the species and thereafter to monitor population levels.
SPONSOR(S): Mississippi State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Due to modern forestry practices and subsequent habitat destruction, there has been a contraction of species range and a decrease in species numbers.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; indicator species; resource planning; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; trees
TAXA: *DENDROCOPOS BOREALIS*
ADDED KEYWORDS: woodpeckers; red cockaded woodpeckers; habitat modification; logging
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; emigration; habitat characterization; home range size; immigration; mortality; natality; numbers; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): literature records; questionnaires
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): MS; AL; FL; GA; SC; NC; VA; MD; TX; OK; LA; AR; MO; TN; KY
TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile; analysis of covariance; regression/correlation analysis; non-parametric analysis

ABSTRACT: Extant and recently extinct colonies of red-cockaded woodpeckers are being identified and their status determined. Each colony is coded uniquely and its location recorded for analytical purposes to the nearest 10 minute block (as used by the U.S. Fish and Wildlife Service for banding records). Colony histories are maintained and an up-to-date status report for the species made each year as long as the species remains endangered. In addition to monitoring the species' distribution and status, I hope to quantify those factors presently causing this species decline.

REFERENCES: Jackson, 1971
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NBIP ACCESSION NUMBER: MS/028

<503>

INVESTIGATOR(S): Knight, L.A.
AFFILIATION: Dept. of Biology, University of Mississippi
TITLE: Aquatic Studies on Freshwater Impoundments
PURPOSE: The purpose of this project is to study and measure water quality parameters as they relate to biological productivity. Qualitative and quantitative studies of plankton are stressed.
SPONSOR(S): University of Mississippi
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Shallow reservoirs such as Ross Barnett Reservoir, where water level is constant, exhibit macrophyte encroachment.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: fisheries; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; plants; vascular plants; herbs; microorganisms; algae
ADDED KEYWORDS: impoundments; phytoplankton; zooplankton; rotifers; copepods; cladocerans; aquatic plants; secondary productivity; management measures
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MS
GEOGRAPHIC DESCRIPTION: Arkabutla Lake; Ross Barnett Lake; Sardis Lake; Enid Lake; Grenada Lake
TYPE OF DATA: raw; summarized
ABSTRACT: Water quality parameters were monitored and plankton samples collected from Barnett Reservoir, Mississippi from 1968 through 1973. Plankton samples were

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collected for the study of Rotifera in the four flood control reservoirs, Enid, Grenada, Sardis, and Arkabutla, from 1965 through June, 1968. Waters in the five reservoirs are low in nutrients and are oligotrophic. Plankton crops, except for protected coves and stagnant arms, are sparse. Waters are usually neutral to acid and only Barnett Reservoir shows low turbidity (5 ppm or less). Water level is maintained at 296 +/- 1ft above mean sea level in Barnett Reservoir and this lack of fluctuation coupled with low turbidity has enhanced encroachment of aquatic macrophytes. Biological and physico-chemical conditions are compared with the four flood control reservoirs.

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NBIP ACCESSION NUMBER: MS/011

<504>

INVESTIGATOR(S): Knight, L.A.
AFFILIATION: Dept. of Biology, University of Mississippi
TITLE: Trace Metal Contamination in Freshwater Organisms
PURPOSE: The purpose of this project is to measure trace metal contamination in selected aquatic organisms in Mississippi waters.
SPONSOR(S): University of Mississippi
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Mercury concentration in fish tissue generally increased with fish size.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; fisheries; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MICROPTERIDAE SALMOIDAE
ADDED KEYWORDS: largemouth basses; basses; mercury; heavy metals; seasonal variations
PRIMARY PARAMETERS INVESTIGATED: residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electroshocking gear
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MS
GEOGRAPHIC DESCRIPTION: Barnett Reservoir; Pearl River
TYPE OF DATA: summarized
ABSTRACT: Total mercury in 73 largemouth bass, MICROPTERIDAE SALMOIDAE, from Ross Barnett Reservoir, Mississippi, was measured by atomic absorption spectrophotometry. The fish analyzed were collected between November 1970 and October 1971 at intervals representing winter, spring, summer, and fall:

specimens ranged in weight from 0.10 to 3.15 kg. Fish contained from <0.05 to 0.74 ppm total mercury: levels generally increased with weight of the fish.

REFERENCES: Knight and Herring, 1972
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NBIP ACCESSION NUMBER: MS/012

<505>

INVESTIGATOR(S): Quimby, P.C.
AFFILIATION: ARS
TITLE: Life History and Physiological Studies of Alligatorweed, ALTERNANTHERA PHILOXEROIDES
PURPOSE: To study ecophysiology and biocontrol of alligatorweed.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Native plants are reappearing where the adventive alligatorweed has come under control following the introduction of its host specific natural enemies from South America.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; indicator species; water quality
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; microorganisms; algae
TAXA: ALTERNANTHERA PHILOXEROIDES; VOGTIA HALLOI; AGASTICLES HYGROPHILA; DISONYCHA COLLATA; DISONYCHA XANTHOMELAS
ADDED KEYWORDS: alligatorweeds; aquatic plants; lepidopterans; management measures; weed control
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; habitat characterization; mortality; migratory patterns; physiology; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; plant harvests; plant counts; insect counts; photographs
NUMBER OF SAMPLING SITES: about 20
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; water quality data
STUDY SITE(S): MS: LA: AB: TX
GEOGRAPHIC DESCRIPTION: Bogue Phalia River; Arkansas River; Bayou Neta; Millers Bayou; Johnson's Bayou; Lake George; Blue Lake; Lake Washington; Ross Barnett Reservoir; Black Bayou Lake; Lake St. John; Lake Maurepas; Steinhagen Lake; Lake Langhofer
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: The alligatorweed stem borer, VOGTIA HALLOI, migrated from Florida through Mississippi to Arkansas, Louisiana, and Texas in 1974. This suppressant produced 50 to 90% biocontrol

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of stable floating mats in the northern reaches of alligatorweed's range in the Mississippi Valley. Biocontrol has been less effective where drainage channels are subject to severe hydrographic flux. Regrowth was characterized by reduced stem size. Control of alligatorweed resulted in the establishment of mixed plant communities. VOGTIA has overwintered in protected sites as far north as Holly Bluff, Mississippi. AGASICLES HYGROPHILA migrated throughout alligatorweed's range in the Mississippi Valley in early summer but disappeared in the northern reaches by August; presumably this species is limited by evaporation rates and temperatures that are higher at inland sites than along coastal areas.

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TELEPHONE: FTS 497-2243 (601) 686-2311 ext. 243
NBIP ACCESSION NUMBER: MS/039

<506>

INVESTIGATOR(S): Stadelbacher, E.A.
AFFILIATION: ARS
TITLE: Biology and Ecology of Plant Pests Research
PURPOSE: To control insect pests of field crops through biological, ecological, cultural, chemical, or integrated methods that will reduce the use of and adverse effects of pesticides.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Beneficial insect populations have declined and pest populations increased due to use of pesticides -- trend is reversible when pesticides are reduced.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna; grassland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: indicator species; resource planning
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: HELIOTHIS ZEA; HELIOTHIS SP
ADDED KEYWORDS: agroecosystems; crops; pest control; pesticides; seasonal variations; population dynamics; hosts; predators; parasites; lepidopterans
PRIMARY PARAMETERS INVESTIGATED: behavior; behavior; habitat characterization; numbers; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): blacklight insect survey traps
NUMBER OF SAMPLING SITES: MS
SAMPLING FREQUENCY: seasonal; weekly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data
STUDY SITE(S): MS
GEOGRAPHIC DESCRIPTION: Washington County

TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: This project aims to rapidly advance ecologically sound insect pest management methods and systems toward use in commercial agriculture.
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NBIP ACCESSION NUMBER: MS/043

<507>

INVESTIGATOR(S): Valentine, J.M.
AFFILIATION: FWS
TITLE: Reintroduction of Sandhill Cranes into Louisiana
PURPOSE: Transplanting of sandhill cranes into Louisiana and biology of Mississippi sandhill cranes.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Constriction of habitats by silviculture, developments, and highways.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; savanna; wetland
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: endangered species; wildlife; forestry
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: GRUS CANADENSIS
ADDED KEYWORDS: sandhill cranes; habitat modification; cranes; species introduction; nests
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nest-counts
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): MS
GEOGRAPHIC DESCRIPTION: Jackson County
TYPE OF DATA: raw
ABSTRACT: The small isolated colony of Florida sandhill cranes (GRUS CANADENSIS PRATENSIS) in southeastern Mississippi was studied during 1963 through the spring of 1970. The important feeding and nesting habitats are boggy savannas and swamps. The total estimated population was between 38 and 40 birds. The egg-laying period was between April 4 and May 20. Thirty nests were found containing an average of 1.7 eggs per completed set. From a total of 51 eggs, 22 were collected for propagation purposes, 29 were left in the nests, and 18 successfully hatched. Four nests were abandoned and none was destroyed by predation. The colony was endangered by pine plantations, drainage, an interstate highway, and increasing housing developments. The establishment of state, federal, or private refuges was recommended if the colony is to survive.

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FWS

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NBIP ACCESSION NUMBER: LA/083

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REFERENCES: Valentine and Nottle, 1970

ADDRESS: Mr. Jacob M. Valentine

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INVESTIGATOR(S): Christisen, D.M.
AFFILIATION: Missouri State Conservation Dept.
TITLE: Prairie Chicken Inventory, Mobility
and Transplant Investigation, and Habitat
Improvement

PURPOSE: To census booming grounds on sample
range, to ascertain population trends and
densities, to define home range and
preserve, and to improve native habitat to
favor this endangered species.

SPONSOR(S): FWS; Missouri Dept. of
Conservation

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1945

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Habitat loss of 1600
square miles and a decline in population
from 13,500 to 8000 birds.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species; range; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; shrubs;
herbs; grasses

TAXA: TYMPANUCHUS CUPIDO

ADDED KEYWORDS: prairie chickens; booming
grounds; management measures; habitat
modification

PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
home range size; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sample routes; observation

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): MO

TYPE OF DATA: raw; summarized

ABSTRACT: None provided.

REFERENCES: Christisen, 1975

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Missouri Dept. of Conservation
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NBIP ACCESSION NUMBER: MO/038

<509>

INVESTIGATOR(S): Cooper, D.C.

AFFILIATION: Battelle Columbus Laboratories

TITLE: Aquatic Life Field Monitoring at
Baraboo, Lake City, and Joliet Army
Ammunition Plants

PURPOSE: To determine the effects of
munitions effluents on selected aquatic
receiving systems.

SPONSOR(S): U.S. Army

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There has been reduced
benthic species diversities and primary
productivity attributable to
nitrocellulose and TNT effluents.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: organism; ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; pollution
control; water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; algae

TAXA: BENTHIC ORGANISMS, ALL SPECIES

ADDED KEYWORDS: industrial chemicals;

diatoms; benthic organisms; copepods;
dipterans; periphyton; phytoplankton;
primary productivity; nitrocellulose; TNT;
nitroglycerine; RDX

PRIMARY PARAMETERS INVESTIGATED: biomass;
bod; distribution; diversity; habitat
characterization; numbers; productivity;
reproduction; residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; Ekman dredge; Van Dorn
sampler; Clarke-Bumpus sampler; Bartek
Mark V

NUMBER OF SAMPLING SITES: 35

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data;
soils; water quality data

STUDY SITE(S): WI; IL; MO

GEOGRAPHIC DESCRIPTION: Wisconsin River;
Grant Creek; Prairie Creek; Little Blue
River; Lake Wisconsin; Doyle Lake

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: CDC 6100; FORTRAN 4

STATISTICS EMPLOYED: mean; percentile;
analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis; modeling,
stochastic

ABSTRACT: We are establishing a portion of a
data base from which draft effluent
limitation guidelines for the munitions
industry can be developed. Ecological and
water quality surveys are being conducted
seasonally at several government owned ,
contractor operated munitions plants
producing and processing a variety of
munitions products, including
Nitrocellulose, Nitroglycerine, TNT, RDX,
and primer compounds. Field investigations
have been designed so as to emphasize
determination of dose-response
relationships between munitions-unique
compounds and non-motile biota such as
benthic macroinvertebrates and attached
algae. The potential for bioaccumulation
of munitions-unique compounds is also
being investigated. Response parameters of
particular relevance in this project are
species composition, species diversity,
and productivity, relative to time-dose
patterns of munitions waste dispersion in
the munitions waste receiving systems.
Spinoff developments from this project
have included the development of improved
analytical methodologies for several
munitions compounds and the development of
a computerized data
storage/access/analysis methodology using
standard interactive modes.

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MISSOURI

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NBIP ACCESSION NUMBER: OH/026

<510>

INVESTIGATOR(S): Elder, W.H.
AFFILIATION: Dept. of Fisheries and Wildlife,
University of Missouri-Columbia
TITLE: Rates of Population Turnover in the
Grey Bat, MYOTIS GRISESCENS, in Marvel
Cave, Missouri

PURPOSE: To monitor population levels of an
endangered species in Missouri's largest
bat hibernaculum.

SPONSOR(S): Missouri Cooperative Wildlife
Research Unit

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gradual and progressive
shrinkage has occurred in bat population.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: MYOTIS GRISESCENS

ADDED KEYWORDS: gray bats; bats; habitat
modification; population effects;
chiropterans; caves

PRIMARY PARAMETERS INVESTIGATED: age;
emigration; immigration; mortality;
numbers; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
samples; banding; census

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: annual

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Taney County; Marvel
Cave

TYPE OF DATA: raw; reduced

ABSTRACT: Population turnover rates are under
analysis. Because of the long life span of
bats (10 years or more), this is a long
term project. A paper on the movements of
these bats to and from other caves is now
in preparation.

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NBIP ACCESSION NUMBER: MO/046

<511>

INVESTIGATOR(S): Fredrickson, L.H.
AFFILIATION: Gaylord Memorial Laboratory,
University of Missouri-Columbia
TITLE: Ecology of Hooded Mergansers and Wood
Ducks

PURPOSE: To develop an understanding of the
life history of these two species and how
they fit into the lowland hardwood forest
ecosystem. To include information on
migration, movements, homing, courtship
and other behavior, mortality, natality,

predation, age related productivity, food
habits, physiology, and pollutants.

SPONSOR(S): Gaylord Memorial Laboratory

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1962

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Population has increased.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;

freshwater; stream; lake; reservoir

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: wildlife; forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates;

reptiles; birds; mammals; plants; vascular
plants; trees

TAXA: AIX SPONSA; MERGUS CUCULLATUS

ADDED KEYWORDS: wood ducks; ducks; hooded
mergansers; mergansers; management

measures; population effects

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; habitat characterization; harvest;
home range size; immigration; kill;
mortality; migratory patterns; natality;
numbers; physiology; productivity;
reproduction; sex; size/weight; stress;
territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observations; nest box checks; behavioral
studies; analysis of 16 mm film; web
tagging

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Stoddard County;
Wayne County; Bollinger County; Mingo
River; Monopoly Lake; Duck Creek Wildlife
Management Area; Mingo National Wildlife
Refuge

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; non-parametric analysis

ABSTRACT: The ecology of wood ducks and
hooded mergansers has been under
investigation since 1962. Primary emphasis
has been on the breeding biology of birds
that use nest boxes. All nesting females
are captured, weighed, and banded. About
85 percent of all young are web-tagged
annually. Information has been generated
on homing, movements, longevity, age
related productivity, dump nesting,
predation, food habits, and behavior.

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NBIP ACCESSION NUMBER: MO/036

<512>

INVESTIGATOR(S): Fredrickson, L.H.
AFFILIATION: Gaylord Memorial Laboratory,
University of Missouri-Columbia
TITLE: Ecology of Swamp Rabbits
PURPOSE: To develop an understanding of the
life history of swamp rabbits including

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information on habitat (extent and preference), movements, behavior, mortality, natality, and physiology.
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Loss of habitat and depleted populations. Species has been extirpated from many parts of the original range.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: wildlife; forestry; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: SYLVILAGUS AQUATICUS
ADDED KEYWORDS: swamp rabbits; rabbits; habitat modification; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; growth; habitat characterization; harvest; home range size; kill; mortality; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress; territory size
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data
STUDY SITE(S): MO
GEOGRAPHIC DESCRIPTION: Stoddard County; Wayne County; Bollinger County; St. Francis River; Mingo River; Duck Creek Wildlife Management Area; Mingo National Wildlife Refuge
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; non-parametric analysis
ABSTRACT: The ecology of swamp rabbits has been under investigation in southeastern Missouri since 1956. The series of studies in the wild and in pens have provided information on behavior, home range, territory, weights, growth, skin glands, mortality, natality, habitat preference, and habitat loss.
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NBIP ACCESSION NUMBER: MO/037

<513>

INVESTIGATOR(S): Heye, P.L.
AFFILIATION: Southeast Missouri State University
TITLE: Annual Count of Nests in S.E. Missouri Heronries
PURPOSE: To monitor annual fluctuations of nesting herons (5 species) in southeast Missouri.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Original heronry has been abandoned; second has peaked and is declining in use; and third has been started.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; forestry
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: FLORIDA CAERULEA; CASHMERODIUS ALBUS; BUBULCUS IBIS; EGRETTA THULA; NYCTICORAX NYCTICORAX
ADDED KEYWORDS: population effects; nesting sites; little blue herons; great egrets; cattle egrets; snowy egrets; black-crowned night herons
PRIMARY PARAMETERS INVESTIGATED: growth; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nest counts
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): MO
GEOGRAPHIC DESCRIPTION: Scott County; Mississippi County
ABSTRACT: The purpose of the project is to monitor the annual fluctuations of five species of nesting herons in southeast Missouri.
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NBIP ACCESSION NUMBER: MO/018

<514>

INVESTIGATOR(S): Hocutt, C.H.
AFFILIATION: Appalachian Environmental Laboratory, University of Maryland
TITLE: Aquatic Ecology Study of the Big River, Missouri
PURPOSE: To evaluate the effects of high suspended and settleable solid concentrations on fish and macrobenthos.
SPONSOR(S): Dresser Industries
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Repopulation of certain stressed areas.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; invertebrates; mollusca
TAXA: FISHES, 80 SPECIES
ADDED KEYWORDS: recovery; impoundments; siltation; habitat modification; benthic organisms; floods
PRIMARY PARAMETERS INVESTIGATED: biomass;

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distribution; diversity; kill; mortality;
productivity; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

seines; kicknets

NUMBER OF SAMPLING SITES: 20

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Jefferson County;
Washington County; St. Francois County;
Big River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

ABSTRACT: A high concentration of non-toxic
suspended solids entered Big River as a
consequence of a ruptured dam. Localized
fish mortality occurred, as well as
extirpation of certain forms of
macroinvertebrates. The study was designed to
determine: (1) the extent of the kill, (2)
the taxonomic forms affected, and (3) the
rate of recovery of stressed areas.

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NBIP ACCESSION NUMBER: MD/030

<515>

INVESTIGATOR(S): Manuel, O.K.
AFFILIATION: Dept. of Chemistry, University
of Missouri

TITLE: Iodine-129: A Study of Its Transport
in the Environment and Distribution in
Biological Systems

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Levels of iodine-129 have
increased from iodine-129/iodine-127
ratios of approximately 10⁻⁴ prior to
1945 to present levels of
iodine-129/iodine-127 approximately 10⁻⁸
to 10⁻⁷ in areas remote from sources of
iodine-129.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland; aquatic;
freshwater; stream; river

LEVEL(S) OF STUDY: ecosystem; region

MANAGEMENT FOCUS: radiological

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; mammals; invertebrates; insects;
plants; vascular plants; trees; shrubs

ADDED KEYWORDS: thyroids; transport; deer;
cattle; livestock; grazing; iodine-127;
iodine-129

PRIMARY PARAMETERS INVESTIGATED: distribution

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

collection

SAMPLING FREQUENCY: continuous; seasonal;
annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; atmospheric chemistry;
hydrological data; soils; water quality
data

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Phelps County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance

ABSTRACT: A combination of neutron activation
and mass spectrometry has been used to
determine the concentrations of
fissionogenic I-129 and stable I-127 in
thyroids of grazing animals and in mineral
iodine. The I-129/I-127 ratios are lowest
in mineral iodine and in a given area
lower in cow thyroids than in deer
thyroids. Near saturation levels of
mineral iodine in commercial feeds and
salt licks may account for differences in
the I-129 levels of cows and deer. Values
of the I-129-I-127 ratio in deer appear
to vary inversely with the iodine
concentration of the thyroid.

REFERENCES: Ballard, et al, 1976

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NBIP ACCESSION NUMBER: MO/050

<516>

INVESTIGATOR(S): Ryck, P.

AFFILIATION: Missouri Dept. of Conservation

TITLE: Water Quality of the Big Piney River

PURPOSE: To evaluate changes in water quality
of the Big Piney River following
improvement in methods of waste treatment
in the basin. Assessments will be based on
studies of the benthic macroinvertebrate
community.

SPONSOR(S): Missouri Dept. of Conservation

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Improvements in waste
treatment are not yet on-line, and changes
since 1973 are minimal.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
stream; river

LEVEL(S) OF STUDY: community; ecosystem;
region

MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insects;
microorganisms; algae

TAXA: PLATYHELMINTHES; ANNELIDA; NEMATODA;
DIPTERA; TRICHOPTERA; CRUSTACEA;
PLECOPTERA; PELECYPODA; EPHEMEROPTERA;
GASTROPODA

ADDED KEYWORDS: waste water; benthic
organisms; species diversity; sewage
treatment; aquatic plants

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

rifle net

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: hydrological data;

water quality data

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Texas County; Phelps
County; Pulaski County; Big Piney River;
Gasconade River; Brushy Creek; Spring

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Creek; Dry Creek; Shanghai Spring Branch
 TYPE OF DATA: raw; reduced; summarized
 STATISTICS EMPLOYED: regression/correlation analysis

ABSTRACT: Generally high stream flows and frequent scouring floods in 1973 partially masked pollution problems in the Big Piney and Gasconade River basins. Invertebrate collections from the summer and autumn, however, suggested that the Big Piney River was chronically polluted in limited reaches by sewage effluent discharges at Cabool, Houston, and Port Leonard Wood. Brushy Creek, Spring Creek, Dry Creek, and Shanghai Spring Branch were polluted by discharges from Houston, Licking, Port Leonard Wood, and an unknown source. The Gasconade River had heavy growths of aquatic vegetation and filamentous algae downstream from its confluence with the Big Piney River. Slight reductions in diversity index values for the Gasconade River below the Big Piney were attributed to discharges at Port Leonard Wood. Above the mouth of the Big Piney River, the Gasconade River appeared unpolluted.

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NBIP ACCESSION NUMBER: MO/022

<517>

INVESTIGATOR(S): Ryck, F.
 AFFILIATION: Missouri Dept. of Conservation
 TITLE: Water Quality of the Southeast Ozark Mining Area

PURPOSE: To determine the effects of discharges from lead mines, mills, and smelters on the water quality of receiving streams.

SPONSOR(S): Missouri Dept. of Conservation; FWS

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Improvements in waste treatment facilities have substantially reduced the level of water pollution in this area.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; mountain; aquatic; freshwater; stream; river

LEVEL(S) OF STUDY: community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; microorganisms; algae

TAXA: PLATYHELMINTHES; ANNELICA; NEMATODA; DIPTERA; PLECOPTERA; EPHEMEROPTERA; TRICHOPTERA; PELECYPODA; GASTROPODA; CRUSTACEA

ADDED KEYWORDS: mining; lead; benthic organisms; heavy metals; industrial

chemicals; channelization; stoneflies; mayflies; caddisflies; flatworms; round worms; segmented worms; waste water; worms; species diversity

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): riffle net

NUMBER OF SAMPLING SITES: 28

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: hydrological data; water quality data

STUDY SITE(S): MO

GEOGRAPHIC DESCRIPTION: Washington County; Crawford County; Iron County; Reynolds County; St. Francois County; Black River; St. Francis River; Meramec River; Big River; Ozark Mountains

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: regression/correlation analysis

ABSTRACT: The Missouri Department of Conservation has monitored water quality in Ozark streams affected by lead mining, milling, and smelting since 1965. Reductions in the number of types of pollution intolerant bottom dwelling macroinvertebrates and in diversity index values were the parameters monitored in this program. Typically, samples from unpolluted streams had diversity index values of at least 4.0 and eight or more total mayfly and stonefly taxa. Samples from polluted streams had reduced diversity index values and fewer than eight types of mayflies and stoneflies. In 1969, the St. Joe Minerals Corporation Viburnum Division began a 6-month trial of the effectiveness of mill effluent recycling in abating the pollution of Indian Creek. Permanent mill effluent recycling began in 1972 at the Viburnum Division. Mill effluent recycling at the Fletcher Division on Bee Fork was started in 1971. Recycling of mill effluent at both operations was effective in reducing the level of pollution in the receiving streams. Pollution abatement at the AMAX Lead Company Buic Project involved lengthening the headwaters of Strother Creek by creating meanders below an existing tailings pond and a new 17-acre lake downstream from the meanders. These modifications resulted in noticeable increases in diversity values and decreases in undesirable growths of filamentous algae in the stream.

REFERENCES: Ryck, 1974

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NBIP ACCESSION NUMBER: MO/024

<518>

INVESTIGATOR(S): Sadler, K.C.

AFFILIATION: Missouri State Conservation Dept.

TITLE: Cottontail Rabbit Production and Population Survey

PURPOSE: To determine the annual production of cottontail rabbits in all eight of Missouri's zoogeographic regions.

SPONSOR(S): FWS; Missouri Dept. of Conservation

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SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1947
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Hunting pressure declined by about 5 percent in 1974, and the rabbit population remained essentially stable.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland.
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: SYLVILAGUS FLORIDANUS
ADDED KEYWORDS: cottontail rabbits; rabbits; management measures; seasonal variations; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; harvest; kill; mortality; natality; reproduction; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: 114
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): NO
TYPE OF DATA: summarized
STATISTICS EMPLOYED: analysis of variance
ABSTRACT: During the 1974 census, 334 routes covered 6690.3 miles. Comparable data are available from all of these routes from 1973. Population estimates are based on data from 112 of the state's 114 counties. One of these, St. Louis County has been permanently omitted from the census because of traffic disturbances. Information gathered from routes during the census in 1973 and 1974 revealed 5,540 rabbits observed along 6662.7 miles, or 0.83 rabbits per mile in 1973, compared with 5,641 rabbits along 6690.3 miles, or 0.84 per mile in 1974. This represents a 1 percent increase in 1974, or for practical purposes, no change in the statewide rabbit population. The 1974 adjusted population index is about 23 percent below the average of the past 10 years. Harvest estimates obtained from the Post-Season Harvest Mail Survey show a reduction in the total state rabbit harvest from 1,909,444 during the 1973-74 season to 1,693,334 during the 1974-75 season. This represents a decline in the harvest of 216,110 rabbits, or about 11 percent. Hunting pressure, represented by the number of rabbit hunting trips, declined by about 5 percent. Regional harvest and hunting pressure data are also given in the report, as are census data in relation to the major soil types in the state.
REFERENCES: Sadler, 1975
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NBIP ACCESSION NUMBER: MO/007

<519>

INVESTIGATOR(S): Sadler, K.C.
AFFILIATION: Missouri State Conservation Dept.
TITLE: Roadside Census of Mourning Doves
PURPOSE: To determine the annual status of breeding dove populations.
SPONSOR(S): FWS; Missouri Dept. of Conservation
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1946
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed a 13 percent decline in dove population between 1973 and 1974.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: ZENAIIDA MACROURA
ADDED KEYWORDS: mourning doves; doves; management measures; breeding; seasonal variations
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; kill; mortality; migratory patterns; natality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observations
NUMBER OF SAMPLING SITES: 114
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): NO
TYPE OF DATA: summarized
STATISTICS EMPLOYED: analysis of variance
ABSTRACT: The 1974 census of Missouri's mourning dove breeding population was conducted in 112 of the state's 114 counties. Comparable data are available from 111 census (2,049.8 miles) routes in 1973. Observers along these routes recorded 3,687 doves: 1,953 (53%) as singles; 1,194 (32.4%) as pairs; and 532 (14.4%) as flocks of 3 or more birds. The average number of doves seen per mile was 1.81. This figure must be adjusted to 1.62 because of route changes made in 1968. A comparable survey conducted in 1973 resulted in 4,319 doves recorded along these same routes, or 2.00 doves per mile (adjusted to 1.88). This change indicates that between 1973 and 1974 Missouri's mourning dove breeding population declined by about 13 percent. This places the 1974 population about 20 percent below the average of the past 10 years, and 38 percent below that of the past 30. The largest number of doves seen per mile was recorded in the Mississippi Lowland Region, where 4.00 doves were recorded per census route. The remaining seven regions showed the following (unadjusted) population indices: Northwest Prairie (2.43), Western Ozark Border (2.35), Western Prairie (2.29), Northeast Riverbreaks (1.80), Northern Riverbreaks (1.72), North and East Ozark Border (1.16), and the Ozark Plateau (0.63). A similar survey conducted by the Fish and Wildlife Service recorded a 13 percent decline.
REFERENCES: Sadler, 1975
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Fish and Wildlife Research Center

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NBIP ACCESSION NUMBER: MO/008

<520>

INVESTIGATOR(S): Tennyson, L.C.
AFFILIATION: School of Forestry, University of Missouri
TITLE: Sewage Effluent Irrigation on Forested Lands in Missouri Ozarks
PURPOSE: Evaluate renovation and production potential on sewage effluent land disposal sites in Missouri with emphasis on forest lands in Ozarks.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased production (bionass) in white and red oak and herbage. Renovation of effluent occurring.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; mountain
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: forestry; pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: TREES, 9 SPECIES
ADDED KEYWORDS: white oaks; oaks; red oaks; bald cypresses; cypresses; green ashes; ashes; walnuts; sycamores; eastern cottonwoods; cottonwoods; scotch pines; red maples; maples; pin oaks; waste water; effluents; irrigation; lagoons; sewage treatment
PRIMARY PARAMETERS INVESTIGATED: age; growth; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): increment cores
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: soils; terrain; water quality data
STUDY SITE(S): MO
GEOGRAPHIC DESCRIPTION: LaCade County; Bennett Spring State Park; Ozark Mountains
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: The wastewater disposal facility serves Bennett Springs State Park in Missouri Ozarks. Approximately 5.5 acres of forest-open field land is sprinkler-irrigated with treated effluent from a three cell facultative lagoon system. Renovation of effluent by soil-plant-atmospheric continuum is being monitored. Production of existing timber and forage is being monitored. Tree seedling growth and survival of eight species is being evaluated in the open field area. Ground water behavior the irrigated site has been evaluated.
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INVESTIGATOR(S): Witt, A.
AFFILIATION: School of Forestry, Fisheries, and Wildlife, University of Missouri - Columbia
TITLE: Alteration of the Environment by Thermal Additions
PURPOSE: To ascertain the effect of thermal additions on growth of fishes, plankton, aufwuchs, benthos, reproduction of fishes, and incidence of diseases in fishes.
SPONSOR(S): OWRT; Missouri State Agricultural Experiment Station
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Thermal effluent has sublethal effect on reproduction of fishes but no measurable effect on benthos or plankton.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta; microorganisms; viruses
TAXA: POMOXIS ANNULARIS; MICROPTERUS SALMOIDES; LEPOMIS MACROCHIRUS; DOROSOMA CEPEDIANUM; LYMPHOCYSTIS SPP
ADDED KEYWORDS: black crappies; crappies; smallmouth basses; basses; gizzard shad; shad; thermal effluents; habitat modification; benthic organisms; phytoplankton
PRIMARY PARAMETERS INVESTIGATED: age; behavior; diversity; growth; mortality; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; electroshocking; plankton nets; Ekman dredge; glass rods
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: seasonal; weekly; irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): MO
GEOGRAPHIC DESCRIPTION: Macon County; Randolph County; Thomas Hill Reservoir
TYPE OF DATA: summarized
ABSTRACT: Age and growth of white crappie and largemouth bass was shown not to be affected by thermal additions. Turbidity was probably more important. Variation in the gonadal somatic indices was affected by thermal effluent as was the fat content of tissues. We could not measure an effect by thermal additions in plankton, aufwuchs, or benthos.
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NBIP ACCESSION NUMBER: MO/026

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MONTANA

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Fish and Wildlife Service Region 6
(SEE ALSO 100, 145, 180, 203, 208, 210, 835,
970, 971)

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INVESTIGATOR(S): Basile, J.V.
AFFILIATION: Forestry Sciences Lab, FS
TITLE: Grizzly Bear Monitoring
PURPOSE: To determine geographic distribution
and ultimately the habitat requirements of
the bear.
SPONSOR(S): FS; FWS; NPS; State of Montana;
State of Wyoming; State of Idaho
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None observed to date but
grizzly populations are generally known to
be declining in some areas.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; savanna; grassland
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: URSUS ARCTOS; URSUS HORRIBILIS
ADDED KEYWORDS: grizzly bears; bears;
management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observations
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): ID; MT; WY
GEOGRAPHIC DESCRIPTION: Yellowstone National
Park; Western National Forests
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: MT/059

<523>

INVESTIGATOR(S): Drown, G.W.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Evaluation of Big Game Habitat
Improvement
PURPOSE: To evaluate various techniques aimed
at increasing browse production on big
game winter ranges around Libby Dam and to
determine increase or decrease in big game
populations around dam.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Decreases occurred in big
game populations around Libby Dam. Burning
of bitterbrush stands was detrimental.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs
TAXA: ODOCOLEUS VIRGINIANUS; ODOCOLEUS
HEMIONUS; CERVUS CANADENSIS; PEROMYSSUS

TRIDENTATA; AMELANCHIER ALNIFOLIA; PRUNUS
VIRGINIANA

ADDED KEYWORDS: habitat modification;
population effects; impoundments; deer;
elk; moose; bighorn sheep; bears;
bitterbrush
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; habitat
characterization; harvest; mortality;
migratory patterns; natality; numbers;
reproduction; sex
SAMPLING FREQUENCY: continuous; seasonal
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Lincoln County;
Kootenai River; Kootenai Lake
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: After two growing seasons, data
from the Canoe Gulch Study Area showed
sites treated with the chainsaw technique
exceeded both control and burn areas in
bitterbrush forage production. Bitterbrush
density on burn areas remained at
approximately one-half the density prior
to treatment. Neither serviceberry or
chokecherry declined in densities
following treatment, and both species
appeared to respond favorably to either
spring broadcast burning or topping.
Checking station information showed a
decline in hunter use of the West Kootenai
and a decline in hunter success over the
previous year.
ADDRESS: Mr. Gerald W. Brown
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Libby, MT 59923
TELEPHONE: (406) 293-7639
NBIP ACCESSION NUMBER: MT/028

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INVESTIGATOR(S): Carroll, R.E.
AFFILIATION: Ecological Consulting Service
TITLE: Ecological Baseline and Monitoring of
Selected Parameters of a Surface Coal Mine
PURPOSE: To obtain data sufficient to
determine the effects of surface coal
mining on wildlife and wildlife habitats.
SPONSOR(S): Peabody Coal Company
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
CHANGE(S) OBSERVED: Minor population
fluctuations associated with weather
patterns only.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; savanna; grassland;
aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species; range; pollution control; water
quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insects;
mollusca; shellfish; annelida; plants;
vascular plants; trees; shrubs; herbs;
grasses; microorganisms; algae
ADDED KEYWORDS: mining; reclamation;
management measures; legal regulation;
habitat modification; weather conditions
PRIMARY PARAMETERS INVESTIGATED: age;

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behavior; biomass; bod; distribution;
diversity; growth; habitat
characterization; harvest; home range
size; mortality; migratory patterns;
natality; numbers; productivity;
reproduction; sex; stress; territory size
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: continuous; seasonal;
weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; terrain; water quality
data

STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Rosebud County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: XEROX Sigma 7
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis;
multivariate analysis; non-parametric
analysis; modeling, deterministic
ABSTRACT: None provided.
ADDRESS: Mr. Bob Carroll
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1300 Cedar St.
Helena, MT 59601
TELEPHONE: (406) 442-4650
NBIP ACCESSION NUMBER: MT/077

<525>

INVESTIGATOR(S): Coop, K.J.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Movements, Population, Range Use, and
Associated Behavior of Elk in Portions of
the Little Belt Mountains, Montana
PURPOSE: To capture, mark, and monitor
distribution and movements of elk within
and between hunting districts.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: There are annual
population fluctuations and movements
which appear to be correlated primarily to
weather and hunting.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: wildlife; forestry; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: CERVUS CANADENSIS
ADDED KEYWORDS: elk; weather conditions;
management measures
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; emigration; habitat
characterization; harvest; home range
size; immigration; kill; natality;
reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
annual and seasonal aerial census; check
station; questionnaires; field
reconnaissance
SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Wheatland County;
Golden Valley County; Musselshell County;
Fergus County; Petroleum County
ABSTRACT: None provided.
ADDRESS: Kenneth J. Coop
Game Management Biologist
Box 475
Harlowton, MT 59036
TELEPHONE: (406) 632-5643
NBIP ACCESSION NUMBER: MT/071

<526>

INVESTIGATOR(S): Coop, K.J.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Sage Grouse Population and Habitat
Inventory
PURPOSE: To determine sagebrush distribution,
sage grouse distribution, location of
breeding grounds, brood areas, winter
areas, monitor breeding, and numbers.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Alteration of habitat
affects number of males present on grounds
and location of grounds.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population;
ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; plants; vascular plants; shrubs;
herbs; grasses
TAXA: CENTROCERCUS UROPHASIANUS; ARTEMISIA
TRIDENTATA
ADDED KEYWORDS: sage grouse; grouse;
sagebrush; breeding grounds; habitat
modification; management measures
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
harvest; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
check station; aerial survey; field
reconnaissance
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Wheatland County;
Golden Valley County; Fergus County;
Petroleum County; Musselshell County
TYPE OF DATA: raw
ABSTRACT: None provided.
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Harlowton, MT 59036
NBIP ACCESSION NUMBER: MT/072

<527>

INVESTIGATOR(S): Eng, R.L.
AFFILIATION: Montana Agricultural
Experimental Station
TITLE: Migration Patterns of Waterfowl Broods
PURPOSE: To determine degree of intactness
(or lack of) in waterfowl broods in their
first fall migration.
SPONSOR(S): Montana Agricultural Experiment
Station; Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government

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DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increase in total numbers and species diversity in banding area.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; wetland; aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: ANATIDAE

ADDED KEYWORDS: prairies; nesting; broods;

migration rates; ducks; management measures

PRIMARY PARAMETERS INVESTIGATED: migratory patterns

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): drive traps; banding

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Phillips County

TYPE OF DATA: raw

ABSTRACT: Waterfowl (ducks only) have been trapped in a small part of Phillips County, Montana for the past 5 years. Emphasis has been placed on banding intact broods with the hope that multiple first-year recoveries will be made to provide information on whether or not broods remain intact during first year migrations.

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NBIP ACCESSION NUMBER: MT/004

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INVESTIGATOR(S): Eversman, S.B.

AFFILIATION: Dept. of Biology, Montana State University

TITLE: Use of Lichens as Predictors and Indicators of Air Pollution from a Coal-Fired Power Plant

PURPOSE: To characterize existing lichen communities and to compare existing anatomical and some physiological properties with the same properties after exposure to SO₂ on a field fumigation plot and from power plant emissions.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Lichens on fumigation plot exhibited chlorophyll bleaching, deterioration of algal cells, decrease in respiration rate and nitrogen content, and increased sulfur content.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; savanna; grassland

LEVEL(S) OF STUDY: organisms; population; community

MANAGEMENT FOCUS: environmental impact; indicator species; power generation

ORGANISMS, MAJOR TYPES: plants; non-vascular

plants; lichens

TAXA: USNEA HIRTA; PARMELIA CHLOROCHROA

ADDED KEYWORDS: fossil fueled power plants; air pollution

PRIMARY PARAMETERS INVESTIGATED: distribution; physiology

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora; climatological data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Rosebud County;

Powder River County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean

ABSTRACT: A coal-fired power plant began generating power in Colstrip, southeast Montana, in September, 1975. During the summer of 1975, fumigation plots were operational on a grassland site in order to simulate SO₂ effects on the ecosystem. Two lichen species, USNEA HIRTA and PARMELIA CHLOROCHROA, were exposed to the SO₂ and anatomical and physiological states were determined for them periodically during the fumigation. The effects observed in the lichen species from the fumigation plots will be used as guides in determining range and impact of the power plant emissions.

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NBIP ACCESSION NUMBER: MT/010

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INVESTIGATOR(S): Firebaugh, J.E.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Elk Movements and Distribution in the Bitterroot Valley

PURPOSE: Determine seasonal ranges, sizes, dispersal routes to and from seasonal ranges, calving areas, and use of cover types during the year.

SPONSOR(S): Montana Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1953

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Change in hunting season distribution of elk as a result of a 28,000 acre fire and increased road construction and logging.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: CERVUS CANADENSIS

ADDED KEYWORDS: logging; construction; fires; forest fires; rocky mountain elk; habitat modification; roads

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; harvest; home range size; immigration; kill; mortality; migratory patterns; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark, release; trapping; observation;

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radiotelemetry
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Ravalli County;
Granite County
TYPE OF DATA: raw
ABSTRACT: None provided.
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Game Management Biologist
823 W. Ravalli
Hamilton, MT 59840
TELEPHONE: (406) 363-2838
NBIP ACCESSION NUMBER: MT/015

<530>
INVESTIGATOR(S): Gjersing, F.M.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Waterfowl Production in Relation to
Rest-Rotation Grazing
PURPOSE: To determine the effects of
rest-rotation grazing on waterfowl (duck)
production.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An increase in duck
production and breeding pair numbers of
approximately 470 percent occurred from
1968 to 1974. This was accompanied by an
increase in species diversity of waterfowl
recorded.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: ANAS PLATYRHYNCHOS; ANAS CLYPEATA; ANAS
DISCORS; ANAS STREPERA; AYTHYA AFFINIS;
AYTHYA AMERICANA; OXYURA JAMAICENSIS;
AYTHYA COLLARIS; AYTHYA VALISNERIA
ADDED KEYWORDS: dabbling ducks; redhead
ducks; ruddy ducks; ring-necked ducks;
canvasback ducks; lesser scaup ducks;
pintail ducks; mallard ducks; baldpate
ducks; shoveler ducks; blue-winged teals;
gadwall ducks; management measures;
habitat modification; ducks; grazing;
cattle
PRIMARY PARAMETERS INVESTIGATED: behavior;
diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
direct observations
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Phillips County
TYPE OF DATA: raw; summarized
ABSTRACT: Duck production was compared in two
rest-rotation cattle grazing systems and
normally grazed areas in Phillips County,
Montana, from 1968 to 1970. Pair
populations generally increased in
pastures excluded from cattle grazing the
previous year and decreased in pastures

grazed in the fall of the previous year.
In eleven of twelve instances, complete
rest or grazing only during spring and
early summer resulted in an increase of
the number of broods the following spring.
In five of eight instances grazing during
summer and fall resulted in a decrease of
broods the following spring.
REFERENCES: Gjersing, 1975
ADDRESS: Mr. Frank M. Gjersing
Game Management Biologist
Box 1462
Havre, MT 59501
TELEPHONE: (406) 265-6950
NBIP ACCESSION NUMBER: MT/054

<531>
INVESTIGATOR(S): Gless, E.E.
AFFILIATION: Dept. Biological Sciences,
Montana College of Mineral Science and
Technology
TITLE: Evaluation of Upper Clark Fork River,
Microbiological and Invertebrate
PURPOSE: To record pollution recovery.
SPONSOR(S): Montana College of Mineral
Science and Technology
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Water quality was
improved in 1973 with the removal of
copper concentrate tailings.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; microorganisms;
bacteria
TAXA: EPHEMEROPTERA; TRICHOPTERA; COLEOPTERA;
DIPTERA; PLECOPTERA
ADDED KEYWORDS: heavy metals; species
diversity; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: diversity;
habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; membrane filter
NUMBER OF SAMPLING SITES: 50
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Silverbox County;
Clark Fork River
TYPE OF DATA: raw
ABSTRACT: None provided.
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Butte, MT 59701
TELEPHONE: (406) 792-8321 ext. 296
NBIP ACCESSION NUMBER: MT/058

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INVESTIGATOR(S): Gould, W.E.
AFFILIATION: Dept. of Biology, Montana State
University
TITLE: Effects of Heavy Metals on Rainbow
Trout and Aquatic Insects of the Boulder
River
PURPOSE: To determine the severity and extent

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of heavy metal pollution in the Boulder River.

SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: SG

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Rainbow trout and benthic populations were lower in sections of the Boulder River receiving heavy metal pollution.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: fisheries; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insects

TAXA: SALMO GAIEDNERI; SALVELINUS PONTINALIS; PROSOPOM WILLIAMSONI

ADDED KEYWORDS: rainbow trouts; brook trouts; mountain whitefishes; trouts; mining; heavy metals; population effects; benthic organisms; ephemeropterans; trichopterans; dipterans; plecopterans

PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; artificial substrate

NUMBER OF SAMPLING SITES: 11

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Jefferson County; Boulder River

ABSTRACT: Three sections of the Boulder River were monitored. One was a control upstream from two old mines, one had large amounts of pollution, and the third had moderate heavy metal pollution. There was good correlation between fish populations and amounts of heavy metal pollution.

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NBIP ACCESSION NUMBER: MT/006

<533>

INVESTIGATOR(S): Greer, K.R.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Grizzly Bear Studies; Mountain Lion Studies

PURPOSE: To document annual man-caused mortalities.

SPONSOR(S): Montana Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Populations appear to be fairly stable.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry;

range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: URSUS ARCTOS; URSUS HORRIBILIS; FELIS CONCOLOR

ADDED KEYWORDS: mountain lions; lions; grizzly bears; bears; management measures; legal regulation

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; residues; sex; size/weight; stress; territory size; toxicity

SAMPLING FREQUENCY: continuous; seasonal; annual

STUDY SITE(S): MT

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Since 1967, grizzly bears in Montana have been hunted as trophy animals by residents and non-residents holding specific licenses. Unrestricted license sales to residents dropped by 50 percent when the fee was increased from one dollar to five dollars. Although the license issue varied between years, it did not significantly affect the success ratio of 0.7 to 2.3 grizzly bears for each hundred licenses. In addition to hunting, grizzly mortality occurs annually for other reasons. During 1967-73, the known hunting and non-hunting mortalities ranged from 26 to 48 grizzlies. Hunting accounted for 41 to 69 percent (avg. 53) of the mortality during those 7 years. Female grizzlies comprised 25 to 59 percent (avg. 47) of the annual mortality. Ages of the 1972 grizzly mortalities ranged from cub of the year to 19 years, and averaged 8.4 years for males and 9.3 years for females. Complaints requiring departmental action for marauding and nuisance grizzlies exploded to a major program in 1971 in the vicinity of West Yellowstone with the handling of 23 live grizzlies; 7 were handled in 1972 and 9 in 1973. Grizzlies were translocated to sites suggested by the Forest Service in the Gallatin National Forest. The successful relocation of grizzlies is documented. Control actions for grizzlies also occurred in 3 to 6 locations in the northern Montana grizzly populations during 1971-73. Data from the 1967-73 hunting seasons do not indicate that the present regulations, licensing procedures, or hunter harvest are jeopardizing the grizzly populations in Montana. Recommendations are presented. A total of 314 mountain lion hunting licenses, including 71 non-residents, were issued for the 1973-74 season and 72 lions were taken. Thirteen lions were also taken for other reasons. The license issue was 46 percent below, and the hunting harvest was 25 percent above those of the previous year. A decreased hunting harvest issue resulted mostly from the change from a no-fee to a five dollar fee. Lions were taken from 26 hunting districts throughout the state. Males accounted for 71 percent of all 1973-74 mortalities. Successful hunters provide information about their

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lion on a special trophy application form soon after their hunt, and also at the end of the season on a special inquiry. Tissue samples from 63 percent of the lions were positive for TRICHINELLA larvae. Various recommendations are available.

REFERENCES: Greer, 1974; Greer, 1975

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NBIP ACCESSION NUMBER: MT/066

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INVESTIGATOR(S): Grkovic, N.

AFFILIATION: Wildlife Research Unit,
University of Montana

TITLE: Idaho - Montana Bi-State Elk Study

PURPOSE: Relate information gained about migration routes and key-use areas to timber industry and road building.

SPONSOR(S): Idaho Dept. of Fish and Game;

Montana Dept. of Fish and Game; FS

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Elk habitat deterioration due to timber industry and road building.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; wildlife; forestry; range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses; microorganisms; bacteria

TAXA: CERVUS CANADENSIS

ADDED KEYWORDS: elk; logging; roads; construction; habitat modification; migration rates

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; sex; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): biotelemetry; aerial surveys; ground surveys

NUMBER OF SAMPLING SITES: several

SAMPLING FREQUENCY: seasonal; daily; weekly;

monthly; quarterly; annual

SUPPORTING DATA COLLECTED: associated flora; climatological data; terrain

STUDY SITE(S): ID; MT

GEOGRAPHIC DESCRIPTION: Lemhi County; Ravalli County; Beaverhead County

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: percentile

ABSTRACT: Purpose of the project is to determine elk migration routes from winter ranges in Idaho to summer ranges in Montana. Some animals studied belong to a

local population. Key-use areas, calving and rutting sites, and feeding and resting sites along migration routes are determined. We relate information gained to the timber industry and road building.

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TELEPHONE: (406) 243-5641

NBIP ACCESSION NUMBER: MT/011

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INVESTIGATOR(S): Halvorson, C.H.

AFFILIATION: FWS

TITLE: Animal Communities in Relation to Fire and Plant Succession in the Northern Rocky Mountains

PURPOSE: To determine small mammal species composition and abundance in forest areas subject to cutting and broadcast burning and relate this to vegetational succession.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Marked reduction in certain microtine species with replacement by cricetid rodents, depending on aspect/burn intensity.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; mountain

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: PEROMYSCUS SPP; EUTAMIAS SPP; MICROTUS SPP; CLETHRIONOMYS SPP

ADDED KEYWORDS: natural catastrophe; rodents; succession; deer mice; chipmunks; red-backed voles; management measures; forest fires; fires

PRIMARY PARAMETERS INVESTIGATED: home range size; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live and kill trap; mark and release

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated flora; climatological data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Mineral County; Flathead County; Bitterroot Mountains; Miller Creek; Newman Ridge

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: On the 30,000 acre severe wildfire burn (1961) in the Bitterroot Mountains, sampling in alternate years has shown low populations of most vertebrates.

Experimental burns on Miller Creek (1967) and Newman Ridge (1969) have resulted in deer mouse increases after burning in general, but population response is strongest in xeric and open conditions. Chipmunks are eliminated but return about the third season after a burn and then increase. Red-backed voles predominate in uncut forest and are subject to marked fluctuation regardless of treatment. Some 11 small mammal, three big game, two grouse, and numerous small bird species are characteristic of cut-over and uncut

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timber.
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Drawer G
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TELEPHONE: (406) 329-3533
NBIP ACCESSION NUMBER: MT/050

<536>

INVESTIGATOR(S): Hanzel, D.A.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Flathead Lake Fisheries Investigation
PURPOSE: To identify and monitor environmental factors affecting the growth, distribution, and reproduction of the six major game fish species in the lake.
SPONSOR(S): Montana Dept. of Fish and Game; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Identification of the effects of fluctuating temperature and water flows upon fish in the river and lake from an upstream peak power operation, Hungry Horse Dam.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: endangered species; fisheries; indicator species; recreation; resource planning; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; microorganisms; algae
TAXA: SALMO CLARKI; SALVELINUS MALMA; ONCORHYNCHUS NEBKA; SALVELINUS MAYNARDI; COREGONUS CLUPEAFORMIS; PROSOPIUM WILLIAMSONI; PROSOPIUM COULTERI
ADDED KEYWORDS: cutthroat trout; dolly varden; kokanee salmon; lake trout; lake whitefishes; mountain whitefishes; pygmy whitefishes; trout; whitefishes; thermal effluents; hydroelectric power plants
PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; habitat characterization; harvest; mortality; migratory patterns; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gillnets; purse seine; midwater trawl
NUMBER OF SAMPLING SITES: 22
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(C): NW
GEOGRAPHIC DESCRIPTION: Flathead County; Lake County; Flathead Lake
TYPE OF DATA: reduced
STATISTICS EMPLOYED: percentile; regression/correlation analysis
ABSTRACT: Flathead Lake in northwest Montana is the state's largest and one of the most important fishing lakes. Due to its size (126,000 surface acres, 400 feet max.

depth) standard lake sampling techniques and equipment have failed to provide the necessary data to accurately interpret the characteristics of the fish community. Knowledge of the status of the lake's fishery and other base-line data affecting it are necessary before recommendations can be assessed or evaluated for existing and future water development projects and before a management program can be formulated that would maintain the quality sport fishery that exists in the lake-river system today. The objectives of this study through the development of techniques and specialized sampling equipment are to: 1) define the relative abundance of the six major game fish species, their seasonal and depth distribution, and 2) to measure year to year trends in recruitment and migrations of fish populations and to identify the major factors affecting these changes.

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NBIP ACCESSION NUMBER: MT/018

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INVESTIGATOR(S): Hartkorn, F.L.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Management of Wildlife
PURPOSE: To obtain information on wildlife and its habitat in south central Montana.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Human land use reducing useable wildlife habitat.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact; wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
ADDED KEYWORDS: habitat modification; management measures
STUDY SITE(S): MT
ABSTRACT: None provided.
ADDRESS: Mr. Fred L. Hartkorn
Game Management Biologist
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TELEPHONE: (406) 549-1496
NBIP ACCESSION NUMBER: MT/016

<538>

INVESTIGATOR(S): Hook, D.L.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Upper Yellowstone - Shields River Planning Project
PURPOSE: To inventory wildlife for aquatic resource management, and to monitor the southeastern Montana coal field development as related to probable watershed demands on the upper Yellowstone drainage.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years

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PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: There are annual and seasonal variations in breeding activities, ranges, and populations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; grassland; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; mammals; invertebrates; crustacea; microorganisms; algae
TAXA: FISHES, 17 SPECIES; BENTHIC ORGANISMS, 78 SPECIES; ANIMALS, 27 SPECIES; BIRDS, 11 SPECIES
ADDED KEYWORDS: habitat modification; breeding; logging; channelization; coal; oil drilling; geothermal power; mining; irrigation; grazing; impoundments
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; harvest; kill; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): crowing routes; aerial surveys; electrofishing gear
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; water quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Park County; Yellowstone River; Shields River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Big game observations were made to determine overall distribution, winter ranges, elk calving grounds, and mountain sheep lambing grounds. Maps outlining elk, deer, antelope, mountain sheep, and mountain goat winter ranges and elk calving and mountain sheep lambing grounds are available. In addition, moose, black and grizzly bear, beavers, and predators are discussed. State and federal land parcels important to big game are identified. Present and potential major environmental problems affecting big game animals are discussed. Principal upland game bird species found in the project area include sage grouse, sharp-tailed grouse, blue grouse, ruffed grouse, Hungarian partridge, pheasants, Merriam's turkey, and chukar. Locations of newly found sage grouse and sharp-tailed grouse breeding grounds are given, along with sage grouse winter concentration areas. Other data presented include estimated harvest, check station results, and production data. Spring, fall, and winter waterfowl surveys of the Yellowstone River are presented, along with limited nesting and production data for Canada geese. Information on non-game species is presented for wintering bald eagles, nesting golden eagles, and mountain bluebirds.
REFERENCES: Hook, 1975
ADDRESS: Mr. Daniel L. Hook
Planning Ecology
410 S. 3rd

Livingston, MT 59047

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NBIP ACCESSION NUMBER: MT/049

<539>

INVESTIGATOR(S): Hutson, J.E.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Reservoir Investigations
PURPOSE: Produce and/or maintain a sport fishery in hydroelectric impoundments in northwest Montana.
SPONSOR(S): COE; Washington Water Power
SPONSOR CATEGORY: federal government; private corporation
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Maintenance and/or establishment of Westslope cutthroat trout fisheries in fluctuating impoundments.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta
TAXA: SALMO TRUTTA; SALVELINUS MALMA; SALMO CLARKI; SALMO GAIARDNERI; CATOSTOMUS MACROCHEILUS; CATOSTOMUS CATOSTOMUS; PYTOCHEILUS ONOGENSIS; MYLOCHEILUS CAURINUS; PROSOPIUM WILLIAMSONI
ADDED KEYWORDS: management measures; impoundments; hydroelectric power plants; brown trouts; dolly varden; cutthroat trouts; mountain whitefishes; lake whitefishes; whitefishes
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; emigration; growth; harvest; immigration; migratory patterns; numbers; reproduction; residues; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard fish sampling techniques; netting; electrofishing gear; trapping
NUMBER OF SAMPLING SITES: reservoir-wide plus tributary streams
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Lincoln County; Sanders County; Flathead County; Hungry Horse Reservoir; Libby Reservoir
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: MT/020

<540>

INVESTIGATOR(S): Kessell, S.B.
AFFILIATION: Gradient Modeling, Inc.; Section of Ecology and Systematics, Cornell University

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TITLE: Glacier National Park Basic Resource and Fire Ecology Systems Model

PURPOSE: To provide resource data retrieval and synthesis for terrestrial sites and biota, and for real-time fire modeling, using a resource inventory linked to gradient models and fire models.

SPONSOR(S): NSF; NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Vegetation and fuel succession due to fire suppression.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; alpine; wetland; mountain

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; forestry; indicator species; recreation; resource planning; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs

ADDED KEYWORDS: fires; models; inventories; management measures; fire control

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth; habitat characterization; numbers; residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

standard over-and understorey vegetation methods; planar intercepts; aerial survey

NUMBER OF SAMPLING SITES: 2000; aerial photo coverage of entire park

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora; climatological data; terrain

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Flathead County;

Glacier County; Glacier National Park

TYPE OF DATA: raw; reduced; summarized; literature-derived

COMPUTER AND LANGUAGE: IBM 370/168 VS; FORTRAN IV G1

STATISTICS EMPLOYED: mean; mode; median;

analysis of variance;

regression/correlation analysis;

multivariate analysis; non-parametric

analysis; non-linear estimation; modeling, deterministic; modeling, stochastic

ABSTRACT: The Glacier National Park Basic Resource and Fire Ecology Systems Model is an integrated resource management package which provides retrieval of terrestrial site information, integration of these site data with gradient models to provide quantitative vegetative composition and fuel loadings, and synthesis of these results with weather parameters to provide real time fire behavior simulation. The model consists of the following parts: The Terrestrial Site Inventory consists of information coded from topographic maps, fire history maps, vertical black and white aerial photos and oblique false color infrared aerial photos. The Gradient Vegetation Models use the data recorded in the Terrestrial Site Inventory files to predict quantitative species composition

for each hectare. The Gradient Fuel Models use the data recorded in the Terrestrial Site Inventory to predict fuel loadings for 6 fuel types. The Weather Data file includes current and predicted fire weather data obtained from remote weather stations and weather forecasts. The Fire Behavior Models integrate site, vegetation, fuel, and weather data hectare by hectare to provide calculated real time ground fire behavior.

REFERENCES: Kessell, 1974; Kessell, 1975

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NBIP ACCESSION NUMBER: MT/068

<541>

INVESTIGATOR(S): Kuchel, C.R.

AFFILIATION: Montana Cooperative Wildlife

Research Unit, University of Montana

TITLE: Breeding Ecology of the Harlequin Duck (HISTRIONICUS HISTRIONICUS) in Glacier National Park

PURPOSE: To investigate basic aspects of Harlequin ecology and behavior, to identify habitat requirements, and to evaluate some effects of human influence.

SPONSOR(S): NPS; Montana Cooperative Wildlife Research Unit; Frank M. Chapman Fund

SPONSOR CATEGORY: federal government; state government; societies and other organizations

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Changes we have noted include dates of departure and arrival from breeding ground, chronology of breeding, nesting, development of young, survival of adults and juveniles, site tenacity of adults, and the population numbers.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

mountain; aquatic; freshwater; stream

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: HISTRIONICUS HISTRIONICUS

ADDED KEYWORDS: harlequin ducks; ducks; sea

ducks; breeding; nesting behavior;

population effects; seasonal variations

PRIMARY PARAMETERS INVESTIGATED: behavior;

habitat characterization; home range size;

mortality; numbers; reproduction;

size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation

NUMBER OF SAMPLING SITES: a single 16

kilometer stretch of stream

SAMPLING FREQUENCY: daily

SUPPORTING DATA COLLECTED: associated fauna;

climatological data; hydrological data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: McDonald Creek;

Glacier National Park

TYPE OF DATA: raw

ABSTRACT: None provided.

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Montana Cooperative Wildlife

Research Unit

University of Montana

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MONTANA
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<541> CONT.
TELEPHONE: (406) 243-5372
NBIP ACCESSION NUMBER: MT/073

<542>
INVESTIGATOR(S): Lonner, T.H.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Montana Cooperative Elk-Logging Study
PURPOSE: To determine the effects of logging on an elk population and determine specific environmental requirements of elk on spring, summer, and fall range.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A significant seasonal shift in elk use between summer and rutting seasons occurred. Interspecific association measurements between elk and cattle resulted in a displacement of elk by cattle.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; grassland; wetland; mountain
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: CERVUS CANADENSIS; TREES, 4 SPECIES; PLANTS, 7 SPECIES
ADDED KEYWORDS: elk; seasonal variations; logging; competition; species introduction; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): pellet group surveys; biotelemetry; vegetation plots; check stations
NUMBER OF SAMPLING SITES: 14 clearcuts; 30 road transects; 60 miles pellet group transects
SAMPLING FREQUENCY: monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Silver Bow County; Madison County; Johnson Creek; Long Tom Creek; Jerry Creek; Fish Lake
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: XEROX Sigma 7; FORTRAN; BASIC
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis; modeling, stochastic
ABSTRACT: Elk use of the Long Tom Creek study area was evaluated on a seasonal basis from June through August (summer season),

September through early October (rutting season), and early October through late October-early November (1st third of hunting season). The distribution of elk use within the study area as defined by 16 subdivided areas for these seasonal categories was quite varied between areas for 1972 through 1974. Statistical analysis showed the overall variation of elk use between years and within subdivided areas between years not to be significant during the summer and breeding season, although there were some significant differences of elk use within individual areas between years. Measurement of elk distribution during the 1st third of the hunting season for all 3 years was so varied that its interpretation was highly questionable. The distribution of elk use for the fall of 1971-1973 showed significant variation between areas and between years. A significant seasonal shift in elk use between the summer and rutting seasons for all 3 years occurred in no more than 5 and not less than 3 of the subdivided areas. A detailed presentation of elk-cattle distribution and interspecific relationships was made. Interspecific association measurements between elk and cattle showed a significant negative response of elk towards cattle during the summers of 1973 and 1974. This negative interaction resulted in a displacement of elk by cattle that appeared to be initially caused by social intolerance of elk towards cattle.

REFERENCES: Lonner, 1974
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TELEPHONE: (406) 994-3285
NBIP ACCESSION NUMBER: MT/039

<543>
INVESTIGATOR(S): Marcuson, P.E.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Stream Sediment Investigation
PURPOSE: To measure detrimental effects of sediment discharge and water temperature on brown trout, bottom fauna, and trout egg incubation; and to reduce sediment loads and measure response to the above mentioned aspect.
SPONSOR(S): Montana Dept. of Fish and Game; USGS; SCS; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Sediment load reduced 50 percent, rough fish decreased in north and west, and juvenile brown trout increased.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta

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TAXA: SALMO TRUTTA

ADDED KEYWORDS: agriculture; brown trouts;

erosion; trichopterans; dipterans;

plecopterans; benthic organisms

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;

habitat characterization; natality;

numbers; reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

depth integrated sampler; electrofishing

gear; Surber sampler; vibrant boxes; egg

survival

NUMBER OF SAMPLING SITES: 15 for fish; 5 for

other parameters

SAMPLING FREQUENCY: continuous; annual

SUPPORTING DATA COLLECTED: associated fauna;

hydrological data; soils; water quality

data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Carbon County;

Bluewater Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

analysis of variance

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: MT/035

<544>

INVESTIGATOR(S): Martin, P.R.

AFFILIATION: State of Montana Fish and Game

Dept.

TITLE: Sarpy Basin Wildlife Ecology Study

PURPOSE: To determine impact of existing and
future surface mining (coal) operations on
wildlife resources in the area.

SPONSOR(S): Cormorant Corp.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Animal populations

healthy but hindered by mining.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

savanna; grassland

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species; range;

resource planning; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; plants; vascular plants;

trees; shrubs; herbs; grasses

TAXA: ODOCOILEUS HEMIONUS; ANTILOCAPRA

AMERICANA; PERDIX PERDIX PHASIANUS; MELEAGRIS GALLOPAVO; ODOCOILEUS

VIRGINIANUS; PHASIANUS COLCHICUS;

CENTROCEPUS OROPHASIANUS; PERDIX PERDIX

ADDED KEYWORDS: mining; coal; mule deer; gray

partridge; partridges; pronghorn

antelopes; prairie grouse; ring-necked

pheasants; sage grouse; grouse; deer;

antelopes; sharp-tailed grouse; pheasants;

management measures; turkeys; seasonal

variations; white-tailed deer; strip mining

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; habitat characterization;

harvest; productivity; sex; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial observations; questionnaire

SAMPLING FREQUENCY: seasonal; quarterly

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; soils; terrain

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Treasure County; Big

Horn County; Sarpy Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

contingency table analysis

ABSTRACT: Strip mining is currently taking place at the Westmoreland Mine located within the Sarpy Creek drainage. With the operation of this mine and the opening of others seemingly imminent in the area, the Sarpy Basin Wildlife Ecology Study was initiated in September 1973, with the following objectives: (1) to determine the impact of existing and future surface mining operations on wildlife resources in the area; (2) to ensure that fish and wildlife habitat values receive full recognition in any surface reclamation efforts that follow surface mining operations; and (3) to investigate possible modifications, additions, or innovations in the surface mining reclamation processes to avoid unnecessary loss of wildlife habitat and develop techniques and procedures to enhance habitat through reclamation.

REFERENCES: Martin, 1975

ADDRESS: Mr. Peter R. Martin

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Box 1017

Forsyth, MT 59327

TELEPHONE: (406) 356-2611

NBIP ACCESSION NUMBER: MT/012

<545>

INVESTIGATOR(S): Martin, P.R.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Yellowstone River Drainage Study -

Task 3: Assessment of the Impact of

Altered Stream Flows on Selected

Furbearing Mammals

PURPOSE: To identify habitat types, inventory species, and relative abundance, to assess impacts of altered stream flows on selected species and to assess indirect impacts on trapping income.

SPONSOR(S): RAPC

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: A significant reduction

in island gravel bars and vegetated

islands (both in area and numbers)

resulted from construction of Yellowtail Dam.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; deciduous; wetland; aquatic;

freshwater; river

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; trees;

shrubs

TAXA: CASTOR CANADENSIS; MUSTELA VISON;

ONDATRA ZIBETHICUS

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ADDED KEYWORDS: beavers; minks; muskrats;
trapping; construction; dams; habitat
modification

PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
harvest; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial observations; photogrammetry;
questionnaires

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated flora;
hydrological data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Yellowstone Basin

TYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
contingency table analysis

ABSTRACT: Harvest parameters (numbers taken,
number of trappers, pelt price and
catch/trapper) for beaver, mink and
muskrat are compiled and analyzed.
Statistical comparisons with in-stream
flows are made. Beaver cache locations
(1974 and 1975) are plotted and compared
with stream bank vegetation and channel
morphology. Total cache numbers are
compared to instream flows changes in area
and numbers of vegetated islands, island
gravel bars, and lateral gravel bars along
with total riparian and water surface area
on the Big Horn River are documented. Two
sets of aerial photographs (1939 and 1974)
bracketing the construction of Yellowstone
Dam (1952-1954) were used in measuring
changes. Personal interviews with trappers
working the Yellowstone river are included.

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NBIP ACCESSION NUMBER: MT/013

<546>

INVESTIGATOR(S): May, B.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Kootenai River Fishing Investigation

PURPOSE: To determine the effect of Libby Dam
upon fish populations in the Kootenai
River below the dam and to make
recommendations for mitigation.

SPONSOR(S): COE

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decrease in torrent
sculpin and mountain whitefish populations
and change in aquatic insect population.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; recreation;
water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; insects

TAXA: RHINICHTHYS CATARACTAE; COTTUS SP;
PROSOPION WILLIAMSONI; SALMO GAIARDNERI;
SALMO CLARKI; CATOSTOMUS MACROCHEILUS

ADDED KEYWORDS: sculpins; whitefishes;
dipterans; trichopterans; ephemeropterans;
plecopterans; suckers; rainbow trouts;
cutthroat trouts; impoundments; trouts

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; growth; harvest; home range size;
mortality; migratory patterns; numbers

NUMBER OF SAMPLING SITES: 4

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Lincoln County;

Kootenai River; Lake Koocanusa

TYPE OF DATA: raw; summarized;
literature-derived

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: River regulation has greatly
altered the algal and insect populations
in the Kootenai River below Libby Dam.
Mountain whitefish populations have been
adversely affected for at least 20 miles
below the dam. An excellent whitefish
fishery has declined markedly. Trout
populations appear to have been affected
less severely than whitefish. Low
populations of trout have precluded
collecting reliable sample sizes for the
first 14 miles below the dam. Nearly all
juvenile cutthroat which migrated out of
the reservoir in late 1972 have moved
downstream. Suckers have a high incidence
of gas bubble disease, but their numbers
have not been noticeably reduced. The
ability of suckers to tolerate low
dissolved oxygen concentrations and their
preference for deeper water helps reduce
the effect of high dissolved gas
concentration on this species.

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NBIP ACCESSION NUMBER: MT/069

<547>

INVESTIGATOR(S): Hunshever, P.F.

AFFILIATION: Animal and Range Sciences Dept.,
Montana State University

TITLE: Evaluation of the Range Resource in
the Vicinity of Colstrip, Montana

PURPOSE: To determine the impact upon the
range ecosystem of emissions from
coal-fired power plants at Colstrip,
Montana, if an impact occurs.

SPONSOR(S): Montana Power Co.; ERDA

SPONSOR CATEGORY: private corporation;
federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No changes observed to
date.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; coniferous; grassland

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact;
indicator species; range; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees; shrubs; herbs; grasses

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TAXA: PLANTS, 70 SPECIES

ADDED KEYWORDS: air pollution; heavy metals;
fossil fueled power plants; sulfur dioxide

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Daubenmire techniques; soil profile
description; chemical analyses

NUMBER OF SAMPLING SITES: 76

SAMPLING FREQUENCY: seasonal; monthly

SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Rosebud County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: This phase of the study is
concerned with the identification of major
vegetation accumulators of potentially
toxic emissions and the isolation,
identification, and quantification of
contaminants occurring in important plant
species and in the soil system. Prior to
operation of the power plant, research has
emphasized a study of what information was
needed and how this data could be acquired
most rapidly and economically. This report
summarizes the baseline data that defines
the grassland resource around Colstrip,
Montana in terms of the trace elements
investigated.

REFERENCES: Munshower, et al, 1974

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NBIP ACCESSION NUMBER: MT/027

<548>

INVESTIGATOR(S): Parrish, L.P.

AFFILIATION: EPA

TITLE: Clark Fork River Study, Montana

PURPOSE: To identify existing water quality
conditions and to identify any damage to
aquatic life & water quality resulting
from seepage or discharges from a paper
mill.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

CHANGE(S) OBSERVED: The two main sources of
organic enrichment of the reach of the
Clark Fork River studied were the Missoula
STP and the seepage from holding ponds
owned by the Hoerner Waldorf Corporation.
Both operations altered natural conditions
slightly, but at the time of the survey
the river evidenced signs of recovery
downstream from both waste sources.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact;
pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta

TAXA: BENTHIC ORGANISMS, 39 SPECIES

ADDED KEYWORDS: benthic organisms;
eutrophication; waste water; legal
regulation; paper mills

PRIMARY PARAMETERS INVESTIGATED:

distribution; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Surber sampler; dip net; multi-plate
artificial substrates

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Missoula County;

Clark Fork River

TYPE OF DATA: summarized; literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: The Environmental Protection

Agency, Region VIII conducted an intensive
field investigation of the Clark Fork
River in the vicinity of Missoula, Montana
during the period July 23-August 3, 1973.
The water quality and biological study of
the 79 km (49 mile) reach of the river
from Missoula downstream to Albion,
Montana indicated that detrimental effects
of seepage and/or discharges from the
Hoerner Waldorf paper mill ponds could not
be evidenced by the dissolved oxygen and
biochemical oxygen demand (BOD)
concentrations in the river. A slight
color and conductivity increase
attributable to pond seepage was evident
and persisted to the downstream limit of
the study. The benthic community evidenced
greater effects from the discharges of the
Missoula wastewater treatment plant and
Bailey Meat Packing plant than from the
Hoerner Waldorf pond seepage.

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NBIP ACCESSION NUMBER: CO/069

<549>

INVESTIGATOR(S): Peters, D.J.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: West-Central Montana Fishery

Investigations

PURPOSE: To inventory and survey fish
populations and fish habitats within the
project area.

SPONSOR(S): Montana Dept. of Fish and Game;
FWS

SPONSOR CATEGORY: state government; federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Major fish habitat
alterations for flood control and major
improvement in fish population below
mining area.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
mountain; aquatic; freshwater; stream;
river; lake; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact;

fisheries; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; insecta

TAXA: FISHES, 11 SPECIES

ADDED KEYWORDS: salmon; impoundments; strip
mining; benthic organisms

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PRIMARY PARAMETERS INVESTIGATED:
distribution; growth; habitat
characterization; harvest; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard methods analysis
NUMBER OF SAMPLING SITES: numerous surveys
throughout area
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Clark Fork River
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; modeling, stochastic
ABSTRACT: Fish populations were inventoried
in 26 streams and 1 lake in the upper
Clark Fork drainage during the report
period. Species distribution, relative
abundance, and size range of fish captured
were included as part of the inventory.
Brown trout population estimates derived
from a modified Peterson mark and
recapture technique were 846 plus or minus
305 and 1214 plus or minus 268 catchable
sized fish in April and October,
respectively. Fish populations have
increased substantially since 1971 in the
upper Clark Fork River, resulting from
improved water treatment by the Anaconda
Company. Annual population estimates have
documented the improvement of the fishery
and will be used to monitor changes in the
water quality.
REFERENCES: Peters, 1975; Miller, 1974;
Harcoux, 1973
ADDRESS: Mr. Donald J. Peters
112 Cobosset
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TELEPHONE: (406) 549-1496
NBIP ACCESSION NUMBER: MT/032

<550>

INVESTIGATOR(S): Picton, H.D.
AFFILIATION: Dept. of Biology, Montana State
University
TITLE: Bridger Mountain Deer Herd
PURPOSE: Long term monitoring of deer
population and deer range.
SPONSOR(S): Montana Agricultural Experiment
Station; Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Mule deer populations
have declined to about 1/4 the number
present in the 1950's.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; mountain
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: ODOCOLEUS HEMIONUS
ADDED KEYWORDS: deer; mule deer; management
measures
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; habitat

characterization; harvest; home range
size; kill; mortality; migratory patterns;
natality; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial census; radiotelemetry; range
transects
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Gallatin County;
Bridger Mountain
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: A long term study extending back
into the 1950's was conducted concerning
the Bridger Mountain deer population and
range conditions. The study involved both
continuous monitoring and in depth
detailed studies of portions of the study
area. Mule deer populations have declined
to about 1/4 the number present in the
1950's. The study includes basic
population and range parameters as well as
plant chemical composition.
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NBIP ACCESSION NUMBER: MT/001

<551>

INVESTIGATOR(S): Picton, H.D.
AFFILIATION: Dept. of Biology, Montana State
University
TITLE: Impact of Large Scale Recreational
Development on a Semi-Primitive Environment
PURPOSE: To monitor effect of recreational
development on large mammals and other
wildlife.
SPONSOR(S): NSF; Montana Agricultural
Experiment Station
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in mammal
distribution and habitat have been
observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; mountain
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: CERVUS CANADENSIS; URSUS ARCTOS; OVIS
CANADENSIS; URSUS HORRIBILIS; URSUS
AMERICANUS; ODOCOLEUS HEMIONUS; ALCES
ALCES; OREAMNUS AMERICANUS
ADDED KEYWORDS: elk; mountain sheep; grizzly
bears; moose; mountain goats; sheep;
bears; goats; construction; habitat
modification; models
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity;
emigration; habitat characterization;
harvest; kill; mortality; migratory
patterns; natality; numbers; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial survey; ground transects
NUMBER OF SAMPLING SITES: 2 stream drainages;
150 square miles
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;

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hydrological data; soils; terrain; water quality data

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Madison County;

Gallatin County; West Gallatin River

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: XEROX Sigma; FORTRAN

ABSTRACT: Large mammal wildlife species are monitored in a 150 square mile portion of the West Fork of the West Gallatin River and adjacent drainages. The study is designed to assess the impact of the Big Sky of Montana recreational development upon the large mammal resources of this semi-primitive area. A large scale simulation model of the area has been developed and its development and application are continuing.

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NBIP ACCESSION NUMBER: MT/003

<552>

INVESTIGATOR(S): Power, H.W.

AFFILIATION: Biological Research Labs,

Syracuse University

TITLE: Population Biology of Mountain

Bluebirds

PURPOSE: To conduct a study of mountain bluebird population biology.

SPONSOR(S): Syracuse University; Princeton University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Population increased 1970-1972, but suffered mass reproductive failure 1974-1975 due to weather conditions. Situation in 1973 was unknown.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: SIALIA CURRUCOIDES

ADDED KEYWORDS: mountain bluebirds; bluebirds; weather conditions; natural catastrophe; habitat modification; population effects

PRIMARY PARAMETERS INVESTIGATED: age; behavior; emigration; habitat characterization; home range size; immigration; mortality; numbers; reproduction; sex; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

observation; tape recording; tagging

NUMBER OF SAMPLING SITES: nest boxes

SAMPLING FREQUENCY: seasonal; weekly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Cascade County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; mode; median; analysis of variance;

regression/correlation analysis; multivariate analysis; non-parametric analysis

ABSTRACT: A population of mountain bluebirds has been created by erection of nest boxes to enable testing of theories in behavioral ecology and sociobiology. The population has been monitored throughout the breeding season since 1970 except for 1973. A five-year report on reproductive success will be published in 1976 or 1977. Population monitoring will continue into the indefinite future.

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NBIP ACCESSION NUMBER: NY/027

<553>

INVESTIGATOR(S): Pyrah, D.B.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Population Characteristics of Antelope in the Yellow Water Triangle

PURPOSE: To document annually the number, sex, and age composition of the antelope herds using the yellow water triangle in aerial surveys.

SPONSOR(S): Montana Dept. of Fish and Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: During this project the antelope population doubled from a previously documented low in 1966.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: wildlife; range; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: ANTILOCAPRA AMERICANA

ADDED KEYWORDS: antelope; survival;

management measures; population effects

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; kill; mortality;

numbers; productivity; reproduction; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial survey

SAMPLING FREQUENCY: annual

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Fergus County;

Petroleum County; McDonald Creek;

Flatwillow Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of

variance; regression/correlation analysis

ABSTRACT: This project enumerates an antelope population by aerial survey, estimates mortality by hunter questionnaire, estimates hunting and nonhunting mortality on the basis of fawns, yearlings, and matures by comparing the sex-age group from one year with the same group the next year and evaluating mortality and survival.

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TELEPHONE: (406) 538-8580 ext. H-9013

NBIP ACCESSION NUMBER: MT/056

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INVESTIGATOR(S): Pyrah, D.B.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Yellow Water Triangle Coyote Survey
PURPOSE: To document the results of an annual coyote siren-answer survey and relate it to the antelope population.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No change in the coyote population by this survey method was noted.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: CANIS LATRANS; ANTILOCAPRA AMERICANA
ADDED KEYWORDS: coyotes; american pronghorn antelopes; antelopes; population effects; predation
PRIMARY PARAMETERS INVESTIGATED: distribution; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): siren-answer survey
NUMBER OF SAMPLING SITES: 17-19
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Fergus County; Petroleum County; McDonald Creek; Flatwillow Creek
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: The siren-answer survey does not indicate any appreciable change in the status of coyotes from 1972 to 1975. There is not enough data to evaluate the influence of coyotes on the antelope population.
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NBIP ACCESSION NUMBER: MT/057

<555>

INVESTIGATOR(S): Roemhild, G.B.
AFFILIATION: Dept. of Biology, Montana State University
TITLE: Aquatic Insects as Indicators of Water Quality and Productivity; A Coordinated Study
PURPOSE: To associate aquatic insect species with various levels of water quality and to use these species as indicators when species complexes change. Presently devising keys for all Montana species and monitoring the effect of recreational area development on water quality.
SPONSOR(S): Montana Agricultural Experiment Station
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Reduction of aquatic invertebrates and increase in other species in response to siltation.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects
TAXA: AQUATIC INSECTS, 60 SPECIES
ADDED KEYWORDS: eutrophication; mayflies; stoneflies; caddisflies; benthic organisms; ephemeropterans; plecopterans; trichopterans; dipterans
PRIMARY PARAMETERS INVESTIGATED: diversity; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): bottom sampler
NUMBER OF SAMPLING SITES: 11
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Gallatin County; West Gallatin River; West Fork of West Gallatin River
TYPE OF DATA: raw; reduced; summarized; literature-derived
ABSTRACT: Baseline values for kinds and numbers of aquatic invertebrates were established before development was begun on the area. Samples were taken above, through and below the development area in 1970. Sampling has continued since that time. In some of the areas a decrease in mayflies, stoneflies, and caddisflies has been observed as well as an increase in diptera numbers. It is believed that these effects are due to siltation. There is some, but little, evidence that eutrophication may be occurring in a limited area. The ability of the stream to rejuvenate itself through scouring is being observed.
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NBIP ACCESSION NUMBER: MT/076

<556>

INVESTIGATOR(S): Shearer, R.C.
AFFILIATION: Intermountain Forest and Range Exp. Sta., FS
TITLE: Coram Experimental Forest (including Coram Natural Area)
PURPOSE: To study the ecology of western larch forests and determine the effect of silvicultural practices on perpetuation and health of these forests. Studies relate to the harvest, utilization, regeneration, and growth of western larch and associated tree species.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1946
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Successional stages in western larch forests (flora and fauna) through time and by varying management practices.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
forestry; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; invertebrates; insects;
plants; vascular plants; trees; shrubs;
herbs; microorganisms; bacteria; fungi;
algae
TAXA: LARIX OCCIDENTALIS; PSEUDOTSUGA
MENZIESII; PICEA SPP; ABIES LASIOCARPA;
PINUS CONTORTA
ADDED KEYWORDS: arachnids; chilopods;
diplopods; lepidopterans; logging; western
larches; larches; management measures;
succession; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; growth;
habitat characterization; harvest;
mortality; physiology; reproduction;
residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent plots
NUMBER OF SAMPLING SITES: varies
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; soils; terrain; water
quality data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Flathead County;
Coram Experimental Forest; Flathead
National Forest
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; modeling; deterministic
ABSTRACT: On the Flathead National Forest in
northwest Montana, a team of forest
managers, scientists, and a timber company
are evaluating skyline logging as a means
of reducing environmental impact while
turning wood formerly wasted into useful
products. The group is also monitoring the
environment consequences of removing
virtually all wood from logged areas
rather than allowing logging residues to
remain and decay.
REFERENCES: Bay, et al, 1974
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TELEPHONE: PTS 585-3533
NBIP ACCESSION NUMBER: MT/047

<557>

INVESTIGATOR(S): Sindelar, B.W.
AFFILIATION: Montana State University
TITLE: Establishment, Succession, and
Stability of Vegetation of Surface Mined
Lands in East Montana
PURPOSE: To investigate plant establishment,
succession, stability, and permanence on
surface mined lands in southeast Montana.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Areas mined since 1923
have acquired plant cover of varying
degrees and kinds.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
savanna; grassland
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact; range
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses;
microorganisms; bacteria; fungi
ADDED KEYWORDS: succession; stability; strip
mining; mining; reclamation; invasion;
seeds; primary productivity; canopy;
phenology; survival; nutrients; soil
microorganisms; leachates
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; mortality; numbers;
physiology; productivity; reproduction;
size/weight; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent quadrats; transects; enclosures;
harvesting; stereophotography
NUMBER OF SAMPLING SITES: 7
SAMPLING FREQUENCY: seasonal; weekly; monthly
SUPPORTING DATA COLLECTED: climatological
data; soils
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Rosebud County;
Colstrip 1 Power Station; Colstrip 2 Power
Station
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis
ABSTRACT: Few disturbances of plants and
soils are as severe as surface mining. The
resultant spoils are normally devoid of
plant nutrients, soil microorganisms, and
organic matter. Often toxic materials are
manifested in high alkalinity and
salinity. The slow process of succession
may be hampered by erosion and mass
movement if spoil piles are not reshaped.
The present study will introduce plant
species including grasses, shrubs, forbs,
and trees on recently mined and shaped
coal spoils. Treatments include seeding on
topsoiled spoils, seeding on mulched and
topsoiled spoils, and unseeded topsoil
spoils. Establishment of seeded and
invading species are closely monitored on
treated and control plots. Parameters used
to document plant succession include
species density, frequency, canopy cover,
basal area, net primary productivity,
sociability, dominance, phenology,
survival, and vigor. Soil development
parameters include soil nutrient content,
organic matter content, microorganism
populations, and leachate accumulation.
Minimum duration of the study is five
years.
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NBIP ACCESSION NUMBER: MT/075

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INVESTIGATOR(S): Swedberg, S.E.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Bighorn Lake and Bighorn River
Post-impoundment Study
PURPOSE: Combine echo sounder, temperature, oxygen samples, gillnetting, and hook and line data to determine behavior patterns of different species of fish. Identify species of fish in Bighorn River.
SPONSOR(S): Montana Dept. of Fish and Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in walleye and yellow perch populations due to water level manipulations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; river; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 18 SPECIES
ADDED KEYWORDS: management measures; food habits; gas embolism; impoundments; trouts; salmon; walleyes; perches; crappies; sunfishes; basses; bullheads; catfishes; killifishes; saugers; goldeyes; carps; shorthead redhorse
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; harvest; migratory patterns; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): creel census; gillnets; seines; fin-clips; jaw-tags; observation; echo sounder; hook and line
NUMBER OF SAMPLING SITES: varies as to season and weather
SAMPLING FREQUENCY: seasonal; monthly; irregular
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Yellowstone County; Treasure County; Bighorn County; Carbon County; Bighorn River; Afterbay Reservoir
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: In this report period Bighorn Lake was drawn down 39 feet in depth; however, during May the water level was allowed to increase about 5 feet in depth to accommodate much of the walleye and perch spawning season. Surface water temperatures on Bighorn Lake reached 76.1 degrees F (24.5 degrees C) in July. Average monthly water temperatures on the Bighorn River were warmest at Fort Smith and Two Leggings Bridge in August and averaged 63 degrees F (17.2 degrees C) and 66 degrees F (18.9 degrees C), respectively. Gas saturation tests were conducted from April 8 to April 29 on the Bighorn River. In conjunction with the tests three live cars were installed which contained rainbow trout. During the study period water temperatures, flows and gas

saturation levels were monitored. On April 29, ten trout exhibited signs of gas embolism. Creel census on Bighorn Lake showed a catch rate of 0.2 fish per hour. Walleye was the most abundant game fish taken and made up 53% of the catch. Montana residents made up 79% of the fishermen and they took 81% of the fish. About 88% of the fishing was done in the Montana portion of the reservoir. Fishermen on the Afterbay Reservoir and Bighorn River caught 0.4 fish per day hour with rainbow trout comprising 99% and 97% of the catch, respectively. Ninety gill nets set in Bighorn Lake took 1,192 fish. Together, carp and suckers made up 38% of the catch and walleye made up about 40%. Turbot, sauger and channel catfish populations appeared to be on the increase. Gill nets, setline, seine, and hook and line were used to catch fish in the Bighorn River below Hardin. Nine species of fish were collected in August and September. Goldeye was the predominant species taken. Age determinations were made from walleye scales taken from creel census and gillnetting in 1973. Walleye from age class V made up 42% of the 236-fish sample.

REFERENCES: Swedberg, 1975
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NBIP ACCESSION NUMBER: MT/021

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INVESTIGATOR(S): Tesch, S.D.
AFFILIATION: School of Forestry, University of Montana
TITLE: Lubrecht Ecosystem Project
PURPOSE: To study the stand dynamics of an old-growth Douglas Fir (Rocky Mountain variety) forest.
SPONSOR(S): University of Montana
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been changes in the forest structure and species composition.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: forestry; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: PSEUDOTSUGA MENZIESII; ABIES LASIOCARPA; PINUS CONTORTA; PICEA ENGELMANNII; LARIX OCCIDENTALIS; PINUS PONDEROSA; JUNIPERUS SCOPULORUM; CALAMAGROSTIS RUBESCENS; SYMPHORICARPOS ALBUS; AGROPYRON SPICATUM; XEROPHYLLUM TENAX; VACCINIUM GLOBULARE; LINNRA BOREALIS
ADDED KEYWORDS: firs; douglas firs; pines; lodgepole pines; junipers; spruces; succession; wheatgrasses; snow berries; twinflowers; larches; beargrasses; bluegrasses; engelmann spruces; ponderosa pines
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; habitat characterization; mortality; numbers; reproduction

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DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
band dendrometers; cambial pin-pricking;
hygrothermographs; plots; point-quarter
methods

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: weekly; monthly; irregular
SUPPORTING DATA COLLECTED: climatological
data; soils; terrain

STUDY SITE(S): MT

GEOGRAPHIC DESCRIPTION: Missoula County;
Washoe Creek; Lubrecht Experimental Forest

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: PDP 10; FORTRAN IV

STATISTICS EMPLOYED: mean

ABSTRACT: A virgin, predominantly inland Douglas fir (*PSEUDOTSUGA MENZIESII*) forest was studied to record its composition and structure, and to gain some insight into the developmental processes involved in reaching the observed stage of forest maturity. The species composition, stand structure, and age structure of the trees within these communities vary with differences in aspect. The differences in community appearance are due partly to the abiotic influence associated with aspect and partly to the biotic influence associated with the developmental maturity of each stand. Douglas fir is ubiquitous throughout the study area, dominating both small and large size classes. Ponderosa pine and Rocky Mountain juniper are minor components of stands on the warmer, drier aspects. Subalpine fir and Engelmann spruce are occasionally found on the cooler, moister aspects. Lodgepole pine is important in larger size classes on the north-facing slope. The four study stands appear to be between 200-240 years old. Stand development, in terms of canopy closure, has apparently occurred most quickly on the cooler, moister site. A closed canopy may never occur on the harsh south-facing slope. Two types of gap-phase stand replacement are possible in non-catastrophically disturbed stands. Stands which become established quickly, forming a more even-aged canopy, probably develop small openings which allow advanced reproduction to become established. As canopy breakup increases, the advanced regeneration is released to replace deceased overstory individuals. The uneven-aged character of more slowly established stands inhibits large scale canopy breakup. Small canopy openings may be constantly available for seedling establishment due to single tree deaths. Once stems become established on these generally harsher sites, environmental conditions no longer appear to inhibit the continued development of the individual.

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NBIP ACCESSION NUMBER: MT/061

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INVESTIGATOR(S): Weigand, J. P.

AFFILIATION: Montana Dept. of Fish and Game
TITLE: Analysis of Statewide Upland Game Bird
Production Data

PURPOSE: To determine production ratios and percentages of harvest by time periods of hunting seasons and hatching distributions for Montana's 5 grouse species and Hungarian partridge.

SPONSOR(S): Montana Dept. of Fish and Game;
FWS

SPONSOR CATEGORY: state government; federal
government

DATE OF INITIATION: 1962

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in production ratios, above and below long-term means, have been detected annually for 5 native grouse species and Hungarian partridge.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: wildlife; indicator
species; range; recreation; resource
planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: DENDRAGAPUS OBSCURUS; BONASA UMBELLUS;
CANACHITES CANADENSIS; CENTROCERCUS
UROPHASIANUS; PEDIOECETES PHASIANELLUS;
PERDIX PERDIX

ADDED KEYWORDS: management measures; grouse;
partridges; seasonal variations; blue
grouse; ruffed grouse; franklin's grouse;
spruce grouse; sage grouse; sharp-tailed
grouse; hungarian partridges; weather
conditions

PRIMARY PARAMETERS INVESTIGATED:

distribution; harvest; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

wing collection; check stations;

wing-envelope survey

SAMPLING FREQUENCY: annual

STUDY SITE(S): MT

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; percentile;

contingency table analysis

ABSTRACT: The objectives of this project are attained annually. The three parameters measured are available by upland game bird species, by Fish and Game Department administrative regions (7) as well as statewide. Year-to-year changes in each parameter are influenced by weather and land uses, although exact degrees of influence have not been evaluated (sage-productivity-weather-factor relationships have been evaluated and published). Evaluation of this survey was begun in 1972 and hopefully will be intensified and completed by 1977.

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NBIP ACCESSION NUMBER: MT/045

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INVESTIGATOR(S): Workman, D. L.

AFFILIATION: Montana Dept. of Fish and Game

TITLE: Upper Yellowstone River Fish

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Population Dynamics
PURPOSE: Monitor fish populations to determine species, age, size composition, growth, movement, and population density. Fisherman use is also monitored. These data are used to make management decisions.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations of fish relatively stable and healthy although minor changes in trout numbers have been noted in response to changes in habitat.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: PROSOPIUM WILLIAMSONI; SALMO CLARKI; SALMO GAIARDNERI; SALMO TRUTTA
ADDED KEYWORDS: mountain whitefishes; cutthroat trouts; rainbow trouts; brown trouts; trouts; management measures; habitat modification; population effects
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; harvest; migratory patterns; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; tagging; creel census
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Park County; Yellowstone River
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIF ACCESSION NUMBER: MT/030

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INVESTIGATOR(S): Workman, D.L.
AFFILIATION: Montana Dept. of Fish and Game
TITLE: Sixteensmile Creek Trout Population Study
PURPOSE: To document and follow the natural repopulation of a stream accidentally poisoned with toxaphene.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Population numbers increased from near zero to nearly 500 per 1000 feet of stream.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALMO GAIARDNERI; SALMO TRUTTA; PROSOPIUM WILLIAMSONI
ADDED KEYWORDS: rainbow trouts; brown trouts; mountain whitefishes; toxaphene; piscicides; industrial chemicals; recolonization; recovery
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; mortality; migratory patterns; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; tagging
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): MT
GEOGRAPHIC DESCRIPTION: Sixteensmile Creek; Gallatin County
ABSTRACT: None provided.
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NBIF ACCESSION NUMBER: MT/031

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INVESTIGATOR(S): Adams, C.E.
AFFILIATION: Dept. of Biology, Concordia Teachers College
TITLE: Fox Squirrel (SCIURUS NIGER) Population Dynamics
PURPOSE: To measure home range, territoriality, changes in population structure, and dispersal phenomena in populations of fox squirrels as these parameters are related to pre- and post-mating and weaning periods.
SPONSOR(S): Concordia Teachers College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Modification of home range to habitat features and significant changes in spatial relationships, pre- and post-weaning, and mating.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: SCIURUS NIGER
ADDED KEYWORDS: fox squirrels; squirrels; breeding; territoriality; population effects; seasonal variations
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; home range size; immigration; mortality; natality; numbers; reproduction; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): radiotelemetry; trap-recapture; observation
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: seasonal; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain
STUDY SITE(S): NE
GEOGRAPHIC DESCRIPTION: Seward County
TYPE OF DATA: raw; summarized; literature-derived
COMPUTER AND LANGUAGE: PDF 11/10; BASIC
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: The study indicated that some type of spacing mechanism is operative between members of fox squirrel populations during mating and weaning periods. Such spacing mechanisms are a function of territoriality. Territoriality was measured by regularly monitoring the linear distance between squirrel pairs or pair groups during and after suspected territorial periods. The resultant differences in distance relationships were subjected to tests of significance including the F and t tests. The mean linear distance between the mated pair and a nonbreeding male was significantly less than the distance maintained during the post-breeding period. The mean linear distance between the female and juvenile male was significantly greater during the

post-weaning period than during the pre-weaning period.

REFERENCES: Adams, 1975

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NBIP ACCESSION NUMBER: NE/008

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INVESTIGATOR(S): Andrews, R.V.
AFFILIATION: Creighton University
TITLE: Effects of Social and Climatic Stress on Small Mammals
PURPOSE: To identify and investigate the long-term effects of alteration in animal density, physical environment, food, and cover on population dynamics of small mammals.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Sterilization of male Norway rats reduced fecundity of populations without affecting social stress. Relationships of environmental and physiological effects on other rodent population dynamics were also studied.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: RATTUS NORVEGICUS; LEMMUS TRIMUCRONATUS; PEROMYSCUS MANICULATUS
ADDED KEYWORDS: chlorhydrin; chemosterilants; norway rats; brown lemmings; lemmings; rats; deer mice; mice; mice; habitat modification; climate; population effects; seasonal variations; weather conditions
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; harvest; home range size; mortality; natality; numbers; physiology; reproduction; sex; size/weight; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): trapping, marking, and releasing
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): NE; AK
GEOGRAPHIC DESCRIPTION: Barrow, AK
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis
ABSTRACT: Nontoxic oral doses of U-5897 produced a transient lag in the fecundity of saturated rat populations with no effect on social stress. Toxic doses of U-5897 administered to a saturated land-fill population lowered the level of social stress in the population, but reduced the fertility rate and recruitment below anticipated expanding population profiles when surviving males were affected by the drug. Aggression and male

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secondary sexual characteristics remained typical of expanding populations. Cycles in breeding and adaptive endocrine responses of *PEROMYSCUS MANICULATUS* followed seasonal climatic changes. Winter breeding occurred in the manipulated population even though most animals in the population showed a reduction in pituitary-gonadal activity in response to winter conditions. We undertook a continuing examination of lemming endocrine physiology in the Point Barrow vicinity to extend earlier physiological observations relevant to lemming population dynamics. More complete evaluations of pituitary-gonadal function, possible disease mechanisms, and demographic profiles were added to field observations and laboratory tolerance studies in an attempt to confirm or deny the involvement of stress as a proximate negative-feedback element in the lemming cycle.

REFERENCES: Andrews, et al, 1974; Andrews, et al, 1975; Andrews, et al, 1972
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NBIP ACCESSION NUMBER: NE/011

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INVESTIGATOR(S): Becker, D.A.
AFFILIATION: Missouri River Basin Commission
TITLE: Terrestrial Productivity and Succession in a Riparian Site on the Platte River in Eastern River
PURPOSE: To follow long-term successional changes in riparian vegetation, and to follow long-term terrestrial productivity as related to yearly climatic and stream flow fluctuations.
SPONSOR(S): Missouri Basin Commission
SPONSOR CATEGORY: state government; societies and other organizations
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Drought has major effects on some communities, but not others. Island development in river channel occurred because of reduced flow.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland; wetland; aquatic; freshwater; stream
LEVEL(S) OF STUDY: community; ecosystem; region
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; non-vascular plants; lichens; mosses
TAXA: *ANDROPOGON GERARDI*; *SPARTINA PECTINATA*; *SALIX INTERIOR*; *POPULUS DELTOIDES*
ADDED KEYWORDS: big bluestems; cord grasses; sand-bar willows; willows; cottonwoods; poplars; islands; habitat modification
PRIMARY PARAMETERS INVESTIGATED: numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

stream flow gauging; quadrat
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; soils

STUDY SITE(S): NE
GEOGRAPHIC DESCRIPTION: Dodge County; Platte River

TYPE OF DATA: raw

ABSTRACT: This project urgently needs expansion in scope since projected depletions of water in the Platte River could drastically alter productivity, structure, and species composition of wetland prairies and riparian environment dependent upon high water table and flooding for maintenance. The Platte River since 1900 has already had 40 percent of its total flow consumed. In 20 years (1995), another 20-40 percent could be consumed by agricultural uses. Environmental effects are poorly understood.

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NBIP ACCESSION NUMBER: NE/015

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INVESTIGATOR(S): Case, R.M.
AFFILIATION: Dept. of Poultry and Wildlife Sciences, University of Nebraska
TITLE: Impact of the Plains Pocket Gopher on Rangeland
PURPOSE: To compile demographic parameters of *GEOMYS BURSARIUS* and relate the impact of various population densities on forage production.
SPONSOR(S): Agricultural Experiment Station; USDA
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Forage production decreased up to 40-60 percent over two seasons in areas having gophers versus areas that were gopher-free.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; herbs; grasses
TAXA: *GEOMYS BURSARIUS*; GRASSES, 64 SPECIES
ADDED KEYWORDS: gophers; population dynamics; management measures; forage production
PRIMARY PARAMETERS INVESTIGATED: age; emigration; habitat characterization; home range size; mortality; natality; numbers; productivity; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): kill-traps; collection
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils; terrain
STUDY SITE(S): NE

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GEOGRAPHIC DESCRIPTION: Davies County;
McPherson County; Lancaster County

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 360

STATISTICS EMPLOYED: mean; analysis of variance

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: NE/022

<567>

INVESTIGATOR(S): Lock, R.A.

AFFILIATION: Nebraska Game and Parks
Commission

TITLE: Surveys and Management of Non-Game
Species

PURPOSE: To determine status, distribution,
ecological relationships, population
trends, and management needs for the
black-footed ferret, black-tailed prairie
dog, canine predators, and raptors.

SPONSOR(S): Nebraska State Game and Parks
Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: General habitat
deterioration has occurred.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland

LEVEL(S) OF STUDY: organism; population;
ecosystem

MANAGEMENT FOCUS: endangered species;
environmental impact

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals

TAXA: MUSTELA NIGRIPES; CYNOMYS LUDOVICIANUS;
VULPES SP; CANIS LATRANS; SPOTYTO

CUNICULARTA; FALCO MEXICANUS; AQUILA
CHRYSAETOS; GRUS AMERICANA

ADDED KEYWORDS: black-footed ferrets;
ferrets; black-tailed prairie dogs;
prairie dogs; swift foxes; foxes; coyotes;
burrowing owls; owls; prairie falcons;
falcons; golden eagles; eagles; whooping
cranes; cranes; management measures;
habitat modification

PRIMARY PARAMETERS INVESTIGATED:

distribution; habitat characterization;
harvest; mortality; migratory patterns;
numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
surveys

SAMPLING FREQUENCY: continuous; seasonal;
annual

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): NE

GEOGRAPHIC DESCRIPTION: Pine Ridge

TYPE OF DATA: raw; reduced; summarized;
literature-derived

ABSTRACT: Reported observations of
black-footed ferrets are documented. Every
attempt is made to make field verification
of the observations by conducting ground
surveys and by interviewing the observers.

Other ground surveys are done in areas
where ferrets are likely to be found in
attempts to detect their presence.
Spotlighting is done on certain prairie
dog towns suspected of harbouring ferrets.
Records and data relative to size and
location of prairie dog towns continue to
be updated as previously unrecorded dog
towns are reported or are found during
ferret investigations. Field work is done
in portions of the Pine Ridge and the
Southwest to locate and examine nests of
the prairie falcon and golden eagle. New
nest sites are mapped for future reference
and study. Nest inspections are made to
evaluate production and to band nestlings.

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NBIP ACCESSION NUMBER: NE/004

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INVESTIGATOR(S): Mills, V.M.

AFFILIATION: Wayne Community High School

TITLE: A Biological Study of the Quality of
Surface Waters in North East and North
Central Nebraska

PURPOSE: To establish baseline data on water
quality for streams in the study area, to
monitor changes in water quality in these
streams, and to develop a biotic index as
a measure of organic pollution.

SPONSOR(S): Wayne Public Schools

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fluctuations in bacterial
populations and populations of benthic
invertebrates have been monitored as
pollution indicators.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: pollution control; water
quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta

TAXA: MACRONHIA OP; ABCIA SP; COMPHNS SP;

PELTOPPERLA SP; TENDIPEDIDAE SP;

OLIGOCHAETA, 1 SPECIES; HIRUDIDAE, 29

SPECIES; TENDIPEDIDAE, 29 SPECIES;

COLEOPTERA, 18 SPECIES

ADDED KEYWORDS: coliform bacteria; waste
water; benthic organisms; amphipods;
odonatans; ephemeropterans

PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Nix hand screen; membrane filtration
techniques

NUMBER OF SAMPLING SITES: 5 to 14

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): NE

GEOGRAPHIC DESCRIPTION: Knox County; Wayne

County; Madison County; Cherry County;

Kirkhorn River; Niobrara River; Logan

Creek; Verdigre Creek

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean

ABSTRACT: This study is an on-going program
of water quality monitoring begun by the
students of Wayne High School in 1974. Its

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purpose is to monitor and compare water quality characteristics in several streams in north-central and north-eastern Nebraska. Data for bacteriological, chemical, and biological assessment of water quality are collected monthly on the Logan Creek and at less frequent intervals on the Elkhorn River, Niobrara River, and Verdigre Creek. Severe sewage pollution problems have been identified and quantified at some sampling sites on the Logan Creek and the Elkhorn River. An index of benthic invertebrates has provided a useful indicator of organic pollutants.

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NBIP ACCESSION NUMBER: NE/010

<569>

INVESTIGATOR(S): Regan, G.T.
AFFILIATION: Dept. of Biology, Spring Hill College
TITLE: Natural and Man-made Conditions Determining the Range of ACRIS CREPITANS in the Missouri River Basin
PURPOSE: To use cricket frogs as indicators of ecological dynamics involving drought.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Restriction of range in the north and extension of range in the west.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; wetland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia
TAXA: ACRIS CREPITANS
ADDED KEYWORDS: habitat modification; weather conditions; cricket frogs; frogs; drought
PRIMARY PARAMETERS INVESTIGATED: distribution; growth; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): listening for distinctive vocalization; collection
NUMBER OF SAMPLING SITES: 55
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated flora; hydrological data; terrain; water quality data
STUDY SITE(S): CO; SD; NE; KS; MN; IA
GEOGRAPHIC DESCRIPTION: Missouri River
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: Honeywell 625; FORTRAN IV
STATISTICS EMPLOYED: multivariate analysis
ABSTRACT: Of the frog genera occurring east of the Rocky Mountains in North America, ACRIS is the only genus that does not occur also west of the mountains. The

streams of the Missouri River basin are among the hypothetically potential dispersal routes to the mountains. Man-made changes in the streams called for an investigation of the effects of the changes at an early stage of ecological succession and for a reference study against which to compare the effects of future succession. Field work suggested three mechanisms of limitation as follows: general aridity, especially in the southwestern part of the study area; wave action around man-made reservoirs; and winterkill due to frost penetration. Measurements of growth taken at marginal localities did not differ greatly from those taken in the interior of the range and exceeded those of known inhibited populations. Thus the growing season at the margin did not appear to be unfavorable. Some region-specific variables appeared, but only tenuous conclusions as to the substantive meaning of the differences were warranted.

REFERENCES: Regan, et al, 1972
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NBIP ACCESSION NUMBER: AL/023

<570>

INVESTIGATOR(S): Robertson, K.D.
AFFILIATION: Nebraska Game and Parks Commission
TITLE: Extensive Surveys of Prairie Grouse
PURPOSE: To check population fluctuations and harvest figures and to derive data to base season recommendations upon.
SPONSOR(S): Nebraska State Game and Parks Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1943
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Annual spring breeding population fluctuations, age and sex ratios, and percent sharp-tail and prairie chicken in kill.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: PEDIOECETES PHASIANELLUS; TYMPANUCHUS CUPIDO
ADDED KEYWORDS: sharp-tailed grouse; grouse; prairie chickens; management measures
PRIMARY PARAMETERS INVESTIGATED: age; distribution; harvest; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): spring breeding ground counts; random and route brood data; roadside checks; collection; survey; hunter success survey
NUMBER OF SAMPLING SITES: 19 breeding ground routes; 11 summer brood routes; 10-13 roadside check stations
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): NE
GEOGRAPHIC DESCRIPTION: Sandhills Region
TYPE OF DATA: raw; summarized

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ABSTRACT: Work is done to check population levels, reproductive success, and fall hunting success. Some winter trapping is done to fulfill obligations for trading purposes. At 5-year intervals, the eastern breeding ground routes are cover mapped to determine changes in habitat.

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NBIP ACCESSION NUMBER: NE/006

<571>

INVESTIGATOR(S): Schildman, G.L.

AFFILIATION: Nebraska Game and Parks
Commission

TITLE: Pheasant, Quail, and Prairie Grouse
Population Surveys and Harvest Surveys

PURPOSE: To determine annual population
trends and annual harvests.

SPONSOR(S): Nebraska State Game and Parks
Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1945

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Pheasant population and
harvest fluctuates in downward trend.
Grouse show same trend but less
drastically. Quail fluctuate annually.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
savanna; grassland; wetland

LEVEL(S) OF STUDY: organisms; population;
region

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: PHASIANUS COLCHICUS; COLINUS
VIRGINIANUS; TYMPANUCHUS CUPIDO;
PEDIOECETES PHASIANELLUS

ADDED KEYWORDS: pheasants; bobwhites; prairie
chickens; short-tailed grouse; grouse;
habitat modification; population effects;
seasonal variations; prairie grouse

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
rural mail-carrier roadside counts;
bobwhite whistle counts; prairie grouse
booming; dancing ground counts

NUMBER OF SAMPLING SITES: approximately 686
routes

SAMPLING FREQUENCY: annual

STUDY SITE(S): NE

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: Nebraska is divided into six
regions and population trends and harvest
determined for pheasants and quail.
Prairie grouse population data mostly are
confined to sandhills and adjacent
grassland habitat.

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NBIP ACCESSION NUMBER: NE/001

<572>

INVESTIGATOR(S): Sinn, J.A.

AFFILIATION: Nebraska Game and Parks
Commission

TITLE: Surveys and Management of Bobwhite
Quail

PURPOSE: To study population trends, harvest
success, sex, age, and hatching dates.

SPONSOR(S): Nebraska State Game and Parks
Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1948

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Population decline since
1970.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: COLINUS VIRGINIANUS

ADDED KEYWORDS: bobwhites; quails; management
measures; habitat modification; population
effects

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; reproduction; sex

SAMPLING FREQUENCY: seasonal

STUDY SITE(S): NE

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Preseason inventories indicated a
decline in population. The whistle count
survey showed a 22 percent decrease while
the summer Rural Mail Carrier survey was
down 45 percent. Total calculated harvest
was down only 9 percent.

REFERENCES: Sinn, 1975

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NBIP ACCESSION NUMBER: NE/009

<573>

INVESTIGATOR(S): Wallace, C.R.

AFFILIATION: Nebraska Game and Parks
Commission

TITLE: Investigations of Selected
Environmental Effects of Two Nuclear Power
Plants on the Missouri River

PURPOSE: To determine influence of thermal
discharges on fish.

SPONSOR(S): Nebraska State Game and Parks
Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decreased fish numbers.

ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact;

fisheries; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea

TAXA: FISHES, 60 SPECIES

ADDED KEYWORDS: nuclear power plants; thermal
effluents; food habits

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; growth;

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kill; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electroshocking gear; seining; hoopnets;
trammel nets; box traps
NUMBER OF SAMPLING SITES: 14-26
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: hydrological data;

water quality data
STUDY SITE(S): NE; IA; MO
GEOGRAPHIC DESCRIPTION: Missouri River
ABSTRACT: None provided.
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HBIP ACCESSION NUMBER: NE/002

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INVESTIGATOR(S): Beatley, J.C.
AFFILIATION: Dept. of Biological Sciences,
University of Cincinnati
TITLE: Biological-Environmental Relationships
in Desert Ecosystems of the Nevada Test
Site
PURPOSE: To define, quantitatively and
qualitatively, the major relationships
between plants, rodents, and their
physical environments in desert systems of
southern Nevada.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Highly variable, but
related to effects of nuclear testing and
ionizing radiation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species;
radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses
TAXA: RODENTIA, 15 SPECIES; PLANTS, 1100
SPECIES
ADDED KEYWORDS: models; rodents; air pollution
PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collections; transects; quadrats
NUMBER OF SAMPLING SITES: 68
SAMPLING FREQUENCY: seasonal; weekly; monthly;
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils; terrain
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Nye County; Clark
County; Lincoln County; Nevada Test Site
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN IV
STATISTICS EMPLOYED: mean; median;
regression/correlation analysis
ABSTRACT: Measurements data were collected on
68 selected sites in 8 drainage basins of
the U.S. Atomic Energy Commission's Nevada
Test Site during the years 1962-75. These
included data for plant, rodent, and
environmental variables (rainfall, air
temperatures, soil moisture, and gamma
radiation) collected concurrently during
the period in all of the 68 systems, which
represented the major kinds of
biological/environmental systems of the
region. The long-term studies had as their
objectives: (1) a definition of
biological/environmental
interrelationships, in space and time, in
undisturbed desert systems; and (2) the
effects of disturbance on the biological
populations, including the effects of
nuclear testing and in particular the
effects of elevated levels of ionizing
radiation which were to be evaluated in
relation to the quantitative expressions

of the same biological variables in
comparable undisturbed systems. Data
collections were completed as of January
1975.

REFERENCES: Beatley, 1969; Beatley, 1974a,b;
Beatley, 1975
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NBIP ACCESSION NUMBER: OH/012

<575>

INVESTIGATOR(S): Bradley, W.G.; Moor, K.S.
AFFILIATION: University of Nevada-Las Vegas
TITLE: Ecological Studies of Vertebrates in
Plutonium-Contaminated Areas of the Nevada
Test Site
PURPOSE: To evaluate environmental effects of
plutonium contamination on vertebrates.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No new patterns of
plutonium contamination have been observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles; birds; mammals
TAXA: REPTILES, 13 SPECIES; BIRDS, 48
SPECIES; MAMMALS, 29 SPECIES
ADDED KEYWORDS: americium; radioisotopes;
radiation; heavy metals; radiation
effects; plutonium; nuclear wastes
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; mortality;
natality; numbers; reproduction;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; live-trapping grids; nooses;
mark-recapture
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Nye County; Nevada
Test Site; Tonopah Test Range
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
contingency table analysis; non-parametric
analysis; non-linear estimation
ABSTRACT: This study is part of an
interdisciplinary effort to evaluate
environmental and radiological health
problems associated with plutonium
contamination. Many aspects are studied
including the presence and distribution of
Pu, the dynamics of Pu cycling in
contaminated areas, and an evaluation of
its effects on native biota. Major
objectives of this study have been to
develop complete vertebrate inventories of
selected Pu study areas; determine
population densities, biomass, survival,
reproduction, and recruitment of selected
vertebrate species in each study area;
investigate food habits; trophic pathways

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and food webs for selected vertebrate species; investigate species diversity in relation to habitat components and environmental stress; and provide specimens of vertebrate biota from Pu study areas for radioanalysis and histopathological studies conducted by other investigators. Comparisons of the vertebrate biota of Pu-contaminated and uncontaminated areas should provide a basis for evaluation of Pu as a long-term contaminant in desert ecosystems. In general, vertebrate population estimates in intensive study areas are similar to those previously obtained for comparable contaminated areas.

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NBIP ACCESSION NUMBER: NV/020

<576>

INVESTIGATOR(S): Crockett, A.B.
AFFILIATION: EPA
TITLE: Biological Monitoring
PURPOSE: To identify biological monitors of specific pollutants, acquire data on factors influencing the accumulation of the pollutant by the monitor, and evaluate the monitor.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: First sampling, but initial results indicate no increased mercury levels.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; indicator species; power generation
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs
TAXA: YUCCA AUGUSTISSIMA; OPUNTIA ERINACEA; ATRIPLEX CANESCENS; ATRIPLEX CONFERTIFOLIA; ORYZOPIA HYMENOIDES; SPOBOBOLUS AIREIDES; GUTIERREZIA SAROTHRAR; HILARIA JAMESII; EPHEDERA SPP
ADDED KEYWORDS: heavy metals; arsenic; lead; mercury; cadmium; fossil fueled power plants
PRIMARY PARAMETERS INVESTIGATED: residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): composite samples
NUMBER OF SAMPLING SITES: 74
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: soils
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: San Juan County; Apache County; Four Corners Power Plant
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; median; regression/correlation analysis
ABSTRACT: Vegetation and soil samples have been collected on a radial grid pattern

around the Four Corners Power Plant. The sampling points were located at the junctions of 16 radii and 5 concentric logarithmically spaced circles out to a distance of 30 kilometers. Composite vegetation samples were collected at each site as well as soil samples. Samples were dried, ground, and analyzed for total mercury. The samples will be analyzed for arsenic, lead, and cadmium. Preliminary results show no statistically significant increases in mercury levels around the power plant.

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NBIP ACCESSION NUMBER: NV/022

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INVESTIGATOR(S): Douglas, C.L.
AFFILIATION: NPS
TITLE: Interaction of Desert Bighorn Sheep and Feral Burros in Death Valley
PURPOSE: To study movements of burros by radiotelemetry and marking, population dynamics for burros and bighorn sheep, movements as related to forage production, seasonal food selection, and effect on small mammal populations.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Habitat destruction is the major observed change.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; wildlife; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; shrubs; herbs; grasses
TAXA: EQUUS ASINUS; OVIS CANADENSIS
ADDED KEYWORDS: burros; bighorn sheep; sheep; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; growth; habitat characterization; home range size; immigration; mortality; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): marking; radiotelemetry; time-lapse cameras; trapping grids; vegetational transects
SAMPLING FREQUENCY: weekly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): CA; NV
GEOGRAPHIC DESCRIPTION: Inyo County; Death Valley National Monument
TYPE OF DATA: raw; reduced
ABSTRACT: This comprehensive project has been underway for two years. The early stages of the project concerned physiological studies, which were utilized in a thesis by Thomas Davis entitled "Physiological studies of the feral burro, EQUUS ASINUS." Various hematological and physiological parameters were studied. More than 80

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individuals have been marked, measured etc. Blood samples are taken from each animal. Ground or aerial surveys are conducted each week to determine distribution and movements. The influence of burros on small mammals is being studied by means of trapping, marking and releasing in grids having 120 stations each. Population genetics of burros is being investigated by means of gel electrophoresis. Transferrin bands are stained, and marked by autoradiography. Browse species and biomass consumed is being studied by double sampling procedures. Growth/aging also is being studied.

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NBIP ACCESSION NUMBER: NV/025

<578>

INVESTIGATOR(S): La Rivers, I.
AFFILIATION: Biological Society of Nevada
TITLE: Biology and Population Dynamics of the Water Bug (AMBRYUSUS MORMON) in the Western Great Basin
PURPOSE: To determine the effects of environmental changes on local populations of a highly sensitive aquatic indicator insects.
SPONSOR(S): Biological Society of Nevada
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is a general decline in population numbers in restricted habitats where water restriction and/or pollution occur.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: AMBRYUSUS MORMON
ADDED KEYWORDS: water bugs; hemipterans; waste water; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; habitat characterization; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): hand picking; net collecting; water trap collecting; light trap collecting; chromosome analyses
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: seasonal; monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; water quality data
STUDY SITE(S): NV
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; mode; median

ABSTRACT: Under study are the distribution and population characteristics of the restricted water bug, AMBRYUSUS MORMON, and its variant in the broken topography and water drainage systems of the western Great Basin, with particular emphasis on its response to changing environmental conditions.

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NBIP ACCESSION NUMBER: NV/015

<579>

INVESTIGATOR(S): Nodine, G.
AFFILIATION: BLM
TITLE: Range Vegetation Trend Studies
PURPOSE: Periodic sampling of vegetation in connection with grazing systems prescribed by allotment management plans to determine vegetative trends.
SPONSOR(S): BLM
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in vegetative condition (plant health and species present as compared to what should be present) vary with sites.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; indicator species; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; shrubs; herbs; grasses
ADDED KEYWORDS: grazing; management measures; litter; climax vegetation; climate; species composition; cattle
PRIMARY PARAMETERS INVESTIGATED: age; distribution; mortality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct observation; plot frame
NUMBER OF SAMPLING SITES: 103
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Lander County; Eureka County; Nye County
TYPE OF DATA: raw; summarized
ABSTRACT: Trend studies are to be used in combination with other studies to evaluate allotment management plans and grazing systems. Photographs, measurements or estimations on small permanent plots, and observed apparent trends are recorded. The major types of plants being studied and measured are rhizomatous grasses, stoloniferous grasses, annual grasses, shrubs, and forbs. The results of the data will be analyzed so that vegetative trends can be determined and management techniques utilized.
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NBIP ACCESSION NUMBER: NV/035

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INVESTIGATOR(S): Romney, E.M.
AFFILIATION: University of California
TITLE: Soil-Plant Relationships and Mineral
Cycling with Reference to Plutonium
Transport through the Processes of
Entrapment and Root Uptake
PURPOSE: To investigate the physical and
chemical properties of the soil and to
characterize the vegetation in order to
study ecosystem radionuclide cycling, and
particularly to distinguish between root
uptake-translocation process and
entrapment on foliage as factors in the
vegetation-carrier transport of plutonium
from soil to animals.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Initial results show
relatively low uptake of plutonium through
roots but considerable variation in
contamination levels between different
species of plants, presumably from
entrapment of particles. Standing
vegetation contributes an insignificant
portion of the total contaminant dispersed
into aged fallout areas.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
radiological; pollution control; water
quality; power generation
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses;
non-vascular plants; lichens
ADDED KEYWORDS: plutonium; contaminants;
mineral cycling; radioactive fallout;
americium; primary productivity;
radionuclides
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; physiology; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
greenhouse culture in fallcut soil
NUMBER OF SAMPLING SITES: 80
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated flora;
atmospheric chemistry; climatological
data; soils; water quality data
STUDY SITE(S): NV; CA
GEOGRAPHIC DESCRIPTION: Imperial Valley;
Nevada Test Site
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: regression/correlation
analysis
ABSTRACT: Vegetation functions as a carrier
of plutonium to grazing animals in
plutonium contaminated areas. The ingested
plutonium may be trapped superficially on
vegetation through processes of
resuspension and it also may be
incorporated in plant foliage through root
uptake and translocation processes. The
aim of this project is to determine the
extent to which the root uptake mechanism
of incorporation is involved in the
vegetation-carrier transport of plutonium
from soil to animals living in
contaminated fallout areas. Root uptake

experiments are conducted under glasshouse
conditions which eliminate superficial
entrapment of resuspended plutonium. The
soil used for these experiments is
collected in fallout areas downwind from
one-point detonation of devices containing
plutonium. Treatment used to determine if
soil amendments have any effect on such
uptake include nitrogen fertilization,
acidulation with sulfur, supplemental
organic matter, and chemical chelating
agents.

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NBIP ACCESSION NUMBER: CA/186

<581>

INVESTIGATOR(S): Smith, D.D.
AFFILIATION: EPA
TITLE: Animal Investigation Program
PURPOSE: Radiological surveillance of
domestic and wild animals that live on or
around the Nevada Test Site, includes the
gross and microscopic examination of
tissues collected from these animals,
investigation of alleged radiation damage.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1957
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a general
decline of radionuclide burdens in tissues
since cessation of atmospheric nuclear
testing. No major pathologic changes have
been observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
wildlife; radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: ODOCOLEUS HEMIONUS; OVIS CANADENSIS;
EQUUS CABALLUS; ALECTORIS CHUKAR; LEPUS
SP; LOPHORTYX GAMBELII; AQUILA CHRYSAETOS;
SYLVILAGUS SP; CANIS LATRANS
ADDED KEYWORDS: cattle; radioactive fallout;
deer; mule deer; chukar; eagles; golden
eagles; bighorn sheep; jackrabbits;
cottontail rabbits; rabbits; feral horses;
quails; gambel's quail; coyotes; sheep;
tritium; cesium-137; ruthenium-106;
strontium-90; plutonium-239
PRIMARY PARAMETERS INVESTIGATED: habitat
characterization; home range size;
migratory patterns; reproduction;
residues; sex; size/weight; territory
size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hunting; live trapping; motor vehicle
accident victims
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; quarterly;
annual; irregular
SUPPORTING DATA COLLECTED: associated flora;
soils; water quality data
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Nye County; Nevada
Test Site
TYPE OF DATA: raw; reduced; summarized

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STATISTICS EMPLOYED: mean; median; percentile
ABSTRACT: Data were obtained from the radioanalysis of tissues collected from cattle, deer, desert bighorn sheep, and other wildlife that reside on or near the Nevada Test Site. Cesium-137 and ruthenium-106 were the only gamma-emitting radionuclides detected in the soft tissues of range cattle. Ruthenium-106 was detected only in the lungs of animals sampled in May. Strontium-90 levels in the cattle femurs ranged from 2 to 37 picocuries per g. of ash. The latter value was found in the bones of a 14-year-old cow that had lived on the Nevada Test Site her entire life. The bones of the same animal also had the highest level of plutonium-239 that was reported. Analysis of her 8-month-old fetus revealed the presence of detectable levels of plutonium 239 which indicates placental transfer of this radionuclide. The average strontium-90 levels in the bones from deer and desert bighorn sheep were 3.2 and 4.7 picocuries per g. of ash, respectively. Elevated levels of ruthenium-106 and tritium were found in the tissues of two mule deer collected near the drainage ponds that collected runoff waters from mines used for nuclear testing activities. Other animals sampled included golden eagles, feral horses, coyotes, and chukar. The cesium-137 levels in an eagle collected during 1964 varied only slightly from one collected during 1971.

REFERENCES: Smith and Giles, 1975

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EPA

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NBIP ACCESSION NUMBER: NV/033

<582>

INVESTIGATOR(S): Soholt, L.F.

AFFILIATION: Desert Research Institute,
University of Nevada

TITLE: Influence of Digging Rodents on

Primary Production in Rock Valley

PURPOSE: To quantify effects of rodent burrowing on a Mojave Desert soil and on growth of annual and perennial plants.

SPONSOR(S): Utah State University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Seasonal variation in plant growth and phenology, possible changes in pattern of burrowing activity.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs;
herbs; grassesTAXA: AMBROSIA DUMOSA; BROMUS RUBENS; FESTUCA
OCTOFLORAADDED KEYWORDS: pocket gophers; gophers;
seasonal variations; soil texture; soil
properties; rodents; ragweeds; population
effectsPRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; numbers;
productivityDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats; observations; countsNUMBER OF SAMPLING SITES: 325 sample quadrats
for annuals; 1200 shoot tips for perennials

SAMPLING FREQUENCY: weekly; monthly; irregular

SUPPORTING DATA COLLECTED: soils

STUDY SITE(S): NV

GEOGRAPHIC DESCRIPTION: Nye County; Nevada

Test Site; Mojave Desert

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of

variance

ABSTRACT: The objective of this study was to evaluate the impact of rodent burrowing upon soil conditions and plant growth. Recent burrowing activity affects less than 5% of the ground surface. However, signs of old, weathered activity suggest that, over the long term, burrowing affects a considerably larger percentage of the ground surface. Over one-third of the perennials were found to have burrowing activity beneath them. Rodents tended to prefer larger shrubs with open bases as sites for burrows. There was a slight trend for finer soil particles and lower bulk density in burrowed soils than found in unburrowed soils. This trend was much less than expected from the literature. Water infiltration into the soil was increased by burrowing activity and by the presence of a shrub. In the open burrowing activity doubled the infiltration rate. Burrowing had little effect beneath shrubs. Evaluation of the effects of rodents upon plant growth was hindered by the poor growth during the study period. AMBROSIA DUMOSA was the only shrub that exhibited even a slight response to the rodents growth was lower than in control plants. This response may have been due to browsing by gophers and ground squirrels. Artificial burrowing resulted in no inhibition or enhancement of growth. It is quite evident that when plant growth is low, rodent activity has little influence.

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NBIP ACCESSION NUMBER: NV/030

<583>

INVESTIGATOR(S): Turner, P.B.

AFFILIATION: University of California

TITLE: Rock Valley Validation Site

PURPOSE: To collect meteorological data and measurements of state changes of populations of plants and animals which are then used to test and validate computer models of desert ecosystem processes.

SPONSOR(S): NSP

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

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CHANGE(S) OBSERVED: Pronounced fluxes in net primary production and associated changes in standing crops of perennial and annual vegetation occurred along with related changes in densities and standing stocks of consumer populations.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles; birds; mammals; invertebrates; crustacea; insecta; plants; vascular plants; shrubs; herbs
TAXA: PLANTS, 14 SPECIES; INSECTA, 14 SPECIES; ARACHNIDA, 6 SPECIES; MAMMALS, 3 SPECIES; BIRDS, 8 SPECIES; VENEZILLO ARIZONICUS; UTA STANSBURIANA
ADDED KEYWORDS: isopods; arthropods; seasonal variations; population effects; models; standing crop; management measures; litter; lizards
PRIMARY PARAMETERS INVESTIGATED: age; diversity; harvest; numbers; productivity; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census; can trapping
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: climatological data; soils
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Nye County; Mohave Desert
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360/91; FORTRAN IV; PL/1
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis; modeling, deterministic
ABSTRACT: Various abiotic and biological measurements were made on a 46.1 ha (113.9 acres) validation site in Rock Valley, Nye County, Nevada, during 1972. Abiotic measurements included wind speed and direction, air temperature, insolation, rainfall, soil temperatures, soil moisture contents, and selected physiochemical attributes of soils. Biological measurements included estimates of standing crops of annual and perennial plants, together with state changes associated with production of new tissue during the spring of 1971; periodic estimates of the relative abundances of various ground- and shrub-dwelling arthropods; and estimates of densities and biomasses of selected species of vertebrates.
REFERENCES: Turner (Coord.), 1973; Turner and McBrayer (Eds.), 1974
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NBIP ACCESSION NUMBER: CA/197

<584>
INVESTIGATOR(S): Turner, F.B.
AFFILIATION: Laboratory of Nuclear Medicine and Radiation Biology, University of California
TITLE: Effects of Continuous Exposure to Low Levels of Gamma Radiation on Enclosed Populations of Lizards
PURPOSE: To define demographic and anatomic consequences of continuous exposure of natural populations of lizards to gamma free-air exposure rates of 3-7 R/day.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Varying proportions of female lizards of four populations became sterile, two of these populations drifted towards extinction, and complete loss of ovarian tissue and fat body hypertrophy occurred among sterile females.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles
TAXA: UTA STANSBURIANA; PHRYNOSOMA PLATYRHINOS; CNEMIDOPHORUS TIGRIS; CROTAPHYTUS WISLIZENII
ADDED KEYWORDS: side-blotched lizards; desert horned lizard; western whip-tail lizard; leopard lizard; radiation; lizards
PRIMARY PARAMETERS INVESTIGATED: age; growth; mortality; natality; numbers; reproduction; sex; size/weight; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): hand capture; census
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): NV
GEOGRAPHIC DESCRIPTION: Nye County
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360/91; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis
ABSTRACT: Leopard lizards (CROTAPHYTUS WISLIZENII) and whip-tail lizards (CNEMIDOPHORUS TIGRIS) have been exposed to gamma radiation in a fenced 20-acre area since January 1964. Free-air exposure rates over most of the area were around 4-6 R/day. Average annual tissue doses have been estimated with implanted lithium fluoride microdosimeters at 400-500 rads/year for CROTAPHYTUS and about half this for CNEMIDOPHORUS. Demographic data and failure of mature female CROTAPHYTUS in the irradiated area to assume typical reproductive coloration indicated absence of reproduction by this species in 1967 and 1968. Three female leopard lizards taken from the irradiated plot in May and June 1969 exhibited complete regression of ovaries, undeveloped oviducal walls, and

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hypertrophied fat bodies. One of three irradiated males collected at the same time was sterile. All of 20 control individuals taken in 1969 exhibited ovaries, oviducts, testes, and epididymides normal for the season. The first sterile female *CNEMIDOPHORUS* was collected in June 1969. Of four more females taken from the irradiated area in June 1970, three lacked ovaries; one had ovaries and had recently laid eggs. Three males from the irradiated area in 1970 did not differ in sexual condition from three control males. Experimental administration of follicle-stimulating hormone to the three apparently sterile *CNEMIDOPHORUS* females collected in 1970 had no effect on oviducal growth. The sterility observed in both species is attributed to long-term exposure to gamma radiation. Reproduction by another lizard, *UTA STANSBURIANA*, occupying the irradiated area has apparently been normal since the beginning of the experiment. The difference in response of *UTA* and the other two species is attributed to their markedly different life-spans and demographic regimes.

REFERENCES: Turner, et al, 1968; Turner, et al, 1969a,b; Medica, et al, 1973; McKinney and Turner, 1971; Turner, et al, 1970a,b

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NBIP ACCESSION NUMBER: CA/226

<585>

INVESTIGATOR(S): Wallace, A.

AFFILIATION: Laboratory of Nuclear Medicine
and Radiation Biology, University of
California

TITLE: Revegetation of Desert Areas Which
Become Denuded During Testing and Cleanup
Operations

PURPOSE: To develop procedures for
revegetation of land in Nevada which
becomes denuded during testing and cleanup
operations.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: unknown

CHANGE(S). OBSERVED: Natural revegetation
occurs readily wherever rainfall exceeds
20 inches per year. Where rainfall is less
than 10 inches per year, revegetation is
nearly impossible, except where native
transplants are protected from grazing and
drought.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: environmental impact;
radiological

ORGANISMS, MAJOR TYPES: plants; shrubs;
herbs; grasses

ADDED KEYWORDS: revegetation; drought; legal
regulation; management measures; catchment
basins; plant propagation; transplanting;
reclamation; grazing; nuclear testing

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field trials; field investigations

NUMBER OF SAMPLING SITES: 1

STUDY SITE(S): NV

GEOGRAPHIC DESCRIPTION: Nevada Test Site

ABSTRACT: Government regulations require the
restoration of disturbed areas of the
landscape to somewhat their original
condition rather than abandoning the area
in its disturbed condition. Desert
environments present considerable
difficulties for restoration once their
vegetation has been destroyed. The
objective of this project is to develop
procedures for revegetation of land in
Nevada under ERDA control which becomes
denuded during testing and cleanup
operations. The work involves both field
and laboratory investigations to determine
the best methods for land shaping to
concentrate natural rainfall in catchment
basins, plant propagation studies to
develop different plant species compatible
for revegetation needs, and field trials
to develop the most efficient and
economical methods for revegetation.

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NBIP ACCESSION NUMBER: CA/187

NEW HAMPSHIRE
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(SEE ALSO 333, 393, 434, 435, 441, 733, 844, 902)

<586>

INVESTIGATOR(S): Allan, D.N.
AFFILIATION: SCS
TITLE: Water Temperature Studies on Site 6A, Baker River
PURPOSE: To determine the effect of a small watershed reservoir on aquatic organisms in a trout stream before, during, and after construction.
SPONSOR(S): SCS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: At present, there is some stream warming during construction, but there is a return to cooler waters one-quarter mile below the construction site.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insects; microorganisms; algae; protozoa
TAXA: SALVELINUS PONTINALIS
ADDED KEYWORDS: brook trout; diatoms; dipterans; trichopterans; ephemeropterans; construction; habitat modification; models; cold water release; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; habitat characterization; kill; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electroshocking gear
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: seasonal; daily; monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; soils; terrain; water quality data
STUDY SITE(S): NH
GEOGRAPHIC DESCRIPTION: Grafton County; Grove Brook; Baker River
TYPE OF DATA: raw
STATISTICS EMPLOYED: modeling, deterministic; modeling, stochastic
ABSTRACT: This project began as a field study to determine the effect of structure on stream temperatures and fisheries. The studies were carried out during the 1975 construction of a reservoir. After the reservoir fills, the study will check the effect of cold water release on the stream for two years. The Soil Conservation Service will also model temperatures of the reservoir in 1976, after completion.
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TELEPHONE: (603) 868-7581
NBIP ACCESSION NUMBER: NH/012

<587>

INVESTIGATOR(S): Allison, D.G.

AFFILIATION: New Hampshire Fish and Game Dept.
TITLE: Ruffed Grouse Brood Census and Factors Affecting Population Changes
PURPOSE: To determine population trends and to determine if weather conditions are involved in population trends.
SPONSOR(S): New Hampshire Fish and Game Dept.; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1949
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Annual fluctuations in relative numbers from 1949 through 1974.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: BONASA UMBELLUS
ADDED KEYWORDS: weather conditions; ruffed grouse; grouse; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): strip counts; transects
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): NH
TYPE OF DATA: summarized
STATISTICS EMPLOYED: analysis of variance; regression/correlation analysis
ABSTRACT: Relative population changes of ruffed grouse were obtained annually over a 26-year period and compared to weather conditions.
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NBIP ACCESSION NUMBER: NH/008

<588>

INVESTIGATOR(S): Baker, A.L.
AFFILIATION: University of New Hampshire
TITLE: Aquatic Macrophytes as Indicators of Nutrient Sources in Lakes and as a Controlling Pool of Phosphorus
PURPOSE: To determine: (1) whether water milfoil responds to different levels of phosphorus supply under natural lake conditions, and (2) whether sources of phosphates entering lakes can be identified using the plant's level of tissue phosphorus.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Seasonal variations in growth rate and tissue phosphorus levels have been observed during January through October of 1975.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; resource

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planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs; microorganisms; algae
TAXA: MYRIOPHYLLUM HETEROPHYLLUM;
MYRIOPHYLLUM EPIPHYTES

ADDED KEYWORDS: seasonal variations;
phosphorus; nutrients; management
measures; milfoil; aquatic plants;
eutrophication

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; emigration; habitat
characterization; numbers; physiology;
reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
SCUBA

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: daily; weekly; monthly
SUPPORTING DATA COLLECTED: associated flora;
associated microorganisms; hydrological
data; soils; water quality data

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Belknap County;
Winnepesaukee Lake

TYPE OF DATA: raw

COMPUTER AND LANGUAGE: DEC-System; FORTRAN X
STATISTICS EMPLOYED: mean; analysis of
variance; non-linear estimation

ABSTRACT: The primary objectives of this
project are to determine the feasibility
of using milfoil as an indicator of
phosphorus loading levels, to determine
the sites of loading of phosphorus
(diffuse or point), to determine the rate
of reproduction (spread) of milfoil in
Lake Winnepesaukee, and to determine the
seasonal pool of phosphorus in the milfoil
population and its rate of release during
winter die-back.

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NBIP ACCESSION NUMBER: NH/007

<589>

INVESTIGATOR(S): Borrer, A.C.

AFFILIATION: Shoals Marine Laboratory

TITLE: Breeding Birds of the Isles of Shoals

PURPOSE: To take annual census of nesting
birds.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fluctuations of abundance
of breeding birds.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: LARUS ARGENTATUS; LARUS MARINUS;
CHLUPHUS GRILLE; PHALACROCORAX AURITUS;
LEUCOPHOXY THULA; PLEGADIS FALCINELLUS;
NYCTICORAX NYCTICORAX

ADDED KEYWORDS: gulls; cormorants; ibises;
egrets; guillemots; appledores; breeding
grounds; seasonal variations; population

effects

PRIMARY PARAMETERS INVESTIGATED: numbers;
reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nest counts

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): NH; ME

GEOGRAPHIC DESCRIPTION: Rockingham County;
York County

TYPE OF DATA: raw

STATISTICS EMPLOYED: percentile

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: NH/039

<590>

INVESTIGATOR(S): Croker, R.A.

AFFILIATION: Dept. of Zoology and Jackson
Estuarine Lab., University of New Hampshire

TITLE: Coastal Marine Sand Communities

PURPOSE: To study temporal variability of
community structure and dynamics against a
background knowledge of geographic

variation in the western Atlantic Ocean.

SPONSOR(S): NSF (1970-1974)

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in species
composition, fluctuations of major species
component by a geometric mean factor of 4
(for both abundance and biomass), and
seasonal changes in community structure as
indicated by diversity indices have been
observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: indicator species

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; annelida;
mollusca

TAXA: CRUSTACEA, 10 SPECIES; NEMERTEA, 1
SPECIES; ANNELIDA, 15 SPECIES; MOLLUSCA, 5
SPECIES

ADDED KEYWORDS: intertidal zones; habitat
modification; species diversity;
peracarids; tides; amphipods

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; habitat
characterization; numbers; reproduction;
sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transect

NUMBER OF SAMPLING SITES: 2 (present); 12
(previous years)

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; soils; terrain

STUDY SITE(S): NH; ME

GEOGRAPHIC DESCRIPTION: Rockingham County;
York County; Cumberland County; Sagadahoc
County; Lincoln County

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: IBM 360; BASIC
STATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: This study of intertidal sand
communities in coastal New Hampshire and

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southwestern Maine has been concerned with patterns of species composition and distribution in relation to physical factors and estimates of seasonal biomass and abundance. Life histories and ecology of several crustaceans, long-term studies of amphipod population fluctuations, and community structure at contrasting habitats have also been studied.

REFERENCES: Croker, et al, 1975

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TELEPHONE: (603) 862-2113

NBIP ACCESSION NUMBER: NH/001

<591>

INVESTIGATOR(S): Frost, T.P.
AFFILIATION: New Hampshire Water Supply and Pollution Control Commission
TITLE: Effects of Destratification upon Temperature and other Habitat Requirements of Salmonoid Fishes

PURPOSE: To answer questions raised by New Hampshire Fish and Game Dept. as to the efficacy of mixing a salmonoid lake.

SPONSOR(S): New Hampshire Water Supply and Pollution Control Commission; New England Interstate Water Pollution Control Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No adverse effects on salmonoids, there has been a maintenance of hypolimnion oxygen at acceptable levels, and hydrogen sulfide was vented upon mixing.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; microorganisms; algae

TAXA: SALMO GAIEDNERI

ADDED KEYWORDS: destratification; habitat modification; rainbow trouts

PRIMARY PARAMETERS INVESTIGATED: habitat characterization; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): grab samples

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: continuous; weekly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Merrisack County;

Hackett Brook; Hot Hole Pond

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: NH/021

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INVESTIGATOR(S): Frost, T.P.
AFFILIATION: New Hampshire Water Supply and Pollution Control Commission

TITLE: Effects of Spray Irrigation with Stabilization Pond Effluent on Surface and Groundwaters and Forest Land

PURPOSE: To demonstrate the feasibility of spray irrigating a mixed hardwood and softwood forest with the effluent from a raw sewage stabilization pond. Prime purpose is prevention of nutrient escape to Class A surface and groundwaters.

SPONSOR(S): New Hampshire Water Supply and Pollution Control Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Nitrate buildup occurred in groundwater with a high degree of phosphorus adsorption.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; mountain

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: environmental impact; pollution control; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses

ADDED KEYWORDS: waste water; sewage treatment; irrigation; management measures; nitrates; phosphorus

PRIMARY PARAMETERS INVESTIGATED: bod

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): test wells; pits

NUMBER OF SAMPLING SITES: 3 testwells; 6 lysimeters; 2 lagoons; 1 distribution box; 7 private wells

SAMPLING FREQUENCY: continuous; weekly

SUPPORTING DATA COLLECTED: hydrological data; soils; water quality data

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Merrisack County;

Chandler Brook; Lake Sunapee; Mountainview Lake; Sunapee Mountains

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: Septic tank effluent stored and stabilized for ten or more months in twin one-acre oxidation ponds located at the Sunapee State Park in Newbury, New Hampshire, was chlorinated at 5.0 mg/l and sprayed for about 6 to 9 weeks during the summer months over a four and one-half acre somewhat hilly, mixed hardwood forest tract within the Sunapee mountain foothills. Application rate via three spray lines averaged about 2 in. of effluent per week. Three years of spray irrigation has demonstrated renovation of sewage constituents as a result of land application. Average values of all constituents tested were well below maximum permissible levels for drinking water. One exception, that of nitrate, showed evidence of build-ups in lysimeters located within spray area. Nitrate values in lysimeters ranged from a low of 0.05 mg/l to a high of 26.2 mg/l. Negligible nitrate values were found in domestic wells, test wells, a public spring, and one brook all of which bracket the spray

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area. Phosphorus enrichment of groundwater was not observed in any of the sampling sites. Approximately 90 percent of the phosphorus was removed by six to eight inches of forest floor. Proper management along with groundwater monitoring will insure the success of this system.

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NBIP ACCESSION NUMBER: NH/023

<593>

INVESTIGATOR(S): Frost, T.P.

AFFILIATION: New Hampshire Water Supply and
Pollution Control Commission

TITLE: Degree and Rate of Eutrophication

Reversal, Kezar Lake, Sutton, New Hampshire

PURPOSE: To study the degree and rate of eutrophication reversal of Kezar Lake resulting from nutrient stripping of a secondary sewage treatment plant by alum precipitation.

SPONSOR(S): New England Interstate Water
Pollution Control Commission

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Nutrient load is slowly diminishing, yet there are no observed floral changes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lakeLEVEL(S) OF STUDY: organism; population;
ecosystemMANAGEMENT FOCUS: indicator species;
pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

TAXA: APHANIZOON FLOS-AQUAE

ADDED KEYWORDS: eutrophication;

destratification; algal blooms; blue-green
algae; management measures

PRIMARY PARAMETERS INVESTIGATED: numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
grab samples; Secchi disk

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Merrimack County;
Lion Brook; Kezar Lake

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median

ABSTRACT: Artificial destratification of Kezar Lake was unsuccessful in controlling the summer APHANIZOON bloom in 1973. The APHANIZOON cells persisted in abundance for the entire summer despite temperature profiles which indicated that the lake was destratified during this time. APHANIZOON began its annual bloom in early June, reaching a surface peak of 750,000 cells/ml on June 27. The cell

numbers then fluctuated around 300,000 cells/ml until August 15 when only broken cells were present. It quickly recovered, however, attaining a second peak of 660,000 cells/ml on September 15. The second bloom was short-lived and this alga was completely absent by the end of September. Secchi disk readings were less than four feet from June 6 to September 11, and the water clarity was not recreationally acceptable for the entire summer vacation period. Although initially, artificial destratification lessened the duration of the blue-green algal blooms, the past two years has seen a gradual return to pre-destratification times. This year, the cells were present for the entire summer which was similar to the duration in 1968 when destratification was first instituted. It thus appears that this blue-green alga has adapted to whatever "environmental factor" was changed as a result of the destratification, and this method is no longer useful for controlling algal blooms in Kezar Lake.

REFERENCES: Staff, 1974

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NBIP ACCESSION NUMBER: NH/025

<594>

INVESTIGATOR(S): Holmes, R.T.

AFFILIATION: Dept. of Biology, Dartmouth
CollegeTITLE: Quantitative Studies of Animal
Populations

PURPOSE: To investigate functional roles and relationships of animal (consumer) populations in ecosystem processes.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: YES

CHANGE(S) OBSERVED: Change in population sizes for birds, insects, and small mammal populations.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduousLEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; invertebrates; insects

TAXA: TAMIAS STRIATUS; PEROMYSCUS

MANICULATUS; HOPLOZYGUS INSIGNIS;

CLETHRONOMYS GAMBELI

ADDED KEYWORDS: population effects; energy
budgets; species diversity; food chains

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution;

diversity; habitat characterization; home

range size; natality; numbers;

productivity; reproduction; sex;

size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

census; mist net; observation

SAMPLING FREQUENCY: continuous; seasonal

SUPPORTING DATA COLLECTED: associated fauna;

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associated flora; associated
microorganisms; atmospheric chemistry;
climatological data; hydrological data;
soils; terrain; water quality data

STUDY SITE(S): NH
GEOGRAPHIC DESCRIPTION: Grafton County;
Hubbard Brook; Hubbard Brook Experimental
Forest

TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; regression/correlation
analysis; non-parametric analysis

ABSTRACT: The bird community occupying the
forested watersheds of the Hubbard Brook
Experimental Forest, New Hampshire U.S.A.,
was studied for fifty-one continuous
months, during which quantified estimates
of bird population densities, biomass, and
energy expenditures were made. While the
species composition of the breeding
community was similar in the five
consecutive summers, the change in total
numbers of breeding birds reflected the
varying abundance of a defoliating
caterpillar population. The size and
composition of the bird community in
winter varied with the abundance of seed
crops and with climatic conditions.
Seasonal and annual changes in bird
community structure were analysed with the
Shannon-Weaver diversity index (H').
Species richness (S), equitability (J'),
and H' were highest for the summer
breeding assemblage, reflecting the most
favourable part of the year with respect
to climate and food supply. Species
diversity was lowest in winter when
equitability was also reduced because of
the influx of flocks of winter finches
opportunistically exploiting seed crops.
Annual energy budgets for the avian
community were calculated over four years.
Estimated bird respiration averaged 51,164
kcal/ha/year, net production 536
kcal/ha/year, for a total average
assimilation of 51,701 kcal/ha/year. This
implies an average ingestion rate by the
bird community of 73,858 kcal/ha/year
which represents 0.17% of the net annual
primary production of these ecosystems.
Although the energy flux through the avian
community is small compared with total
system energy flow, birds are complexly
involved in forest trophic structure and
may obtain a considerable portion of their
energy intake from detrital as well as
grazing food chains.

REFERENCES: Holmes and Sturges, 1975

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NBIP ACCESSION NUMBER: NH/014

<595>

INVESTIGATOR(S): Kiang, Y.T.
AFFILIATION: Dept. of Plant Science,
University of New Hampshire
TITLE: Genetic Differentiation of Roadside

Grass Populations

PURPOSE: To study effects of roadside
environments on adaptation of grass
species and causes of population,
morphological, and genetic change.

SPONSOR(S): University of New Hampshire

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A change in species
composition and morphological
differentiation.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: resource planning;

right-of-way

ORGANISMS, MAJOR TYPES: plants; vascular
plants; grasses

TAXA: AGROSTIS ALBA; FESTUCA CAPILLATA;

ANTHOXANTHUM ODOBATUM; FESTUCA RUBRA

ADDED KEYWORDS: habitat modification;
genetics; redtop; hair fescue; sweet
vernal grasses; red fescue; roads; highway
system; sodium chloride

PRIMARY PARAMETERS INVESTIGATED: habitat
characterization; mortality; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

field collection; greenhouse studies

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: continuous; weekly; annual

SUPPORTING DATA COLLECTED: associated flora;
climatological data; hydrological data;
soils

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Strafford County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; percentile;
analysis of variance

ABSTRACT: The mortality pattern of the plants
along the roadside was not examined.

However, if these greenhouse observations
reflect what may occur along the roadside,
then salt application will likely cause a
decline of these perennial grass
populations, and result in an invasion of
short-lived undesirable weeds such as
crabgrass and common ragweed.

REFERENCES: Kiang, 1974

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TELEPHONE: (603) 862-1205

NBIP ACCESSION NUMBER: NH/015

<596>

INVESTIGATOR(S): Lacaille, H.C.

AFFILIATION: New Hampshire Fish and Game Dept.

TITLE: Waterfowl Survey and Inventory -

Hunter Survey and Bag Check

PURPOSE: To appraise waterfowl hunting

success, kill composition by species,

crippling rate, and other relevant

information during opening days of the

hunting season as an aid to management.

SPONSOR(S): New Hampshire Fish and Game
Dept.; FWS

SPONSOR CATEGORY: state government; federal
government

DATE OF INITIATION: 1949

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No major changes were

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noted.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: BRANTA CANADENSIS; ANAS PLATYRHYNCHOS;
ANAS RUBRIPES; AYTHYA SPONSA; ANAS CRECCA;
ANAS DISCORS; LOPHODYTES CUCULLATUS; ANAS
STREPERA; OXYURA JAMAICENSIS

ADDED KEYWORDS: black ducks; wood ducks;
mallard ducks; scaup ducks; green-winged
teals; blue-winged teals; teals; hooded
mergansers; american mergansers; canada
geese; geese; pintail ducks; gadwall
ducks; ruddy ducks; ducks; management
measures

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration,
harvest; immigration; kill; migratory
patterns; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
interviews

NUMBER OF SAMPLING SITES: 12

SAMPLING FREQUENCY: annual

STUDY SITE(S): NH

TYPE OF DATA: summarized

ABSTRACT: A hunter bag check was conducted by
department personnel on opening day and
opening weekend of the 1974 waterfowl
hunting season. The survey inquired into
hunting activities on major shooting areas
throughout the state, including several of
the department's waterfowl management areas.
Hunters were interviewed as they returned
from gunning and information as to species
composition of birds in the bag, success,
and crippling rates, as well as methods of
hunting and other factual information
pertaining to their hunting activities was
collected.

REFERENCES: Lacaille, 1975

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Concord, NH 03301

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NBIP ACCESSION NUMBER: NH/028

<597>

INVESTIGATOR(S): Likens, G.E.

AFFILIATION: Section of Ecology and
Systematics, Cornell University

TITLE: The Hubbard Brook Ecosystem
Study—Hydrologic-Nutrient Cycle
Interaction in Small Undisturbed and
Man-Manipulated Ecosystems

PURPOSE: To quantify the structure and
function of natural forest ecosystems, and
to measure the effects of human
manipulation on these ecosystems.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1963

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; mountain; aquatic;
freshwater; stream; lake

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
forestry; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish; birds; mammals;
invertebrates; crustacea; insecta;
mollusca; plants; vascular plants; trees;
shrubs; herbs; microorganisms; bacteria;
algae

TAXA: PLANTS, 190 SPECIES; ALGAE, 10 SPECIES;
MOLLUSCA, 5 SPECIES; INSECTA, 115
FAMILIES; CRUSTACEA, 1 ORDER; ARACHNIDA, 4
ORDERS; FISHES, 17 SPECIES; BIRDS, 94
SPECIES; MAMMALS, 24 SPECIES;
PHYTOPLANKTON, 39 SPECIES; HYDROPHYTA, 19
SPECIES; ZOOPLANKTON, 30 SPECIES; FISHES,
5 SPECIES; INVERTEBRATES, 11 SPECIES

ADDED KEYWORDS: nutrients; litter;
decomposition; phenology; energy budgets;
watersheds; herbicides; clearing;
eutrophication; fertility; habitat
modification; aquatic plants; benthic
organisms

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;
habitat characterization; harvest;
numbers; productivity; reproduction;
size/weight

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: continuous; daily;
weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; atmospheric chemistry;
climatological data; hydrological data;
soils; terrain; water quality data

STUDY SITE(S): NH

GEOGRAPHIC DESCRIPTION: Grafton County;
Hubbard Brook; Mirror Lake; White Mountain
National Forest

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN;
APL

STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis; modeling,
deterministic; modeling, stochastic

ABSTRACT: The Hubbard Brook Project was
conceived and developed as a
multidisciplinary study of the structure
and function of small forested water
watershed-ecosystems, both natural and
man-manipulated. This Ecosystem Project
began in 1963 and has involved some 32
senior scientists from 9 universities, 1
national laboratory and 3 governmental
agencies. The work ranges from studies of
quantitative hydrologic and nutrient
budgets, including measurements of the
addition of chemical elements in
precipitation and of losses as dissolved
or particulate matter exiting the system
in stream water to studies of nutrient
cycle-hydrologic cycle interactions,
weathering, soils, litter accumulation and
decomposition, vegetation biomass and
productivity, nutrient turnover within the
biota, phenology, and to studies of energy
budgets. The forest on one entire
watershed-ecosystem has been
experimentally cleared and treated with
herbicides to determine the effects of
this treatment on losses of water and
nutrients from the system. Nutrients
flushed from this deforested watershed in

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drainage water not only represent losses of fertility from the forest soils, but eutrophication of downstream aquatic ecosystems. A detailed ecological study of a small lake within the drainage area provides basic information on the vital ecological linkages between terrestrial (forest) and aquatic (lake) ecosystems.

REFERENCES: Likens, 1972
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Cornell University
Ithaca, NY 14850
TELEPHONE: (607) 256-3498
NBIP ACCESSION NUMBER: NY/033

<598>

INVESTIGATOR(S): Mathieson, A.C.
AFFILIATION: University of New Hampshire
TITLE: Nutrient Studies of the Great Bay Estuary System
PURPOSE: To monitor nutrients and plankton populations in the estuary through the year and to determine the nutrient contributions of the Squamscott, Lamprey, and Oyster Rivers to the estuarine system.
SPONSOR(S): Coastal Zone Management; NOAA
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Estuary enrichment occurs primarily from natural sources and domestic sewage.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae; protozoa
ADDED KEYWORDS: phytoplankton; seasonal variations; waste water; phosphorus; nitrates; silica; nitrogen; pigments; dissolved oxygen; algal blooms; eutrophication
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Van Dorn water sampling bottle
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: monthly
STUDY SITE(S): NH
GEOGRAPHIC DESCRIPTION: Great Bay Estuary System; Squamscott River; Lamprey River; Oyster River
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
ABSTRACT: Nine stations were monitored from the open coast at Fort Stark, N.H. to the headwaters of the Great Bay, N.H. in order to establish nutrient baseline data and to make spatial and temporal comparisons. Nitrogenous, phosphorus, and siliceous nutrients were studied in addition to temperature, salinity, pH, pigments, dissolved oxygen and dissolved organic carbon. Within the Great Bay Estuary enrichment occurs primarily from natural sources and domestic sewage. The seasonal

fluctuation of the parameters studied reflect the interrelationship of biological activity and physical water conditions. Phytoplankton blooms are initiated by a combination of factors (light, temperature, and nutrients), any of which may be limiting. Seasonal nutrient trends are primarily functions of 2 biological processes: microbial regeneration causing the increases, and plant uptake causing decreases.

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NBIP ACCESSION NUMBER: NH/037

<599>

INVESTIGATOR(S): Staff
AFFILIATION: Normandeau Associates, Inc.
TITLE: Piscataqua River Ecological Monitoring Studies
PURPOSE: To determine impact of Newington Generating Station, a 400 MW fossil-fueled plant, on estuary.
SPONSOR(S): Public Service Co. of New Hampshire
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Effects of plant, so far, are minimal and limited to the discharge area; however only one year of operational data have been analyzed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; microorganisms; algae; protozoa
ADDED KEYWORDS: primary productivity; chlorophyll a; fossil fueled power plants; benthic organisms; oil
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; mortality; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Van Veen grab; Kemmerer bottle; seines; trawls
NUMBER OF SAMPLING SITES: 5-15 depending on sample type
SAMPLING FREQUENCY: continuous; seasonal; weekly; monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): NH
GEOGRAPHIC DESCRIPTION: Rockingham County; Piscataqua River; Great Bay Estuary; Newington Generating Station
TYPE OF DATA: reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM System 3; FORTRAN
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis
ABSTRACT: During 1970, an ecological inventory of the Piscataqua River and Great Bay estuary in southern New

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Hampshire was initiated. The survey supplied baseline data on certain biological and physical/chemical properties of the estuary. These data, combined with pertinent literature, were utilized to develop a monitoring program by which possible effects to the estuary from construction and operation of the 400 MW oil-fired Newington Station could be detected. Areas of major ecological concern chosen for the monitoring program included intertidal, subtidal, plankton, and productivity studies as well as studies of the finfish community. Several physical and chemical parameters were also selected for monitoring on either a continuous or periodic basis. Three years of pre-operational and one year of operational data have been collected so far. Effects of the power plant to date are considered minimal and limited to the discharge area.

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NBIP ACCESSION NUMBER: NH/013

<600>

INVESTIGATOR(S): White, D.L.
AFFILIATION: New Hampshire Fish and Game Dept.
TITLE: Big Game Management Research
PURPOSE: To analyze annual deer harvest and factors responsible.
SPONSOR(S): New Hampshire Fish and Game Dept.; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1969

PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population fluctuations appear to be associated with winter severity.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOLEUS VIRGINIANUS
ADDED KEYWORDS: seasonal variations; weather conditions; deer; white-tailed deer
PRIMARY PARAMETERS INVESTIGATED: harvest; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): registration
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): NH
GEOGRAPHIC DESCRIPTION: First Lake; Milan; Woodstock; Lakewood; Concord; Keene
TYPE OF DATA: summarized
ABSTRACT: Regional buildups and declines in deer populations and harvests and the factors responsible are analyzed in a very broad sense, and associated with winter severity (snow depths and duration). Hunter success has been associated with snow distribution and depths during the season. All snow records are drawn from Climatological Data, New England (U.S. Dept. of Commerce) and concern six weather stations for which uniform data has been available since 1949.
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TELEPHONE: (603) 271-2462
NBIP ACCESSION NUMBER: NH/004

NEW JERSEY
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733, 902)

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INVESTIGATOR(S): Anderson, J.D.
AFFILIATION: Rutgers University
TITLE: Endangered Species of Amphibians and
Reptiles in New Jersey
PURPOSE: To determine the exact status of
five species classified as endangered or
threatened in New Jersey and to determine
causes for their decline and to recommend
programs for improving their status.
SPONSOR(S): New Jersey Dept. of Environmental
Protection
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Depletion to near
extinction in New Jersey of AMBYSTOMA
TIGRINUM, AMBYSTOMA LATERALE, and CLEMNYS
MUHLENBERGI; and serious decline of HYLEA
ANDERSONI.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; deciduous; wetland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: endangered species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles
TAXA: AMBYSTOMA TIGRINUM; AMBYSTOMA LATERALE;
CLEMNYS MUHLENBERGI; HYLEA ANDERSONI; HYLEA
CHRYSOCELIUS
ADDED KEYWORDS: tiger salamanders;
blue-spotted salamanders; bog turtles;
pine barrens treefrogs; southern gray
treefrogs; habitat modification;
management measures; salamanders; turtles;
frogs
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
mortality; migratory patterns; natality;
numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field observation; recordings of voice;
mark-recapture techniques
NUMBER OF SAMPLING SITES: hundreds, statewide
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): NJ
TYPE OF DATA: raw; reduced; summarized;
literature-derived
ABSTRACT: AMBYSTOMA TIGRINUM once common in
southern New Jersey is now restricted to
about 12 breeding locations only half of
which are flourishing. AMBYSTOMA LATERALE
is restricted to the Passaic River
drainage in Morris County, NJ. Complete
protection of the species and habitat is
necessary for its survival. CLEMNYS
MUHLENBERGI-great decline in distribution
and population size because of habitat
disturbance; more detailed studies are
needed. HYLEA ANDERSONI-distribution is
more restricted and populations are
smaller; large segments of Pine Barrens
and Cedar Bogs must be kept intact. HYLEA
CHRYSOCELIUS-restricted to about 10
breeding localities.
ADDRESS: J.D. Anderson
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Rutgers University
Newark, NJ 07102

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NBIP ACCESSION NUMBER: NJ/014

<602>

INVESTIGATOR(S): Ferrigno, F.
AFFILIATION: New Jersey Div. of Fish, Game,
and Shell Fisheries
TITLE: Job I-B: Aerial Waterfowl Surveys
PURPOSE: To determine annual population
trends, movements, distribution, and
location of waterfowl in New Jersey.
SPONSOR(S): New Jersey Div. of Fish, Game,
and Shell Fisheries
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations have varied
within certain levels within the past 20
years and these levels are now lower.
Twenty-four percent of New Jersey's
coastal marshes have been lost to filling
and diking in the past twenty years.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
wetland; aquatic; marine; coastal;
estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 27 SPECIES
ADDED KEYWORDS: habitat modification;
population effects; census
PRIMARY PARAMETERS INVESTIGATED:
distribution; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial census; aerial flights
NUMBER OF SAMPLING SITES: 43 flight segments
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): NJ; DE
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: For the past twenty years, aerial
waterfowl surveys have been conducted
along the coast of New Jersey. Populations
have varied within certain levels and
these levels are now lower. This change,
however, was not substantial, except for
certain species. Considering that
twenty-four percent of New Jersey's
coastal marshes have been lost to filling
and diking in the past twenty years
waterfowl populations still fluctuate at
good levels where good habitat is
available. Because of this habitat loss,
the overall totals for the state are not
expected to be as high as they were twenty
years ago.
ADDRESS: Mr. Fred Ferrigno
Wildlife Management
ATTN: Mr. George Howard
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Trenton, NJ 08625
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NBIP ACCESSION NUMBER: NJ/022

<603>

INVESTIGATOR(S): Festa, P.J.
AFFILIATION: New Jersey Div. of Fish, Game,
and Shell Fisheries
TITLE: Marine Fisheries Investigations and
Management

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<603> CONT.

PURPOSE: To monitor catch rates and angler effects on catch size composition of inshore summer flounder fishery, New Jersey.
SPONSOR(S): FWS; New Jersey Div. of Fish, Game, and Shell Fisheries
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A marked increase in yield of summer flounder from a 1969 low point has been documented as well as year to year variations in size composition.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: PACALICHTHYS DENTATUS
ADDED KEYWORDS: summer flounders; flounders; flukes; population effects
PRIMARY PARAMETERS INVESTIGATED: growth; harvest; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): creel census
NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): NJ
GEOGRAPHIC DESCRIPTION: Atlantic County; Great Bay River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis
ABSTRACT: Declines in the yield of summer flounder in both the sport and commercial fishery during the 1960's initiated considerable efforts in New Jersey and adjoining states to develop management programs aimed at stabilizing the fishery. To provide the necessary data for establishing such management programs the current study was instigated with emphasis on determining catch rates in the sport fishery in relation to recruitment rates and catch size composition. The census is carried out by direct interview of anglers fishing for summer flounder or anything in Great Bay.
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Naccote Creek Research Station
Star Rt. 9
Absecon, NJ 08201
TELEPHONE: (609) 652-9509
NBIP ACCESSION NUMBER: NJ/018

<604>

INVESTIGATOR(S): Klaas, E.E.
AFFILIATION: Iowa Cooperative Wildlife Research Unit, Iowa State University
TITLE: Organochlorine and Polychlorinated Biphenyl Residues in Selected Fauna from a New Jersey Salt Marsh - 1967 vs. 1973.
PURPOSE: To document changes in organochlorine residues, particularly DDT and its analogs, between 1967 and 1973, in salt marsh organisms in Cape May County,

N.J. Area had been exposed to extensive DDT spraying for mosquito control for 20 years prior to 1967. DDT use ceased in 1966.

SPONSOR(S): Iowa Cooperative Wildlife Research Unit; FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Residues of DDT and its analogs decreased 84 to 99 percent among nine species of organisms from 1967-1973.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: fisheries; wildlife; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; crustacea; mollusca
TAXA: RALLUS LONGIROSTRIS; CYPRINIDON VARIEGATUS; FUNDULUS HETEROCLOTUS; FUNDULUS NAJALIS; PALAEMONETES SPP; UCA PUGNAX; CALLINectes SAPIDUS; BRACHIDONTES DEMISSUS; LITTORINA LITTOREA; NASSARIUS OBSOLETUS; MELAMPUS BIDENTATUS
ADDED KEYWORDS: fiddler crabs; mud snails; salt marsh snails; snails; crabs; sheepshead minnows; minnows; mummichogs; striped killifishes; meadow grasshoppers; grasshoppers; periwinkles; ribbed mussels; mussels; clapper rails; pesticides; DDT; dieldrin; mirex; toxaphene; chlordane; benthic organisms; mosquitoes; oxychlordane; HCB
PRIMARY PARAMETERS INVESTIGATED: residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection; seines
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: irregular
STUDY SITE(S): NJ
GEOGRAPHIC DESCRIPTION: Cape May County; Salt Marsh (Ocean City to Avalon)
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; non-parametric analysis
ABSTRACT: More than 0.5 million pounds of DDT were applied for mosquito control in salt marsh estuaries of Cape May County, New Jersey, during the period 1946-66. The use of DDT was discontinued after 1966. In 1967, concentrations of DDT and metabolites were still relatively high in aquatic fauna, but by 1973, residue levels had decreased 84 to 99 percent among nine species. DDE was still present at reduced levels in nearly all samples in 1973, but other DDT isomers had mostly disappeared. Dieldrin was detected only in clapper rails and residue levels decreased during the period. Concentrations of PCB's, which occurred at low levels in most samples, increased in the clapper rail, remained the same in the fiddler crab and mud snail, and decreased in sheepshead minnow, mummichog, striped killifish, and salt marsh snail. Small amounts of mirex, toxaphene, cis-chlordane (and/or trans-nonachlor), oxychlordane, and HCB were detected in a few specimens.
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Ames, IA 50010

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<604> CONT.
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NBIP ACCESSION NUMBER: IA/035

<605>
INVESTIGATOR(S): McNulty, J.K.
AFFILIATION: NMFS
TITLE: MESA New York Bight Biological Oceanography
PURPOSE: To determine effects of ocean dumping on benthic macroinvertebrates.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations are altered at and near ocean dumping sites.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; annelida; microorganisms; bacteria; protozoa
TAXA: BENTHIC ORGANISMS, 200 SPECIES
ADDED KEYWORDS: heavy metals; benthic organisms; population effects; isopods; amphipods; decapods; coelenterates; echinoderms; sediments
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Smith-McIntyre grabs
NUMBER OF SAMPLING SITES: 64 minimum; 105 maximum
SAMPLING FREQUENCY: seasonal; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; hydrological data; water quality data
STUDY SITE(S): NJ; NY
GEOGRAPHIC DESCRIPTION: Continental Shelf from Cape May NJ to Montauk, NY; New York Bight
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN
STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: The objectives of the research are to sort and identify the first grab samples taken at standard MESA sampling stations, and to expedite the analysis of sediments that were collected concomitantly with the benthic macrofauna for standard geological characteristics and heavy metal burdens. The data resulting from the foregoing operations, along with similar data from the August, 1973 and August, 1974 cruises, will be subjected to statistical treatment using the Center ADP office and services. Center personnel will use the resulting relationships, derived from cluster

analyses and other statistical treatment, to define sampling strata.
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Sandy Hook Laboratory
NMFS-NOAA
Highlands, NJ 07732
TELEPHONE: (201) 872-0200 ext. 58
NBIP ACCESSION NUMBER: NJ/049

<606>
INVESTIGATOR(S): Thomas, J.P.
AFFILIATION: NMFS
TITLE: Primary Productivity and Its Relationship and Coastal Fisheries
PURPOSE: To investigate the spatial and temporal distribution of phytoplankton and productivity in relationship to chemical and hydrographic factors.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Only annual cycle observed thus far. Net plankton (greater than 20 microns) bloom in March and nanoplankton (less than 20 microns) bloom in summer.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; pollution control
ORGANISMS, MAJOR TYPES: microorganisms; algae; protozoa
ADDED KEYWORDS: primary productivity; phytoplankton; management measures; energy flow; carbon cycle; nutrients; pollution; dissolved oxygen; nitrates; phosphates; silicates; ammonia; nitrogen; algal blooms; sediments
PRIMARY PARAMETERS INVESTIGATED: biomass; bio; distribution; diversity; habitat characterization; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard oceanographic gear; Niskin bottles; submersible pump
NUMBER OF SAMPLING SITES: approximately 50
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: climatological data; hydrological data
STUDY SITE(S): NY; NJ
GEOGRAPHIC DESCRIPTION: Richmond County; Monmouth County; Hudson River; Raritan River; Raritan Bay; Lower Bay; Sandy Hook Bay
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis
ABSTRACT: Sixteen monthly cruises were undertaken in a highly polluted estuary of the New York metropolitan area between November 1973 and March 1975 to measure the spatial and temporal distribution of primary productivity, photosynthetically active radiation, light extinction, temperature, salinity, dissolved oxygen, pH, alkalinity, phytoplankton nutrients (ammonia, nitrite, nitrate, phosphate, silicate), chlorophyll pigments, particulate organic carbon, and nitrogen. In addition samples of seawater, collected

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and preserved during our cruises, have been examined for phytoplankton species composition, density, and average cell size. These structural aspects of the phytoplankton community will be linked to concurrent changes in release of dissolved organic matter by phytoplankton, to nanoplankton/netplankton productivity ratios, and to total primary productivity as well as to previously listed environmental variables.

REFERENCES: Thomas, et al, 1975

ADDRESS: James P. Thomas

Sandy Hook Laboratory

NMFS-NOAA

Highlands, NJ 07732

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NBIP ACCESSION NUMBER: NJ/045

<607>

INVESTIGATOR(S): Whigham, D.F.

AFFILIATION: Rider College

TITLE: The Effect of Sewage Effluent on the Structure and Function of a Freshwater Tidal Marsh Ecosystem

PURPOSE: To determine the practicality of applying effluent to marshes in order to utilize them as low-cost tertiary treatment facilities.

SPONSOR(S): OWBT; Hamilton Township

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1976

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Some species are sensitive to chlorine in sewage, especially algae.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; mollusca; plants; vascular plants; shrubs; herbs; microorganisms; algae

ADDED KEYWORDS: tidal marsh; sewage treatment; nitrogen; phosphorus; spray irrigation; algal blooms; tides; waste water; chlorine

PRIMARY PARAMETERS INVESTIGATED: biomass; bod; diversity; growth; harvest; mortality; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): harvest technique

NUMBER OF SAMPLING SITES: 16

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora; soils; water quality data

STUDY SITE(S): NJ

GEOGRAPHIC DESCRIPTION: Twpenton Neck;

County; Delaware River; Crosswicks Creek;

Hamilton Township

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: PDP-10; FORTRAN; BASIC

STATISTICS EMPLOYED: mean;

regression/correlation analysis

ABSTRACT: The research involves laboratory and field investigations directed at the determination of the effects of secondarily treated sewage effluent on the structure and function of a freshwater tidal marsh ecosystem. Sixteen enclosures were constructed on one of the marshes watersheds. Using several application rates, the enclosures are sprayed with effluent. The following ecosystem parameters will be examined for species composition, various population attributes of plants and algae, decomposition rates, and soil metabolism. The movement and storage of nitrogen and phosphorus in vegetation, soil water solution, and soils are examined. Nitrogen and phosphorus content of tidal water moving into and out of the watershed are monitored. The oxygen content of water moving into and out of the watershed is examined as well as the oxygen levels of water moving into and out of the experimental enclosures. The field and laboratory data enable us to determine the practicality of applying effluent to these marshes in order to utilize them as a low cost tertiary treatment facility.

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Rider College

School of Liberal Arts

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Lawrenceville, NJ 08648

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NBIP ACCESSION NUMBER: NJ/051

<608>

INVESTIGATOR(S): Widjeskog, L.E.

AFFILIATION: New Jersey Div. of Fish, Game, and Shell Fisheries

TITLE: Tidal Marsh Management, Job II-A

PURPOSE: To monitor changes on tidal marshes brought about by mosquito control practices and make recommendations for changes in Open Marsh Water Management Procedures (OMWM).

SPONSOR(S): FWS; New Jersey Div. of Fish, Game, and Shell Fisheries

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Studies indicate that areas subjected to OMWM produce less mosquitos, are shunned by snipe and snow geese, and show increased vegetational and invertebrate production.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact;

wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; crustacea; insecta; plants; vascular plants; shrubs; microorganisms; algae

TAXA: Aedes spp; Capella Gallinago; Chen caerulescens

ADDED KEYWORDS: islands; mosquitoes; snipes;

snow geese; geese; management measures

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): square meter plots; bird use studies; blinds

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NUMBER OF SAMPLING SITES: 100+

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora

STUDY SITE(S): NJ

GEOGRAPHIC DESCRIPTION: Cape May County;
Cumberland County; Ocean County; Egg
Island; Seaville; Barnegate Bay

TYPE OF DATA: reduced

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Co-operation with various mosquito
commissions has led to the development of
Open Marsh Water Mgt. (OMWM). This is a
ditching of tidal marshes to each mosquito
breeding depression. The project monitors
the effects of ditching on marsh
vegetation, numerous marsh surface
invertebrates, and birds or mammals that
use the marsh for resting or feeding.
Changes in OMWM are recommended as data
indicate. The sample plots are surveyed
each year for the first three years and
then as time permits. Most survey work is
done in the early fall or late summer.

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TELEPHONE: (609) 628-2103

NBIP ACCESSION NUMBER: NJ/025

<609>

INVESTIGATOR(S): Widjeskog, L.E.

AFFILIATION: New Jersey Div. of Fish, Game,
and Shell Fisheries

TITLE: Clapper Rail Study, Job II-B

PURPOSE: To determine the trends in
production of the clapper rail population
in New Jersey.SPONSOR(S): FWS; New Jersey Div. of Fish,
Game, and Shell FisheriesSPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1955

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The population has shown
a tendency to build to peak levels
followed by drastic drops.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES:

animals; vertebrates; birds

TAXA: RALLUS LONGIROSTRIS

ADDED KEYWORDS: clapper rails; nesting;

tides; predation; management measures

PRIMARY PARAMETERS INVESTIGATED: behavior;

distribution; habitat characterization;

harvest; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field surveys

NUMBER OF SAMPLING SITES: 4

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): NJ

GEOGRAPHIC DESCRIPTION: Cape May County;

Ocean County; Atlantic County; Carson's
Inlet

TYPE OF DATA: reduced

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Nesting censuses are conducted on
four areas felt to represent the types of
marsh vegetation found in New Jersey. The
effects of tidal inundation and plant
succession on nesting were checked. From
this data, predictions for the subsequent
hunting season are made.

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NBIP ACCESSION NUMBER: NJ/027

<610>

INVESTIGATOR(S): Wilk, S.J.

AFFILIATION: NMFS

TITLE: MARNAP II - Biological Assessment
(Finfish and Invertebrates)

PURPOSE: To conduct comprehensive annual,
biannual, and monthly groundfish and
invertebrate surveys and to provide a
broad life history data base.

SPONSOR(S): NMFS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The distribution and
abundance of the major species of finfish,
surf clams, ocean quahogs, and sea
scallops varies.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarineLEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
fisheries; range; recreation; resource
planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates: crustacea; mollusca;
shellfish

TAXA: SPISULA SOLIDISSIMA; MERCENARIA
MERCENARIA; AEQUIPECTEN IRRADIANS;
CALLINectes SAPIDUS; HOMARUS AMERICANUS;
SCIAENIDAE; BOTHIDAE; PLEURONECTIDAE;
EMBIOTOCIDAE; SERRANIDAE

ADDED KEYWORDS: surf clams; quahogs; sea
scallops; cancer crabs; lobsters; drums;
flounders; porgies; sea basses;
surfperches; decapods; management
measures; spawning

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity;
emigration; growth; habitat
characterization; harvest; immigration;
migratory patterns; numbers; reproduction;
sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
otter trawl; scallop dredge; surf clam
dredge; collecting gear

NUMBER OF SAMPLING SITES: 15 to 200

SAMPLING FREQUENCY: monthly; annual;

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data

STUDY SITE(S): MA; NC; CT; RI; NJ; DE; MD; VA

GEOGRAPHIC DESCRIPTION: New York Bight

TYPE OF DATA: raw; reduced; summarized

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COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN IV
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-parametric
analysis

ABSTRACT: We conduct comprehensive surveys to
collect biological materials pertinent to
selected Atlantic coast finfishes and
invertebrates such as drums, flounders,
porgies, sea basses, surf clams, and sea
scallops. Analysis is made on a real time
basis to determine one or more of the
following: distribution; abundance; unit
stock identification; age composition and
rate of growth; sexual development;
spawning season and fecundity; food and
feeding habits; recruitment; optimum
levels of exploitation; and impact of
long-term natural fluctuation and/or
man-induced changes on the environment.

ADDRESS: Stuart J. Wilk
Middle Atlantic Coastal Fisheries
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Highlands, NJ 07732
TELEPHONE: (201) 872-0200 ext. 34
NBIP ACCESSION NUMBER: NJ/016

<611>

INVESTIGATOR(S): Zich, H.E.
AFFILIATION: New Jersey Bureau of Fisheries
TITLE: New Jersey Anadromous Fish Inventory
PURPOSE: To confirm runs of anadromous
clupeids within the state.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Loss of spawning habitat.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: environmental impact;
fisheries; range; water quality;
right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ALOSA JAFIDISSIMA; ALOSA
PSEUDOHARENGUS; ALOSA AESTIVALIS; ALOSA
MEDIOCRIS
ADDED KEYWORDS: american shad; alewives;
blueback herrings; hickory shad; shad;
herrings; management measures; habitat
modification
PRIMARY PARAMETERS INVESTIGATED:
distribution; immigration; food;
reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill net; electrofishing gear; dip net;
creel census; fish trap
NUMBER OF SAMPLING SITES: 267 to date; about
100 to go
SAMPLING FREQUENCY: continuous; seasonal;
daily
STUDY SITE(S): NJ
TYPE OF DATA: raw; summarized;
literature-derived

ABSTRACT: To date New Jersey has not had an
adequate program of protecting or
enhancing its anadromous fishery
resources. This project is designed to
locate existing anadromous spawning runs
by species and determine what factors
(physical and chemical) inhibit or stop
them. Moreover it is expected that
information can be collected on extinct
spawning runs and that the cause of their
demise can be overcome. The species of
anadromous fish that are of primary
concern are the alewife, blueback herring,
and the American shad. This project will
encompass the sixty-one major river basins
that drain into the Hudson and Delaware
Rivers, Delaware Bay, and the Atlantic
Ocean within the limitations of budget.

ADDRESS: H.E. Zich
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TELEPHONE: (201) 236-2313
NBIP ACCESSION NUMBER: NJ/010

<612>

INVESTIGATOR(S): Zuck, R.K.
AFFILIATION: Dept. of Botany, Drew University
TITLE: Flora of Great Swamp Wildlife Refuge
and Wilderness Area
PURPOSE: To collect and identify all plants
of the Great Swamp Refuge and wilderness
area.
SPONSOR(S): Drew University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Open land once under
cultivation reverting to forest.
Impounding of water is killing many trees.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species;
range
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses;
non-vascular plants; mosses; liverworts;
microorganisms; bacteria; fungi; algae
TAXA: PLANTS, 300 SPECIES
ADDED KEYWORDS: ferns; sedges; rushes;
impoundments; population effects; census
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration;
growth; habitat characterization;
immigration; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
preparation of herbarium specimens; field
notes
NUMBER OF SAMPLING SITES: innumerable
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated flora;
soils
STUDY SITE(S): NJ
GEOGRAPHIC DESCRIPTION: Morris County;
Passaic River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: We who are attempting to make a
herbarium of the plants of the Great Swamp
are more and more impressed with the
wealth of species. Including the algae,
fungi, and bryophytes, the list (if ever

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completed) will run into the thousands,
perhaps three thousand or more. As time
passes, such a permanent record will
become more and more valuable. When
changes in habitat occur, as the result of
the creation by the United States Fish and
Wildlife Service of more areas of open

water for migratory waterfowl, some
stations of plants will disappear and new
ones will be created.
ADDRESS: Robert K. Zuck
Dept. of Botany
Drew University
Madison, NJ 07940
TELEPHONE: (201) 377-3000 ext. 360
NBIP ACCESSION NUMBER: NJ/002

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NEW MEXICO

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Fish and Wildlife Service Region 2
(SEE ALSO 72, 77, 80, 154, 180, 208, 210, 835)

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INVESTIGATOR(S): Allen, L.S.
AFFILIATION: FS
TITLE: Range Environment Analysis
PURPOSE: To monitor condition and trend of
rangelands grazed by livestock and
wildlife (about 1.1 million acres in south
central New Mexico).
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Vegetative retrogression
due to early overgrazing accompanied by
soil loss but trend is being reversed with
management.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; deciduous;
grassland; tundra; alpine; wetland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species;
wildlife; forestry; range; recreation;
resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses
ADDED KEYWORDS: grazing; habitat
modification; management measures; cattle
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; harvest; productivity;
reproduction; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects
NUMBER OF SAMPLING SITES: various
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
soils; terrain; water quality data
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: Lincoln County; Otero
County; Eddy County; Chaves County
TYPE OF DATA: raw; summarized
ABSTRACT: Continuing monitoring is being made
of the effects of grazing by domestic and
wild animals on the floral and edaphic
components of a wide variety of ecosystems.
Data are used to plan management of all
species present and to determine
suitability of the land for grazing and
for input to land use planning.
ADDRESS: Larry S. Allen
Federal Bldg.
11th and New York
Alamogordo, NM 88310
TELEPHONE: (505) 437-6030
NBIP ACCESSION NUMBER: NM/035

<614>

INVESTIGATOR(S): Harper, K.T.
AFFILIATION: Dept. of Botany and Range
Science, Brigham Young University
TITLE: Compositional Flux in Desert
Vegetations in San Juan County, New Mexico
PURPOSE: Document seasonal and year-to-year
change in abundance of vascular plants in
35 stands.
SPONSOR(S): New Mexico Power and Light;
Arizona Public Service Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1971
PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Community composition
fluctuates as much as 60% in similarity
from year-to-year.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses; lichens;
mosses
TAXA: PLANTS, 100 SPECIES
ADDED KEYWORDS: fossil fueled power plants;
germination; coal
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; habitat
characterization; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent quadrats (square meter)
NUMBER OF SAMPLING SITES: 35 with 25 quadrats
per site
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: atmospheric
chemistry; climatological data; soils
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: San Juan County; Four
Corners
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance; contingency table
analysis
ABSTRACT: Thirty-five 1/20 acre study sites
were established on radii running outwards
from the Four Corners and the anticipated
San Juan coal powered generating plants.
Half of these sites were placed less than
4 miles from each plant and half were
placed over 5 miles away. Each May the
sites are resampled with 25 sq meter
quadrats per site. Species frequency and
vigor are noted in the individual quadrats
as also are living plant cover by shrub,
perennial grass, perennial forbs, and
annual composites.
ADDRESS: Dr. Kimball T. Harper
Dept. of Botany and Range Science
401 Wiltsoe Bldg.
Brigham Young University
Provo, UT 84602
TELEPHONE: (801) 374-1211 ext. 2129
NBIP ACCESSION NUMBER: UT/077

<615>

INVESTIGATOR(S): Herbel, C.H.
AFFILIATION: ARS, USDA
TITLE: Environmental and Grazing Studies on
Arid Range
PURPOSE: To develop management practices
which will maximize production of red meat
while preserving and improving the
rangeland resource and associated
watershed, wildlife, and recreation values.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1912
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Massive changes in plant
populations and production in response to
climatic variation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland
LEVEL(S) OF STUDY: organism; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;

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indicator species; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; birds; mammals;
plants; vascular plants; shrubs; herbs;
grasses

ADDED KEYWORDS: management measures;
population dynamics; population control;
grazing

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
clip quadrats; standard environmental
sensors

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal; weekly; annual;

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
soils

STUDY SITE(S): NM

GEOGRAPHIC DESCRIPTION: Dona Ana County;

Jornada Experimental Range

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; analysis of

variance; analysis of covariance;

regression/correlation analysis;

multivariate analysis; modeling, stochastic

ABSTRACT: Research at the Jornada

Experimental Range is aimed at the development of a resource-oriented management system which will maximize as much as possible all land uses while preserving and improving the resource base. This objective calls for a detailed monitoring of the abiotic and biotic ecosystem components. Rainfall is a primary driving variable in the ecosystem and measurement of hydrologic parameters is necessary to achieve an understanding of their effects on soils, vegetation, and animals. Extensive historical and on-going invasion of the semi-desert grassland by shrubs necessitates development of methodology to control and eliminate invading species. Long-term and short-term data bases will be used in the development and testing of models which will facilitate the development of resource management. Some vegetation monitoring has been done continuously since 1914 and will be continued. Rainfall has been monitored for the same time span. Shorter term studies are many and varied. Intensive monitoring of the semi-desert grassland ecosystem was conducted for 3 years under the Grassland Biome studies of the IBP. Recent and projected expansion of the research staff of the Jornada Experimental Range will result in a greatly increased collection of data.

ADDRESS: Dr. Carlton H. Herbel

USDA

Agricultural Research Service

Jornada Experimental Range

P.O. Box 698

Las Cruces, NM 88001

TELEPHONE: (505) 646-1709

NBIP ACCESSION NUMBER: NM/034

<616>

INVESTIGATOR(S): Hill, A.C.

AFFILIATION: Environmental Studies Lab

TITLE: Vegetation Air Pollution

Investigations in the Vicinity of the Four
Corners and San Juan Power Plants, New
Mexico

PURPOSE: Monitoring of the air quality and
vegetation as affected by the two power
plants located in this area.

SPONSOR(S): Arizona Public Service Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: No biotic changes due to
effluents were observed. Only effects
observed were due to construction site
preparation, roads, and mining operations.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert; forest; coniferous; grassland

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: endangered species;

environmental impact; forestry; indicator

species; range; resource planning;

pollution control; power generation

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; shrubs; herbs; grasses

ADDED KEYWORDS: air pollution; fossil fueled

power plants; construction; mining;

habitat modification; coal

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat

characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

plot samples; observations; photography;

chemical analysis

NUMBER OF SAMPLING SITES: 5 air quality

sites; 391 vegetation plots

SAMPLING FREQUENCY: seasonal; monthly; annual

SUPPORTING DATA COLLECTED: associated fauna;

atmospheric chemistry; climatological

data; soils; terrain

STUDY SITE(S): NM

GEOGRAPHIC DESCRIPTION: San Juan River; San

Juan Power Plants; Four Corners Power

Plant; Farmington

TYPE OF DATA: raw; summarized

COMPUTER AND LANGUAGE: UNIVAC; FORTRAN

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: None provided.

ADDRESS: Dr. A. Clyde Hill

Research Institute

391 Chipeta Way

Salt Lake City, UT 84108

TELEPHONE: (801) 581-7591.

NBIP ACCESSION NUMBER: UT/028

<617>

INVESTIGATOR(S): Hubbard, J.P.

AFFILIATION: New Mexico State Dept. of Game

and Fish

TITLE: Population Survey of Harris' Hawk in

Southeastern New Mexico

PURPOSE: To monitor population size and age

composition, to determine range in

southeastern New Mexico, and to gather

data on reproductive biology.

SPONSOR(S): New Mexico State Dept. of Game

and Fish-Endangered Species Program

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Slight gain per unit

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censused from January to March but
reproduction detected in May-October, 1975.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; deciduous; savanna;
grassland; wetland; aquatic; freshwater;
reservoir

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: PARABUTEC UNICINCTUS

ADDED KEYWORDS: harris' hawks; hawks;
seasonal variations; population effectsPRIMARY PARAMETERS INVESTIGATED: age;
distribution; habitat characterization;
migratory patterns; numbers; reproductionDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
roadside censuses; on-site monitoring;
irregular visitationNUMBER OF SAMPLING SITES: all roadways in
area, plus known breeding areaSAMPLING FREQUENCY: continuous; monthly;
irregular

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): NM

GEOGRAPHIC DESCRIPTION: Chaves County; Lea
County; Eddy County; Roosevelt County;
Pecos RiverTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: In view of the limited range of
PARABUTEC in New Mexico (confined to SE
corner of state) and increasing pressures
of falconers on the bird, studies were
undertaken to yield data on exact range,
numbers, and reproduction in the species
in the state. From these data it is
expected that exploitation can be
controlled on a sustained yield basis.

ADDRESS: John F. Hubbard

Dept. of Game and Fish

Santa Fe, NM 87503

TELEPHONE: (505) 827-5406

NBIP ACCESSION NUMBER: NM/015

<618>

INVESTIGATOR(S): Jester, D.B.

AFFILIATION: Dept. of Fishery and Wildlife
Sciences, New Mexico State UniversityTITLE: Commercial Potential of Rough Fish in
Elephant Butte LakePURPOSE: Measure changes in all fish
populations as a result of harvest of
rough fishes. Monitor physical, chemical,
and biological factors along with fish
populations.SPONSOR(S): NOAA; New Mexico State Dept. of
Game and FishSPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decrease in small mouth
buffalo and carp, increase in carpsucker,
but net decrease in rough fishes. Increase
in game fishes and decrease in shad.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: fisheries; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
annelida; microorganisms; algaeTAXA: MICROPTERUS SALMOIDES; POMOXIS
ANNULARIS; POMOXIS NIGROMACULATUS; MORONE
CHRYSOPTERUS; ESOX LUCIUS; STIZOSTEDION
VITREUM; ICTALURUS PUNCTATUS; PYLODICTUS
OLIVARIUS; DOROSOMA CEPEDIANUM; ICTIOBUS
BUBALUS; CYPRINUS CARPIO; CARPIODES CARPIOADDED KEYWORDS: largemouth basses; gizzard
shad; white crappies; black crappies;
white basses; northern pikes; rothenone;
walleyes; blue pikes; channel catfishes;
flathead catfishes; grizzard shad;
small-mouth buffalo fishes; carps; river
carpsuckers; habitat modification;
population dynamics; entomastacans;
crayfishes; dipterans; ephemeropterans;
coleopterans; aquatic earthwormsPRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; growth;
habitat characterization; harvest; kill;
mortality; migratory patterns; natality;
numbers; productivity; reproduction; sex;
size/weight; stressDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; seines; traps

NUMBER OF SAMPLING SITES: random

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data

STUDY SITE(S): NM

GEOGRAPHIC DESCRIPTION: Sierra County; Rio
Grande River; Elephant Butte Lake;
Elephant Butte Irrigation DistrictTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
contingency table analysis; multivariate
analysis

ABSTRACT: Fish management applied from 1963
to 1970 consisted of commercial harvest of
rough fish, introduction of walleye and
white bass, and stabilizing the water
level during spawning seasons of
large-mouth bass, black crappie, and white
crappie. Fish population data are analyzed
in terms of relative density and biomass
of game, rough, and forage fish; catch
rates per unit of effort; and estimates of
population density. Data are interpreted
to determine success or failure of
management methods and needs for
additional management. Introduction of
white bass was successful. Walleye need a
prey species which spawns earlier than
grizzard shad. Western golden shiners are
being cultured for introduction in an
effort to provide this prey. Stabilizing
water level during spawning seasons did
not result in larger populations of
largemouth bass or crappies. Stocking
largemouth bass was also of little value.
Reduction of predation on largemouth bass
by removal of flathead catfish might
result in more bass, but would reduce
predation on carp. Crappie populations
vary with large changes in volume of
stored water and might benefit from
establishment of a 370.3 million m³
(300,000 acre-foot) or larger minimum pool.

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REFERENCES: Jester, 1971; Jester, 1973;
Jester, 1967; Jester, et al, 1970; Jester,
1974; Jester, 1972; Jester, et al, 1972
ADDRESS: Dr. Doug B. Jester
Dept. of Fishery and Wildlife
Sciences
New Mexico State University
Las Cruces, NM 88001
TELEPHONE: (505) 646-3719
NBIP ACCESSION NUMBER: NM/033

<619>

INVESTIGATOR(S): Ludwig, J.A.
AFFILIATION: Dept. of Biology, New Mexico
State University
TITLE: Jornada Validation Site, Chihuahua
Desert; Primary Productivity and
Environmental Measurements Phase
PURPOSE: To monitor annual and seasonal
changes in plant productivity in relation
to changes in environment.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in productivity
of major desert shrubs, grasses, and forbs.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial;
desert; mountain
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles; birds; mammals; invertebrates;
insecta; plants; vascular plants; shrubs;
herbs; grasses
TAXA: PLANTS, 10 SPECIES; LARREA TRIDENTATA;
PROSORIS GLANDULOSA; YUCCA ELATA;
XANTHOCEPHALUS SAROTHRAE; CHILOPSIS
LINEARIS; FALLOGIA PARADOXA; PLOURENSIA
CENNUA; BOUTELOUA SP; EUPHORBIA SP;
BAILEYA MULTIRADIATA
ADDED KEYWORDS: population effects; seasonal
variations; yuccas; spurge
PRIMARY PARAMETERS INVESTIGATED: biomass
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
harvest methods; dimensional biomass
analysis
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: Dona Ana County; Dona
Ana Mountains
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/65; PL1;
FORTRAN; APL
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis; non-linear
estimation; modeling, stochastic
ABSTRACT: The Jornada Validation Site
studies, initiated in 1970 and continuing
to present, on the bajada and playa
portions of a small watershed in the
Chihuahuan desert has shown that year to
year productivity values may vary by an
order of magnitude. These tremendous

differences are related to the seasons of
available soil moisture and favorable
temperatures.

ADDRESS: Mr. John A. Ludwig
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New Mexico State University
Las Cruces, NM 88001
TELEPHONE: (505) 646-3933
NBIP ACCESSION NUMBER: NM/005

<620>

INVESTIGATOR(S): Ludwig, J.A.
AFFILIATION: Dept. of Biology, New Mexico
State University
TITLE: Classification of Subalpine and
Montane Forest Habitat Types in New Mexico
and Arizona
PURPOSE: To discover, classify, and monitor
such forests as potential natural areas.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in forest
structure.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: forestry; indicator
species; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
TAXA: PICEA ENGELMANNII; PICEA PUNGENS; ABIES
LASIOCARPA; ABIES CONCOLOR; PSEUDOTSUGA
MENZIESII; POPULUS TREMULOIDES; PINUS
PONDEROSA; PINUS STROBIFORMIS
ADDED KEYWORDS: population effects; seasonal
variations; ponderosa pines; firs;
engelmann spruces; spruces; quaking
aspens; aspens; pines; management measures
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; growth; habitat
characterization; mortality
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
size class estimates; canopy cover
estimates
NUMBER OF SAMPLING SITES: 416
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): NM; AZ
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN
STATISTICS EMPLOYED: contingency table
analysis; multivariate analysis
ABSTRACT: The subalpine and montane forests
of the southwestern region of the U.S.
Forest Service have never been classified
relative to the habitat type concept.
About 30 such types have been tentatively
identified. About 10 of these are very
restricted and need to be monitored and
protected. Others are widespread and
heavily utilized under the multiple use
concept and need to be managed.
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Biology Dept., Box 3 AF
New Mexico State University
Las Cruces, NM 88001
TELEPHONE: (505) 646-3933
NBIP ACCESSION NUMBER: NM/006

<621>

INVESTIGATOR(S): Whitford, W.G.
AFFILIATION: Dept. of Biology, New Mexico
State University

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TITLE: Jornada Validation Studies
PURPOSE: Continuous monitoring of the state of the ecosystem including meteorological measurements, animal population changes, and vegetative changes.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes in species diversity and composition of all vertebrates in response to changing productivity.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial; desert; grassland; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: endangered species; environmental impact; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; birds; mammals; invertebrates; insects; plants; vascular plants; shrubs; trees; herbs; grasses; microorganisms; viruses; bacteria; fungi; algae; protozoa
ADDED KEYWORDS: population dynamics
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; bod; distribution; diversity; emigration; growth; habitat characterization; harvest; home range size; immigration; mortality; natality; numbers; physiology; productivity; reproduction; sex; size/weight; territory size
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; soils; terrain
STUDY SITE(S): NM
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; median; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis
ABSTRACT: None provided.
ADDRESS: Mr. Walter G. Whitford
Biology Dept., Box 3AF
New Mexico State University
Las Cruces, NM 88001
TELEPHONE: (505) 646-3921
NBIP ACCESSION NUMBER: NM/003

<622>

INVESTIGATOR(S): Williams, C.I.
AFFILIATION: Anthropology Dept., Eastern New Mexico University
TITLE: San Juan Valley Archaeological Project
PURPOSE: Excavation, preservation, and interpretation of a large southwestern archaeological site--the Salmon Ruin.
SPONSOR(S): State of New Mexico; NMH
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Loss of tall grasses,

loss of palatable annuals due to grazing, and loss of selected herbs.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial; forest; coniferous; savanna; grassland
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: endangered species; environmental impact
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: archeological sites; habitat modification; grazing
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: terrain
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: San Juan County
TYPE OF DATA: raw; literature-derived
ABSTRACT: None provided.
ADDRESS: Dr. Cynthia Irwin-Williams
Dept. of Anthropology
Eastern New Mexico University
Portales, NM 88130
TELEPHONE: (505) 562-2915
NBIP ACCESSION NUMBER: NM/011

<623>

INVESTIGATOR(S): Williamson, R.
AFFILIATION: FS
TITLE: Bacteriological Monitoring of Forest Streams
PURPOSE: To determine the extent, occurrence, and fluctuations of fecal coliform colonies near recreation facilities; and the recreation and management impact on algal blooms.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in bacterial populations are correlated with recreation activity and summer rain storms.
ECOSYSTEM OR BIOHE TYPE(S): aquatic; freshwater; lake; reservoir
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; forestry; indicator species; range; recreation; water quality
ORGANISMS, MAJOR TYPES: microorganisms; bacteria; algae
ADDED KEYWORDS: coliform bacteria; management measures
PRIMARY PARAMETERS INVESTIGATED: mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): membrane filter technique; lab chemical analysis
NUMBER OF SAMPLING SITES: 25
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: climatological data; hydrological data; water quality data
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: Grant County; Catron County; Gila River; Gila National Forest; Lake Roberts; Quamado Lake; Snow Lake
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: STORET
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis
ABSTRACT: Data gathered are being used to establish effects of management activities

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on aquatic deterioration (chemical, physical, and bacteriological). Time response of variables will be inventoried in attempting to estimate time impacts of management on water quality.
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NBIP ACCESSION NUMBER: NM/018

<624>
INVESTIGATOR(S): Wilson, D. E.
AFFILIATION: FWS
TITLE: Factors Affecting Declines in Populations of Bats
PURPOSE: To determine if selected species of bats are declining in population size, and why.
SPONSOR(S): FWS; NPS; World Wildlife Fund
SPONSOR CATEGORY: federal government; societies and other organizations
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a long term decline in *TADARIDA BRASILIENSIS* and short term fluctuations but no recent decline.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: *TADARIDA MEXICANA*; *TADARIDA BRASILIENSIS*
ADDED KEYWORDS: bats; pesticides; mexican free-tailed bats; DDE; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; mortality; migratory patterns; natality; numbers; physiology; reproduction;

residues; sex; size/weight; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sampling fallen bats
NUMBER OF SAMPLING SITES: 1
STUDY SITE(S): NM
GEOGRAPHIC DESCRIPTION: Eddy County; Carlsbad Caverns
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; percentile; non-parametric analysis
ABSTRACT: The Mexican free-tailed bat, *TADARIDA BRASILIENSIS* forms maternity colonies numbering millions of individuals in the southwestern United States. Recent indications of large-scale die-offs and reduced population levels has led to concern about the apparent decline in numbers of these bats. In the spring of 1973, a four-year study funded by the National Park Service, the U. S. Fish and Wildlife Service, and the World Wildlife Fund, was initiated to determine the factors effecting these population declines. One objective was to investigate the possible relationship between pesticides and infant mortality. We restricted our work to infant and yearling animals at an early stage when we discovered that most of the observable mortality is in these age classes. We have documented infant mortality for the 1973, 1974, and 1975 reproductive seasons. During the course of our investigations, we discovered that although DDE residues in carcasses of young animals were quite high when compared to levels found in other vertebrates, the majority of the young animals were still alive and capable of flight when fall migration began.
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Fish and Wildlife Service Region 5
(SEE ALSO 227, 236, 434, 478, 605, 606, 733)

<625>

INVESTIGATOR(S): Bayless, L.E.
AFFILIATION: Dept. of Biology, Concord College
TITLE: Population Study of CHRYSEMYS PICTA
and CHELYDRA SERPENTINA in a New York Pond
PURPOSE: To determine population size,
density, sex ratios, emigration and
immigration rates, and changes with time.
SPONSOR(S): Edmund Niles Huyck Preserve, Inc.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: CHRYSEMYS PICTA
population stable for 3 years, has been
declining recently.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
reptiles
TAXA: CHRYSEMYS PICTA; CHELYDRA SERPENTINA
ADDED KEYWORDS: painted turtles; snapping
turtles; turtles; population dynamics;
management measures; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age;
emigration; growth; immigration;
mortality; migratory patterns; natality;
numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hand-grabbing; basking traps; baited
traps; observation with spotting scope
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Albany County;
Ten-Mile Creek; Lincoln Pond; Hall's Pond;
Lake Myosotis; Huyck Preserve; Helderberg
Plateau
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
contingency table analysis
ABSTRACT: A population of painted turtles
(CHRYSEMYS PICTA) was studied by
mark-recapture in Albany Co., New York,
during May-June 1970-71-72, and May-July
1973. Samples were taken by hand-grabbing
and basking trap. Eighty-six turtles were
marked and 653 recaptures obtained. The
sex ratio from combined results of both
sampling methods was 1.4 males: 1 female.
The juvenile: adult ratio was 0.2:1.
Estimated juvenile recruitment since 1967
averaged 2.3 turtles/year. Population
size, estimated by Lincoln Index, has
remained stable at approximately 73
turtles since 1970. Estimates of losses by
emigration and mortality ranged from
0.09/year; gains by juvenile recruitment,
.03-.08/year, and gains by immigration,
0-.03/year. Immigration produces a
slightly inflated Lincoln Index estimate
of population size. The population density
of 9-11 turtles/acre differs strikingly
from previously published values. A
hypothesis is offered that CHRYSEMYS PICTA
density is positively correlated with, and

may be influenced by, the amount of marsh
adjacent to a turtle pond. No difference
was observed in results obtained from late
May to mid-June sampling vs. samples taken
mid-May to early August.

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NBIP ACCESSION NUMBER: WV/019

<626>

INVESTIGATOR(S): Benton, A.H.
AFFILIATION: Dept. of Biology, State
University College
TITLE: Studies Providing Ecological
Information on the West Valley, New York
Site of Nuclear Fuel Services, Inc.
PURPOSE: To provide baseline data on current
and ongoing ecological conditions in the
vicinity of the plant.
SPONSOR(S): Nuclear Fuel Services, Inc.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The vegetational survey
was completed in Dec. 1975, so no changes
have yet been observed. Changes in small
mammal populations have been noted.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact;
radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; mammals; plants; vascular plants;
trees; shrubs; herbs
ADDED KEYWORDS: succession; census; nuclear
power plants; population effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; habitat
characterization; home range size;
numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard North American small mammal
census method; plot cruising; seines
NUMBER OF SAMPLING SITES: 1 for small
mammals; vegetational survey covered whole
site
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Cattaraugus County;
Cattaraugus Creek; Nuclear Fuel Services
Plant
TYPE OF DATA: raw; summarized
ABSTRACT: The site occupied by the
reprocessing plant was established before
the Environmental Protection Act required
environmental impact studies. Since the
plant is now applying for a permit to
increase its volume of activity,
environmental data are needed, and it was
decided that rather than a one-shot
survey, plans should be made for
long-range ecological monitoring. While we
do not do radiological monitoring as such,
our observations may be useful in
suggesting fruitful areas or species for
radiological monitoring. Thus far,
preliminary studies have been made of
vegetation, the small mammals have been

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monitored for three years on one study area, and one-time collections have been made of other species.
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NBIP ACCESSION NUMBER: NY/091

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INVESTIGATOR(S): Benton, A.H.
AFFILIATION: Dept. of Biology, State University of New York
TITLE: Census of Small Mammal Populations at Burnham's Hollow
PURPOSE: This is largely an educational operation--successive classes in mammalogy have run the census and worked with accumulated data from the earlier censuses.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The major changes resulted from Hurricane Agnes in June 1972, when the population was destroyed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: PEROMYSCUS MANICULATUS
ADDED KEYWORDS: deer mice; mice; census; natural catastrophe; floods; hurricane agnes
PRIMARY PARAMETERS INVESTIGATED: home range size; numbers; reproduction; sex
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: irregular
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Chautauqua County; Canadaway Creek
ABSTRACT: Since 1971, students have conducted periodic mammal censuses on a plot in the town of Arkwright, Chautauqua County, New York, on state-owned game management lands. The only major change occurred in June 1972, when flooding resulting from Hurricane Agnes completely wiped out the small mammal population. Since then recovery has been studied and further studies will be conducted in 1976.
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NBIP ACCESSION NUMBER: NY/092

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INVESTIGATOR(S): Bowen, V.T.
AFFILIATION: Chemistry Dept., Woods Hole Oceanographic Institution
TITLE: Plutonium and Americium Concentrations in Freshwater Food Chains of the Great Lakes, U.S.A.

PURPOSE: To evaluate the significance of the transuranic elements in the Great Lakes to questions of public health, water quality, and environmental effects; and to estimate the pathways and rates of their movement through a major lake system, with special reference to processes resulting in immobilization or remobilization.

SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is a lack of correspondence between transuranic levels in plankton, fish, and benthic invertebrates, and those in the lake water or being supplied as atmospheric fallout.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: fisheries; indicator species; radiological; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; mollusca; plants; herbs; microorganisms; algae
ADDED KEYWORDS: food chains; plutonium; americium; heavy metals; public health; radiation; benthic organisms; plankton; phytoplankton; zooplankton; radioactive fallout; radionuclides; transuranium elements; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: physiology; residues; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): radiochemical analyses
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): NY; CN
GEOGRAPHIC DESCRIPTION: Niagara River; St. Lawrence River; Lake Erie; Lake Ontario
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; median
ABSTRACT: We continue to measure plutonium and americium radionuclides from fallout in the water, sediments and biota of Lake Ontario. Also, we began to investigate non-fallout sources of transuranic nuclides in this lake, and in the materials supplied from Lake Erie to the Niagara River fan. In the process of evaluating the significance of the transuranic elements to questions of public health, water quality, and environmental effects, it is important to estimate their trajectories and rates of movement from such point-sources as shore-based nuclear reactors or nuclear fuel services. It is also important to estimate more accurately the rates of back diffusion of transuranics from lake sediments, and to establish the chemistry responsible for this process. A certain number of measurements of strontium-90, cesium-137, or iron-55 have proved very useful in interpreting the distributions of the transuranic elements.
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NBIP ACCESSION NUMBER: MA/071

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INVESTIGATOR(S): Brocke, R.H.
AFFILIATION: State University of New York,
College of Environmental Science and
Forestry
TITLE: Mechanics of Replenishment of a
Heavily Hunted Population of Snowshoe Hares
PURPOSE: To determine the roles of
immigration and reproduction in
replenishing a depleted population.
SPONSOR(S): State University of New York; New
York Dept. of Environmental Conservation;
FWS
SPONSOR CATEGORY: teaching institution; state
government; federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Snowshoe hare population
remained stable over a year period,
despite 86 per cent decimation in two of
the years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: LEPUS AMERICANUS
ADDED KEYWORDS: hares; snowshoe hares;
census; models; population effects; rabbits
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; emigration; home range size;
immigration; mortality; natality; numbers;
reproduction; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trap-mark-release; track census;
radiotelemetry
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Hamilton County;
Adirondack Mountains
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: modeling, deterministic
ABSTRACT: The project seeks to determine the
relative roles of immigration and
reproduction in replenishing one heavily
hunted (simulated) and one unhunted
population of snowshoe hares. These
objectives are met by marking,
recapturing, winter track censusing, and
position telemetering of snowshoe hares.
These data and reproductive data are being
used to develop mathematical models of
replenishment alternatives.
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Adirondack Ecological Center
Huntington Forest
Newcomb, NY 12852
TELEPHONE: (518) 582-4551
NBIP ACCESSION NUMBER: NY/030

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INVESTIGATOR(S): Butts, W.L.
AFFILIATION: Dept. of Biology, State
University College-Oneonta
TITLE: Studies of Mosquito Populations at the
Biological Field Station at Cooperstown,
New York
PURPOSE: To maintain periodic samplings of

mosquito populations and to study
interactions with other organisms IN SITU.
SPONSOR(S): State University of New
York-Oneonta
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Considerable variations
in species components of total populations
of univoltine Aedine mosquitoes occurred.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta
TAXA: MOSQUITOES, 16 SPECIES
ADDED KEYWORDS: mosquitoes; population
effects; dipterans
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
biting and/or alighting counts, hand
dipping
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Otsego County
TYPE OF DATA: raw; summarized;
literature-derived
ABSTRACT: In successive years, 8 species of
the genus Aedes were recorded by capture
of females alighting on/or biting man. The
pattern in each year was an early peak in
collections of Aedes punctator (Kirby)
followed by a decline and a subsequent
peak in collection of Aedes stimulans
(Walker), the two most numerous species.
Apparent lower activity for all species
was noted during late June. Some
individuals survived until September.
Those Aedes spp. which were more numerous
in adult collections were also found in
larval surveys. Two Culex spp., two
Culiseta spp., and Wyeomyia smithii
(Coquillett) were collected as larvae but
were not taken as adults. Larval surveys
indicated that development of the Aedes
spp. is limited to a single generation per
year.
REFERENCES: Butts, 1974
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NBIP ACCESSION NUMBER: NY/107

<631>

INVESTIGATOR(S): Culp, T.R.
AFFILIATION: Ichthyological Associates, Inc.
TITLE: Schoharie Valley Ecological Study
PURPOSE: To determine the impact of proposed
and existing pumped storage reservoirs on
the indigenous wildlife species in the
area affected.
SPONSOR(S): Power Authority of the State of NY
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years

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PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Change in species composition of fish on a 400 acre reservoir after three years operation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; stream; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; fisheries; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
ADDED KEYWORDS: pumped storage; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; biomass; bod; distribution; diversity; emigration; growth; immigration; kill; mortality; migratory patterns; natality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill net; trap net; seine net; block net; electrofishing gear; Surber sampler
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Catskill Mountains; Delaware County; Greene County; Schoharie County; Schoharie Creek; Blenheim Lake; Gilboa Reservoir; Schoharie Reservoir
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
ABSTRACT: The objective of the investigation of Schoharie Reservoir and tributaries was to acquire data to determine the expected impact on the aquatic environment of the Prattsville Alternative to the Proposed Breakabeen Pumped Storage Project which would utilize Schoharie Reservoir as the lower reservoir. The study attempted to define: (1) the variety, relative abundance, distribution, feeding behavior, and age and growth of fishes in Schoharie Reservoir; (2) fisherman use and success on Schoharie Reservoir; and (3) limnological factors important to fish life throughout the study area. The research on the Blenheim-Gilboa Reservoirs was designed to acquire data to determine the expected impact on the aquatic environment of the proposed Breakabeen pumped storage facility. Objectives were: (1) to determine the fishes and the fisheries present in Schoharie Creek and its tributaries which are to be inundated by the proposed Breakabeen facility; (2) to determine changes, if any, in the fisheries of Schoharie Creek above and below the Blenheim-Gilboa Pumped Storage Project which could be attributed to construction and operation of this facility; (3) to determine changes, if any, in the fisheries of Lower Blenheim-Gilboa Reservoir after operation of the facility began in June 1973; and (4) to monitor the development of the fisheries in Upper Blenheim-Gilboa Reservoir since pumping began in June 1973.

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NBIP ACCESSION NUMBER: NY/075

<632>
INVESTIGATOR(S): Dean, H.J.
AFFILIATION: New York State Dept. of Environmental Conservation
TITLE: Effect of Methoxychlor Blackfly Larviciding on Fish Growth in Adirondack Streams
PURPOSE: To determine if the use of methoxychlor as a blackfly larvicide reduces fish growth through depletion of macroinvertebrates under field conditions.
SPONSOR(S): Bureau of Environmental Protection
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some reduction in macroinvertebrates as a result of treatment has been noted.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta
TAXA: SALMO TRUTTA; SALVELINUS FONTINALIS; SALVELINUS NANNYUS
ADDED KEYWORDS: black flies; pesticides; dipterans; ephemeropterans; plecopterans; trichopterans; benthic organisms; species diversity; methoxychlor; DDT; larvicides
PRIMARY PARAMETERS INVESTIGATED: age; biomass; growth; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; electrofishing gear
NUMBER OF SAMPLING SITES: 6 streams
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Essex County; Beaver Brook; Styles Brook; Norton Brook; Roaring Brook; Spruce Hill Brook; Niagara Brook
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis
ABSTRACT: None provided. Abstract on previous DDT research is as follows. Losses of fry during various periods of development were compared for brown trout and brook trout hatched from eggs taken from females fed DDT at different concentrations and for various lengths of time, and for control fish held under identical conditions and fed the same ration except for DDT. Significant differences for the various periods of development were determined by the "t" test. Only one period, from swim-up (i.e., when hatchery feeding is normally begun) for a specified time thereafter, showed significant losses, depending on the time DDT was fed before

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spawning and the weekly dosage in milligrams per kg of body weight. DDT was confirmed as the cause of approximately 100 per cent mortality of lake trout fry reared from eggs taken after adding 6 milligrams of DDT per kilogram of body weight to the weekly diet of potential breeders that had been reared from the egg at normal hatchery procedures until they neared maturity. A single control had no recorded loss of fry during this period.

REFERENCES: Burdick, et al, 1972; Burdick, et al, 1964

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8314 Fish Hatchery Road
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TELEPHONE: (315) 337-0910

NBIP ACCESSION NUMBER: NY/032

<633>

INVESTIGATOR(S): Foehrenbach, J.J.

AFFILIATION: New York State Dept. of
Environmental Conservation

TITLE: Chlorinated Hydrocarbons (PCB, DDT,
DDE, DDD, etc.) in Marine Organisms

PURPOSE: To identify amounts of contaminants
in marine organisms.

SPONSOR(S): New York Dept. of Environmental
Conservation

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decrease in DDE and DDT.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: fisheries; pollution
control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; invertebrates; crustacea;

mollusca; shellfish

TAXA: PELECYPODA; MERCENARIA MERCENARIA;

MYTILUS EDULIS; CRASSOSTREA VIRGINICA; MYA

ARENARIA; BRACHIDONTES DEMISSUS;

AEQUIPECTEN IRRADIANUS; MYCONE SAXATILIS;

POMATONUS SALTATRIX

ADDED KEYWORDS: clams; mussels; hard clams;
blue mussels; oysters; soft clams; ribbed

mussels; scallops; bay scallops; striped
basses; bluefishes; pesticides; DDT;

dieldrin; PCB; PRIN

PRIMARY PARAMETERS INVESTIGATED: residues

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: continuous; irregular

STUDY SITE(S): NY

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; mode; median

ABSTRACT: Since October 1968, the New York
State Department of Environmental
Conservation has been monitoring
chlorinated hydrocarbon residues in
shellfish. Ten sites have been chosen and
are sampled on a monthly basis. Analyses
were carried out for the following
compounds: DDT, DDD, DDE, aldrin,
heptachlor, heptachlor epoxide, lindane,

dieldrin, and endrin. As of July 1970, the
residues found were DDT, DDD, DDE, and
dieldrin. Concentrations were low, the
highest being 0.146 mg/kg wet weight. The
distribution of residues could at times be
correlated with agricultural use or type
of community in the watershed surrounding
the various stations.

REFERENCES: Alexander, et al, 1973;
Foehrenbach, et al, 1971

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NBIP ACCESSION NUMBER: NY/038

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INVESTIGATOR(S): Green, D.M.; Smith, S.B.

AFFILIATION: Dept. of Natural Resources,
Cornell University

WILSON: Fisheries Investigations of Canadago
Lake, D-J project F-29-R NY

PURPOSE: To measure changes in the structure
and dynamics of fish and invertebrate
populations, and in fisherman use in a
highly eutrophic lake following a
reduction in cultural eutrophication.

SPONSOR(S): New York Dept. of Environmental
Conservation

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increased water clarity
and submergent macrophytes with increase
in some fish species. The increase was
not necessarily due to phosphorus control.

ECOSYSTEM OR BIONE TYPE(S): aquatic;

freshwater; lake

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; recreation;
resource planning; pollution control;
water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;

mollusca; microorganisms; algae

ADDED KEYWORDS: eutrophication;

destratification; population effects;
nutrients; phosphorus; benthic organisms;

aquatic plants

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;
habitat characterization; harvest;

mortality; natality; numbers;

productivity; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

electrofishing gear; seine; trawl; trap

net; gill net; highspeed Miller sampler;

nets; Ekman dredge; aerial photography

NUMBER OF SAMPLING SITES: 1 lake

SAMPLING FREQUENCY: continuous; daily;

weekly; monthly

SUPPORTING DATA COLLECTED: associated flora;

climatological data; hydrological data;

soils; water quality data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Otsego County;

Canadago Lake

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

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analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis; non-parametric analysis;
non-linear estimation; modeling,
deterministic
ABSTRACT: Canadatego Lake, a highly eutrophic
759 ha lake in central New York has been
receiving 78 percent of the lake's soluble
phosphorus during the growing season and
44 percent of the total phosphorus from
the sewage effluent from Richfield
Springs (pop. 1500). A tertiary wastewater
treatment plant designed to remove 90-95
percent of the phosphorus began operation
in January 1973. Annual comparisons of
population size, biomass, mortality and
production of yellow perch, large- and
smallmouth bass, and chain pickerel have
been made since fall 1972. Relative
abundance of the 33 fish species is being
monitored throughout their life span.
Angler catch and effort is being
determined. Abundance and biomass of
zooplankton and zoobenthos is being
determined. Changes in aquatic plants are
being mapped. Related studies by others
are being made of nutrient balance,
primary productivity, chemical and
physical limnology, phytoplankton, public
attitudes, and economics. The study is
part of the North American Project. The
lake is characterized by a low density
fish predator population, about 10-15/ha
age I and older. Dense populations of
yellow perch (500-2000/ha) and several
forage and pan fish species are present.
Growth rate is rapid for predators and
slow for perch. Indices of abundance have
increased steadily since 1972 for several
species. Angler effort ranges from 40-50
hours/ha and exploitation rate is low
except for smallmouth bass. Twenty species
of zooplankton have been identified. Most
numerous are DAPHNIA SPP, DIAPYCNUS SPP,
CYCLOPS SPP, and rotifers. Seasonal
fluctuations of zooplankton numbers and
biomass are apparent. Zoobenthos consists
primary of chironomids, oligochaetae and
CHAEBORUS. Mollusks, abundant in 1930 are
now rare. Numbers of benthic organisms are
high.

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NBIP ACCESSION NUMBER: NY/085

<635>

INVESTIGATOR(S): Harman, W.N.
AFFILIATION: State University of New
York-Oneonta
TITLE: Effects of Eutrophication on the
Distribution and Abundance of Freshwater
Mollusca in Central New York State
Inventory of Molluscan Resources
PURPOSE: To determine the effects of

eutrophication on the distribution and
abundance of freshwater mollusca.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Reduction in diversity
and elimination of native species as
introduced species became established.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population; community;
ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mollusca; plants; vascular
plants; herbs
TAXA: MOLLUSCA, 50 SPECIES; AQUATIC PLANTS,
14 SPECIES
ADDED KEYWORDS: introduced species;
eutrophication; benthic organisms; yellow
water lilies; waterweeds; water marigolds;
stoneworts; brittleworts; pondweeds;
milfoil; eelgrasses; water celery; mud
plantain; aquatic plants; margaritiferae;
unionids; anodontins; lampsilins;
gastropods; lymnaeids; planorbids;
ancylids; physids; viviparids; volvatids;
hydrobiids; pleurocerids
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; emigration;
growth; habitat characterization;
immigration; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
dredge; hand picking; SCUBA
NUMBER OF SAMPLING SITES: 700
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Skaneateles Lake;
Ostego Lake; Oneida Lake
TYPE OF DATA: raw
ABSTRACT: Mollusks have been collected in 650
locations in central New York State since
1966 in order to determine habitat
preferences of the various species.
Chemical and physical data were recorded
at each locality. Three large lakes
(Skaneateles, Ostego, and Oneida) were
studied in detail to observe patterns of
molluscan distribution. The species
associated with different bottom types are
tabulated. Mollusks and substrate
distribution in typical environments are
discussed. The lake studies show that
definite relationships exist between
mollusk distribution and substrate
pattern. Species diversity is correlated
with substrate diversity in 348 collection
areas that include several biotype types.
REFERENCES: Harman, 1968; Harman, 1970
a,b,c,d,e; Harman, 1971; Harman, 1972;
Harman, 1973; Harman, 1974 a,b,c,d
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NBIP ACCESSION NUMBER: NY/035

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INVESTIGATOR(S): Hirshfield, H.I.

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AFFILIATION: Dept. of Environmental Medicine,
New York University School of MedicineTITLE: Cadmium in an Aquatic Ecosystem:
Distribution and EffectsPURPOSE: Effects of high concentrations of
cadmium and nickel in sediments at Foundry
Cove (Cold Springs, New York) on biota,
prior to, during, and post dredging of the
metals.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Increases in biota
occurred at outfall and channel.
Redistribution of Cd-Ni occurred as result
of dredging.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream;
river; marine; estuarineLEVEL(S) OF STUDY: organism; population;
community; ecosystemMANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; pollution
control; water qualityORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; shellfish; annelida;

microorganisms; algae; protozoa

TAXA: CHLAMYDOMONAS REINHARD; EUGLENA

GRACILIS; ROTIFERA; COPEPODA; OSTRACODA

ADDED KEYWORDS: rotifers; copepods; seed
shrimps; zooplankton; heavy metals;
cadmium; nickel; tides

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration;
habitat characterization; harvest;
immigration; kill; mortality; migratory
patterns; natality; numbers; physiology;
productivity; reproduction; residues;
toxicity; stressDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plankton netsNUMBER OF SAMPLING SITES: 10; 2 for tidal
cycles

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; water
quality data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Putnam County; Hudson
River; Foundry Brook; Indian Brook;
Marathon CorporationTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; percentile;
analysis of variance; TLMABSTRACT: Cadmium, a toxic metal, has been
known to be an important contaminant in
Foundry Cove, located near Cold Spring,
New York on the Hudson River. Its
distribution in water and sediments and
effect on the microzooplankton in the area
is being studied and evaluated.
Microzooplankton may well be a critical
link in the aquatic food web, involved in
trophic levels utilizing nanoplankton
such as bacteria, algae and protozoans, as
food and in turn being consumed by largerorganisms such as fish and their
juveniles. The microzooplankton, may in
turn reflect the number and possible
composition of the nanoplankton
populations since as grazers or croppers,
they represent the next trophic level and
have the advantage of being easily
collected, observed and quantified.
Preliminary toxicological studies are in
progress on species found in the cove. An
effect due to Cadmium is questionable at
this time.

REFERENCES: Kneip, et al, 1975

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NBIP ACCESSION NUMBER: NY/006

<637>

INVESTIGATOR(S): Jacobson, J.3.

AFFILIATION: Boyce Thompson Institute

TITLE: Effects of Ambient Air Pollutants on
VegetationPURPOSE: To use tobacco plants as an
indicator of photochemical air pollution
in Yonkers, New York.

SPONSOR(S): Boyce Thompson Institute

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Year to year changes in
severity of foliar damage occur but no
trends have been established as yet.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: environmental impact;
indicator speciesORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs

TAXA: NICOTIANA TABACUM

ADDED KEYWORDS: air pollution; hurricanes;
photochemical oxidants; tobacco; ozone;
crops

PRIMARY PARAMETERS INVESTIGATED: toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
foliar lesion scoring

NUMBER OF SAMPLING SITES: 1

SUPPORTING DATA COLLECTED: atmospheric
chemistry; climatological data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Westchester County

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Tobacco was selected as the
biological indicator because certain
varieties: (1) are highly susceptible to
oxidants; (2) produce readily discernible
foliar markings; (3) continue to produce
susceptible tissue up to the flowering
stage; and (4) have been successfully used
as indicators of atmospheric oxidants in
the past. It was anticipated that
compilation of data in a standardized
manner from different locations within the
region would provide information on the
current impact of oxidants on vegetation
and the usefulness of these techniques of
biological and chemical monitoring of the

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phytotoxicity of the atmosphere. This information could then be used to assess the impact of oxidants on agriculture in the northeast, to improve current air quality criteria, and to evaluate standards and implementation plans designed to protect agriculture from the injurious effects of atmospheric contaminants.

REFERENCES: Jacobson, et al, 1974

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NBIP ACCESSION NUMBER: NY/008

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INVESTIGATOR(S): LaBuy, J. L.

AFFILIATION: EPA

TITLE: Biological Survey of the Susquehanna River and its Tributaries Between Danville, Pa. and Conowingo, Md.; Biological Survey of the Susquehanna River and its Tributaries Between Coopersburg, N.Y. and Northumberland, Pa.

PURPOSE: The project made use of known data plus chemical, biological, and bacteriological analyses plus mine drainage, hydraulic, and hydrological studies.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Major improvements have occurred in the Binghamton, NY area, Scranton, Pa. area, and Wilkes-Barre, Pa. area.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; reservoir

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida; plants; non-vascular plants

TAXA: FONTINALIS SP; PECTINATELLA SP; DECAPODA; AMPHIPODA; ISOPODA; TRICHOPTERA; DIPTERA; EPHEMEROPTERA; COLEOPTERA; PLATYHELMINTHES

ADDED KEYWORDS: bryozoans; bloodworms; scuds; sludge worms; rat-tailed maggots; caddisfly larvae; hellgrammites; leeches; benthic organisms; strip mining; management measures

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; Ekman dredge; Petersen dredge

NUMBER OF SAMPLING SITES: 295

SAMPLING FREQUENCY: annual; irregular

SUPPORTING DATA COLLECTED: associated flora; hydrological data; water quality data

STUDY SITE(S): NY; PA; MD

GEOGRAPHIC DESCRIPTION: Conowingo Lake;

Susquehanna River

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: None provided.

REFERENCES: LaBuy, 1967

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NBIP ACCESSION NUMBER: WV/030

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INVESTIGATOR(S): Lee, J. J.

AFFILIATION: Dept. of Biology, City College of New York

TITLE: Effects of Stress on the Community Structure and Productivity of Salt Marsh and Epiphytic Communities

PURPOSE: To evaluate the effects of environmental stress (including: intense radiation, thermal, heavy metal, organic, and petrochemical) on lower and intermediate steps of the food web.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Community structure is changed with application of stress.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; indicator species; radiological; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; bacteria; fungi; algae; protozoa

TAXA: DIATOMS, 250 SPP; ENTEROMORPHA INTestinalis; ALGAE, 66 SPP; BACTERIA, 75 SPP; CYANOPHYTA; FUNGI, 10 SPP; PROTOZOA, 100 SPP; INVERTEBRATES, 40 SPP; PLANTS

ADDED KEYWORDS: radiation; thermal effluents; heavy metals; petrochemicals; food chains; benthic organisms

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; harvest; numbers; productivity; stress

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: seasonal; weekly; quarterly; annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): NY; CT; MA

GEOGRAPHIC DESCRIPTION: Suffolk County; Nassau County; Barnstable County; New York City; Bronx; Queens; Milestone Power Station

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 360/70; FORTRAN
STATISTICS EMPLOYED: mean; median; analysis of variance; modeling, deterministic; modeling, stochastic

ABSTRACT: Our special interest over the past decade has been the characterization of the microbial and micrometazoan populations of salt marsh epiphytic and epibenthic communities in comparable unpolluted and polluted areas. Although there is a great deal of knowledge on salt

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marshes and shoal water marine habitats, very little is known of the microbial and micrometazoan assemblages which are so important in the nutritional transformations underlying the marine detritus food web. The diversity of forms within the aufwuchs community is large but manipulatable for modeling in the laboratory. Within one cubic cm live perhaps 100,000 organisms belonging to several hundred species. What are the bases which underly the huge diversity of species on the same trophic level? If we understand this we would know much about the subtle variables which regulate population structure, succession, and information within the community. The references cited deal with specific studies of this type.

REFERENCES: Lee, et al, 1973; Tietjen and Lee, 1973; Muller, 1975; Lee, et al, 1975; McEnery and Lee, 1970; Lee and Muller, 1973; Lee, et al, 1966; Lee and McEnery, 1970; Saks and Lee, 1971

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NBIP ACCESSION NUMBER: NY/021

<640>

INVESTIGATOR(S): MacLean, D.C.

AFFILIATION: Boyce Thompson Institute

TITLE: Effects of Ambient-Air Pollutants on Vegetation in Yonkers, New York

PURPOSE: To determine the effects of ambient air pollutants on growth, yield, and quality of various plant species.

SPONSOR(S): EPA; Boyce Thompson Institute

SPONSOR CATEGORY: federal government; private corporation

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Significant reductions in yield of snap bean, tomato, sweet corn, and alfalfa due to photochemical oxidants.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; pollution control

ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs

TAXA: PHASEOLUS VULGARIS; LYCOPERSICON ESCULENTUM; MEDICAGO SATIVA; ZEA MAYS

ADDED KEYWORDS: air pollution; photochemical oxidants; ozone; beans; tomatoes; crops

PRIMARY PARAMETERS INVESTIGATED: growth; harvest; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field-grown plants; chambers

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: atmospheric monitoring

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: West County; Yonkers (NY)

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 2731/360; APL

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: Field plots of bean (PHASEOLUS VULGARIS) and tomato (LYCOPERSICON ESCULENTUM) were enclosed in chambers and exposed for 43 or 99 days, respectively, to ambient air or to air from which 60 to 70% of the ambient photochemical oxidants were excluded. Comparisons between these treatments revealed that ambient oxidants at Yonkers, New York reduced the fresh weight yield of tomato by at least 33%, and in bean, the weight and number of marketable pods were reduced by 26 and 24%, respectively.

REFERENCES: MacLean, et al, 1975

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NBIP ACCESSION NUMBER: NY/007

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INVESTIGATOR(S): Mahoney, J.B.

AFFILIATION: NMFS

TITLE: Ecology of Chronically Occurring Phytoplankton Blooms in New York Harbor and Adjacent Waters

PURPOSE: To investigate relationships of chronic phytoplankton blooms, including deleterious types, with eutrophication, and other contributing factors, resulting from man's activities.

SPONSOR(S): NMFS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Phytoplankton populations before, during, and after bloom pulses.

ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;

fisheries; recreation; pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

TAXA: ALGAE, 25 SPECIES; BACILLARIOPHYCEAE;

DINOPHYCEAE; EUGLENOPHYCEAE;

XANTHOPHYCEAE; CHRYSOPHYCEAE;

CRYPTOPHYCEAE; CHLOROPHYCEAE; CYANOPHYCEAE

ADDED KEYWORDS: algal blooms; red tides;

dinoflagellates; yellow-green algae;

golden-brown algae; green algae; diatoms;

eutrophication; phytoplankton; nutrients

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; emigration;

growth; kill; mortality; numbers; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): counting

NUMBER OF SAMPLING SITES: 6; supplemented by appropriate sites during blooms

SAMPLING FREQUENCY: daily; weekly

SUPPORTING DATA COLLECTED: associated flora;

associated microorganisms; climatological data; hydrological data; water quality data

STUDY SITE(S): NJ; NY

GEOGRAPHIC DESCRIPTION: Monmouth County (NJ); Navesink River; Shrewsbury River; New York Harbor

TYPE OF DATA: raw

ABSTRACT: This project attempts to determine the relationship between chronic phytoplankton blooms and pollution caused eutrophication of New York Harbor and adjacent waters. Comparisons are made in

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locales where blooms most frequently occur. Comparisons are also made between nutrient supply, phytoplankton, annual succession, and bloom development. Critical organic and inorganic compounds having origin in pollution are studied. REFERENCES: Cohn and van de Sande, 1974; Umminger and Mahoney, 1972 ADDRESS: John B. Mahoney
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TELEPHONE: (201) 872-0200
NBIP ACCESSION NUMBER: NJ/050

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INVESTIGATOR(S): Majors, J.T.; Cowherd, G.
AFFILIATION: Texas Instruments Inc.
TITLE: Striped Bass Hatchery Study
PURPOSE: Assess the feasibility of augmenting the Hudson River striped bass population by artificial propagation.
SPONSOR(S): Texas Instruments Inc.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Striped bass have been successfully propagated, cultured, and stocked in the Hudson River.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; marine; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact; fisheries; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MORONE SAXATILIS
ADDED KEYWORDS: striped basses; population effects; broods; spawning; management measures; species introduction
PRIMARY PARAMETERS INVESTIGATED: growth; natality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; mark-recapture
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Hudson River
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: FORTRAN IV
STATISTICS EMPLOYED: mean; median; regression/correlation analysis
ABSTRACT: The details of brood fish collection and spawning, hatching, and distribution of striped bass larvae during 1974 are available. Handling, marking, and stocking of about 102,000 fingerlings is described as well as testing for handling and marking losses. Intensive culture of striped bass was investigated by several groups, the results of which are summarized. Significant improvements in larval production efficiency and handling and marking procedures are reported. Recaptures of stocked fish are listed and their probability of recapture is discussed in terms of fish stocked in 1973. Thirty-six female and thirty-five

male Hudson River striped bass were captured by gill net for use as brood stock for artificial propagation. Twenty-four females were successfully ovulated, producing 31,328,000 eggs. The eggs of twenty-one females hatched, producing 16,027,000 larvae, and resulting in a 51 percent hatch compared with 40 percent in 1973.

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NBIP ACCESSION NUMBER: NY/114

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INVESTIGATOR(S): Majors, J.T.; Cowherd, G.
AFFILIATION: Texas Instruments Inc.
TITLE: Hudson River Ecological Study in the Area of Indian Point
PURPOSE: Evaluation of effects of continued use of once-through cooling systems at the Indian Point Nuclear Generating Station.
SPONSOR(S): Texas Instruments Inc.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Annual changes in species composition and relative abundance of species in benthic communities related to annual differences in freshwater flow and salt water intrusion.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; marine; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: MORONE SAXATILIS; MORONE AMERICANA; ALOSA SAPIDISSIMA; MICROGADUS TOMCOD
ADDED KEYWORDS: benthic organisms; white perches; striped basses; atlantic tomcods; nuclear power plants; thermal effluents
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; harvest; immigration; mortality; migratory patterns; natality; numbers; physiology; reproduction; sex; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): beach seines; trawls; powerplant screens; traps; benthic dredges
NUMBER OF SAMPLING SITES: 25
SAMPLING FREQUENCY: daily; weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Westchester County; Putnam County; Orange County; Rockland County; Hudson River
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: FORTRAN IV
STATISTICS EMPLOYED: analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis;

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non-linear estimation; modeling, deterministic; modeling, stochastic
 ABSTRACT: Preliminary analyses of data collected on the benthos in the vicinity of Indian Point and of physiological and behavioral data relative to the thermal tolerances and preferences of white perch and striped bass are available. The relationships of temperature and conductivity to the abundance of selected species of fishes are graphically presented. Growth, length frequency, fecundity, age composition, age at maturity, and condition of striped bass, white perch, and Atlantic tomcod are discussed as well as movement of large (most >500 mm TL) striped bass tagged in the Hudson River. The potential operational impact of Indian Point Unit 2 is estimated using methods previously developed. Variation of physical and chemical parameters in the vicinity of Indian Point is analyzed, particularly with reference to the location and movement of saline waters in the Hudson River estuary.

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 Rt. 3065
 New York, NY 10003
 TELEPHONE: (214) 238-3444
 NBIP ACCESSION NUMBER: NY/118

<644>

INVESTIGATOR(S): Malone, T.C.
 AFFILIATION: Dept. of Biology, City College of New York; Lamont-Doherty Geological Observatory, Columbia University
 TITLE: Phytoplankton Productivity in the Lower Hudson Estuary and New York Bight
 PURPOSE: To study environmental regulation of phytoplankton productivity, estuarine-coastal zone interactions, and environmental impact of sewage disposal and ocean dumping.
 SPONSOR(S): NOAA
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1973
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Phytoplankton growth rates are regulated by light, energy, and temperature. Phytoplankton accounts for 40 percent of organic carbon input, but no effect of ocean dumping found in apex of New York Bight.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
 LEVEL(S) OF STUDY: population; community; region
 MANAGEMENT FOCUS: environmental impact; fisheries; pollution control; water quality
 ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; plants; microorganisms; algae
 ADDED KEYWORDS: zooplankton; phytoplankton; waste water; carbon cycle; ocean dumping; primary productivity; secondary

productivity; sewage treatment
 PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; growth; habitat characterization; harvest; physiology; productivity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field collections; nets
 NUMBER OF SAMPLING SITES: 16
 SAMPLING FREQUENCY: continuous; seasonal; weekly; monthly
 SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
 STUDY SITE(S): NY; NJ
 GEOGRAPHIC DESCRIPTION: Hudson Estuary; New York Bight; Hudson River
 TYPE OF DATA: raw; reduced; summarized; literature-derived
 COMPUTER AND LANGUAGE: PDP-10; FORTRAN IV
 STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis; modeling, deterministic
 ABSTRACT: None provided.
 ADDRESS: Dr. T. Malone
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 New York, NY 10031
 TELEPHONE: (212) 690-8434
 NBIP ACCESSION NUMBER: NY/087

<645>

INVESTIGATOR(S): Nyland, R.D.
 AFFILIATION: State University of New York, College of Environmental Science and Forestry; Applied Forestry Research Institute
 TITLE: Effects of Different Timber Harvesting Methods and Ameliorative Measures Applied to Soften Environmental Impact of Logging
 PURPOSE: To study the effects of different logging and harvesting methods upon residual vegetation, animals, soil, logging costs, and reaction of vicwers.
 SPONSOR(S): FS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1972
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: unknown
 CHANGE(S) OBSERVED: Reduction in stocking of tree species following logging. Diversity and numbers of singing birds increased.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
 LEVEL(S) OF STUDY: organism; population; community
 MANAGEMENT FOCUS: environmental impact; wildlife; forestry; recreation
 ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; birds; mammals; plants; vascular plants; trees
 ADDED KEYWORDS: logging; regeneration; management measures; species diversity; habitat modification
 PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; harvest; numbers; reproduction; residues
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): interview
 NUMBER OF SAMPLING SITES: 3
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils
 STUDY SITE(S): NY
 GEOGRAPHIC DESCRIPTION: Oneida County; Cortland County; Hamilton County

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TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; mode; percentile;
analysis of variance;
regression/correlation analysis;
contingency table analysis; non-parametric
analysis

ABSTRACT: Four methods of harvest were
applied to mature hardwood stands at three
locations. The effects upon residual
trees, tree regeneration, singing birds,
mammals, and other animals was studied.
The effects upon soil were measured. The
costs and productivity of logging crews
were evaluated. Also, the reaction of lay
persons was obtained. The data will show
effects of the four harvesting methods and
the reaction of people to what they saw.
The results should provide guidance for
planning harvest where multiple use
management is the goal.

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NBIF ACCESSION NUMBER: NY/014

<646>

INVESTIGATOR(S): Pough, H.F.
AFFILIATION: Ecology and Systematics Dept.,
Langmuir Laboratory, Cornell University
TITLE: The Effect of Environmental Variables
on Amphibian Survival and Reproductive
Success
PURPOSE: To identify environmental stresses
affecting amphibians, especially those
caused or affected by human activity; and
to identify the mechanisms by which the
stresses act and the physiological and
genetic responses of the amphibians to
those stresses.
SPONSOR(S): USDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Failure of reproduction
and extinction of populations of some
ambystomatid salamanders. Probable causes
are land clearing and acid precipitation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
region
MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia
TAXA: AMBYSTOMA SPP; RANA SPP; Hyla spp; BUFO
SPP
ADDED KEYWORDS: salamanders; frogs;
treefrogs; toads; habitat modification;
succession; adaptation; population
dynamics; embryo
PRIMARY PARAMETERS INVESTIGATED: growth;

habitat characterization; mortality;
natality; numbers; reproduction; stress;
toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
laboratory studies; field studies

NUMBER OF SAMPLING SITES: 5

SUPPORTING DATA COLLECTED: climatological
data; hydrological data; soils; water
quality data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Tompkins County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: analysis of variance;
analysis of covariance

ABSTRACT: Acid precipitation appeared to
cause embryonic mortality of spotted
salamanders, which breed in temporary
pools formed in early spring by melted
snow and rain. Many of these pools reflect
the low pH of precipitation in the
northeastern United States. Egg mortality
is low (< 1%) in pools near neutrality,
but high (>60%) in pools more acid than pH
6. Developmental anomalies and the
embryonic stage at which death occurs are
the same in field situations as at
corresponding pHs in laboratory
experiments.

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NBIF ACCESSION NUMBER: NY/088

<647>

INVESTIGATOR(S): Preddice, T.L.
AFFILIATION: New York State Dept. of
Environmental Conservation
TITLE: Water Quality: Macroinvertebrates
Investigations
PURPOSE: To determine water quality and
changes therein of selected New York
State's streams based on benthic
macroinvertebrates and other biological
parameters.
SPONSOR(S): New York Dept. of Environmental
Conservation
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Reduction in quantity of
improved effluents from industry and
municipal sewage treatment plants.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; resource planning; pollution
control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; insects;
microorganisms; fungi; algae
ADDED KEYWORDS: benthic organisms;
stoneflies; mayflies; caddisflies; midges;
waste water; industrial chemicals; species
diversity
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; Ekman grab; Ponar grab;
dip net

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NUMBER OF SAMPLING SITES: between 50 and 220
per year
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated
microorganisms; hydrological data; water
quality data
STUDY SITE(S): NY
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance
ABSTRACT: This macroinvertebrate study is the
biological phase of a program designed to
determine water quality and to detect
changes therein, primarily for important
recreational waters (streams) of New York
State.
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TELEPHONE: (716) 226-2466 ext. 43
NBIP ACCESSION NUMBER: NY/013

<648>
INVESTIGATOR(S): Seischab, F.
AFFILIATION: Dept. of Biology, Rochester
Institute of Technology
TITLE: Community Development in the
Byron-Bergen Swamp
PURPOSE: To determine the
successional-developmental changes in the
Byron-Bergen Swamp.
SPONSOR(S): Rochester Institute of Technology
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Vegetational changes
leading from a bog habitat to a
Thuja-dominated bog forest.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; wetland
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: endangered species;
forestry, resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; non-vascular
plants; mosses
ADDED KEYWORDS: succession
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth; habitat
characterization; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous; seasonal
SUPPORTING DATA COLLECTED: associated flora;
hydrological data; soils; terrain
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Genesee County; Black
Creek; Swamp Road; Byron-Bergen Swamp
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: XEROX Sigma VI; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministic
ABSTRACT: The vegetation of the Byron-Bergen
Swamp was quantified and ordinated. Direct
gradient analysis has led to the

determination of probable successional
changes taking place in the swamp.
Ordinations have been correlated to
differences in the soils parameters, thus
giving some insight as to the changes
which are taking place in both the
vegetation and the soils as the community
is developing.

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NBIP ACCESSION NUMBER: NY/084

<649>
INVESTIGATOR(S): Sobacki, L.P.
AFFILIATION: State University of New
York-Oneonta
TITLE: Eutrophication Processes in Otsego Lake
PURPOSE: To determine changes in Otsego Lake
which are associated with the
eutrophication process and to utilize data
to recommend control measures for slowing
eutrophication.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An increased abundance of
sestonic materials and biological
productivity.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: eutrophication; management
measures; nutrients; population effects;
primary productivity
PRIMARY PARAMETERS INVESTIGATED: biomass;
productivity
NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Otsego County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Physical, chemical and biological
data were collected from Otsego Lake to
measure eutrophication changes resulting
from cultural impact. Data were usually
procured on an irregular basis, however,
annual surveys were being conducted on a
specific date. Biological data in this
study included survey of the
phytoplanktonic components in which
biomass via gravimetric and chlorophyll
extraction were determined. Productivity
of the phytoplankton was assessed via the
carbon-14 method. Nutrient budgets were
also estimated. Data will be used to
direct management efforts in the lake
watershed to inhibit the eutrophication
process.
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TELEPHONE: (607) 431-3703
NBIP ACCESSION NUMBER: NY/034

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Standard Federal Region 2
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INVESTIGATOR(S): Stewart, M.M.
AFFILIATION: Dept. of Biological Sciences,
State University of New York-Albany
TITLE: Competitive Interaction Among
Populations of RANA CLAMITANS, RANA
CATESBEIANA, and RANA SEPTENTRIONALIS
PURPOSE: To monitor the three species as they
occur in various combinations in ponds in
the Adirondack Mountains, especially
around Cranberry Lake, St. Lawrence County.
SPONSOR(S): SUNY Research Foundation
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Minor fluctuations of
RANA SEPTENTRIONALIS and RANA CATESBEIANA
remained constant, and major fluctuations
of RANA CLAMITANS occurred.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; mountain; aquatic;
freshwater; lake
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia
TAXA: RANA SEPTENTRIONALIS; RANA CLAMITANS;
RANA CATESBEIANA
ADDED KEYWORDS: mink frogs; green frogs;
bullfrogs; frogs; population effects; sex
ratio; feeding habits; census
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; emigration; habitat
characterization; home range size;
natality; numbers; sex; size/weight;
territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark-recapture; census
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: St. Lawrence County;
Franklin County; Essex County; Herkimer
County; Hamilton County; Warren County;
Cranberry Lake; Raquette Pond; Saranac
Pond; Dexter Pond; Titus Pond; Harrisburg
Pond; Fourth Pond; Adirondack Mountains
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Populations of the three species
were surveyed 1968-71 at Woodh Pond,
Cranberry Lake, St. Lawrence County, to
determine population structure, annual
growth rate, and sex ratio. Stomach
analyses were made to determine overlap in
food. Feeding behavior of the mink frog
was studied by Kramek. In order to
determine whether the presence of the
bullfrog was inhibiting presence of mink
frog, numerous ponds were surveyed in
various parts of the Adirondacks.
REFERENCES: Stewart and Sandison, 1972
ADDRESS: Dr. Margaret M. Stewart
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State University of New York-Albany
1400 Washington Ave.
Albany, NY 12222
TELEPHONE: (518) 457-8271

NBIP ACCESSION NUMBER: NY/108

<651>

INVESTIGATOR(S): Storch, T.A.
AFFILIATION: State University of New York
TITLE: Chautauqua Lake Algal Studies
PURPOSE: Investigation of algal numbers,
types, and metabolism in Chautauqua Lake
and determination of factors affecting
their presence and change.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Phytoplankton communities
have changed since last studied in 1937 in
that diatoms are no longer dominant
throughout year.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: fisheries; indicator
species; recreation; pollution control;
water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: phytoplankton; chlorophylls;
eutrophication; diatoms; nutrients;
population effects; habitat modification
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat
characterization; numbers; physiology;
productivity
NUMBER OF SAMPLING SITES: 6-8
SAMPLING FREQUENCY: weekly; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; atmospheric chemistry;
climatological data; hydrological data;
water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Chautauqua County;
Chautauqua Lake
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
non-parametric analysis
ABSTRACT: None provided.
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State University College
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TELEPHONE: (716) 673-3375
NBIP ACCESSION NUMBER: NY/011

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INVESTIGATOR(S): Sze, P.
AFFILIATION: Dept. of Biology, State
University of New York
TITLE: Phytoplankton Monitoring Program on
Onondaga Lake, New York
PURPOSE: To follow quantitative changes in
phytoplankton species seasonally and
annually and to relate changes in
phytoplankton abundance and composition to
environmental conditions.
SPONSOR(S): Dept. of Public Works, Onondaga
County
SPONSOR CATEGORY: county government
DATE OF INITIATION: 1968

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NBIP ACCESSION NUMBER: NY/003

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PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in phytoplankton composition with reduction in phosphorus concentrations.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; fungi; algae

TAXA: CHLOROPHYCEAE, 26 GENERA; EUGLENOPHYCEAE, 3 GENERA; CHRYSOPHYCEAE, 2 GENERA; DIATOMEACEAE, 22 GENERA; DINOPHYCEAE, 3 GENERA; CHRYSTOPHYCEAE, 2 GENERA; MYXOPHYCEAE; RHIZOFIDIUM PLANKTONICUM; ALGAE, 50 GENERA

ADDED KEYWORDS: blue-green algae; diatoms; green algae; euglenoids; golden-brown algae; phosphorus; algal blooms; copper; waste water; industrial chemicals; chromium; eutrophication

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Van Dorn sampler; Kemmerer sampler; millipore filter; Whipple disk micrometer

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Onondaga County;

Onondaga Lake

TYPE OF DATA: raw; summarized

ABSTRACT: Onondaga Lake is a heavily polluted, saline lake near Syracuse, New York. Since completion of a detailed study of this lake in 1969, lake conditions, including phytoplankton populations, have been monitored. A ban on phosphorus in detergents in Onondaga County (1971) and throughout New York State (1972) resulted in reduction of inorganic phosphorus concentrations in the surface waters of Onondaga Lake by approximately 50 percent. A change in the summer phytoplankton was observed in 1972 and the next 2 years. Prior to 1972, flagellates and diatoms were common in spring. During summer, green algae (Chlorococcales) and blue-green algae were dominant in the lake. Before 1972, nitrogen and phosphorus were present in sufficient quantities to support observed growths of phytoplankton. Silica was depleted during diatom blooms. During 1972 to 1974 green algae persisted in large numbers throughout the summer and blue-green algae were absent or rare. Absence of blue-green probably did not result from direct limitation of their growth by low phosphorus levels.

REFERENCES: Sze and Kingsbury, 1972; Sze, 1975

ADDRESS: P. Sze

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<653>

INVESTIGATOR(S): Webster, D.A.

AFFILIATION: Dept. of Natural Resources,

Cornell University

TITLE: Dynamics and Management of Adirondack Fish Populations

PURPOSE: Preservation of wild native strains of brook trout, use in management, role of nontrout species in management, and general ecological relationships in regional aquatic ecosystems.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1951

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A decrease in fish faunas in past 2 decades, presumably due to increased acidification of precipitation.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; streams; lake

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: endangered species; fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: SALVELINUS FONTINALIS; SALVELINUS MAYNARDI

ADDED KEYWORDS: brook trouts; lake trouts; acid rain; logging; whitefishes; sunfishes; species introduction; trouts

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; growth; habitat

characterization; harvest; mortality;

migratory patterns; numbers; reproduction;

sex; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

trap nets; electrofishing gear; angling

NUMBER OF SAMPLING SITES: 10-20

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated fauna;

water quality data

STUDY SITE(S): NY

GEOGRAPHIC DESCRIPTION: Hamilton County;

Kerkman County; Franklin County

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of

variance; analysis of covariance;

regression/correlation analysis;

contingency table analysis; non-parametric

analysis; modeling, deterministic

ABSTRACT: Under typical primitive conditions, upland Adirondack fish populations contained only one or two piscivorous species: brook and/or lake trout. Beyond this, the fauna consisted of two species of suckers, finescale and white; round whitefish, locally called frostfish; brown bullheads; pumpkinseed sunfish; several species of minnows and a sculpin. striking differences exist in species diversity above and below existing natural barriers, with the additional species made up of a typical "lowland" ichthyofauna. The distribution of these species was determined following the melting of the Laurentian ice sheet and the upland groups may be considered as glacial relicts. Because of superior abilities to ascend waterfalls or unique conditions during the glacial retreat, brook trout were the only species to find passage into some waters;

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unpassably high barriers or other reasons caused other lakes to remain unpopulated. With notable exceptions, the entire assemblage of relict species was present at lower elevations although round whitefish were established primarily in the large lake systems.
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Ithaca, NY 14850
TELEPHONE: (607)256-6578
NBIP ACCESSION NUMBER: NY/109

<654>

INVESTIGATOR(S): Wood, K.G.
AFFILIATION: State University of New York
TITLE: Environmental Impact of Coal Ash on Tributary Streams and Nearshore Waters of Lake Erie
PURPOSE: To study trace elements cycling from fly ash dumps to aquatic biota.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Iron and manganese have been identified in higher concentrations in aquatic biota below the fly ash dump in a small stream.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta
TAXA: STICTOCHIRONOMUS SPP; CONCHAPELOPIA SPP; CHIRONOMUS SPP; EPHHEBERA SPP;

HABROPHLEBIODES SPP; PARALEPTOPHELEBIA SPP; CAENIS SPP; BAETIS SPP; STENOHEMA SPP
ADDED KEYWORDS: fly ash; coal; heavy metals; trace elements; fossil fueled power plants; decapods; chironomids; ephemeropterans
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; mortality; numbers; physiology; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; Surber sampler; artificial substrates
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; soils; water quality data
STUDY SITE(S): NY
GEOGRAPHIC DESCRIPTION: Chautauqua County; Lake Erie
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Determination is being made of the movement of trace elements derived from coal wastes within the geochemical pool (wind, stream, and lake transport of particulate coal ash; and release of leachates to streams or groundwater). Also studied are trace element burden in the biological pool; development of biological indicators for predicting ecological effects of energy related pollutants; and persistence of trace elements in biota, physiological, and behavioral effects. Leachate and runoff from coal wastes at landfill and dump sites in Chautauqua County, N.Y. may enter streams, groundwater, and Lake Erie at several sites on the lake plain.
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State University College
Fredonia, NY 14063
TELEPHONE: (716) 673-3280
NBIP ACCESSION NUMBER: NY/072

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NORTH CAROLINA
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Fish and Wildlife Service Region 4
(SEE ALSO 236, 238, 279, 283, 409, 502, 610,
772, 859)

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INVESTIGATOR(S): Arvey, M.D.
AFFILIATION: Dept. of Biology, University of
North Carolina
TITLE: Vertebrate Animal Surveys
PURPOSE: Impact statement of population
changes as environment is modified.
SPONSOR(S): Local engineering firms
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Mammal, bird, reptile,
and amphibian populations declined
temporarily.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: environmental impact;
wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; birds; mammals
ADDED KEYWORDS: habitat modification;
management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: home range
size; numbers
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Mecklenburg County;
Cleveland County
TYPE OF DATA: summarized; literature-derived
ABSTRACT: None provided.
ADDRESS: Dr. Dale Arvey
Biology Dept.
University of North
Carolina-Charlotte
Charlotte, NC 29213
TELEPHONE: (704) 597-2315
NBIP ACCESSION NUMBER: NC/023

<656>

INVESTIGATOR(S): Budnitz, N.A.
AFFILIATION: Dept. of Zoology, Duke University
TITLE: The Impact of Intermittent Flooding on
Birds
PURPOSE: To study the effects of intermittent
flooding on birds living in an alluvial
forest.
SPONSOR(S): COF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decrease in
ground-nesting and/or ground-feeding
species in heavily flooded areas.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: BIRDS, 85 SPECIES
ADDED KEYWORDS: impoundments; habitat
modification; siltation; defoliation;
nesting sites; floods
PRIMARY PARAMETERS INVESTIGATED:

distribution; home range size; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
breeding census; winter census
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Durham County;
Chatham County; New Hope Creek; Morgan
Creek; Little Creek; B. Everett Jordan Dam
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: Five study sites were chosen for
censusing the bird populations of parts of
the B. Everett Jordan Lake Project in an
attempt to assess the impact of
intermittent flooding due to operation of
the dam for flood control. The results of
the first year showed no declines in any
species observed. The winter bird
populations also seemed to show no marked
deviation from previous censuses. The
flooding since 1971, occurring most often
in winter, seems to have had no
deleterious effects. However, the
progressive destruction of vegetation and
deposition of silt in the habitats which
experience maximum inundation may have
severe effects on the breeding birds
during subsequent years as food and
nesting sites are reduced. Observations in
1975 show a correlation between reduced
breeding success of 3 ground feeding
species and the disappearance of ground
vegetation.
REFERENCES: Budnitz, 1975
ADDRESS: Norman A. Budnitz
Zoology Dept.
Duke University
Durham, NC 27706
TELEPHONE: (919) 684-2507
NBIP ACCESSION NUMBER: NC/068

<657>

INVESTIGATOR(S): Chapoton, R.B.
AFFILIATION: NMFS
TITLE: Fishery Analysis: Menhaden, Atlantic
PURPOSE: To monitor, analyze, assess, and
predict purse seine catches of menhaden
along the Atlantic coast of the U.S.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A decline in population
abundance was shown by change in age
distribution and purse seine catches.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: BREVOORTIA TYRANNUS
ADDED KEYWORDS: atlantic menhaden; population
effects; juveniles; recruitment;
management measures; models
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; immigration; kill; mortality;
migratory patterns; natality; numbers;
reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sampling landings; purse-seine
SAMPLING FREQUENCY: seasonal; daily

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STUDY SITE(S): MA; NJ; VA; NC; FL
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
non-linear estimation; modeling,
deterministic

ABSTRACT: Task personnel monitor the purse-seine fishery for age and size of menhaden at all active reduction plants from Maine to Florida. They collect daily catch records of each active vessel, study population changes in space and time in the fishery, determine fishing efforts and estimate CPUE, generate stock-yield models, determine stock recruitment, make estimates of MSY, survey along the coast for juvenile distribution and determine yearly changes in relative abundance, carry out age and growth studies, estimate mortality and survival rates, determine migrations of marked juvenile menhaden (via numbered ferromagnetic tags), estimate the time and place marked juveniles are recruited into the fishery 2 and 3 years later, and collect recovered juvenile and adult tags at all active reduction plants. Reports of the findings and present status reports will be prepared, and forecasts issued of expected landings one year in advance.

ADDRESS: Dr. Robert B. Chapoton
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NOAA-NMFS
Rivers Island
Beaufort, NC 28516
TELEPHONE: (919) 728-4594 ext. 225
NBIP ACCESSION NUMBER: NC/007

<658>

INVESTIGATOR(S): Cullen, M.
AFFILIATION: Carolina Power and Light
Environmental Assessment Unit
TITLE: Environmental Monitoring Related to
the Construction of Shearon Harris Nuclear
Power Plant Units 1, 2, 3, and 4
PURPOSE: To conduct pre-operational and
operational biological surveys and to
monitor phytoplankton, zooplankton, and
especially periphyton in a river.
SPONSOR(S): Carolina Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No major changes have
been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
indicator species; water quality; power
generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: thermal effluents;
periphyton; nuclear power plants; diatoms;
species diversity
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat

characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
periphytometers; Wisconsin plankton net;
Sedgwick-Rafter cell
NUMBER OF SAMPLING SITES: 16
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; water
quality data

STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Wake County; Chatham
County; Cape Fear River; Buckhorn Creek
TYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
non-parametric analysis

ABSTRACT: In the Cape Fear River monitoring,
attached algae (especially the diatom
community) assumes great importance. The
presence of significant quantities of
attached algae on natural or artificial
substrates is strong evidence of the
suitability of the water for the growth of
organisms collected at a station.
Periphyton samplers are placed at 16
sampling sites and collection occurs in
conjunction with benthos and water
chemistry sampling. Phytoplankton and
zooplankton are sampled from one transect
located in the future impoundment area.
Analysis of data includes diatom diversity
and variance, abundances, indicator
species, and reference collections. Study
of the periphyton community structure will
be valuable in assessing future
environmental effects.

ADDRESS: Ms. Maureen Cullen
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Tingen Rd.
Apex, NC 27502
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NBIP ACCESSION NUMBER: NC/051

<659>

INVESTIGATOR(S): Dimock, B.V.
AFFILIATION: Wake Forest University
TITLE: A Study of the Incidence and Intensity
of the Bass Tapeworm in Largemouth Bass in
the Belews Creek Reservoir
PURPOSE: To determine the population dynamics
and histopathology of endoparasitic
helminths in largemouth bass and to assess
the impact of thermal effluent on the
host-parasite system.
SPONSOR(S): Duke Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The abundance and
recruitment of tapeworms and copepod
distributions vary seasonally and are
probably affected by thermal effluent.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; recreation;
power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea
TAXA: MICROPTERUS SALMOIDES; PROTOCEPHALUS

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AMBLOPLITIS; NEOECHINORHYNCHUS
CYLINDRATUS; CALANOIDA; CYCLOPOIDA
ADDED KEYWORDS: parasitism; tapeworms;
thermal effects; copepods; centrachids;
largemouth basses; plathyhelminthes;
basses; fossil fueled power plants; coal
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear; Clarke-Bumpus sampler
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Stokes County;
Forsyth County; Belews Lake; Belews Lake
Steam Station
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The population dynamics of the
tapeworm, PROTEOCEPHALUS AMBLOPLITIS, and
the acanthocephalan NEOECHINORHYNCHUS
CYLINDRATUS, within largemouth bass,
MICROPTERUS SALMOIDES, have been assessed
in Belews Lake, North Carolina, a cooling
impoundment for a coal fired steam
generating power plant. Concomitantly, the
diversity and abundance of cyclopoid and
calanoid copepods have been investigated.
Several species of cyclopoid copepods
serve as the first intermediate host for
P. AMBLOPLITIS. In addition to an analysis
of several parameters of the population
dynamics of these parasitic helminths, the
histopathology associated with their
presence in bass has also been
investigated. Ultimately, an analysis of
the impact of thermal effluent on the
host-parasite system within this reservoir
will be affected.

ADDRESS: Dr. Ronald Dimock
Biology Dept.
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Winston-Salem, NC 27109
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NBIP ACCESSION NUMBER: NC/029

<660>

INVESTIGATOR(S): Finn, P.L.
AFFILIATION: Carolina Power and Light Co.
TITLE: Ecological Monitoring of Freshwater
Drainage Canal at Brunswick Steam Electric
Plant, Southport, North Carolina
PURPOSE: To determine biological changes
caused by poor water quality in a canal
and borrow pit area where tidal flow is
restricted by a rock vein at the mouth of
the canal.
SPONSOR(S): Carolina Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Disappearance of benthos
with prolonged dissolved oxygen levels of
less than 1 ppm, but reappearance of
benthos with intrusions of water with
higher dissolved oxygen levels.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; water
quality; power generation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; annelida
TAXA: PARAPRIONOSPION PINNATA; STREBLOSPIO
BENEDICTI; HETEROMASTUS FILIFORMIS
ADDED KEYWORDS: benthic organisms;
channelization
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ponar sampler
NUMBER OF SAMPLING SITES: 11
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Brunswick County;
Brunswick Steam Electric Plant
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean
ABSTRACT: A monitoring program began in the
borrow pit area and the freshwater
drainage canal in July, 1974 after
regulatory agencies expressed concern
about possible poor water quality in the
borrow pit and its effect on the biota. It
was thought that the 13 ft. depth of the
freshwater drainage canal and the rock
vein at its entrance created a potential
for stagnation by restricting flow in the
deep area (25 ft.) of the borrow pit.
Monthly benthos, juvenile and adult fish,
water quality, and water chemistry data
are collected.
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Box 1551
Raleigh, NC 27602
TELEPHONE: (919) 362-8394
NBIP ACCESSION NUMBER: NC/028

<661>

INVESTIGATOR(S): Godwin, W.P.
AFFILIATION: North Carolina Div. of Marine
Fisheries
TITLE: Oyster Rehabilitation - District III
PURPOSE: Rehabilitation of public oyster
resources.
SPONSOR(S): North Carolina Div. of Marine
Fisheries
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in oyster
populations and availability to resource
users.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mollusca; shellfish
TAXA: CRASSOSTREA VIRGINICA
ADDED KEYWORDS: eastern oysters; american
oysters; sediments; oysters; management
measures; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; growth; habitat
characterization; harvest; mortality;
natality; numbers; productivity;
reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
SCT meter; random samples

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NUMBER OF SAMPLING SITES: varies
SAMPLING FREQUENCY: continuous; quarterly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: New Hanover County;
Brunswick County; Onslow County; Pender
County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; percentile
ABSTRACT: Cultch material is placed at
appropriate time in pre-selected areas to
catch oyster "set" and population is
monitored to determine success.
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N 301 Causeway Dr.
Wrightsville Beach, NC 28480
TELEPHONE: (919) 256-3446
NBIP ACCESSION NUMBER: NC/045

<662>

INVESTIGATOR(S): Jeffreys, D. E.
AFFILIATION: Dept. of Biology, East Carolina
University
TITLE: A Study of Some DIONAEA MUSCIPULA
Populations in Carteret County, North
Carolina
PURPOSE: To monitor population changes of
DIONAEA and determine factors causing
changes.
SPONSOR(S): East Carolina University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: With favorable
conditions, venus flytrap populations may
increase by as much as 126 percent per
year. Mean annual growth rate for plots
showing an increase was 61 percent. Five
of 12 plots had decreases. Five plots
were lost due to human activities.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
savanna; wetland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs
TAXA: DIONAEA MUSCIPULA
ADDED KEYWORDS: venus flytrap; habitat
modification
PRIMARY PARAMETERS INVESTIGATED: growth;
numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sample plots
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Carteret County;
Croctetan National Forest
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Plots containing populations of
DIONAEA MUSCIPULA have been established in
Carteret County and counts of the number
of plants are being made twice each year.
ADDRESS: Donald B. Jeffreys
Biology Dept.
East Carolina University

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Greenville, NC 27834

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NBIP ACCESSION NUMBER: NC/064

<663>

INVESTIGATOR(S): Maughan, O. E.
AFFILIATION: Virginia Polytechnic Institute
and State University
TITLE: The Effects of Debris Removal on Fish
and Benthos in Forest Streams
PURPOSE: To evaluate the impact of debris
removal on aquatic ecosystems.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Initial response to
debris removal has been increased numbers
of fish in the debris area.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca
TAXA: SALMO TRUTTA; SALMO GAIARDNERI;
ETHEOSTOMA SWANNANOA
ADDED KEYWORDS: habitat modification;
management measures; brown trouts; rainbow
trouts; darters; trouts; debris removal
PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; distribution; diversity; growth;
habitat characterization; home range size;
immigration; numbers; size/weight;
territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
depletion method; circular sampler
NUMBER OF SAMPLING SITES: 10
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Transylvania County;
Southfork Mills River; Poplar Creek
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis;
non-parametric analysis
ABSTRACT: Debris removal from streams as
practiced by the U.S. Forest Service is
done both as a watershed management tool
and to improve fish habitat by eliminating
blockages and the resulting silt
deposition. By estimating fish and benthos
populations before and after debris
removal in sections of a southeastern
trout stream, this study is testing the
effects of debris removal. The hypothesis
is that where fish are year-around
residents, they require adequate cover as
well as proper spawning substrate.
ADDRESS: O. Eugene Maughan
106 Cheatham Hall
Virginia Polytechnic Institute and
State University
Blacksburg, VA 24061
TELEPHONE: (703) 951-5507
NBIP ACCESSION NUMBER: VA/026

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NORTH CAROLINA
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INVESTIGATOR(S): Olmsted, L.L.
AFFILIATION: Duke Power Company
TITLE: Aquatic Biological Surveillance of Lake Keowee in the Vicinity of Oconee Nuclear Station, SC
PURPOSE: To investigate the influence of a heated water effluent on the biota of Lake Keowee.
SPONSOR(S): Duke Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Densities of phytoplankton, zooplankton, and macroinvertebrates are typically lower in the discharge area than at control sites.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organisms; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; shellfish; annelida
ADDED KEYWORDS: phytoplankton; zooplankton; thermal effluents; algal blooms; habitat modification; population effects; impingement
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; emigration; habitat characterization; kill; mortality; natality; numbers; productivity; reproduction; sex; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): alpha bottles; screen removal; net; plexiglass plates; Peterson dredge; sweep net
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: climatological data; hydrological data; water quality data
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Oconee County; Pickens County; Keowee Lake; Hartwell Lake
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: System 2000
STATISTICS EMPLOYED: mean; mode; percentile; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: A general surveillance of the biotic community of Lake Keowee, South Carolina was initiated in January, 1973. A heated water discharge from Oconee Nuclear Station enters the 7435 ha reservoir. The influence of cooling water use on five categories of organisms has been examined. Periphyton accumulation on plexiglass slides has increased at most stations with time. Phytoplankton densities and biovolumes in the lake's euphotic zone are higher at open lake, control stations than at discharge area stations. Mean standing crops of zooplankton are usually higher at control stations than at discharge area stations from 10 meter to surface net tows. Use of lower strata water for

cooling introduces lower plankton concentrations to the discharge area. Plankton entrainment studies have shown that phytoplankton densities and chlorophyll concentrations are similar between intake and discharge. Zooplankton mortality has been attributed to mechanical stress(es) due to passage in the condenser system. Macroinvertebrate density, diversity, and biomass in the immediate area of the discharge has declined due to substrate change, predation, elevated temperature, and/or toxic substances. Fish impingement studies have shown that threadfin shad, yellow perch, and bluegills are the most commonly impinged species at the intake screens. Impingement rates have been estimated to remove a small fraction of these fish populations of Lake Keowee.

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Duke Power Co.
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Charlotte, NC 28242
TELEPHONE: (704) 875-1381
NBIP ACCESSION NUMBER: NC/101

<665>

INVESTIGATOR(S): Olmsted, L.L.
AFFILIATION: Duke Power Company
TITLE: Perkins Nuclear Station Environmental Monitoring
PURPOSE: To determine the components of the aquatic community of the Yadkin River and its major tributaries in the vicinity of the proposed Perkins Nuclear Station in order to assess the environmental impact.
SPONSOR(S): Duke Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Spatial-temporal changes observed were considerable. This was influenced by the changes in lotic environment.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; radiological; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; crustacea; insecta; microorganisms; algae; protozoa
TAXA: PHYTOPLANKTON, 7 SPECIES; EUCHLANIS; BRACHIONUS; DIPTERA; CHIROMONIDAE; OLIGOCHAETA; POLYPTERIDUM SPP; RHOTANYTARSUS SPP; CHAOBORUS; FORCIPENNIS; CATOSTOMIDAE; CLUPEIDAE; ICTALURIDAE; ICTALURIDAE; CYPRINIDAE; CENTRARCHIDAE; PERCIDAE
ADDED KEYWORDS: catfishes; perches; phytoplankton; diatoms; nuclear power plants; copepods; eladocerans; rotifers; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; bod; distribution; growth; habitat characterization; kill; natality; numbers; reproduction; sex; size/weight; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

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artificial substrates; Kenner bottles;
Van Dorn bottles; Wisconsin nets;
Clarke-Bumpus nets; Surber net; Ponar
nets; Ekman dredges; drift nets;
electrofishing gear; trot lines
NUMBER OF SAMPLING SITES: 14-27
SAMPLING FREQUENCY: seasonal; weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
soils; terrain; water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Yadkin River; Davies
County; High Rock Lake; Dutchman Creek;
Carter Creek
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360-370; FORTRAN;
BASIC; PL/I
STATISTICS EMPLOYED: mean; mode; median;
analysis of variance; analysis of
covariance; regression/correlation
analysis; multivariate analysis;
non-parametric analysis
ABSTRACT: The study area was characterized by
high sediment loads and varying flows
throughout the study. Phytoplankton were
numerically dominated by diatoms, followed
in abundance by green algae, blue-green
algae, euglenoids, yellow-green algae,
cryptomonads, and dinoflagellates. Diatoms
also dominated the periphyton community.
Zooplankton was dominated by rotifers with
cladocerans and copepods found in lower
densities. Rotifers were dominated by the
littoral order Bdelloida. Other littoral
rotifers such as EUCLANIS and BRACHIONUS
were common. Littoral crustacean forms
were found more frequently than those
forms that are characteristically
planktonic. Dominant benthic organisms
from Petersen dredge and Surber samples
were midge larvae and aquatic earthworms.
Invertebrate drift samples were dominated
by the chironomid larvae. Other abundant
drift organisms were caddisfly larvae and
the phantom midge, CHAOBORUS
PUNCTIPENNIS. Cyprinidae and Centrarchidae
were the most common fish families found
in the site area. Other families collected
were Clupeidae, Catostomidae, Ictaluridae,
Poeciliidae, Percichthyidae, and Percidae.
Collections at all stations were variable
throughout the study, resulting from
changes in river conditions.
Ichthyoplankton sampling resulted in few
larval fish in the fall, with the highest
densities found in May 1975. Catostomidae
were the principal component of the larval
samples, followed by Ictaluridae. Small
numbers of Clupeidae, Cyprinidae,
Centrarchidae, and Percidae were found.
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TELEPHONE: (704) 875-1381
NBIP ACCESSION NUMBER: NC/103

<666>

INVESTIGATOR(S): Schwartz, P.J.

AFFILIATION: Institute of Marine Sciences,
University of North Carolina
TITLE: Ecological Study of Fishes, Crabs, and
Shrimps Utilizing the Lower Cape Fear
River, Carolina Beach Inlet, and Adjacent
Ocean
PURPOSE: To evaluate and monitor fish,
shrimp, and crabs inhabiting the lower
Cape Fear in relation to Brunswick Power
Plant of Carolina Power and Light.
SPONSOR(S): Carolina Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None noted to date.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
fisheries; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca;
shellfish
TAXA: FISHES, 150 SPECIES; SHRIMP, 3 SPECIES;
CRABS, 15 SPECIES
ADDED KEYWORDS: shrimp; crabs; nuclear power
plants
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; immigration; mortality;
migratory patterns; numbers; productivity;
reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trawls; gill nets
NUMBER OF SAMPLING SITES: 14
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Brunswick County; New
Hanover County; Cape Fear; Brunswick
Nuclear Power Plant
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: Hewlett Packard; BASIC
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
multivariate analysis
ABSTRACT: We are studying fish, shrimp, and
crabs inhabiting the lower Cape Fear in
relation to Brunswick Power Plant.
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NBIP ACCESSION NUMBER: NC/026

<667>

INVESTIGATOR(S): Stroud, L.H.; Seneca, E.D.
AFFILIATION: Botany Dept., North Carolina
State University
TITLE: An Analysis of the Effects of the
Brunswick Nuclear Power Plant on the
Productivity of SPARTINA ALTERNIFLORA on
Oak Island, Dutchman Creek, Walden Creek,
and Snow's Marshes, Brunswick County,
North Carolina
PURPOSE: To monitor vegetation patterns in
the Oak Island, Dutchman Creek, Snow's

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Marshes and to determine if the power plant has caused any changes in patterns since building or operation began.
SPONSOR(S): Carolina Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
CHANGE(S) OBSERVED: None observed as yet due to nuclear plant operation but destruction of habitat occurred due to building.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; community; ecosystem
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; invertebrates; crustacea; insects; plants; vascular plants; herbs; grasses
TAXA: SPARTINA ALTERNIFLORA; JUNCUS ROEMERIANUS
ADDED KEYWORDS: smooth cordgrasses; black needlerushes; habitat modification; construction
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; habitat characterization; harvest; productivity; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: seasonal; quarterly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; soils
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Brunswick County; Cape Fear River; Brunswick Steam Electric Power Plant; Dutchman's Creek; Oak Island; Walden Creek; Snow's Marsh; Southport
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: This study was initiated to determine the effect of construction and operation of the Brunswick Nuclear Power Plant near Southport, North Carolina on salt marshes in the vicinity. One basic objective of the project is to obtain baseline data on the productivity and distribution of the dominant marsh plants, SPARTINA ALTERNIFLORA (smooth cordgrass) and JUNCUS ROEMERIANUS (black needlerush) in the Dutchman Creek, Oak Island, Walden Creek, and Snow's Marsh areas. The intake and discharge canals and dikes along them were constructed through marshes in these areas. Another phase of the project is designed to determine population densities, distribution patterns, and species diversity of the major marsh fauna and to determine energy flow in the marshes under study. Both pre-operation and post-operation sampling is scheduled for these areas to assess the operational impact of the power plant.
REFERENCES: Seneca, et al, 1975; Seneca, et al, 1974
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NBIP ACCESSION NUMBER: NC/010

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INVESTIGATOR(S): Thayer, G.W.
AFFILIATION: Atlantic Estuarine Fisheries Center
TITLE: Structure and Function of Benthic Communities and Estuarine Ecosystems in Southeastern Coastal Plain Estuaries
PURPOSE: To evaluate the structure of the community in vegetated and unvegetated estuarine habitats and factors regulating the flow of energy in these habitats.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Increases in diversity of grass bed communities with maturity and stability of the substrate.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; plants; vascular plants; herbs; microorganisms; bacteria; algae
TAXA: ZOSTERA MARINA; SPARTINA ALTERNIFLORA
ADDED KEYWORDS: seagrasses; nekton; grass-wrack; eelgrasses; saltwater cord grasses; cord grasses; zooplankton; phytoplankton; benthic organisms; succession; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: biomass; emigration; growth; habitat characterization; harvest; immigration; numbers; productivity; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): benthic sled; bottom samplers; modified Knudsen corer; suction sampler
NUMBER OF SAMPLING SITES: 20,000 grass beds; 30 estuarine
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Carteret County; Newport River estuary-mouth
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis
ABSTRACT: An understanding of the structure and function of estuarine and coastal ecosystems is a prerequisite to the development of rational management strategies for these important systems. The major objective of this research task is to gain not only knowledge of seasonal and areal changes in species composition, abundance and biomass, but also of distribution and flows of energy and materials through trophic levels of the community. Current research is stressing the study of heterotrophic microbes, benthic invertebrates, and nekton populations in the Newport River estuary, Beaufort, North Carolina; and in the immediately adjacent near-shore coastal

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zone. Eight manuscripts have been published this fiscal year by researchers in this task covering marine and estuarine sanctuaries, growth chambers for C(14) labeled SPARTINA, seagrass ecosystems, fish populations in estuarine waters, phytoplankton productivity, effects of larval fish on zooplankton biomass, and influence of harvest techniques on bay scallop and seagrass abundance.

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NBIP ACCESSION NUMBER: NC/042

<669>

INVESTIGATOR(S): Tyler, J.E.
AFFILIATION: North Carolina Div. of Marine Fisheries
TITLE: Fish Species Present on Oceanic Artificial Reefs
PURPOSE: To monitor fish species changes (kind, size, and numbers) at sample stations located on various oceanic artificial reefs by means of creel census.
SPONSOR(S): State of North Carolina
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The individual sizes have increased with time. There was a species diversification noted with time.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 80 SPECIES
ADDED KEYWORDS: seasonal variations; reefs; artificial reefs; habitat modification; management measures
PRIMARY PARAMETERS INVESTIGATED: diversity; harvest; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; fish traps; creel census; SCUBA
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): NC
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Materials are placed on the ocean bottom at selected sites. A monitoring program of SCUBA stations, fish trap stations, and creel censuses are used to monitor fish diversity, numbers, and size with time. Monthly visual and trap data are collected except during winter months. Creel census data are collected three days a week. Reef construction is ongoing and reef composition is continually changing. Bottom visibility, temperatures, and salinities are recorded. Presently the project has five oceanic reefs that are

sampled periodically.

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NBIP ACCESSION NUMBER: NC/036

<670>

INVESTIGATOR(S): Weiss, C.M.
AFFILIATION: Dept. of Environmental Sciences and Engineering, University of North Carolina
TITLE: Belews Lake Monitoring Project
PURPOSE: To monitor environmental and biotic changes in a cooling water lake (pre- and post-steam power station operation).
SPONSOR(S): Duke Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Detailed changes in community structure have been noted as a result of construction and lake water backup.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; annelida; plants; vascular plants; herbs; grasses; non-vascular plants; lichens; microorganisms; fungi; algae
ADDED KEYWORDS: phytoplankton; zooplankton; fossil fueled power plants; benthic organisms; thermal effluents
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; drift net; dip net; sweep net; Petersen dredge; permanent plots
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): NC
GEOGRAPHIC DESCRIPTION: Rockingham County; Stokes County; Guilford County; Forsyth County; Belews Lake; Belews Creek Steam Station
COMPUTER AND LANGUAGE: IBM OS/360; PL/1; FORTRAN IV
STATISTICS EMPLOYED: mean
ABSTRACT: In the second year of observation of Belews Lake and the streams draining into it, many of the running water environments changed to standing water systems as the filling lake rose nearly 30 feet. As the lake filled and flooded surrounding land, these areas were quickly invaded by benthic organisms. The changing characteristics of the benthic organisms throughout the lake appear to be more directly related to the changing nature of the bottom materials than to any other environmental factor.
REFERENCES: Weiss, et al, 1972; Weiss, et al, 1974
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NORTH CAROLINA
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NBIP ACCESSION NUMBER: NC/093

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NORTH DAKOTA
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INVESTIGATOR(S): Cassel, J.P.
AFFILIATION: Zoology Dept., North Dakota State University
TITLE: Bird Communities in North Dakota
PURPOSE: To determine the population fluctuations in avian communities in floodplain deciduous forests, shelter belts, and wetlands.
SPONSOR(S): North Dakota State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1951
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Bird communities (both breeding and winter) reflect successional and age changes of their plant matrix, but often change more slowly than the plant community.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland; wetland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
ADDED KEYWORDS: succession; population effects; habitat modification; shelterbelts; density
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Audubon cooperative breeding bird counts; winter bird count methods
NUMBER OF SAMPLING SITES: approximately 48
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated fauna; climatological data; terrain
STUDY SITE(S): ND; MN
GEOGRAPHIC DESCRIPTION: Cass County; Barnes County; Dunn County; Bottineau County; Clay County; Red River; Cheyenne River; Ilo Lake; Astabula Lake
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Twenty-five years of study of varied North Dakota communities resulted in identification of diverse avian communities and their changes. Some have been single season comparative studies as in Dunn County, 1975, one a 20 year winter study of a floodplain deciduous forest along the Red River, and a 5 year shelterbelt study.
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NBIP ACCESSION NUMBER: ND/009

<672>

INVESTIGATOR(S): Goetz, R.
AFFILIATION: Botany Dept., North Dakota State University
TITLE: Range Improvement by Means of Chemical and Mechanical Treatments
PURPOSE: To observe changes in species composition, soil nutrient levels, and

water use of 12 different fertilizer treatments and interseeded native range.
SPONSOR(S): North Dakota Agricultural Experiment Station
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Major shifts in plant species have occurred from shortgrass to midgrass (cool season) vegetation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: range; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs; grasses
TAXA: AGROPYRON SMITHII; STIPA COMATA; BOUTELOUA GRACILIS; CAREX PENNSYLVANICA; ARTEMISIA FRIGIDA; ARTEMISIA LUDOVICIANA
ADDED KEYWORDS: sedges; sagebrush; prairie sageworts; management measures; species introduction; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; growth; harvest; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): clipping
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data; soils
STUDY SITE(S): ND
GEOGRAPHIC DESCRIPTION: Stark County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; analysis of variance; multivariate analysis
ABSTRACT: Fertilization and interseeding of native rangeland in western North Dakota was initiated in 1969 and continued through the 1974 growing season. Fertilizer treatments consisted of a one time nitrogen application (spring 1970) of 200, 300, and 400 lbs./acre. Every year treatments included 67 and 100 lbs. N/acre, 67 lbs. N + 50 P, 67 lbs. N + 50 P + 200 lbs. K/acre, 50 lbs. P/acre, and 200 lbs. K/acre. Nitrogen alone is applied at 100 lb/acre at biennial intervals as another treatment. Other parameters measured by treatment at regular soil depths and intervals are available soil moisture and N, K and P, protein content of selected native grass species, production, and species composition changes. Production was considerably above average in the 1974 season. The 67 N, 100 N, 50 P + 67 N and 50 P + 67 N + 200 K/acre treatments are the highest producers and compare favorably with the single application, 300 and 400 N/acre plots. Interseeded grass and legume species were studied. Three species of alfalfa were successfully established and increased production over check plots by more than 100 percent. Somewhat lower results were observed from interseeding of smooth bromegrass (BROMUS INERMIS). Production from plowing alone was nearly as good as from interseeded bromegrass. The fertilizer and interseeding studies will be continued in the 1975 growing season.
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State University Station
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NBIP ACCESSION NUMBER: ND/001

<673>

INVESTIGATOR(S): Kannowski, P.E.
AFFILIATION: Institute for Ecological
Studies, University of North Dakota
TITLE: Entomofauna of the Vicinity of the
Leland Olds Power Plant, North Dakota
PURPOSE: To establish the species diversity,
seasonal distribution, and relative
populations of the insects in the vicinity
of the Leland Olds Power Plant site in
west-central North Dakota.
SPONSOR(S): Basin Electric Power Cooperative
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Species diversity and
seasonal distribution varied and will be
used as baselines for environmental impact
of power plant stack effluents.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insects
ADDED KEYWORDS: fossil fueled power plants;
air pollution; species diversity; coal
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
random sweeps
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: monthly
STUDY SITE(S): ND
GEOGRAPHIC DESCRIPTION: Mercer County; Oliver
County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: This project involves intensive
collecting of the insects inhabiting three
sites near the Leland Olds Power Plant
near Stanton, North Dakota. In addition to
the specimens collected, data recorded
includes type of plant community, period
of occurrence, estimated abundance, and
limitations of distribution.
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TELEPHONE: (701) 777-2051
NBIP ACCESSION NUMBER: ND/014

<674>

INVESTIGATOR(S): Kannowski, P.E.
AFFILIATION: Institute for Ecological
Studies, University of North Dakota
TITLE: Effects of a Mid-Summer Flood on the
Floodplain Biota of the Red River Valley,
North Dakota and Minnesota
PURPOSE: To determine the impact of a

prolonged flood in early July, 1975, upon
the soil fauna and vegetation of the
floodplain forest of the Red River Valley
of the North.

SPONSOR(S): University of North Dakota
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There have been species
and population changes, in conjunction
with reforestation and revegetation of the
floodplain.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; invertebrates; insects; annelids;
plants; vascular plants; trees; shrubs;
herbs; grasses
TAXA: ACARINA; CHELONITHIDA; ANNELIDA;
FORMICIDAE; COLLEMBOLA; COLEOPTERA; PROTURA
ADDED KEYWORDS: collembolans; proturans;
acarines; chelonithidans; coleopterans;
floods; revegetation; mites; springtails;
ticks; habitat modification; species
composition; succession; maps
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats; augers; transects; Tullgren
funnel apparatus
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; soils
STUDY SITE(S): ND; MN
GEOGRAPHIC DESCRIPTION: Red River Valley
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: Heavy rains in late June and early
July of 1975 caused prolonged flooding in
the valley of the Red River of the North,
North Dakota and Minnesota. The effects of
the flood upon the vegetation and soil
fauna are being studied to determine the
changes in species composition and
populations that occurred, and to
determine what the succession of organisms
will be over the next 5-10 years on the
disturbed environment of floodplain. On
each study site a transect from the river
to the top of the floodplain terraces is
laid out and 4-5 100 sq meter quadrats
established along the transect to
represent the diversity of the forest
vegetation and the variation in
topography. The vegetation in each quadrat
is being mapped. In addition, the trees
are being dated by increment boring. The
soil fauna is being sampled by soil auger
at sites adjacent to each quadrat and the
organisms extracted by use of the modified
Tullgren funnel apparatus.
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NBIP ACCESSION NUMBER: ND/015

NORTH DAKOTA
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INVESTIGATOR(S): Peterka, J.J.
AFFILIATION: North Dakota State University
TITLE: Productivity of Phytoplankton and Quantities of Zooplankton and Bottom Fauna in Relation to Water Quality of Lake Ashtabula Reservoir, North Dakota
PURPOSE: To relate primary production and water quality to standing crops of zooplankton and bottom fauna.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Eutrophication is expected to increase in an already eutrophic lake as a result of receiving water with increased dissolved solids from farmland runoff and from a highly saline lake.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta; microorganisms; algae
TAXA: ZOOPLANKTON, 22 SPECIES; ALGAE, 112 SPECIES; MOLLUSCA, 8 GENERA; ANNELIDA, 2 GENERA; POTAMOGETON SPP; DIPTERA; EPHEMEROPTERA; PHYTOPLANKTON, 112 SPECIES
ADDED KEYWORDS: impoundments; eutrophication; benthic organisms; primary productivity; secondary productivity; phytoplankton; zooplankton; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Ekman dredge; Clarke Bumpus sampler; Van Dorn sampler
NUMBER OF SAMPLING SITES: 1
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): ND
GEOGRAPHIC DESCRIPTION: Barnes County; Sheyenne River; Ashtabula Lake
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; analysis of variance; multivariate analysis
ABSTRACT: The kinds and amounts of benthic invertebrates in Lake Ashtabula, a 20-year-old eutrophic reservoir in southeastern North Dakota, were recorded at a single station located 3.2 km N of the dam. The average standing crops of benthic invertebrates in the sampling station collected during April, June and August 1967 were 6.4, 8.2 and 7.1 g per sq. meter, respectively, and 1831, 2622 and 1295 individuals per sq. meter. Organisms in the 0-3 m depth zone accounted for 28 percent by number and 53 percent by weight of all organisms present in the study area from April to August; 56 percent by number and 37 percent by weight were in the 3-8 m depth zone; and 16 percent by number and 9 percent by weight were in the 8-12 m depth zone. The quantity and kinds of its benthic invertebrates indicate Lake Ashtabula is eutrophic when compared with data

available from other lakes that are also unstratified during open-water periods.
REFERENCES: Peterka, 1970; Peterka, 1972
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NBIP ACCESSION NUMBER: ND/008

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INVESTIGATOR(S): Shubert, L.E.
AFFILIATION: University of North Dakota
TITLE: Investigations of the Algal Growth Potential of Devils Lake, North Dakota
PURPOSE: Collect base-line data on the primary productivity of Devils Lake using the bioassay technique and determine the effect of Garrison Diversion waters (freshening effect) on algal growth.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: This lake has received sewage effluent for the past two years resulting in algal blooms (MICROCYSTIS and APHANIZOENON), an increase in phosphorous, and a decrease in transparency. Bioassays confirm the high productivity.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; community; ecosystem
MANAGEMENT FOCUS: recreation; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; fish; birds; invertebrates; crustacea; insecta; plants; vascular plants; trees; herbs; microorganisms; viruses; bacteria; fungi; algae; protozoa
TAXA: APHANIZOENON FLOS-AQUAE; MICROCYSTIS AERUGINOSA; COELOSPHAERIUM SP; OSCILLATORIA SP; CHAETOCEROS ELMOREI; CYCLOTELLA BODANICA; ENTEROMORPHA PROLIFERA; CLADOPHORA GLOMERATA; ANKISTRODESUS FALCATUS; CHLORELLA VULGARIS; CHLAMYDOMONAS SP; EUGLENA ELONGATA; ANBYSTOMA TIGRINUM; ALGAE, 43 SPECIES
ADDED KEYWORDS: eutrophication; algal blooms; primary productivity; waste water
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; physiology; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Beta plus bottles; Secchi disc
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated microorganisms; hydrological data; water quality data
STUDY SITE(S): ND
GEOGRAPHIC DESCRIPTION: Ramsey County; Devils Lake; Main Bay; Creel Bay
TYPE OF DATA: raw; summarized; literature-derived
STATISTICS EMPLOYED: mean; percentile; analysis of variance; multivariate analysis
ABSTRACT: A field and laboratory study of a highly saline and eutrophic lake was conducted to determine baseline information on its chemical, physical, and biological properties and to "predict" the effect of Garrison Diversion water

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(freshening effect) on primary
productivity by the use of algal bioassay
tests.

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NBIP ACCESSION NUMBER: ND/004

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INVESTIGATOR(S): Tripp, L.A.
AFFILIATION: North Dakota State Game and Fish
Dept.
TITLE: Tree Squirrel Population Data
PURPOSE: To determine annual North Dakota
tree squirrel harvest, hunter success,
number of hunting trips, and trends in
squirrel hunting pressure.
SPONSOR(S): North Dakota State Game and Fish
Dept.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1976
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tree squirrel harvest and
number of huntings has been increasing in
recent years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; forestry;
recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees
TAXA: SCIURUS NIGER; TAMIASCIURUS HUDSONICUS;
SCIURUS CAROLINENSIS
ADDED KEYWORDS: fox squirrels; red squirrels;
gray squirrels; squirrels; agriecosystems;
population effects
PRIMARY PARAMETERS INVESTIGATED: age;
harvest; kill; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
questionnaires
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): ND
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: non-linear estimation
ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: ND/020

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INVESTIGATOR(S): Tripp, L.A.
AFFILIATION: North Dakota State Game and Fish
Dept.
TITLE: Ringneck Pheasant Population Data
W-67-R Study B-I
PURPOSE: To develop annual harvest
recommendations for ringneck pheasants in
North Dakota that will result in the
greatest sustained use of the pheasant
resource.
SPONSOR(S): North Dakota State Game and Fish
Dept.
SPONSOR CATEGORY: state government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Over a long term, there
has been a general decline in pheasant
populations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland; wetland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: PHASIANUS COLCHICUS
ADDED KEYWORDS: pheasants; ring-necked
pheasants; management measures
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; kill; mortality;
numbers; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standardized census techniques
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): ND
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; multivariate
analysis; non-linear estimation
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: ND/021

OHIO

Standard Federal Region 5
Fish and Wildlife Service Region 3
(SEE ALSO 478, 733, 912)

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INVESTIGATOR(S): Baker, D.B.
AFFILIATION: River Studies Lab, Heidelberg College
TITLE: Effects of Municipal Phosphorus Removal on Stream-Water Quality
PURPOSE: To measure the effects of phosphorus removal on algal standing crops in the stream system. The results will be incorporated into cost-benefits analyses for advanced waste treatment.
SPONSOR(S): Cities of Tiffin, Upper Sandusky, and Bucyrus
SPONSOR CATEGORY: city government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: We have noted a lack of change in algal standing crops in streams in response to phosphorus removal at municipal sewage treatment plants.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; reservoir
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: phosphorus; waste water; habitat modification; eutrophication; chlorophyll a; phytoplankton; sewage treatment
PRIMARY PARAMETERS INVESTIGATED: biomass
NUMBER OF SAMPLING SITES: 30
SAMPLING FREQUENCY: daily; weekly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Sandusky County; Seneca County; Wyandot County; Crawford County; Sandusky River and tributaries
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: VARIAN; FORTRAN IV
STATISTICS EMPLOYED: mean; mode; regression/correlation analysis
ABSTRACT: The effects of nutrient removal of domestic sewage treatment plants on the biomass of stream phytoplankton are being investigated in the Sandusky River System. Thirty collecting stations have been established along a 120 mile section of the stream, bracketing 3 municipalities. Nutrient and chlorophyll data were collected 3 times per week during the summer and fall periods. After one year of background data, two of the cities have initiated phosphorus removal. This study is now in its third year.
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NBIP ACCESSION NUMBER: OH/074

<680>

INVESTIGATOR(S): Britt, N.W.
AFFILIATION: Entomology Dept., Ohio State University
TITLE: Linnology of Western Lake Erie
PURPOSE: To determine changes in the flora and fauna of western Lake Erie and to

measure some of the possible factors influencing these changes.

SPONSOR(S): Ohio State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: HEXAGENIA SPP (EPHEMEROPTERA) and OECETIA SPP (TRICHOPTERA) disappeared from mid-bottom of Lake Erie and were replaced by midges and OLIGOCHAETES.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; microorganisms; algae
TAXA: HEXAGENIA SPP; OECETIA SPP; EPHEMEROPTERA; TRICHOPTERA; OLIGOCHAETA
ADDED KEYWORDS: phytoplankton; zooplankton; benthic organisms; eutrophication; drawdown
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard limnological methods
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Lake Erie
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Between 1959 and 1963 inclusive, 172 collections were made at 6 stations in the island area of western Lake Erie. These samples included zooplankton, phytoplankton, and benthos plus some physical-chemical data. The organisms were identified as far as practical and the number per unit area or volume was determined. Zooplankton and phytoplankton indicated distinct changes when compared with the results of previous studies. The change in the benthos was the most noticeable change. HEXAGENIA which formerly averaged 400 nymph per sq. meter had been reduced to 25 per sq. meter by 1959. The population declined by approximately 50% each year after 1959 until it was practically eliminated from the deeper mud bottom of the area by 1962. Numbers of midges and oligochaetes increased in comparison with previous studies.
REFERENCES: Britt, 1955a,b
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NBIP ACCESSION NUMBER: OH/042

<681>

INVESTIGATOR(S): Cooke, G.D.
AFFILIATION: Dept. of Biological Sciences, Kent State University
TITLE: Monitoring and Nutrient Inactivation Studies on Two Glacial Lakes (Ohio) Before and After Nutrient Diversion
PURPOSE: To measure effects of septic tank diversion on degree of eutrophication and

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development methodology; and to apply a nutrient (phosphorus) inactivation substance.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Almost no change due to diversion. Aluminum sulfate application reduced phosphorus levels in Exter Lakes and algal taxa changed.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; lake

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; algae

TAXA: ALGAE, 7 SPECIES; CRUSTACEA, 2 SPECIES; AQUATIC PLANTS, 5 SPECIES

ADDED KEYWORDS: water lilies; nutrients; phosphorus; eutrophication; lake restoration; coliform bacteria; algal blooms; green algae; dissolved oxygen; sediments; aluminum sulfate; habitat modification; cladocerans; copepods; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; habitat characterization; numbers; physiology; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; Kemmerer sampler

NUMBER OF SAMPLING SITES: 3 (1 per lake)

SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly

SUPPORTING DATA COLLECTED: associated flora; associated microorganisms; atmospheric chemistry; climatological data; hydrological data; soils; terrain; water quality data

STUDY SITE(S): OH

GEOGRAPHIC DESCRIPTION: Portage County; East Twin Lake; West Twin Lake; Dollar Lake; Exter Lake

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis

ABSTRACT: The Twin Lakes watershed (Kent, Ohio) contains three eutrophic glacial lakes which have received urban runoff and septic tank drainage for years. No agricultural or industrial discharges enter the lakes. 96% of the homes were connected to a sewer line by 1974. The first objective was to determine the response of the lakes and the watershed to sewage diversion, and the second objective was to develop and apply a technique for inactivating phosphorus. The streams and lakes have been monitored weekly since 1972, and aluminum sulfate was selected, after laboratory and field tests for dose, effectiveness, and toxicity. Coliforms have disappeared and stream concentrations

of phosphorus have declined, but phosphorus loading in 1976 is sufficient to maintain eutrophic conditions. The lakes continue to have algal blooms and macrophyte problems. Aluminum sulfate was added to Dollar Lake in 1974, and to West Twin in 1975, and both lakes appear to be greatly improved. Algal species composition shifted to green algae, and zooplankton became very abundant. Dissolved oxygen and transparency were greatly improved. Absence of watershed management to control non-point nutrient and sediment discharge will keep the lakes eutrophic and will reduce or eliminate the effectiveness of the treatment.

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NBIP ACCESSION NUMBER: OH/081

<682>

INVESTIGATOR(S): Cooney, J.J.

AFFILIATION: Dept. of Biology, University of Dayton

TITLE: Hydrocarbon Degrading Microorganisms in Ohio Waters

PURPOSE: To study role of microorganisms in oil-polluted freshwater ecosystems.

SPONSOR(S): ONWT

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Hydrocarbons did not accumulate in water but did in sediments where heterotrophic activity of microorganisms was greatest. Bacteria, yeasts, and other fungi are important in hydrocarbon-polluted ecosystems.

ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; river; lake

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: indicator species;

pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms;

bacteria; fungi; algae

ADDED KEYWORDS: oil spills; hydrocarbons;

yeasts; sediments; decomposition

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat

characterization; numbers; physiology;

residues; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plate counts

NUMBER OF SAMPLING SITES: 13

SAMPLING FREQUENCY: monthly;

SUPPORTING DATA COLLECTED: associated microorganisms; climatological data; water quality data

STUDY SITE(S): OH

GEOGRAPHIC DESCRIPTION: Miami River; Lake

Erie; Lake Holiday; Lake Acton

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; analysis of variance; multivariate analysis

ABSTRACT: Hydrocarbons and hydrocarbon-using microorganisms were studied in three bodies of fresh water over a two-year period. Each ecosystem had a different history of hydrocarbon pollution. Hydrocarbons did not accumulate in waters

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but were associated with sediments which may be the site of greatest microbial activity. Petroleum products likely to gain access to these ecosystems contain paraffins as the largest class of hydrocarbons, whereas sediments yielded large fractions of olefins and aromatics. The amount of hydrocarbon in sediments did not appear to promote or hinder the size of the aerobic heterotrophic microbial population. The numbers of total heterotrophic bacteria were at least 100 times as great as the numbers of yeast and filamentous fungi, but the relative biomasses of the two groups may be more nearly equal. Only 0.1% of the total heterotrophic population of bacteria or of yeast and fungi grew with hydrocarbons as sole carbon sources. The numbers of hydrocarbon-using bacteria correlated positively with the numbers of hydrocarbon-using yeast and fungi, suggesting that both groups are important in hydrocarbon-polluted ecosystems. Representative colonies, picked at each sampling, included 54% bacteria, 33% yeasts and 13% filamentous fungi. About 30% of each group gave evidence of emulsifying kerosene IN VITRO.

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NBIP ACCESSION NUMBER: OH/010

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INVESTIGATOR(S): Crites, J.L.
AFFILIATION: Dept. of Zoology, Ohio State University
TITLE: Impact of Parasitic Worms on Lake Erie Fishes
PURPOSE: To determine the transmission cycles of parasites in Lake Erie fishes and to monitor infection intensity.
SPONSOR(S): FWS; Ohio Div. of Wildlife
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Increase in infection intensity of nematodes in white bass, drum, and yellow perch.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; annelida
TAXA: PHILOMETRA SPP; CAMALLANUS OXYCEPHALUS; EUSTRONGYLIDES TUBIFEX
ADDED KEYWORDS: parasites; white basses; drums; yellow perches; nematodes; population effects; infection
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; migratory patterns; habitat characterization; mortality; physiology; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

fish trawl; gill nets; plankton nets
SAMPLING FREQUENCY: daily; monthly
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Lake Erie
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: mean; median; analysis of variance; regression/correlation analysis

ABSTRACT: The project was designed to determine the transmission cycles of parasites in Lake Erie, to determine the pathology caused by these parasites, and to determine their effects on populations of fish in western Lake Erie. Samples of fish hosts were taken regularly from the Ohio waters of Lake Erie to determine the seasonal abundance and intensity of infection in populations of different age classes of fish hosts. This data was correlated with the stage, size and age structure of the parasite population and resultant pathologies. Experimental infections were utilized to elucidate the sequence of development and routes of migration of parasite stages through the tissues and organs of hosts. This study was conducted at the Stone Laboratory of Hydrobiology, Put-in-Bay, Ohio and at the Laboratory of Parasitology, the Department of Zoology, the Ohio State University, Columbus, Ohio.

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NBIP ACCESSION NUMBER: OH/019

<684>

INVESTIGATOR(S): Gannon, J.R.
AFFILIATION: Dept. of Zoology, DePauw University
TITLE: Fish Populations of the Ohio at the J.M. Stuart Electrical Generating Plant near Aberdeen, Ohio
PURPOSE: To assess impact of a large electrical generating plant on aquatic communities of the Ohio River.
SPONSOR(S): Dayton Power and Light
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Localized changes in distribution but no major reorganization of fish community.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
ADDED KEYWORDS: fossil fueled power plants; thermal effluents; population effects; gars; carpsuckers; saugers; redborse
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; physiology; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; D-net; gill net; sonar soundings
NUMBER OF SAMPLING SITES: 7 at power plant; recently expanded to comparative study of

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200 miles
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Adam County; Ohio
River; J.M. Stuart Electrical Generating
Station
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; non-parametric
analysis

ABSTRACT: The report is a summary of four years of research (1970-1973) on the effects of thermal input from the J. M. Stuart Electrical Generating Plant near Aberdeen, Ohio, on the aquatic biota of Little Three Mile Creek and the adjacent Ohio River. Collections were accomplished with the use of stationary D-nets, floating and sinking gill nets, and a boat-mounted Smith-Root electroshocking apparatus. Further studies were conducted via sonar soundings with a Bendix Echo Sounder. In 1973, five additional zones of study were added to the five present areas of study in the discharge canal and the Ohio River. The five new zones, two in the Ohio River and the remainder in creeks above the plant, were added in the hopes of ascertaining a truer picture of the response of the population. Definite responses of the populations were noted in three major forms. An increased number of gar, smallmouth buffalo, and carpsuckers in the thermally-affected waters indicate marked attraction to thermal input. A dramatic decline in abundance occurred in the sauger and redbreast populations, suggesting possible exclusion by thermal input. The varied response of the centrarchid family indicated perhaps a response to an additional pressure besides thermal input. Temperature histograms for major groups were plotted and the results compared to other studies of this nature. With temperatures in the river exceeding final preferences for many species, a re-evaluation of existing studies may be called for.

REFERENCES: Lesniak and Gammon, 1974

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NBIP ACCESSION NUMBER: IN/007

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INVESTIGATOR(S): Gottschang, J.L.
AFFILIATION: Dept. of Biological Sciences,
University of Cincinnati
TITLE: Raccoon in an Urban Environment
PURPOSE: To determine the effect of the urban environment on all phases of raccoon life.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1968
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Urban raccoons have small home ranges, unconventional den sites,

food sources, lower weights, and little territoriality.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: PROCYON LOTOR
ADDED KEYWORDS: raccoons; habitat
modification; morbidity
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; habitat
characterization; home range size;
immigration; kill; mortality; migratory
patterns; natality; numbers; reproduction;
sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
capture; radiotelemetry
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: continuous; irregular
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
terrain

STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Hamilton County;
Cincinnati
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Observations have been made on the life history and ecology of the raccoon in an urban environment. Urban raccoons had smaller, more linear home ranges; high population densities; used homes, sewer systems, and garages for denning sites; and had distemper as the principal factor limiting population size. Garbage cans, dumps, and gardens provided food yet the average weight was less than in the wild population. They were inactive below 25 degrees C, showed little or no signs of territoriality, but had sex ratios, litter sizes, and reproductive habits similar to wild populations.

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NBIP ACCESSION NUMBER: OH/036

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INVESTIGATOR(S): Griswold, B.L.; Herdendorf, C.E.
AFFILIATION: Dept. of Zoology, Ohio State University
TITLE: Investigations of Excessive Fish Accumulations at Power Plant Intake Structures on Maumee River
PURPOSE: To investigate movement of fish from Lake Erie into power plant structures on the Maumee River.
SPONSOR(S): Toledo Edison Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased populations of gizzard shad in Lake Erie.
ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; river; lake
LEVEL(S) OF STUDY: organism; population;

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community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: DOROSOMA CEPEDIANUM; STIZOSTEDION CANADENSE; NOTROPIS ATHERINOIDES; PERCA FLAVESCENS; APLODINOTUS GRUNNIENS; CARASSIUS AURATUS; CYPRINUS CARPIO; STIZOSTEDION VITREUM
ADDED KEYWORDS: fossil fueled power plants; gizzard shad; yellow perch; walleyes; saugers; freshwater drums; carps; emerald shiners; goldfishes; thermal effluents
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; habitat characterization; kill; mortality; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gillnets; trawls; frynets
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: daily; weekly; monthly
SUPPORTING DATA COLLECTED: climatological data; hydrological data; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Lucas County; Maumee River; Lake Erie; Bayshore Lake; Acme Lake
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: OH/018

<687>

INVESTIGATOR(S): Herdendorf, C.E.
AFFILIATION: Ohio State University
TITLE: Lake Erie Nutrient Control Program: An Assessment of Its Effectiveness in Controlling Lake Eutrophication
PURPOSE: To monitor benthos and plankton populations, analyze physiochemical properties of the water and sediment, and index the state of eutrophication in western and central Lake Erie.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Anoxic area of Central Basin of Lake Erie expanded through 1973 but decreased markedly in 1975.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida; microorganisms; bacteria; algae
ADDED KEYWORDS: plankton; eutrophication; benthic organisms
NUMBER OF SAMPLING SITES: 50
SAMPLING FREQUENCY: monthly
STUDY SITE(S): OH; MI; CN
GEOGRAPHIC DESCRIPTION: Lake Erie
TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: EPA STORET

STATISTICS EMPLOYED: mean;
regression/correlation analysis

ABSTRACT: Our objectives are to conduct a series of research cruises in western and central Lake Erie; to monitor benthos and plankton populations; to analyze several physiochemical properties of the water and sediment with particular attention to nutrient chemistry; to develop a system of indicators which will index the state of eutrophication of Lake Erie as a function of time; and to determine the effectiveness of Federal, State, and local nutrient control programs in reducing the over-enrichment of Lake Erie.

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Columbus, OH 43210

TELEPHONE: (614) 422-8949

NBIP ACCESSION NUMBER: OH/015

<688>

INVESTIGATOR(S): Herdendorf, C.E.; Reutter, J.M.
AFFILIATION: Ohio State University
TITLE: Pre-operational Aquatic Ecology Monitoring Program for the Davis-Bessee Nuclear Power Station
PURPOSE: To monitor natural population of Lake Erie biota prior to the operation of a nuclear power station at Locust Point.
SPONSOR(S): Toledo Edison Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None, except recolonization of benthic invertebrates after completion of intake construction.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; microorganisms; algae; protozoa
TAXA: BACILLARIOPHYCEAE, 13 GENERA;
CHLOROPHYCEAE, 27 GENERA; CHRYSOPHYCEAE, 1 GENUS; DINOPHYCEAE, 3 GENERA;
EUGLENOPHYCEAE, 2 GENERA; MYXOPHYCEAE, 6 GENERA; ROTIFERA, 17 GENERA; COPEPODA, 8 GENERA; CLADOCERA, 7 GENERA; PROTOZOA, 7 GENERA; HYDRA SPP; ANNELIDA, 10 GENERA;
ARTHROPODA, 15 GENERA; MOLLUSCA, 2 GENERA;
AMPHIBIA; LABIDESTHES SICCULUS;
CATOSTOMIDAE, 5 GENERA; CENTRARCHIDAE, 5 GENERA; CLUPEIDAE, 2 GENERA; CYPRINIDAE, 4 GENERA; ESOX LUCIUS; ICTALURIDAE, 2 GENERA; LEPISOSTEUS OSSEUS; OSMERUS EPERANUS; PERCIDAE, 3 GENERA; MORONE CHRYSOPS; PERCOPSIS OMISCOMAYCUS;
PETROMYZON MARINUS; ONCORHYNCHUS KISUTCH;
APLODINOTUS GRUNNIENS
ADDED KEYWORDS: nuclear power plants; benthic organisms; phytoplankton; zooplankton; thermal effluents; cladocerans; eucopepods; amphipods; dipterans; trichopterans; ephemeropterans;

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coelenterates; construction; sediments;
habitat modification
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; immigration; migratory
patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ponar dredge; Wisconsin plankton net; gill
net; hoop net; trawl; seine; Kemmerer
bottle
NUMBER OF SAMPLING SITES: 25
SAMPLING FREQUENCY: weekly; monthly; quarterly
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Ottawa County; Lake
Erie
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The Toledo Edison Company and the
Cleveland Electric Illuminating Company
are currently building the Davis-Besse
Nuclear Power Station on the south shore
of Lake Erie near Locust Point. The first
unit (906 MWe) of this station is
scheduled to be operational in September
1976. Two additional units, each 906 MWe,
have been proposed and are scheduled for
completion in 1983 and 1985. This study is
being carried out to characterize the
lake's aquatic biota prior to the thermal
discharge from unit 1. Fish, plankton,
benthos, and selected physical parameters
are sampled at 25 stations within a 4000
ft. radius of the plant site. Comparisons
are made with previous results and trends
are developed. These results will be
compared with results from a similar
post-operational study and changes due to
operation will be documented.
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NBIP ACCESSION NUMBER: OH/016

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INVESTIGATOR(S): Klein, W.L.
AFFILIATION: Ohio River Valley Water
Sanitation Commission
TITLE: ORSANCO Water Quality Monitoring
Program on the Ohio River and Lower
Reaches of Major Tributaries
PURPOSE: To provide data on the aquatic life
resources in river for use in water
pollution control and planning.
SPONSOR(S): USGS; ORSANCO; EPA; COE;
Participant States
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Return of pollution
sensitive organisms to river.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
indicator species; recreation; resource
planning; pollution control; water
quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
microorganisms; algae
ADDED KEYWORDS: management measures; heavy
metals; radiation; pesticides; industrial
chemicals; benthic organisms; periphyton;
phytoplankton
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; growth; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
nets; electrofishing gear; grab samples
NUMBER OF SAMPLING SITES: 8; initially
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data
STUDY SITE(S): IL; IN; OH; PA; WV; KY
GEOGRAPHIC DESCRIPTION: Ohio River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The Engineering Committee in
September 1972 requested the ORSANCO staff
to conduct an appraisal of the basic
ORSANCO, State, and Federal agencies'
water quality monitoring strategies and
programs. A draft report of its findings
titled "Monitoring and Evaluation of River
Quality Conditions in the Compact
District" was issued in March 1973. In
view of the comprehensive monitoring
requirements contained in PL 92-500, the
Commission directed a reappraisal, based
on the Policy Committee recommendation to
develop a recommended water quality
monitoring strategy for the main stem of
the Ohio River and the lower reaches of
the major tributaries. The study team
consists of representatives from the U.S.
EPA, U.S. Corps of Engineers, USGS, the
signatory states and the ORSANCO staff.
REFERENCES: Klein, et al, 1973
ADDRESS: Mr. William L. Klein
Ohio River Valley Water Sanitation
Commission
414 Walnut St.
Cincinnati, OH 45202
TELEPHONE: (513) 421-1151
NBIP ACCESSION NUMBER: OH/033

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INVESTIGATOR(S): Love, R.L.
AFFILIATION: Bowling Green State University
TITLE: Planktonic Algae of the Sandusky River
PURPOSE: To describe distribution patterns of
plankton algae in the Sandusky River.
SPONSOR(S): Bowling Green State University;
Ohio Biological Survey
SPONSOR CATEGORY: teaching institution; state
government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Increased algal standing
crop in the downstream areas.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: indicator species; water
quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: population effects; diatoms;
phytoplankton

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PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
surface grab samples; Palmer-Malony cell
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Sandusky County;
Seneca County; Crawford County; Wyandot
County; Sandusky River; Lake Erie
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Plankton samples were collected
from the full length of the Sandusky River
from October, 1973 to August, 1974. The
samples were sedimented in one liter
graduated cylinders and analyzed in a
Palmer-Malony Cell. Phytoplankters were
identified to genus and species and the
number of organisms per liter was
calculated. Data should be available by
February, 1976.
ADDRESS: Dr. Rex L. Love
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Bowling Green, OH 43403
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NBIP ACCESSION NUMBER: OH/004

<691>

INVESTIGATOR(S): Nisbet, R.A.
AFFILIATION: Malone College
TITLE: Changes in Vascular Plant Flora at
Stark Wilderness Center, 1968-1975
PURPOSE: To determine changes in composition,
growth, and reproduction of trees and
shrubs.
SPONSOR(S): Ohio Biological Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1968
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Large elm mortality,
normal successional changes, but basal
area increase confined to fewer stems per
acre.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: forestry; indicator
species; recreation; resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs
TAXA: PLANTS, 14 SPECIES
ADDED KEYWORDS: succession; population effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; growth;
mortality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
survey and resurvey
NUMBER OF SAMPLING SITES: 36
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Stark County; Fox
Creek; Sugar Creek; Wilderness Lake
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; non-parametric

analysis

ABSTRACT: We study the changes in
composition, relative density, dominance,
and frequency of vascular plants at the
Stark Wilderness Center, Wilsot, Ohio
during the period 1968 through the summer
of 1974. Thirty-five random plots were
located by sandstone markers. Photographs
were taken of each plot, and vascular
plants plotted by size and position on
plot maps. The data gathered in this
project will permit assessment of changes
during the 6-year period of variables such
as: importance value, percent cover, mean
DBH by species plot, net growth by species
by plot, and response of trail-side
vegetation to recreation pressure.

REFERENCES: Nisbet, 1968

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TELEPHONE: (216) 454-3011 ext. 266

NBIP ACCESSION NUMBER: OH/057

<692>

INVESTIGATOR(S): Peterle, T.J.
AFFILIATION: Dept. of Zoology, Ohio State
University
TITLE: Bioaccumulation and Translocation of
Chlorine-36 DDT in a Meadow Ecosystem
PURPOSE: To determine transfer rates,
bioaccumulation, mass balance,
disappearance rates, and modeling of
results.
SPONSOR(S): ERDA; Ohio Div. of Wildlife; Ohio
Cooperative Unit
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
CHANGE(S) OBSERVED: Accumulation in various
biota.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; pollution
control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; invertebrates; insects;
annelids; plants; vascular plants; herbs
ADDED KEYWORDS: shrews; isopods; earthworms;
models; DDT; pesticides; insecticides;
population effects; chlorine-36
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity;
growth/home range size; mortality;
natality; physiology; reproduction;
residues; sex; size/weight; stress;
territory size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trap
NUMBER OF SAMPLING SITES: many within a 10
acre site
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Champaign County;
Urbana State Game Area
TYPE OF DATA: reduced; summarized;
literature-derived

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COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
multivariate analysis; non-parametric
analysis; modeling, deterministic
ABSTRACT: The study was made to determine
initial distribution, translocation, and
bioaccumulation of one application of
Cl-36 labeled DDT in a 10-acre meadow
ecosystem. Residue levels in various
compartments of the physical and
biological components were measured,
transfer rates estimated, and computer
modeling of the resultant data attempted.
ADDRESS: Dr. Tony J. Peterle
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Ohio State University
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NBIP ACCESSION NUMBER: OH/009

<693>

INVESTIGATOR(S): Scholl, R.L.
AFFILIATION: Ohio Dept. of Natural Resources
TITLE: Lake Erie Fish Research
PURPOSE: Research and inventory of annual
changes in fish populations, commercial
and sport harvests, and research on
specific fish species life patterns to
formulate a basis for management practices
on Lake Erie.
SPONSOR(S): FWS; Ohio Dept. of Natural
Resources
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decrease in high value
fish species and reduction in harvest
growth and maturation changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
ADDED KEYWORDS: management measures; census;
population dynamics
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; growth; habitat
characterization; harvest; home range
size; mortality; migratory patterns;
numbers; reproduction; sex; size/weight;
stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trap nets; gill nets; seines;
electroshocking gear
NUMBER OF SAMPLING SITES: numerous for all
surveys
SAMPLING FREQUENCY: continuous; seasonal;
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Lake Erie
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;

multivariate analysis; non-parametric
analysis; non-linear estimation; modeling,
deterministic

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: OH/032

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INVESTIGATOR(S): Seelye, J.G.
AFFILIATION: Waterways Experiment Station, COE
TITLE: Identification and Assessment of
Environmental Effects of Disposal of
Dredged Material in Open Waters
PURPOSE: To identify physical and chemical
characteristics of dredged material
disposal on the biota associated with an
open water disposal site in Lake Erie near
Ashtabula, Ohio.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Basic temporal changes in
the plankton, nekton, and benthos were
found in the central basin of Lake Erie,
due to dredging and disposal.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;
microorganisms; algae
TAXA: ALGAE, 60 SPECIES; PROTOZOA, 4 SPECIES;
ROTIFERA, 2 SPECIES; ANNELIDA, 10 SPECIES;
MOLLUSCA, 9 SPECIES; ARTHROPODA, 16
SPECIES; CHORDATA, 67 SPECIES
ADDED KEYWORDS: dredging; plankton; nekton;
benthic organisms; habitat modification;
primary productivity
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity;
emigration; habitat characterization;
mortality; numbers; productivity;
reproduction; residues; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard collection methods
NUMBER OF SAMPLING SITES: 15 square mile
area, 1-4 miles offshore from Ashtabula,
Ohio
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms; climatological
data; water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Ashtabula County;
Lake Erie
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: Honeywell 635; FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis; non-parametric
analysis
ABSTRACT: This study conducted at the
Ashtabula Harbor site was separated into
four phases: (1) initial survey of the
general area to choose two specific
reference (control) sites and two disposal
sites, (2) collection of baseline

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Standard Federal Region 5
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American Electric Power Co.
312 Locust St.
McArthur, OH 45651
TELEPHONE: (614) 596-4396
NBIP ACCESSION NUMBER: OH/003

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information from the sites prior to disposal, (3) monitoring of the disposal of polluted and nonpolluted sediments from Ashtabula Harbor, and (4) collection of postdisposal data to determine the extent and duration of any effects of disposal on the aquatic system.

REFERENCES: COE, 1975 a,b
ADDRESS: Dr. James G. Seelye
Dept. of the Army
Waterways Experiment Station, Corps
of Engineers
P.O. Box 631
Vicksburg, MS 39180
TELEPHONE: (601) 636-3111 ext. 2141
NBIP ACCESSION NUMBER: MS/038

<695>

INVESTIGATOR(S): Showman, R.E.
AFFILIATION: Environmental Division, American Electric Power Co.
TITLE: Lichen Studies Around Coal-fired Power Plants
PURPOSE: To use lichens as indicators of air quality around coal-burning power plants.
SPONSOR(S): American Electric Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Around the newer power plants with tall stacks, I found no change in the lichen flora or distribution pattern. However, around older plants with short stacks and/or high-sulfur coal, an effect on lichen distribution was noted.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; indicator species; power generation
ORGANISMS, MAJOR TYPES: plants; non-vascular plants; lichens
TAXA: PARNELIA CAPERATA; PARNELIA RUDECTA; LICHENS, 87 SPECIES
ADDED KEYWORDS: habitat modification; air pollution; fossil fueled power plants; pollutant pathways; coal
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; kill; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field survey
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: atmospheric chemistry
STUDY SITE(S): OH; WV; KY; IN
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Being studied are several aspects of lichens as indicators of air quality. Of primary importance is the survey and mapping of lichens in power plant areas. I am also studying lichen growth, heavy metal content of lichens, sulfur content of lichens, and tree-bark acidity.
REFERENCES: Showman, 1975 a,b; Showman, 1973
ADDRESS: Mr. Ray E. Showman

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INVESTIGATOR(S): Sinclair, R.M.
AFFILIATION: Aquatic Biology Div., EPA
TITLE: Benthic Integrity of Dry Run Creek
PURPOSE: Training example of benthic integrity, water quality, and monitoring techniques.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Successional change in a small stream with LIRCEUS occurring in recovery zones of sewage-polluted streams.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; annelida; microorganisms; algae
TAXA: LIRCEUS FONTINALIS; ASELLUS SPP
ADDED KEYWORDS: succession; coleopterans; ephemeropterans; dipterans; trichopterans; isopods; waste water; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Clermont County; Dry Run Creek
TYPE OF DATA: raw; summarized
ABSTRACT: Literature reviews regarding the relation of North American asellid isopods to pollution have been contradictory and confused. To add to this problem the systematics of ASELLUS have only recently been handled adequately, and LIRCEUS as a genus is not amenable to dichotomous keys. In other countries, ASELLUS is renowned for living in water mains and in recovery zones of polluted rivers. Typical representations of dominant microinvertebrates in sewage polluted streams depict Asellids and more specifically ASELLUS as the third "peak" in a downstream progression. LIRCEUS was noted in recovery zones far more often than the former genus. Bottom fauna data from a sewage polluted stream near Cincinnati, Ohio reveal that LIRCEUS FONTINALIS at least on this occasion did form a third major "peak" downstream from the treated effluent.
REFERENCES: Sinclair, et al, 1975
ADDRESS: Mr. Ralph M. Sinclair
EPA Office of Water Programs
National Training Center
Cincinnati, OH 45268
TELEPHONE: (513) 684-7510
NBIP ACCESSION NUMBER: OH/066

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INVESTIGATOR(S): Stilwell, J.M.

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AFFILIATION: Battelle Columbus Laboratories
TITLE: Effects of Power Plant Cooling Water Discharge on the Muskingum River Biota
PURPOSE: To investigate species composition, diversity, and abundance changes in the macroinvertebrate and fish communities below the thermal additions of three fossil fueled electric generating plants.
SPONSOR(S): American Electric Power Co.; South Ohio Electric
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Only minor localized changes in the macroinvertebrate communities were noted. Fish communities also showed only minor changes. Some forage fish were attracted to the area.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta
TAXA: FISHES, 75 SPECIES; MOLLUSCS, 30 SPECIES; BENTHIC ORGANISMS, 100 GENERA
ADDED KEYWORDS: fossil fueled power plants; thermal effluents; benthic organisms; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; kill
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Ponar dredge; artificial substrate; electrofishing gear; seine; clam hooks
NUMBER OF SAMPLING SITES: approximately 30
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Coshocton County; Muskingum County; Washington County; Muskingum River
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: An investigation presently in progress is determining the effect of thermal effluents from electric generating stations on physical, chemical, and biological parameters of riverine ecosystems. The collection of extensive data on water temperature, dissolved oxygen, specific conductance, pH, redox potentials, selected elemental analyses, plankton, periphyton, benthos, and fish is being accomplished for different seasons of the year. Results of preliminary investigations indicate that the local river environments in the areas of the generating stations and their biota have not been degraded by the thermal input to these ecosystems over an operating experience of several years.
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Ecology and Ecosystems Analysis
Section
Battelle Columbus Laboratories
Columbus, OH 43201

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NBIP ACCESSION NUMBER: OH/049

<698>

INVESTIGATOR(S): Wood, T.S.
AFFILIATION: Dept. of Biology, Wright State University
TITLE: The Distribution and Taxonomy of Freshwater Ectoprocta in Ohio and Western Lake Erie
PURPOSE: To obtain bryozoan specimens throughout Ohio and western Lake Erie, compare them with published descriptions and museum specimens from other parts of the world, and identify possible ecotypic variation.
SPONSOR(S): Ohio Biological Survey
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: In Lake Erie there is a distinct increase in frequency of species bearing a relatively large number of tentacles on the lophophore.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea
TAXA: FREDERICELLA SULTANA; HYALINELLA PUNCTATA; PLUMATELLA CASHIANA; PLUMATELLA EMARGINATA; PLUMATELLA REPENS; PECTINATELLA MAGNIFICA; CRISTATELLA MUCEDO; POTTIELLA ERECTA; PALUDICELLA ARTICULATA; LOPHOPODELLA CARTERI
ADDED KEYWORDS: habitat modification; bryophytes; ectoproctans; eutrophication
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: 120
SAMPLING FREQUENCY: irregular
STUDY SITE(S): OH
GEOGRAPHIC DESCRIPTION: Lake Erie
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: Despite their general abundance and wide distribution, the Ectoprocta of fresh water as a group are poorly known. They are seldom mentioned in biological survey reports and are rarely collected intentionally by students or professional biologists. Such neglect is understandable: ectoproct colonies are often mistaken for algae, moss, detritus, or fish eggs; they must be collected along with substrate upon which they grow; and species identification is difficult. The present study is designed to help remove these obstacles and encourage further acquaintance with the group. The initial thrust of the study was to obtain specimens from every part of Ohio, selecting primarily those bodies of water having public access. Ranges of temperature and pH were determined at each site. At least one species of bryozoan was found at nearly every pond, lake site, river, and stream examined. Particularly common were PLUMATELLA EMARGINATA and PECTINATELLA MAGNIFICA. The former species

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exhibits extraordinary morphological variation even within single sites, and may in fact include more than one genetic type. In Lake Erie there is a distinctly greater abundance of species having relatively large lophophores compared to

1932-33 data; this may be related to tolerance to low oxygen tension.
ADDRESS: Dr. Tim Wood
Biology Dept.
Wright State University
Dayton, OH 45431
TELEPHONE: (513) 873-2542
HBIP ACCESSION NUMBER: OH/028

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OKLAHOMA

Standard Federal Region 6

Fish and Wildlife Service Region 2

(SEE ALSO 180, 210, 502)

<699>

INVESTIGATOR(S): Bradley, J.A.

AFFILIATION: Dept. of Interior, Bureau of Reclamation, Southwest Region

TITLE: Eurasian Watermilfoil (MYRIOPHYLLUM SPICATUM) Control Research Program

PURPOSE: To determine the effects of 2,4-D in potable waters when used for control of Eurasian watermilfoil or other aquatic plants.

SPONSOR(S): BR

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: 2,4-D was used successfully for control of watermilfoil without any adverse impacts on other parameters.

ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; reservoir

LEVEL(S) OF STUDY: organisms; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs

TAXA: MYRIOPHYLLUM SPICATUM

ADDED KEYWORDS: eurasian milfoil; milfoil; herbicides; aquatic plants; pesticides

PRIMARY PARAMETERS INVESTIGATED: biomass; bsd; distribution; diversity; growth; kill; reproduction; residues

NUMBER OF SAMPLING SITES: numerous

SAMPLING FREQUENCY: continuous; daily; weekly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data

STUDY SITE(S): OK

GEOGRAPHIC DESCRIPTION: Caddo County; Fort Cobb Reservoir

TYPE OF DATA: raw; summarized

ABSTRACT: The purpose of the research is to develop ways and means to achieve and maintain control of Eurasian water milfoil to the degree necessary to protect public health and to assure that economic and recreational values of the Bureau of Reclamation reservoirs are not materially impaired. 2,4-D was used to accomplish this control with high success and minimum environmental impacts.

ADDRESS: Mr. James A. Bradley
Bureau of Reclamation
Dept. of the Interior
Herring Plaza, Box 8-4377
317 E. 3rd St.
Amarillo, TX 79101TELEPHONE: (806) 376-2448; FTS 734-2448
NBIP ACCESSION NUMBER: TX/118

<700>

INVESTIGATOR(S): Pigg, J.

AFFILIATION: Science Chairman, Moore High School

TITLE: Fishes of Kiamichi River, Oklahoma

PURPOSE: To survey the distribution of each species of fish in the Kiamichi River and to compare with past collection records.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes have already occurred in the fishes of the river since damming has now been completed on the river. Some rare fishes are now lost.

ECOSYSTEM OR BIONE TYPE(S): aquatic;

freshwater; stream; river; reservoir

LEVEL(S) OF STUDY: organisms; population;

community; region

MANAGEMENT FOCUS: endangered species;

environmental impact; fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: FISHES, 98 SPECIES

ADDED KEYWORDS: dams; habitat modification; adaptation

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat

characterization; migratory patterns;

numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

seines; gill nets; electrofishing gear;

hook and line

NUMBER OF SAMPLING SITES: 141

SAMPLING FREQUENCY: continuous

STUDY SITE(S): OK

GEOGRAPHIC DESCRIPTION: LeFlore County;

Pushmataha County; Choctaw County;

Kiamichi River; Hugo Lake

TYPE OF DATA: raw; reduced; summarized;

literature-derived

ABSTRACT: A description of the Kiamichi River system and a brief history of ichthyological collecting within this drainage introduce an annotated checklist of 98 fish species with remarks on the distribution and probable abundance of each species. A total of 141 collections included 16 families and 88 species, of which 15 were new records for species of the Kiamichi River drainage. Collections were made before completion of the Hugo Reservoir and subsequent inundation of riverine habitats.

REFERENCES: Pigg and Hill, 1974

ADDRESS: James Pigg

Fish Div.

Dept. of Wildlife Conservation

300 N. Eastern

Moore Public Schools

Moore, OK 73160

TELEPHONE: (405) 794-1531

NBIP ACCESSION NUMBER: OK/006

<701>

INVESTIGATOR(S): Smith, J.

AFFILIATION: Oklahoma Dept. of Wildlife Conservation

TITLE: Greenleaf Lake Fisheries Investigations

PURPOSE: To measure the combined effects of drawdown, fish removal, vegetation cover, and introduction of catchable channel catfish on fish population and fishing success in a 920 acre warmwater reservoir.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: The drawdown did improve sport fishing, however the benefits appeared to have been short lived.

ECOSYSTEM OR BIONE TYPE(S): aquatic;

freshwater; lake

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LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: ICTALURUS PUNCTATUS; LEPOMIS
MACROCHIRUS; POMOXIS SPP; DOROSOMA
CEPEDIANUM; MNYTERNA MELANOPS;
APLODINOTUS GRUNNIENS; MOXOSTOMA ERYTHRURUM

ADDED KEYWORDS: channel catfishes; management
measures; drawdown; rotenone; crappies;
bluegills; gizzard shad; spotted suckers;
drums; golden redbhorse

PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; harvest; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; trap nets; creel census

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: continuous;

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): OK

GEOGRAPHIC DESCRIPTION: Greenleaf Lake;

Muskogee County; Sportsman Lake

TYPE OF DATA: raw; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The drawdown project did improve
the sport fishery, however the benefits
appeared to have been short lived. The
status of the fish population appeared to
approach resemblance of predrawdown
conditions within 3-4 years after lake
refill. Marking of brush shelters and
the stocking of catchable channel catfish
definitely improved fishing success and
benefitted the lake fishery. Without
continued maintenance of the fish
shelters, control of water willow growth,
improvement of fish habitat, and
instigation of further predator
manipulation practices; it is doubtful
that another drawdown, even if it were
physically possible and/or desired by the
public, could produce an improved sport
fishery and better balanced overall
fishery for more than three, or four years
at the most. It was felt the lake would
require additional management assistance
in addition to some of the management
tools utilized during the Greenleaf Lake
drawdown project to create and sustain a
reasonable good sport fishery.

REFERENCES: Smith, 1975

ADDRESS: Mr. James Smith
Oklahoma Dept. of Wildlife
Conservation
N.E. Regional Fishery Office
4101 Boston
Muskogee, OK 74401

TELEPHONE: (918) 683-1031

NBIP ACCESSION NUMBER: OK/011

<702>

INVESTIGATOR(S): Summers, G.L.
AFFILIATION: Oklahoma Dept. of Wildlife
Conservation

TITLE: Canton Reservoir Research

PURPOSE: Identify areas of seasonal walleye
concentration through the use of
ultrasonic telemetry.

SPONSOR(S): Oklahoma Dept. of Wildlife

Conservation; FWS

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Declining walleye
population since last stocking in 1972.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: STIZOSTEDION VITREUM

ADDED KEYWORDS: walleyes; management
measures; seasonal variations

PRIMARY PARAMETERS INVESTIGATED: distribution

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

ultrasonic telemetry

NUMBER OF SAMPLING SITES: 1 reservoir

SUPPORTING DATA COLLECTED: associated flora;

soils; water quality data

STUDY SITE(S): OK

GEOGRAPHIC DESCRIPTION: Blain County; Dewey

County; Canton River; Canadian River;

Canton Dam; Canton Reservoir

TYPE OF DATA: raw; reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: IBM 1400; Autocoder

STATISTICS EMPLOYED: multivariate analysis;

non-parametric analysis

ABSTRACT: We are locating specific areas of
walleye concentrations and providing
information on seasonal depth and
temperature preference of walleye in order
to improve walleye management and sport
fishing in Oklahoma.

ADDRESS: Gregory Summers

University of Oklahoma
Oklahoma Fishery Research Laboratory
1416 Planck St.

Norman, OK 73069

TELEPHONE: (405) 325-7288

NBIP ACCESSION NUMBER: OK/003

<703>

INVESTIGATOR(S): Taylor, R.J.

AFFILIATION: Dept. of Biology, Southeastern
State University

TITLE: The Effect of Aquatic Macrophytes on
the Quality of Human Drinking Water
Impounded in Artificial Reservoir

PURPOSE: To determine the effects of water
weeds on water quality of municipal
reservoirs.

SPONSOR(S): NIH

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: There has been an
observed change in the number and kinds of
aquatic macrophytes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: resource planning; water
quality

ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs

ADDED KEYWORDS: aquatic plants; weeds;
management measures

PRIMARY PARAMETERS INVESTIGATED:

distribution; numbers; toxicity

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OKLAHOMA

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SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): OK

TYPE OF DATA: summarized

ABSTRACT: In the growing season the last five years, we have made irregular collections of the aquatic macrophytes of most of the municipal reservoirs in eastern Oklahoma.

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Biological Sciences Dept.
Southeastern State University
Station A
Durant, OK 74701

NBIP ACCESSION NUMBER: OK/026

<704>

INVESTIGATOR(S): Toetz, D.
AFFILIATION: School of Biological Sciences,
Oklahoma State University

TITLE: Biological and Water Quality Effects
of Lake Mixing and Destratification

PURPOSE: To describe effects of artificially
mixing reservoirs on species composition
of algae and the growth and distribution
of fish (larval and adult).

SPONSOR(S): OWET; Oklahoma State University
SPONSOR CATEGORY: federal government;
teaching institution

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decrease in bluegreen
algae.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

fisheries; recreation; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; microorganisms; algae

TAXA: LEPOMIS MACROCHIRUS; DOROSOMA
CEPHALANUM; POMOXIS SPP; MICROPTERUS
SALMOIDES; ICTALURUS PUNCTATUS; ALGAE, 53
SPECIES

ADDED KEYWORDS: bluegills; gizzard shad;
crappies; largemouth basses; basses;
channel catfishes; catfishes; shad;
destratification; phytoplankton; ammonia;
nitrogen fixation; nitrogen; nitrates;
management measures

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; bod; distribution; growth;
productivity; reproduction; size/weight

NUMBER OF SAMPLING SITES: 2-3

SAMPLING FREQUENCY: seasonal; weekly

SUPPORTING DATA COLLECTED: associated fauna;
climatological data; water quality data

STUDY SITE(S): OK

GEOGRAPHIC DESCRIPTION: Ham's Arbuckle; Lake
Carl Blackwell

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Two objectives are: (1) to describe
the effects of the Garton pump on water
chemistry of Arbuckle Lake, and (2)
effects of the Garton pump on the
abundance of taxa and algae and the mass
of Chlorophyll A. Extensive limnological
collections on Ham's Lake during July and
August provide data for ammonia, nitrate,
nitrite, phosphorus, dissolved organic
matter, and chlorophyll A. Samples were
also taken for enumeration of algae to
learn the most reliable method to sample
the algal flora.

ADDRESS: Dr. D.W. Toetz
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Oklahoma State University
Stillwater, OK 74074

TELEPHONE: (405) 372-6211 ext. 418

NBIP ACCESSION NUMBER: OK/028

OREGON

Standard Federal Region 10
Fish and Wildlife Service Region 1
(SEE ALSO 100, 125, 145, 149, 180, 186, 867,
868, 875, 902)

<705>

INVESTIGATOR(S): Berry, R.E.
AFFILIATION: Dept. of Entomology, Oregon
State University
TITLE: Biology and Management of Soil
Arthropods
PURPOSE: To investigate biology and ecology
of soil arthropods with emphasis on
population dynamics and the use of
pheromones to improve population sampling
and monitoring techniques.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1961
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: We are detecting major
population outbreaks of damaging species
and monitoring populations to decrease
unnecessary use of pesticides in the
environment.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; invertebrates; crustacea; insecta;
mollusca
TAXA: EXUOA OCHROGASTER; PERIDROMA SAUCIA;
AUTOGRAPHA CALIFORNICA; PYBAUTA FUNALIS;
SCUTIGERELLA IMMACULATA
ADDED KEYWORDS: population dynamics;
management measures; pesticides;
lepidopterans; symphylans
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; kill; numbers; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
soil sampling; black light trap
NUMBER OF SAMPLING SITES: 4 to 6
SAMPLING FREQUENCY: seasonal; weekly;
irregular
SUPPORTING DATA COLLECTED: climatological
data; soils
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Jefferson County;
Benton County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance
ABSTRACT: The gradual withdrawal of some
registered uses of persistent pesticides
to control soil arthropods has resulted in
gradual increases in soil pest
populations. Soil pests such as
SYMPHYLANS, cutworms, wireworms, and root
weevils are becoming increasingly serious
in Oregon. Numerous biological and
ecological factors, often unknown,
contribute to the unreliability of some
pesticides to control soil pests.
Therefore, there is a need for additional
research on natural factors which regulate
soil arthropod populations since this
information could result in the
development of multiple approaches to
control soil pests. Information on the
biology of certain soil arthropods is
inadequate and further studies could
result in improved techniques for sampling
and monitoring populations and a

refinement of current control
recommendations.

ADDRESS: Mr. R. E. Berry
Entomology Dept.
Oregon State University
Corvallis, OR 97331
TELEPHONE: (503) 754-1597
NBIP ACCESSION NUMBER: OR/054

<706>

INVESTIGATOR(S): Daterman, G.E.
AFFILIATION: FS, Pacific NW Forest and Range
Experiment Station
TITLE: Pheromone-Trapping for Monitoring
Populations of Western Spruce Budworm
PURPOSE: To develop sex-attractant traps as a
method to reflect changes in relative
density of spruce budworm populations.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Insect species more
widespread than previously known.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
forestry
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; plants; vascular
plants; trees
TAXA: CHORISTONEURA OCCIDENTALIS
ADDED KEYWORDS: western spruce budworms;
pheromones; lepidopterans; population
effects
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standardized adhesive traps; standard
pheromone bait
NUMBER OF SAMPLING SITES: 32
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): OR; WA
TYPE OF DATA: reduced
STATISTICS EMPLOYED: regression/correlation
analysis
ABSTRACT: Availability of synthetic sex
pheromone of the western spruce budworm
provides a means to develop a sensitive
sampling method that will reflect relative
changes in population densities. This
research effort is aimed at evaluation of
such a system for its possible use over a
wide area to predict population changes
that could potentially cause damage in the
forest.
ADDRESS: Gary E. Daterman
Forestry Sciences Laboratory
3200 Jefferson Way
Corvallis, OR 97331
TELEPHONE: (503) 752-4211 ext.259
NBIP ACCESSION NUMBER: OR/039

<707>

INVESTIGATOR(S): Deibert, W.J.
AFFILIATION: FS
TITLE: Deschutes National Forest Osprey
Nesting Study
PURPOSE: To determine nesting requirements
and site preference, productivity, and
nest longevity of osprey.
SPONSOR(S): FS

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SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Osprey nesting population has increased significantly since 1968. As reservoir nest sites decrease, birds are forced to nest inland.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; wetland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: PANDION HALIAETUS; HALIAETUS LEUCOCEPHALUS
ADDED KEYWORDS: ospreys; bald eagles; eagles; management measures; nesting behavior
PRIMARY PARAMETERS INVESTIGATED: habitat characterization; numbers; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): helicopter survey; ground observation; nesting success; nest site parameters
NUMBER OF SAMPLING SITES: 285 (varies from year to year)
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora; terrain
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Deschutes County; Klamath County; Deschutes River; Odell Lake; Davis Lake; Crane Prairie Lake; Crescent Lake; Wickiup Lake; Elk Lake; Lava Lake
TYPE OF DATA: raw; reduced
ABSTRACT: The primary management objectives of the Crane Prairie Reservoir Osprey Management Area are to improve and protect the osprey habitat to protect the birds and to provide an opportunity for public enjoyment. It is far easier to maintain or increase present population levels, than to bring an endangered species like the California condor or the whooping crane back from the brink of extinction. Secondary objectives of the Management Area are to protect the other potentially endangered wildlife, such as the bald eagle and greater sandhill crane, and to improve and protect the habitat of these birds. Fish, waterfowl, song birds, shorebirds, big game and other wild mammals of the area and their habitat will also be managed and protected.
REFERENCES: Roberts, 1969
ADDRESS: William J. Deibert
Deschutes National Forest
211 N.E., Revere Ave.
Bend, OR 97701
TELEPHONE: (503) 382-6922 ext. 366
NBIP ACCESSION NUMBER: OR/036

<708>

INVESTIGATOR(S): Denison, W.C.
AFFILIATION: Dept. of Botany and Plant Pathology, Oregon State University
TITLE: Monitoring Air Quality with Epiphytic Lichens

PURPOSE: To observe distribution and changes in distribution of epiphytic lichens in relation to air quality.
SPONSOR(S): Oregon State University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Disappearance or no regrowth of lichen species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; forestry; indicator species; pollution control; power generation
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; non-vascular plants; lichens
TAXA: EVERNIA PRUNASTRI; PRAXINUS LATIPOLIA; HYPOGYMNIA PHYSOIDES; HYPOGYMNIA TUBULOSA; LECANORA CARPINEA; LECANORA CONFUSA; LECANORA PACIFICA; LEPRARIA CANDELARIS; LEPRARIA MEMBRANACEA; LOBARIA PULMONARIA; PARMELIA SUBAURIFERA; PARMELIA SULCATA; PHYSCIA ADSCENDENS; PHYSCIA AIPOLIA; PLATISMATIA GLAUCA; QUERCUS GARRYANA; RAMALINA FARINACEA; RAMALINA LEPTOCARPHA; RAMALINA MENZIESII; RINODINA ARCHAEA; RINODINA MARYSVILLENSIS; USNEA SUBFLORIDANA; XANTHORIA POLYCARPA
ADDED KEYWORDS: bushy cord lichens; fishnet lichens; golden xanthoria; hair-tipped physcia; hoary physcia; inflated hypogymnia; lungwort; marysville rinodina; mealy ramalina; moose antler ramalina; net-marked parmelia; old rinodina; papery bronze parmelia; powdery paint lichen; ragged platismatia; spanish moss; tubular hypogymnia; wrinkled evernia; sulfur oxides; air pollution; oregon ashes; oregon white oaks
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; mortality; reproduction; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field collections
NUMBER OF SAMPLING SITES: over 300
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated flora; atmospheric chemistry; climatological data; terrain
STUDY SITE(S): OR; WA
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; mode; median; modeling, deterministic; modeling, stochastic
ABSTRACT: In places where the air is very dirty, no lichens survive. In areas with slightly cleaner air one or two very resistant lichens can grow. In cleaner areas five or six species are found. In the cleanest areas, a dozen or more species of lichen thrive. By learning which lichens are most sensitive to air pollution and which ones are most resistant, one can judge the quality of the air by examining the lichens. It should be noted that the lichen method will not reveal how much of a particular pollutant is present. It is only an indicator, although a very sensitive indicator, which can reassure you when the

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air is clean and warn you when it is not.
Other methods must be used to determine
which pollutants are present and to
measure the exact amount.

REFERENCES: Denison, 1973
ADDRESS: Mr. W. C. Denison
Botany Dept.
Oregon State University
Corvallis, OR 97331
TELEPHONE: (503) 754-1106 ext. 1106
NBIP ACCESSION NUMBER: OR/063

1-year observational period at established
stations, and will establish four
additional stations at existing spoil
disposal sites just off the mouth of the
Columbia River. The resulting data will be
critically needed in the evaluation of
effects of maintenance dredging and spoil
disposal on aquatic organisms in the lower
Columbia River and estuary.

ADDRESS: Joseph T. Durkin
Deschutes National Forest
211 N.E., Revere Ave.
P.O. Box 155
Hammond, OR 97121
TELEPHONE: (503) 861-1818
NBIP ACCESSION NUMBER: OR/027

<709>

INVESTIGATOR(S): Durkin, J.T.
AFFILIATION: NMFS
TITLE: Baseline Fish and Shellfish Studies at
Offshore Dredge Material Disposal Sites
PURPOSE: To determine fish and shellfish
species composition, seasonal
availability, size ranges, and food
utilization at selected sites off the
mouth of the Columbia River.
SPONSOR(S): COF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Seasonal changes in
availability noted for some species of
Osmeridae, Engraulidae, and
Pleuronectidae, the numerically dominant
groups.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; pollution
control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; shellfish
TAXA: FISHES, 71 SPECIES; DECAPODA, 12 SPECIES
ADDED KEYWORDS: dredging; shrimp; crabs;
spoil disposal; decapods
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; numbers;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trawl nets
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): OR; WA
GEOGRAPHIC DESCRIPTION: Clatsop County;
Pacific County; Columbia River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis
ABSTRACT: Data on benthic and epibenthic
organisms that are indigenous to the
Columbia River and estuary are scarce or
nonexistent. Recently, a species inventory
of aquatic species in the Columbia and
Willamette Rivers established dominant
benthic forms, but consideration could not
be given to evaluation of seasonal trends.
Benthic communities exhibit seasonal
trends over longer observational periods
than was allowed for in the "species
inventory" study. Our study completes a

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INVESTIGATOR(S): Fessler, J.L.
AFFILIATION: Oregon Wildlife Commission;
Oregon State University
TITLE: An Ecological and Fish Cultural Study
of Summer Steelhead in the Deschutes River
PURPOSE: To determine factors limiting
efficiency of hatchery production,
population characteristics, and life
history of Deschutes summer steelhead.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: An increased return of
hatchery-reared steelhead has been
observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: SALMO GAIARDNEBI
ADDED KEYWORDS: steelhead trouts; rainbow
trouts; migration rates; legal regulation;
management measures; trouts
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; harvest; migratory
patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
creel census; electrofishing gear;
seining; weirs
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Deschutes River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: FORTRAN
ABSTRACT: In July 1969, the Oregon Wildlife
Commission initiated an ecological study
of summer steelhead and resident rainbow
trout in the Deschutes River. The research
program has included defining hatchery
rearing techniques for summer history and
migration studies, population and harvest
estimates, and evaluation of special
regulations.
REFERENCES: Fessler, 1974
ADDRESS: Mr. James L. Fessler
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303 Extension Hall Oregon State
University
Corvallis, OR 97331
TELEPHONE: (503) 754-1431
NBIP ACCESSION NUMBER: OR/016

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INVESTIGATOR(S): Frank, P.W.
AFFILIATION: Dept. of Biology, University of Oregon
TITLE: Population Study of *TEGULA PUNEBRALIS* (Gastropoda: Trochidae)
PURPOSE: To study growth rates, mortality rates, and population stability of this mollusk.
SPONSOR(S): University of Oregon
SPONSOR CATEGORY: teaching institution; other country
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Secular variations, but no consistent trends except locally.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca; shellfish
TAXA: *TEGULA PUNEBRALIS*; *TEGULA PULLIGO*; *TEGULA BRUNNEA*
ADDED KEYWORDS: black turban snails; snails; population effects; climate
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; habitat characterization; home range size; mortality; natality; numbers; reproduction; sex
NUMBER OF SAMPLING SITES: 19
SAMPLING FREQUENCY: irregular
STUDY SITE(S): WA; OR; CA; CN
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM/360; FORTRAN
STATISTICS EMPLOYED: mean; analysis of covariance; regression/correlation analysis
ABSTRACT: At higher latitudes along the west coast of the USA, the herbivorous intertidal snail *TEGULA PUNEBRALIS* lives longer, grows more slowly, but attains a larger size than further south. To the north, age distributions are less predictable and often far from stationary. The differences, which have some generality, can be explained either by a primary temperature effect joined with increased hazards to planktonic larvae in the north, or else may result from a combination of interactions between intensity of predation, population density and food supply. Growth rates of transplanted individuals suggest a genetic basis for the latitudinal differences.
REFERENCES: Frank, 1965; Darby, 1964; Frank, 1975
ADDRESS: Dr. Peter Frank
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University of Oregon
Eugene, OR 97403
TELEPHONE: (503) 686-4507
NBIP ACCESSION NUMBER: OR/014

<712>

INVESTIGATOR(S): Hines, W.W.
AFFILIATION: Oregon Dept. of Fish and Wildlife
TITLE: Western Oregon Big Game Habitat Studies
PURPOSE: To determine impacts of forest practices upon black-tailed deer and

Roosevelt elk habitat.

SPONSOR(S): Oregon Dept. of Fish and Wildlife
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Extensive clear cut logging over a short period of time results in reduced carrying capacities for elk.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: wildlife; forestry; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs
TAXA: *PSEUDOTSUGA MENZIESII*; *ODOCOILEUS HEMIONUS*
ADDED KEYWORDS: logging; mule deer; douglas fir; fires; succession; habitat modification; management measures; carrying capacity; deer; elk; fire; natural catastrophe
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; radiotelemetry; recording instruments
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: daily; weekly; annual
SUPPORTING DATA COLLECTED: atmospheric chemistry; climatological data; terrain
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Coos County; Douglas County; Tillamook County; Millicoma Tree Farm
TYPE OF DATA: raw; summarized; literature-derived
COMPUTER AND LANGUAGE: FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; contingency table analysis
ABSTRACT: The habitats of black-tailed deer and Roosevelt elk are being studied in Oregon's Tillamook Burn region. Field observations and aerial photography are the primary methods being utilized. Logging and/or fires of the Douglas fir stands diminished the carrying capacity for the elk. Where Douglas fir seeds and/or seedlings are scarce, the area remains highly productive deer habitat longer than areas that are reforested soon after the logging or fires. Areas where Douglas firs grow quickly and survive show a gradual decline in deer habitat productivity.
REFERENCES: Hines, 1973
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Allegany, OR 97407
TELEPHONE: (503) 754-1241
NBIP ACCESSION NUMBER: OR/010

<713>

INVESTIGATOR(S): Leckenby, D.A.
AFFILIATION: Oregon Dept. of Fish and Wildlife
TITLE: Silver Lake Mule Deer Research
PURPOSE: To acquire, analyze, interpret and publish ecological information concerning mule deer, *ODOCOILEUS HEMIONUS*, and their winter range habitats in order to develop and demonstrate improved techniques for

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management of wildlife resources.
SPONSOR(S): Oregon Dept. of Fish and Wildlife
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Changes in numbers of various plant species, weather phenomena, and mule deer numbers over time have occurred.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; indicator species; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: ODOCOLELUS HEMIONUS; BIRDS, 13 SPECIES; PLANTS, 51 SPECIES; PURSHIA TRIDENTATA
ADDED KEYWORDS: mule deer; weather conditions; bitterbrush; management measures; winter habitats
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; habitat characterization; home range size; mortality; migratory patterns; natality; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): direct observation; standard ring indices
NUMBER OF SAMPLING SITES: 4-10
SAMPLING FREQUENCY: continuous; weekly; annual; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Silver Lake; Fort Rock; Klamath County; Deschutes County; Crook County
TYPE OF DATA: raw; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC 3300; FORTRAN IV; OSCAR
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis; contingency table analysis; non-parametric analysis; modeling, deterministic
ABSTRACT: We are studying mule deer-habitat relationships, winter range habitat improvements, growth and competition between junipers and shrubs, regional habitat-treatment evaluations, and influences of native and manipulated plant communities on mule deer populations. With the increasing intensity and diversity of land uses, it is necessary that ecological relationships of winter range be understood in order for management to maintain maximal value of deer winter ranges. Recognition of plant communities as indicators of the current value of a range to deer, their value as predictors of results from application of various treatments and use of homogeneous vegetation stands as rehabilitation units should permit greater success than experienced previously.
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NBIP ACCESSION NUMBER: OR/020

<714>

INVESTIGATOR(S): Lewis, S.L.
AFFILIATION: Research Section, Oregon Dept. of Fish and Wildlife
TITLE: Population Dynamics of Kokanee Salmon
PURPOSE: To determine factors influencing year class production.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A decline in lake productivity, fish population density, and yield associated with a decline in nutrients was attributed to vaulting of toilet facilities in public campgrounds.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; mountain; aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: fisheries; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; microorganisms; algae
TAXA: ONCORHYNCHUS NERKA; DAPHNIA LONGISPINA; CYCLOPS BICUSPIDATUS
ADDED KEYWORDS: kokanee salmon; carrying capacity; spawning; survival; eggs; fry; population effects; management measures; sewage treatment; salmon
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; harvest; mortality; numbers; productivity; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): water trawl; acoustics; gill nets; seines; vertical plankton tows; creel census
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: seasonal; weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Klamath County; Odell Lake; Cascade Mountains
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: Causes for the apparent decline in lake productivity and carrying capacity are unknown. At present, spawning escapement and reproductive potential are presently unknown, and may be cyclical, caused by climatic or nutrient related factors. The poor year-class production from 1972 through 1974 forecasts a drastic decline in the sport fishery by 1975 and appears to be attributable to a decline in lake productivity and carrying capacity. At present, spawning escapement and reproductive potential seem to be adequate to stock the lake to its carrying capacity. The most obvious recent change in the lake basin has been the U.S. Forest Service's replacement of drainage-field sewage systems with vault facilities at the three large public campgrounds. This change has removed a considerable nutrient source from the lake system. Odell Lake

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may have become eutrophied to some degree but in the absence of nutrient inflow, rapidly recovered. If the above occurred, the lake might be in the process of declining from an artificially high level of productivity to that more characteristic of oligotrophy. Temperature and precipitation may also be involved in the production decline and need further investigation.

REFERENCES: Lewis, 1974

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NBIP ACCESSION NUMBER: OR/009

<715>

INVESTIGATOR(S): Link, T.

AFFILIATION: Oregon Dept. of Fish and Wildlife

TITLE: Razor Clam Studies

PURPOSE: To monitor sport and commercial fisheries and to investigate specific related problems.

SPONSOR(S): Oregon Dept. of Fish and Wildlife

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1949

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Drastic fluctuation in harvest with accompanying severe wastage problems.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; region

MANAGEMENT FOCUS: fisheries; recreation

ORGANISMS, MAJOR TYPES: animals;

invertebrates; mollusca; shellfish

TAXA: SILIQUA FATULA

ADDED KEYWORDS: razor clams; clams;

management measures; population effects

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; growth; habitat

characterization; harvest; mortality;

numbers; sex; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

statistical sampling

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: climatological

data; hydrological data

STUDY SITE(S): AK; WA; OR; CA

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; mode; percentile

ABSTRACT: Razor clam diggers are sampled during low tides throughout the year. Most of the effort is active during daylight tides of spring and summer. The number of diggers, area dug, number of clams, weight, and age are noted. Data are used to regulate the fishery and monitor the condition of the stocks.

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<716>

INVESTIGATOR(S): Lorz, H.W.

AFFILIATION: Oregon Dept. of Fish and Wildlife

TITLE: Effects of Copper and Zinc Ions on Sea

Water Adaptation of Coho Salmon

PURPOSE: Determine if metals found in fresh water environment have an effect on ability of juvenile salmon to migrate and survive in sea water.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fish released into a natural stream were inhibited in their migration following intoxication with copper.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: environmental impact;

fisheries; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish

TAXA: ONCORHYNCHUS KISUTCH

ADDED KEYWORDS: coho salmon; heavy metals;

migration rates; ATPase; population effects

PRIMARY PARAMETERS INVESTIGATED: behavior;

growth; mortality; migratory patterns;

physiology; residues; stress; toxicity

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): OR

GEOGRAPHIC DESCRIPTION: Benton County; Linn

County; Crooked Creek; Yew Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean;

regression/correlation analysis

ABSTRACT: Considerable research has been done to determine safe limits of copper for the survival and growth of juvenile salmonids in fresh water. However, there is a paucity of information available for establishing standards as they relate to the migration of fish into sea water. This study was designed to determine the effect of sublethal concentrations of copper in fresh water on downstream migration, gill ATPase, and adaptation to sea water of juvenile coho salmon.

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NBIP ACCESSION NUMBER: OR/012

<717>

INVESTIGATOR(S): Lorz, H.W.

AFFILIATION: Oregon Dept. of Fish and Wildlife

TITLE: Ecology and Management of Brown Trout

in the Little Deschutes River

PURPOSE: To determine factors affecting

distribution and abundance of brown trout

and to compare growth rates of brown trout

in Oregon streams.

SPONSOR(S): FWS; Oregon Wildlife Commission

SPONSOR CATEGORY: federal government; state

government

DATE OF INITIATION: C

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PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: In many sections of the stream the stream-banks were badly over-grazed. U.S. Forest Service modified grazing leases on land that they had jurisdiction over.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insects
TAXA: SALMO TRUTTA
ADDED KEYWORDS: brown trout; trout; logging; construction; impoundments; siltation; channelization; grazing; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; mortality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; electrofishing gear; direct measurements
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Deschutes County; Klamath County; Little Deschutes River; Deschutes River
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; median; analysis of variance; analysis of covariance; regression/correlation analysis
ABSTRACT: Study sites in the natural, free-flowing stream channel with adequately vegetated banks had greater trout populations than heavily grazed areas. An area with good streamside cover supported 1,853 more brown trout (one-year and older) or 146.9 pounds more per acre than did a badly overgrazed area. Cover was found to be the most important physical parameter governing the number of brown trout. Little movement of tagged fish older than one year occurred in the upper Little Deschutes River, but no estimate of fry movement was made. There is however, a spring and summer movement of brown trout (ages 0 - 4) into irrigation canals from the main Deschutes River, and that portion of the Little Deschutes River subject to irrigation releases from Crescent Lake. Thus, a large number of brown trout are lost annually by entry into unscreened or improperly screened irrigation canals.
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NBIP ACCESSION NUMBER: OR/013

<718>

INVESTIGATOR(S): Mason, R.R.
AFFILIATION: FS
TITLE: Population Ecology and Impacts of Forest Insects of the Pacific Northwest
PURPOSE: To study population dynamics of the Douglas-fir tussock moth and the lodgepole needle miner.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed annual fluctuations, development, peaking, and decline of outbreaks.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: animals; invertebrates; insects; plants; vascular plants; trees
TAXA: ORGYIA PSEUDOTSUGATA; COLEOTECHNITES SP
ADDED KEYWORDS: douglas fir; tussock moths; moths; lodgepole needle miner; population effects; management measures
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; emigration; habitat characterization; immigration; mortality; natality; numbers; reproduction; residues; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): foliage samples from host-tree crowns
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; terrain
STUDY SITE(S): OR; CA; AZ
GEOGRAPHIC DESCRIPTION: Umatilla National Forest; Wallaw-Whitman National Forest; Deschutes National Forest; Malheur National Forest; Winema National Forest; Modoc National Forest; Tonto National Forest
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis; modeling, deterministic
ABSTRACT: This project is concerned with population changes in time and place of the Douglas fir tussock moth and the lodgepole needle miner. Objectives are to determine the underlying causes of population change and regulation in different forest environments and to develop strategies for maintaining the pest populations below the level where damage is caused.
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NBIP ACCESSION NUMBER: OR/026

<719>

INVESTIGATOR(S): McHugh, R.A.
AFFILIATION: Oregon Dept. of Environmental Quality
TITLE: Study of Physical, Chemical and Biological Properties of Selected Oregon

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Lakes
PURPOSE: To ascertain the biological condition of lakes for background and to select lakes for cleanup where data indicate the need.
SPONSOR(S): Oregon Dept. of Environmental Quality
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some eutrophication was identified and point source removed. Situation was only partially alleviated.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake; reservoir
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: pollution control; water quality; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insects; plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria; fungi; algae; protozoa
TAXA: DIATOMS, 84 SPECIES; DESMIDS, 38 SPECIES; ALGAE, 55 SPECIES; ROTIFERA, 12 SPECIES; CLADOCERA, 10 SPECIES; COPEPODA, 2 SPECIES; MALLOPEDA, 1 SPECIES; INSECTA, 1 SPECIES
ADDED KEYWORDS: eutrophication; sewage treatment; camping; siltation; benthic organisms; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: bod; distribution; diversity; habitat characterization; numbers; physiology
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): OR
TYPE OF DATA: raw; summarized; literature-derived
ABSTRACT: Recreational use of Oregon lakes and reservoirs has increased at an incredible rate during the last twenty years. Lakes subjected to increasing exposure to a variety of human activities have been adversely affected. Overfertilization due to addition of raw or treated sewage from resorts, summer homes, and campgrounds, to sewage and garbage thrown from boats; and to soil and surface litter washed in from cleared lands, clearcut forests, road cuts and similar denuded areas has led to massive growths of algae and higher aquatic vegetation. To prevent further deterioration of Oregon's recreational lakes, a program of water quality monitoring was instituted to spot lakes which were becoming undesirably enriched. Remedial measures such as sewage treatment or removal of aquatic weeds and the construction of fish cleaning stations has been recommended.
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Portland, OR 97225
TELEPHONE: (503) 229-5983
NBIP ACCESSION NUMBER: OR/029

<720>

INVESTIGATOR(S): Newton, M.
AFFILIATION: School of Forestry, Oregon State University
TITLE: Comparative Effects of Herbicides, Fire, and Mechanical Site Preparation on Regeneration Success in Coastal Brushfields
PURPOSE: To monitor performance of conifers under pressure from weed species, to evaluate carry-over of weeds through site preparation, and to formulate a strategy of minimum impact in site preparation as measured by impact on site, streams, and desirable species.
SPONSOR(S): FS; Oregon State University
SPONSOR CATEGORY: federal government; teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Biotic changes are nearly totally dependent on primary response of primary producers with effects being greatest for mechanical compared to fire and chemical site preparation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: ALNUS SPP; ACER SPP; RUBUS SPP
ADDED KEYWORDS: pesticides; prescribed burning; species introduction; natural catastrophe; succession; fires; alders; maples; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; habitat characterization; kill; productivity; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): point sample plant distribution; ground cover expressed as cover by layer
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Benton County; Lincoln County; Lane County; Siskiyou River; Yaquina River; Marys River
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC Cyber 3300
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; non-linear estimation; modeling, deterministic
ABSTRACT: Conifer seedling performance is being evaluated in the various plant communities that follow brushfield conversion in the Oregon Coast Ranges. Trees, shrubs, and herbs are monitored to determine their carry-over through disturbances and their subsequent effects on planted conifers. Conifers vary in size and competitive ability. Responses of herbivores to system perturbation are recorded and their effects on system dynamics noted. Scarification, fire, and herbicides of various effect spectra are in use.
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NBIP ACCESSION NUMBER: OR/072

<721>

INVESTIGATOR(S): Richardson, S.L.
AFFILIATION: Oregon State University
TITLE: Early Life History of Boreal Food Fish
PURPOSE: To assess relative abundance, seasonal, spatial, and annual distribution of larval fishes off the Oregon coast.
SPONSOR(S): NOAA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Major annual fluctuations in larval abundances may be related to oceanographic phenomena such as upwelling.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: population; community; region
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: ICHTHYOPLANKTON, 122 SPECIES
ADDED KEYWORDS: ichthyoplankton; population effects; seasonal variations; management measures
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): bongo net plankton sampler; Neuston net
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: monthly; annual
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Yaquina Bay
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: median; percentile; non-parametric analysis
ABSTRACT: Our objectives are: (1) to assess the relative abundance, seasonal, and spatial distribution of larval fishes, especially flatfishes, off the Oregon coast; (2) to determine the importance of the coastal zone (1-30 mi. offshore along the Oregon coast) as a spawning and nursery area for English sole; and (3) to determine the number and location of spawning grounds of English sole along the Oregon coast and their relation to estuaries. Such knowledge is prerequisite to understanding the population dynamics of early stages and management of this species; and (4) to relate the large yearly variations in spawning time and larval abundance to ecological and oceanographic factors, such as coastal currents and upwelling. Such factors may be important in affecting larval survival and resulting year-class strength in commercial populations.
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Oregon State University

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NBIP ACCESSION NUMBER: OR/022

<722>

INVESTIGATOR(S): Tingey, D.T.
AFFILIATION: EPA
TITLE: The Influence of Ozone and/or Sulfur Dioxide on the Metabolite Pools of Ponderosa Pine
PURPOSE: To determine the modifications in metabolic pools both before and after injury is visible, and to see if metabolic pools are good monitors of effects.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in metabolic pools as a function of time of year and pollutant stress.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: PINUS PONDEROSA
ADDED KEYWORDS: ponderosa pines; pines; ozone; sulfur dioxide; pollution; lignin; nitrogen; air pollution
PRIMARY PARAMETERS INVESTIGATED: physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): clip sample
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
STUDY SITE(S): OR
GEOGRAPHIC DESCRIPTION: Benton County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Ponderosa pine (PINUS PONDEROSA) seedlings were grown in field exposure chambers and fumigated with ozone at a concentration of 200 micrograms per cubic meter, 6 hours per day, 7 days per week for variable periods up to 20 weeks. Pines were harvested at 4 week intervals to determine the levels of the metabolites in tops (stems and needles) and roots. The ozone exposure affected the metabolite pools in the roots and tops differently. The ozone treatment had no effect on the nitrogen or amino acid content of the tops but increased the levels of these pools in the roots. The levels of soluble sugars, starch, and phenols tended to increase in the tops and decrease in the roots of the ozone-exposed plants. The ozone treatment had no effect on lignin content in either the roots or tops.
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National Environmental Research Center
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NBIP ACCESSION NUMBER: OR/068

<723>

INVESTIGATOR(S): Waring, R.H.

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AFFILIATION: Forest Ecology Dept., Oregon
State University

TITLE: Watershed Analysis - Coniferous Forest
Biome, Analysis of Ecosystems Program -
Oregon Intensive Site

PURPOSE: To assess ecosystem recovery and
interactions between terrestrial units and
the stream.

SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Vegetation, composition,
cover, biomass, litter, leaf area, leaf
water diffusive resist, nutrient cycling,
soil and erosion, and stream biology
change in response to climate, soil
moisture, seep chemistry, stream flow, and
sediments.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream

LEVEL(S) OF STUDY: community; ecosystem;
region

MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; forestry; indicator
species; radiological; resource planning;
water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; insecta; plants; vascular
plants; trees; shrubs; herbs; grasses;
microorganisms; fungi; algae

TAXA: PSEUDOTSUGA MENZIESII

ADDED KEYWORDS: douglas firs; logging;
models; habitat modification; management
measures

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; growth;
habitat characterization; mortality;
physiology; productivity

NUMBER OF SAMPLING SITES: 1; plus 25
reference stands

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; atmospheric chemistry;
climatological data; hydrological data;
soils; terrain

STUDY SITE(S): OR; WA

GEOGRAPHIC DESCRIPTION: Lookout Creek

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: modeling, deterministic

ABSTRACT: An integrative study of an
old-growth Douglas fir dominated watershed
is following changes in water, nutrients,
carbon, and sediments under disturbed and
undisturbed conditions. Studies of changes
in biomass and the rates of processes are
emphasized. Effect of terrestrial
manipulations (logging) is assessed with
particular emphasis on stream biology,
energy sources, stream chemistry, and
sediment storage and transfer. Detailed
process models as well as general system
models are employed.

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HBIP ACCESSION NUMBER: OR/028

<724>

INVESTIGATOR(S): Wickman, B.E.

AFFILIATION: FS, Pacific NW Forest and Range
Experiment Station

TITLE: Tree Damage Caused by Different
Population Densities of Douglas-fir
Tussock Moth

PURPOSE: To determine tree damage and stand
changes after defoliation by Douglas-fir
tussock moth.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Various levels of tree
mortality were seen, resulting in changes
of stocking, stand composition, and plant
communities.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
forestry; resource planning

ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; plants; annelida;
trees; shrubs; herbs; microorganisms;
viruses

TAXA: ORGYIA PSEUDOTSUGATA; SOLYTUS
VENTRALIS; DENDROCTONUS PSEUDOTSUGATA;
PSEUDOTSUGA MENZIESII; ABIES GRANDIS;
ABIES CONCOLOR

ADDED KEYWORDS: tussock moths; douglas firs;
grand firs; white firs; insecticides;
firs; population effects; biological
control; moths; lepidopterans; coleopterans

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; growth;
habitat characterization; kill; mortality;
numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plots

NUMBER OF SAMPLING SITES: 30

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils; terrain

STUDY SITE(S): OR; WA

GEOGRAPHIC DESCRIPTION: Blue Mountains;
Umatilla National Forest

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; percentile;
analysis of variance;

regression/correlation analysis;
multivariate analysis; non-parametric
analysis; modeling, deterministic

ABSTRACT: Case histories of five tussock moth
outbreaks that occurred in California and
Oregon between 1935 and 1965 are
discussed. Information is given on the
time and duration of the outbreaks, the
presence of natural control agents, and
the damage caused. Most of the outbreaks
were eventually treated with DDT. However,
enough information was available from
untreated portions to show the probable
trend of natural events in the absence of
direct control. Repeated patterns observed
in each of the outbreaks enabled certain
generalizations to be made about natural
population behavior and tree impact. All

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infestations followed a 3-year cycle with inconspicuous to minimal defoliation the first year, severe foliage loss the second year, and ultimate collapse of the population by the end of the third year. The most severe tree damage occurred in the second year. Additional loss of foliage before population collapse in the third year was usually of minor importance in terms of total impact. Although other natural factors were involved, a virus disease appeared to be the principal cause of insect mortality during collapse.

REFERENCES: Wickman, 1973

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NBIP ACCESSION NUMBER: OR/017

<725>

INVESTIGATOR(S): Zobel, D.B.

AFFILIATION: Dept. of Botany and Plant Pathology, Oregon State University

TITLE: Vegetation and Fire History of a Ponderosa Pine - White Fir Forest in Crater Lake National Park

PURPOSE: To determine what changes have occurred in this forest as a result of protection from fire.

SPONSOR(S): NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Changes in tree numbers by species over the past 150 years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: forestry

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs

TAXA: PINUS PONDEROSA; PINUS CONTORTA; ABIES CONCOLOR; ABIES MAGNIFICA
ADDED KEYWORDS: fires; pines; firs; ponderosa pines; white firs; natural catastrophe; management measures

PRIMARY PARAMETERS INVESTIGATED: age; distribution; habitat characterization; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plots; cross-sections of fire scars

NUMBER OF SAMPLING SITES: 68

SUPPORTING DATA COLLECTED: associated flora; soils; terrain

STUDY SITE(S): OR

GEOGRAPHIC DESCRIPTION: Klamath County; Crater Lake National Park

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: mean; regression/correlation analysis

ABSTRACT: Fire occurred at sampling spots at intervals from three or less to more than 50 years with the mean interval at a spot ranging from nine to 42 years. The intervals between fires generally lengthened with increased elevation. A rough estimate of the composition of the forest was gained by combining age-size data with vegetation data. Most of the study area is not near maturity, and probably never has been due to the frequent recurrence of fire. The vegetation has apparently been changing since fire suppression became effective. As the forest matures, the canopy will probably close some more, resulting in less PINUS PONDEROSA and decreased importance of shrubs. Reintroduction of fire can probably reverse these trends to some extent.

REFERENCES: McNeil, 1975

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NBIP ACCESSION NUMBER: OR/030

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INVESTIGATOR(S): Adelson, L.M.
AFFILIATION: Dept. of Biology, Delaware Valley College
TITLE: Water Quality Monitoring Project of Neshaminy Basin
PURPOSE: To identify and monitor the biology and chemistry of natural waters in Bucks County.
SPONSOR(S): Bucks County
SPONSOR CATEGORY: county government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Projected construction of ten dams in Bucks County (five completed) is upgrading biota.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; resource planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insecta; microorganisms; algae
TAXA: HYDROPSYCHIDAE; SIMULIIDAE; TENDIPEDIDAE; TIPULIDAE; TUEIFICIDAE; AEOLOSOMATIDAE
ADDED KEYWORDS: habitat modification; population effects; caddisflies; black flies; buffalo gnats; bloodworms; leatherjackets; gnats; flies; mosquitoes; midges; construction; species diversity; models
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler
NUMBER OF SAMPLING SITES: 40
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; water quality data
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Bucks County; Neshaminy Basin
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: Honeywell 6600-D; FORTRAN
STATISTICS EMPLOYED: non-parametric analysis; modeling, deterministic
ABSTRACT: Since 1967, a continuing program of water quality research has been conducted in Bucks County streams. Purposes of the program are to: (1) compile a baseline of stream quality data, (2) predict water quality trends accompanying urbanization of the county, and (3) develop a program of water quality management in Bucks County. The study is concerned with the complex factors making up the ecosystem of each stream under investigation.
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NBIP ACCESSION NUMBER: PA/045

<727>

INVESTIGATOR(S): Bahorik, J.W.
AFFILIATION: Dept. of Biology, Kutztown State College
TITLE: Greenwich Township Environmental Analysis: A Field Study 1972-1974
PURPOSE: To provide baseline data regarding environmental quality of a large political unit, i.e., the township of Greenwich, in Berks County, Pennsylvania.
SPONSOR(S): The Pennsylvania Ecological Consortium
SPONSOR CATEGORY: societies and other organizations
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Reduction in available forest and diversity of tree species, severe reduction in size and numbers of gametophytes, and severe reduction in natural wildlife habitat.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; aquatic; freshwater; stream
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; forestry; resource planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; crustacea; insecta; mollusca; shellfish; plants; vascular plants; trees
TAXA: TREES, 19 SPECIES; BENTHIC ORGANISMS, 61 FAMILIES; FISHES, 18 SPECIES; AMPHIBIA, 23 SPECIES; REPTILES, 25 SPECIES; MAMMALS, 44 SPECIES
ADDED KEYWORDS: management measures; waste water
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrat; Surber sampler; observation; counting
NUMBER OF SAMPLING SITES: 20 quadrats (trees); 9 stations (macroinvertebrates); 5 stations (fishes)
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: hydrological data; soils; terrain; water quality data
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Berks County; Sacony Creek; Maiden Creek; Greenwich Township
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The Greenwich Township Environmental Analysis (GTEA) was an outgrowth of the recent surge in public concern for environmental quality. One basic objective of this effort was to undertake the assessment of the state of the environment in Greenwich Township, Berks County, Pennsylvania and to provide the concerned public with the information necessary to take a direct hand in assessing the value of large segments of the environment. Ten study areas were defined: Aquatic Analysis, Wildlife Analysis, Botanical Analysis, Geological Analysis, Insect Survey, Bird Census, Historical-Economic Analysis, Political Analysis, Demographic Analysis, and

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NBIP ACCESSION NUMBER: PA/013

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Analysis of Solid Waste Disposal. The data presented should serve as the beginnings of an environmental baseline upon which intelligent judgements can be founded. The procedures accompanying these studies are intended to contribute to the rapidly growing public capability to undertake their own local environmental assessments.
REFERENCES: Bahorik, 1974
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Kutztown, PA 19530
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NBIP ACCESSION NUMBER: PA/034

<728>

INVESTIGATOR(S): Bell, D.M.
AFFILIATION: Dept. of Biology, Lehigh University
TITLE: Heavy Metal (Cadmium and Zinc) Distribution in a Creek Receiving a Zinc Mine Effluent
PURPOSE: To analyse the cadmium and zinc concentrations in the biotic and abiotic components of a creek ecosystem and to quantify the biological changes.
SPONSOR(S): Lehigh University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Lowered diversity of periphyton and macrobenthic communities.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; crustacea; insecta; plants; vascular plants; microorganisms; algae; protozoa
ADDED KEYWORDS: cadmium; zinc; heavy metals; species diversity; periphyton; benthic organisms; sediments
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; electroshocking gear
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Lehigh County; Saucon Creek
TYPE OF DATA: raw
ABSTRACT: The creek receives a pumped ground water effluent from zinc mining operations. The project is to examine heavy metal cycling in the various biotic (algae, plants, invertebrates, and fish) and abiotic (water and sediment) elements of the system. Also, a community analysis is being performed to indicate the kinds and magnitude of alterations associated with the effluent.
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Biology Dept.
Lehigh University

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INVESTIGATOR(S): Brezina, E.R.
AFFILIATION: Pennsylvania Dept. of Environmental Resources
TITLE: Aquatic Biology Monitoring System
PURPOSE: To inventory present stream quality through benthic community, to measure changes in water quality over time, and to monitor specific waste sources.
SPONSOR(S): Pennsylvania Dept. of Environmental Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Most of the changes noted to this point have been seasonal changes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida
ADDED KEYWORDS: management measures; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): kick method; multiple plate artificial substrate sampler
NUMBER OF SAMPLING SITES: 145
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): PA
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 370/158; STORET
ABSTRACT: The Pennsylvania Department of Environmental Resources Aquatic Biology Monitoring System is designed to provide a seasonal evaluation of water quality based on qualitative benthic macroinvertebrate sampling. The biological data, in conjunction with water chemistry sampling throughout the Commonwealth of Pennsylvania, provides data for trends in water quality. Hopefully, this system, applied to individual watersheds, will act as an early warning method in the detection of water pollution. It will then serve as a basis for more intensive biological and chemical investigations to isolate and correct the problem(s).
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NBIP ACCESSION NUMBER: PA/007

<730>

INVESTIGATOR(S): French, E.W.
AFFILIATION: Dept. of Biology, Delaware Valley College
TITLE: Mosquito Species and Populations in Bucks County, Pennsylvania
PURPOSE: To control mosquitoes.
SPONSOR(S): Bucks County Mosquito Control Program (PA)

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SPONSOR CATEGORY: county government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Woodland species are decreasing. Aedes vexans and Culex pipiens are increasing as urbanization increases.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland; aquatic; freshwater; lake; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: Aedes vexans; Anopheles punctipennis; Anopheles quadrimaculatus; Culex pipiens; Mansonia perturbans; Uranotaenia sapphirina; Mosquitoes, 22 species
ADDED KEYWORDS: mosquitoes; pest control; management measures; dipterans; habitat modification
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; immigration; kill; mortality; numbers; territory size; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): light traps; water samples
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: climatological data; water quality data
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Bucks County
TYPE OF DATA: summarized
STATISTICS EMPLOYED: percentile
ABSTRACT: A study was made to determine the identity and distribution of the mosquito population in Bucks County, Pa. Seventeen species of mosquitoes representing seven genera were collected. Aedes vexans and Culex pipiens were reported for every collecting station and represented over 88 per cent of the female specimens taken in light traps. Six species of mosquitoes that are new records for Bucks County were collected, bringing the total known species for the county to 22.
REFERENCES: French and Sweeney, 1971
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NBIP ACCESSION NUMBER: PA/057

<731>

INVESTIGATOR(S): Grove, D.G.
AFFILIATION: Dept. of Biology, Wilson College
TITLE: Frequency of Passerine Species During Spring Migration in Local Study Areas
PURPOSE: Documentation of apparent population changes in some passerines, with special attention to warblers (Parulidae).
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1949
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A distinct reduction in occurrence of some Parulidae.

Fluctuations noted in other species.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; trees
TAXA: BIRDS, 56 SPECIES
ADDED KEYWORDS: warblers; elms; ashes; population effects
PRIMARY PARAMETERS INVESTIGATED: diversity; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field trip listings
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Franklin County
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Through nearly 600 field trips in spring between 1949 and the present, all in the same wooded area, a listing of species occurrences has been developed. Comparison of recent records with earlier ones suggests trends in bird populations.
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Wilson College
Chambersburg, PA 17201
NBIP ACCESSION NUMBER: PA/041

<732>

INVESTIGATOR(S): Harmon, P.L.
AFFILIATION: Ichthyological Associates, Inc.
TITLE: Limerick Ecological Study
PURPOSE: Ecological survey to gather preoperational (baseline) data in the Schuylkill River and Perkiomen Creek in the vicinity of Limerick Generating Station.
SPONSOR(S): Philadelphia Electric Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Shifts or changes occurred in relative abundance of fish species and of macroinvertebrate populations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; recreation; pollution control; water quality; power generation; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; invertebrates; insecta
TAXA: INCHOTA, 20 ORDEAS
ADDED KEYWORDS: population dynamics; benthic organisms; nuclear power plants
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; numbers; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine; trap net; trawl; electrofishing gear; drift nets; buried baskets; sampler; artificial substrate
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): PA

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GEOGRAPHIC DESCRIPTION: Chester County; Bucks County; Schuylkill River; Limerick Generating Station; Perkionen Creek
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: None provided.
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TELEPHONE: (215) 327-0398
NBIP ACCESSION NUMBER: PA/053

<733>

INVESTIGATOR(S): Mayer, C.E.
AFFILIATION: FS
TITLE: Forest Survey
PURPOSE: To periodically inventory on a continuing basis the forest resources of the 14 northeastern states (Maine to Kentucky) and report on the findings.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1945
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Continuing increases in the volume of usable timber have been observed since the initiation of the study.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees
TAXA: TREES, 56 SPECIES
ADDED KEYWORDS: management measures; inventories; pines; hemlocks; oaks; maples; birches
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; harvest; mortality; residues
NUMBER OF SAMPLING SITES: photo points (1 per 500 acres); ground plots (1 per 15,000 acres)
SUPPORTING DATA COLLECTED: photo samples; ground samples
STUDY SITE(S): ME; VT; NH; MA; CT; RI; NY; NJ; DE; PA; WV; OH; KY
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 370/168; FORTRAN IV
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: Under the authority of the McSweeney-McNary Forest Research Act of May 22, 1928, and subsequent amendments, the Forest Service, U.S. Department of Agriculture, conducts a series of continuing forest surveys of all states to provide up-to-date information about the forest resources of the Nation. Reports summarizing the forest-resource situation and the changes that have taken place since the initial survey are produced. The first forest survey of Maine was made in 1954-58 by the Northeastern Forest

Experiment Station and a resurvey was made in 1968-70. Projections of future timber supply show that, if present removal trends continue, hardwood removals will exceed growth before the turn of the century. A greatly increased effort at forest management, particularly of hardwoods is indicated if timber growth in Maine is to keep pace with demand. In southern New England States - Connecticut, Massachusetts, and Rhode Island - a resurvey was undertaken in 1971, some 19 years after the initial forest survey. The volume of timber was up despite decrease in area and the average net annual growth exceeds removals 4 to 1. Lack of active timber harvesting may adversely affect forests in the future.

REFERENCES: Kingsley, 1974; Ferguson and Kingsley, 1972; Wilson and Peters, 1967; Bickford, et al, 1963
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Upper Darby, PA 19082
TELEPHONE: (215) 596-1645
NBIP ACCESSION NUMBER: PA/010

<734>

INVESTIGATOR(S): Medve, R.J.
AFFILIATION: Dept. of Biology, Slippery Rock State College
TITLE: Volunteer Plants on Reclaimed Bituminous Strip Mine Spoils
PURPOSE: Identify successional stages and composition of plant communities on strip mines.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: More volunteer plants are found on non-seeded spoils. Red maple, quaking aspen, and large toothed aspen are the main woody plant invaders.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; forestry; indicator species; pollution control
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: PLANTS, 23 SPECIES
ADDED KEYWORDS: strip mining; mining; revegetation; succession; red maples; maples; quaking aspens; large toothed aspens; aspens
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transects; counts
NUMBER OF SAMPLING SITES: 13
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Butler County; Moraine State Park
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Sixteen reclaimed strip mine spoils in Moraine State Park and West Sunbury, Pennsylvania, have been studied for tree seedling survival and for volunteer woody plant invasion. Of ten species found in

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PENNSYLVANIA

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the study area, the dominant species were *POPULUS GRANDIDENTATA*, *POPULUS TRENULOIDES*, and *ACER RUBRUM*. Terrace-backfilled spoils had a higher density and frequency of seedlings, but a lower diversity of species than did spoils returned to the approximate original contour. Sites seeded with a legume-grass mixture had fewer species, lower density, and lower frequency of volunteer woody seedlings than did non-seeded areas.

REFERENCES: Hedve, 1974; Hedve, 1973

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NBIP ACCESSION NUMBER: PA/017

<735>

INVESTIGATOR(S): Ratzlaff, W.

AFFILIATION: Dept. of Biology, Millersville State College

TITLE: Three Mile Island Fish Study

PURPOSE: To determine species composition and percentage composition of fishes in the immediate vicinity of the Three Mile Island Nuclear Plant and to determine condition factor of the most important species.

SPONSOR(S): Metropolitan Edison Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: All data which have been analyzed are pre-operational and all changes are attributable to Hurricane Agnes or to other unknown causes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: environmental impact; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles; fish

TAXA: FISHES, 40 SPECIES

ADDED KEYWORDS: species diversity; nuclear power plants

PRIMARY PARAMETERS INVESTIGATED: numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; trap nets

NUMBER OF SAMPLING SITES: 11

SAMPLING FREQUENCY: seasonal

STUDY SITE(S): PA

GEOGRAPHIC DESCRIPTION: Dauphin County; Susquehanna River

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: FORTRAN

STATISTICS EMPLOYED: mean; analysis of variance

ABSTRACT: The purpose of the project is to determine changes in species composition and condition factor of important fish species in the Three Mile Island area with the ultimate view to determining if the nuclear facility has any effect on the fish population.

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NBIP ACCESSION NUMBER: PA/018

<736>

INVESTIGATOR(S): Ratzlaff, W.

AFFILIATION: Dept. of Biology, Millersville State College

TITLE: Schuylkill Fish and Water Study

PURPOSE: To determine species and percentage composition of fishes in the vicinity of Reading, Pa.; and to determine food of four important species as well as to determine dissolved oxygen, pH, and temperature of water.

SPONSOR(S): Metropolitan Edison Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1971

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decrease in creek chubsucker, increase in river carpsucker, increase in centrarchid basses, and decrease in tumorous redbreast sunfish.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: ERINYZON OBLONGUS; CARPIODES CARPIO;

LEPOMIS AURATUS; AMBLOPLITES SPP

ADDED KEYWORDS: creek chubsuckers; river carpsuckers; basses; redbreast sunfishes; thermal effluents; fossil fueled power plants

PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

electrofishing gear

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna; water quality data

STUDY SITE(S): PA

GEOGRAPHIC DESCRIPTION: Berke County; Schuylkill River

TYPE OF DATA: raw; reduced

ABSTRACT: The purpose of the project is to determine changes in species composition, condition factor, dissolved oxygen, pH, and temperature at time of fish sampling at six sites on the Schuylkill River from the mouth of Tulpehocken Creek at the upstream limit of Reading to immediately downstream from Titus Station near Gibraltar.

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NBIP ACCESSION NUMBER: PA/019

<737>

INVESTIGATOR(S): Richardson, J.L.

AFFILIATION: Dept. of Biology, Franklin and Marshall College

TITLE: A Long-Term, Periodic Monitoring of

PENNSYLVANIA
Standard Federal Region 3
Fish and Wildlife Service Region 5
(CONTINUED)

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Stream Conditions in the Conestoga Basin,
Lancaster County, Pennsylvania
PURPOSE: To study changes in water quality
and biological communities in selected
streams of a heavily farmed, increasingly
populated, and industrialized limestone
basin.
SPONSOR(S): Conestoga Valley Association
SPONSOR CATEGORY: societies and other
organizations
DATE OF INITIATION: 1947
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Little change since 1947.
Certain tributaries are much improved but
one or two others degraded.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; community;
ecosystem
MANAGEMENT FOCUS: indicator species;
pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; annelida; microorganisms; algae
ADDED KEYWORDS: diatoms; habitat
modification; population effects; isopods;
amphipods
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
sampling
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: monthly; annual; irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): PA
GEOGRAPHIC DESCRIPTION: Lancaster County;
Conestoga River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The Conestoga Creek and its
tributaries have been examined
periodically since the classical
investigation by Ruth Patrick and
associates in 1947 that has become
something of a benchmark study in the
biological investigation of water quality.
In 1960, Dr. Patrick returned for further
small-scale sampling. In 1972, a team of
undergraduates sponsored by NSF spent 10
weeks reinvestigating the condition of
many of the 1947 sites. Since 1972,
periodic collections from selected streams
in the basin have been made in class field
trips of Franklin and Marshall students
and a more continuous, systematic effort
has been mounted by several local high
schools under the sponsorship of the
Conestoga Valley Association.
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NBIP ACCESSION NUMBER: PA/021

<738>

INVESTIGATOR(S): Shope, W.K.
AFFILIATION: Pennsylvania State Game

Commission
TITLE: Game Take Survey
PURPOSE: To estimate small game harvests by
county and for the State of Pennsylvania.
SPONSOR(S): Pennsylvania State Game Commission
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Steady decrease in grouse
harvests since project initiation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: PHASIANUS COLCHICUS; BONASA UMBELLUS;
PHILOMELA MINOR; MELEAGRIS GALLOPAVO;
SYLVILAGUS SP; SCIURUS SP
ADDED KEYWORDS: ring-necked pheasants;
pheasants; cottontail rabbits; rabbits;
gray squirrels; squirrels; ruffed grouse;
grouse; turkeys; woodcocks; doves; quails;
habitat modification
PRIMARY PARAMETERS INVESTIGATED: harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mail surveys; questionnaire
SAMPLING FREQUENCY: annual
STUDY SITE(S): PA
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Information on harvests by county
and state have been collected since 1971
on the species listed above. In addition,
information on the number of hunters
pursuing various small game species has
been collected. Information on trapping
activities (participation) has been
collected for some years. This project is
primarily a survey and inventory job.
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NBIP ACCESSION NUMBER: PA/016

<739>

INVESTIGATOR(S): Waters, J.H.
AFFILIATION: Dept. of Biology, Villanova
University
TITLE: Stream Communities and Water Quality
in Southeastern Pennsylvania
PURPOSE: To monitor long-term stream
communities in relation to water quality
in southeastern Pennsylvania.
SPONSOR(S): Villanova University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Some increase in species
diversity with improved water quality.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: indicator species; water
quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish; invertebrates; crustacea;
insecta; annelida; plants; microorganisms;
bacteria; fungi; algae; protozoa
TAXA: RANA SPP; ETHEOSTOMA NIGRUM; NOTROPIS
SPP; GOMPHUS SPP; OPHIOGOMPHUS SPP;
LUMBRICULUS SPP; BRANCHIOBELLA SPP;

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PENNSYLVANIA

Standard Federal Region 3

Fish and Wildlife Service Region 5

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SPIROGYRA SPP; CLADOPHORA SPP; SPIRULINA
SPP; MACROTHRIX SPP; EUGLENA SPPADDED KEYWORDS: coliform bacteria;
eutrophication; frogs; darters; shiners;
dragonflies; species diversity; industrial
chemicals; streptococcusPRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbersDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
seine; bottom scrapers; millipore filters;
nets; cell counters

NUMBER OF SAMPLING SITES: 7

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

water quality data

STUDY SITE(S): PA

GEOGRAPHIC DESCRIPTION: Delaware County;
Chester County; Montgomery County; IthanCreek; Gulph Creek; Mill Creek; Crow
Creek; Trout Run; French Creek

TYPE OF DATA: raw

STATISTICS EMPLOYED: non-parametric analysis

ABSTRACT: Efforts include: Determination of
oxygen, carbon dioxide, chemical pollution
levels, and physical parameters of feeder
creeks into the Schuylkill and Delaware
River systems; determination of levels of
coliform and fecal streptococcus bacteria;
estimation of algal, protozoan,
invertebrate, and vertebrate populations
by sampling; correlation of species
diversity and populations with chemical
and physical parameters; and annual
sampling to determine biotic changes in
response to water quality changes.

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NBIP ACCESSION NUMBER: PA/002

RHODE ISLAND
Standard Federal Region 1
Fish and Wildlife Service Region 5
(SEE ALSO 393, 610, 733)

<740>

INVESTIGATOR(S): Gould, M.D.
AFFILIATION: Dept. of Natural Sciences, Roger Williams College
TITLE: Meiofaunal Populations Under Various Concentrations of Pollutants in Both Fresh and Marine Ecosystems
PURPOSE: To identify the populations (especially Nematoda) present with varying thermal and hydrocarbon discharges.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There is a presence of a particular species with specific temperatures.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; microorganisms; algae; protozoa
TAXA: MONONCHUS SPP; CEPHALOBUS SPP; PLECTUS SPP; RHABDITIS SPP
ADDED KEYWORDS: hydrocarbons; thermal effluents; isopods; nematodes; oil
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; emigration; growth; habitat characterization; numbers; sex; size/weight; stress; territory size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): dredge samples; core samples
NUMBER OF SAMPLING SITES: 7 on regular basis; 50 on irregular basis
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; water quality data
STUDY SITE(S): RI; MA
GEOGRAPHIC DESCRIPTION: Washington County; Kent County; Bristol County; Hunt River; Narragansett Bay; Brayton Point Power Station; East Greenwich Dairy
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis; multivariate analysis; modelling, deterministic
ABSTRACT: The collection of data on a regular basis is designed to determine the effect of thermal pollutants on the meiofaunal community.
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NBIP ACCESSION NUMBER: RI/018

<741>

INVESTIGATOR(S): Jeffries, H.P.
AFFILIATION: Graduate School of Oceanography,

University of Rhode Island
TITLE: Distribution and Abundance of Bottom Fishes in the Narragansett Bay-Rhode Island Sound Area.
PURPOSE: To conduct weekly sampling by standardized otter-trawl, observe seasonal patterns, and to evaluate and interpret trends and cycles.
SPONSOR(S): State of Rhode Island
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The major species, PSEUDOPLEURONECTES AMERICANUS, decreased more than 80 percent from 1968 to present. Variation is attributed to subtle climatic warming.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea
TAXA: PSEUDOPLEURONECTES AMERICANUS
ADDED KEYWORDS: winter flounders; flounders; decapods; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): otter trawl
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
STUDY SITE(S): RI
GEOGRAPHIC DESCRIPTION: Greenwich County; Washington County; Narragansett Bay; Rhode Island Sound
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; analysis of covariance; regression/correlation analysis; multivariate analysis
ABSTRACT: None provided.
REFERENCES: Jeffries and Johnson, 1974
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NBIP ACCESSION NUMBER: RI/004

<742>

INVESTIGATOR(S): Pratt, S.D.
AFFILIATION: Graduate School of Oceanography, University of Rhode Island
TITLE: Effects of Disposal of Dredge Spoil in Rhode Island Sound
PURPOSE: To describe repopulation of spoil by macrobenthos and to describe natural benthic communities of Rhode Island Sound.
SPONSOR(S): COE; NMFS; EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Colonization of spoil by members of natural soft-bottom communities followed by changes due to development of sandy substrate caused by erosion.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population; community

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RHODE ISLAND

Standard Federal Region 1

Fish and Wildlife Service Region 5

(CONTINUED)

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MANAGEMENT FOCUS: wildlife; indicator species; pollution control

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida

TAXA: BYBLIS SERRATA; ANPELISCA AGASSIZI; ARCTICA ISLANDICA; PERIPLOMA PAPYRITUM; NUCOLA SPP; NERPHYS INCISA; PHEROSA AFFINIS

ADDED KEYWORDS: benthic organisms; sediments; amphipods; polychaetes; habitat modification; dredging

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; immigration

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): grab samples; Smith-McIntyre grab

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): RI

GEOGRAPHIC DESCRIPTION: Rhode Island Sound

TYPE OF DATA: raw; reduced; summarized; literature-derived

ABSTRACT: The natural and disturbed sea floor in study areas of Rhode Island Sound have been described. Selected pollutant levels in sediments were measured in 1971-1975.

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NBIP ACCESSION NUMBER: RI/013

<743>

INVESTIGATOR(S): Smayda, T.J.

AFFILIATION: Graduate School of Oceanography, University of Rhode Island

TITLE: Causes of Phytoplankton Species

Succession and Blooms in Narragansett Bay

PURPOSE: To describe and to quantify through experimentation the phytoplankton species and bloom dynamics, with the eventual development of a model. Quantitative phytoplankton samples have been collected weekly since 1960.

SPONSOR(S): NSF; NOAA; State of Rhode Island

SPONSOR CATEGORY: federal government; state government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Periodic invasions of

certain diatoms, notably ASTERIONELLA

JAPONICA, and one-time dominance of

CHAETOCEROS DIADEMA. Major annual

phytoplankton bloom displaced from

winter-spring to August during 4 of last 6 years since 1970.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; recreation; resource planning; pollution control; water quality; power generation

ORGANISMS, MAJOR TYPES: microorganisms; algae

TAXA: PHYTOPLANKTON, 150 SPECIES

ADDED KEYWORDS: phytoplankton; succession;

algal blooms; diatoms; population effects

PRIMARY PARAMETERS INVESTIGATED: behavior;

biomass; diversity; growth; habitat

characterization; numbers; physiology;

productivity; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

water bottle samples; nets

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;

hydrological data; water quality data

STUDY SITE(S): RI

GEOGRAPHIC DESCRIPTION: Narragansett Bay

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/155; FORTRAN

STATISTICS EMPLOYED: mean; percentile;

analysis of variance; analysis of

covariance; regression/correlation

analysis; multivariate analysis;

non-linear estimation; modeling,

deterministic; serial autocorrelations

ABSTRACT: We monitor water chemistry, hydrographic conditions, and phytoplankton and zooplankton populations; measure productivity, nutrients uptake, and grazing; carry out other experiments with natural and cultured populations of phytoplankton; and quantify, through these, the regulation of phytoplankton species occurrence, succession, and bloom dynamics in Narragansett Bay. Also, we seek to evaluate the annual variability in these events and processes and account for such short-term and long-term variability.

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NBIP ACCESSION NUMBER: RI/014

SOUTH CAROLINA
Standard Federal Region 4
Fish and Wildlife Service Region 4
(SEE ALSO 236, 238, 279, 370, 409, 502)

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INVESTIGATOR(S): Blecha, J.B.
AFFILIATION: Carolina Power and Light Co.
TITLE: Environmental Monitoring of the H.B. Robinson Steam Electric Plant Benthic Macroinvertebrates
PURPOSE: To determine the effect of heated effluent on the major components of the benthic macroinvertebrate populations.
SPONSOR(S): Carolina Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The species richness varies inversely with temperature. The structure of the benthic community changes from heated areas to non-heated areas.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream; reservoir
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida
TAXA: BENTHIC ORGANISMS, 120 SPECIES
ADDED KEYWORDS: thermal effluents; benthic organisms; impoundments; hydroelectric power plants; dipterans; chironomids
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Ponar grab sampler; artificial substrate samplers
NUMBER OF SAMPLING SITES: 17
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Darlington County; Chesterfield County; Black Creek; Lake Robinson; H.B. Robinson Steam Electric Plant
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Monthly samples of the benthos were collected from March, 1974 to present, with grab sampler and artificial substrate samplers. One hundred-twenty taxa of macroinvertebrates were collected from Lake Robinson and Black Creek, the majority belonging to the dipterans, specifically the CHIRONOMIDAE. A maximum density of 4600 organisms per square meter was recorded. Preliminary calculation indicate a decrease in diversity indices with an increase in depth and water temperature.
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Apex, NC 27502
TELEPHONE: (919) 362-8394
NBIP ACCESSION NUMBER: NC/046

<745>

INVESTIGATOR(S): Ezell, W.B.
AFFILIATION: The Citadel
TITLE: Chemical, Physical, and/or Biological Control of Mosquitoes Associated with Dredged Soil Disposal
PURPOSE: To determine the physical and biotic factors that affect mosquito production within hydrologic spoil sites, and to develop ecologically sound procedures to eliminate mosquito breeding from such sites.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in soil fissures resulting from mosquito breeding.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland; wetland
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; invertebrates; insecta; plants; vascular plants; herbs
TAXA: AEDES SOLLICITANS; AEDES TAENIORHYNCHUS
ADDED KEYWORDS: management measures; mosquitoes; dredging; dipterans; habitat modification
PRIMARY PARAMETERS INVESTIGATED: biomass; bod; distribution; diversity; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): light traps; emergence traps; pitfall traps; hand collections
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Santee River; Ashley River; Cooper River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
ABSTRACT: We are concerned with monitoring the ecological changes that occur in insects (especially mosquitoes), plants (vascular), and birds after the pumping of dredged soil into hydraulic spoil sites.
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Biology Dept.
The Citadel
Charleston, SC 29409
TELEPHONE: (803) 577-6900
NBIP ACCESSION NUMBER: SC/002

<746>

INVESTIGATOR(S): Gentry, J.B.
AFFILIATION: Savannah River Ecology Laboratory, University of Georgia
TITLE: Annual Fluctuations in Small Mammal Populations in a Southeastern United States Hardwood Forest
PURPOSE: To make density estimates of small mammal populations in lowland hardwood forests of the southeastern United States.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

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CHANGE(S) OBSERVED: Populations fluctuated annually: high in 1967-1968, low in 1969-1971, high in 1972-1973, and low in 1974-1975.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: BLARINA BREVICAUDA; SOREX LONGIROSTRIS; PEROMYSCUS GOSSYPINUS; OCHROTONYS NUTTALLI
ADDED KEYWORDS: weather conditions; population effects; succession; southeastern shrews; shrews; cotton mice; mice; short-tailed shrews; golden mice
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; home range size; immigration; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): snap traps; kill traps
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Aiken County; Savannah River Plant
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/105; FORTRAN
STATISTICS EMPLOYED: mean
ABSTRACT: A 5.8 ha grid, consisting of 256 stations spaced 15 meters apart, was laid out in a mature cove hardwood forest near Aiken, South Carolina. Snap traps were used to remove animals from the grid. The grid was trapped once each year from 1967-1970. Emphasis was placed upon population levels, changes in species composition, and habitat utilization of the small mammals. Population levels declined during the study. Species composition did not remain the same over the four year period. Prebaiting resulted in different removal rates. Weather changes also influenced removal rates.
REFERENCES: Gentry, et al, 1974; Smith, et al, 1974
ADDRESS: Mr. J.B. Gentry
Savannah River Plant
SREL
Drawer E
Aiken, SC 29801
TELEPHONE: (803) 649-6211 ext. 2752
NBIP ACCESSION NUMBER: SC/012

<747>

INVESTIGATOR(S): Gracy, R.C.; Keith, W.J.
AFFILIATION: South Carolina Wildlife and Marine Resources Dept.
TITLE: Survey of the South Carolina Oyster Fishery
PURPOSE: To document problem areas within the state oyster fishery and to formulate recommendations basic to the improvement of the industry.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years

PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Oyster production declined from 3,250,000 S.C.bu. in 1908 to 250,000 S.C.bu. in 1970.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca
TAXA: CRASSOSTREA VIRGINICA
ADDED KEYWORDS: oysters; management measures; legal regulation
PRIMARY PARAMETERS INVESTIGATED: habitat characterization; harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field interview
SAMPLING FREQUENCY: weekly
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Santee River; Wando River
TYPE OF DATA: literature-derived
ABSTRACT: The intertidal oyster current dominates the shellfish industry. Subtidal bottoms should be expanded to supplement intertidal production. Recent studies indicate that this may be feasible. Lack of mechanization continues to ensure dependency on hand labor. Interest in mechanical harvesting is now high. Several harvesters, designed for intertidal harvesting, are now under development. State-managed oyster grounds have been established in several areas giving an additional source of intertidal seed for planting. Extensive deposits of "washed-shell" have been made available for use as cultch material. The subtidal seed beds of the Santee and Wando Rivers have been resurveyed to provide a basis for formulating a management program which should ultimately promote a more intense use of this seed.
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NBIP ACCESSION NUMBER: SC/016

<748>

INVESTIGATOR(S): Gracy, R.C.; Keith, W.J.
AFFILIATION: South Carolina Wildlife and Marine Resources Dept.
TITLE: Management and Development of the Shellfish Industry in South Carolina
PURPOSE: To revamp the existing oyster leasing system, to examine aerial photographs as a means of intertidal oyster inventory, to develop shellfish management methods, and to document the state's hard clam resources.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Oysters have declined during this century but recent findings in unleased areas indicate increased clam populations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: fisheries

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ORGANISMS, MAJOR TYPES: animals;
invertebrates; shellfish

TAXA: CRASSOSTREA VIRGINICA; MERCENARIA
MERCENARIA

ADDED KEYWORDS: oysters; clams; management
measures; legal regulation

PRIMARY PARAMETERS INVESTIGATED: growth;
habitat characterization; harvest; home
range size; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field sampling; tong sampler

SAMPLING FREQUENCY: daily

STUDY SITE(S): SC

TYPE OF DATA: literature-derived

ABSTRACT: The annual oyster harvest in South Carolina makes it the second most valuable fishery in the state. Ex-vessel value is currently exceeded only by shrimp, however, since early in this century the oyster fishery has exhibited a steady downward trend. In the past ten years, this decline has been accelerated. Past leasing arrangements have been unduly complicated. Recent realignment of intertidal leases has resulted in the establishment of well defined boundaries. Accurate inventories of leases, acreages, and locations have been compiled. Examination of current legislation, regulations, leasing procedures and management practices indicate that some changes would be beneficial to the industry. Observations made have resulted in the formulation of a long-range shellfish management plan. Such a plan is considered necessary to secure the future of the South Carolina shellfish industry. From March 1973 until June 1975, a hard clam survey was conducted on the unleased subtidal bottoms of the state. Upon completion, more than 18,000 square yard samples had been collected and recorded. Four commercially valuable clam beds were located. These contained enough clams to warrant the experimental commercial use of hydraulic escalator harvesters. More clams were taken than in any previous recorded season. Coincident with the field survey, a study was conducted in growth recruitment and survival of clams within specific areas.

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NBIP ACCESSION NUMBER: SC/017

<749>

INVESTIGATOR(S): Patrick, R.
AFFILIATION: Dept. of Limnology, Academy of
Natural Sciences

TITLE: Monitoring River Conditions in
Industrialized Areas

PURPOSE: To determine effects of pollution.

SPONSOR(S): Sabine River Plant; Savannah
River Project

SPONSOR CATEGORY: private corporation

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in model of
diatom community by shifts in numbers of
species and relative sizes of populations,
and also by shifts in kinds of species and
biomass.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: environmental impact;

pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

ADDED KEYWORDS: industrial chemicals;

diatoms; models

PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

artificial substrates; glass slides

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): TX; SC

GEOGRAPHIC DESCRIPTION: Sabine River;
Savannah River

TYPE OF DATA: literature-derived

ABSTRACT: The purpose of the diatometer
programs of the Academy of Natural
Sciences was to determine the condition of
the river in various sections by the use
of substrates. Slides are withdrawn at
approximately 2-week intervals, scraped,
thoroughly homogenized, and a number of
drops are removed for study. A truncated
curve is developed for these samples. A
semi-detailed reading is based upon the
detailed reading, and in this type of
reading the numbers of individuals for all
species are not determined. Only the
numbers of individuals of the most common
species are estimated by a thorough count
of approximately 500 cells. The whole
slide is scanned and all new species are
recorded. Biomass is determined by
estimating the numbers of individuals in a
given amount of water. The methodology for
this has been statistically determined. In
some instances, we actually measure the
biomass of diatoms.

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Academy of Natural Sciences of
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Philadelphia, PA 19103

TELEPHONE: (215) 567-3700

NBIP ACCESSION NUMBER: PA/056

<750>

INVESTIGATOR(S): Sherer, R.W.
AFFILIATION: North American Benthological
Society

TITLE: Biological Monitoring Program -
Statewide

PURPOSE: Evaluate water quality through
analysis of biological parameters.

SPONSOR(S): State of South Carolina

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Species diversity,
biomass, indicator organisms, and
chlorophyll.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake;

reservoir; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population;

community

MANAGEMENT FOCUS: environmental impact;

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indicator species; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
plants; vascular plants; herbs;
microorganisms; algae
ADDED KEYWORDS: phytoplankton; periphyton;
heavy metals; chlorophylls; habitat
modification; benthic organisms; aquatic
plants
PRIMARY PARAMETERS INVESTIGATED: biomass;
bod; distribution; diversity; habitat
characterization; numbers; residues
NUMBER OF SAMPLING SITES: 74
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; water quality data
STUDY SITE(S): SC
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; mode; median;
percentile
ABSTRACT: Program involves sampling 74
stations located throughout South
Carolina. Parameters include
physico-chemical factors, phytoplankton,
periphyton, macrophyton,
macro-invertebrates, and fish.
ADDRESS: Mr. Russell Sherer
South Carolina Health and
Environmental Control
Office of the Commissioner
2600 Bull St.
Columbia, SC 29201
TELEPHONE: (803) 758-3499
NBIP ACCESSION NUMBER: SC/001

<751>

INVESTIGATOR(S): Tilly, L.J.
AFFILIATION: E. I. du Pont de Nemours, Inc.
TITLE: Aquatic Biology Studies
PURPOSE: To study effects of elevated water
temperatures on the ecology of aquatic
organisms and provide biological
information for production use.
SPONSOR(S): ERCA
SPONSOR CATEGORY: federal government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Faster growth at elevated
temperature for green and blue-green algae
- habitat selection based on temperature.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; reservoir
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
pollution control; water quality; power
generation
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; bacteria; algae
TAXA: OSTRACODA; GASTROPODA; DECAPODA;
BACTERIA; EPHEMEROPTERA; ALGAE
ADDED KEYWORDS: thermal effluents; habitat
modification; ostracods; decapods;
ephemeropterans; nuclear power plants
PRIMARY PARAMETERS INVESTIGATED: age;
diversity; growth; habitat

characterization; physiology; sex;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection
NUMBER OF SAMPLING SITES: 1-10
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data
STUDY SITE(S): SC
GEOGRAPHIC DESCRIPTION: Aiken County;
Barnwell County; Edgefield County; Upper
Three Runs Creek; Par Pond; Savannah River
Plant
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: SASS, IBM 360
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis
ABSTRACT: Although major emphasis is placed
on studying the effects of elevated
temperatures on the ecology of aquatic
organisms, the biology program carries out
a variety of studies in support of
production efforts at the Savannah River
Laboratory. The aquatic studies are
conducted in Par Pond, a 2800-acre cooling
water reservoir, and in upper Three Runs
Creek, a soft black water stream, typical
of streams of the Atlantic Coastal plain.
The basic limnology of Par Pond has been
studied since 1965. The effects of 5 to
10C increases in water temperature on the
biota are being studied with emphasis on
phytoplankton and periphyton. Zooplankton
and snails are also being studied to
determine the influence of elevated
temperatures on growth and metabolic
rates. Thermal studies are just beginning
at the Flowing Streams Laboratory on Upper
Three Runs Creek. Four of the six
experimental streams have mixed water
temperatures 2.5, 5.0, 7.5, and 12.5C
above ambient; two streams are controls.
Effects of these temperatures on the
ecology of lower trophic level organisms,
such as algae, bacteria, and aquatic
insects are being studied.
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E.I. Dupont
Aiken, SC 29801
TELEPHONE: (803) 649-6211 ext. 3406
NBIP ACCESSION NUMBER: SC/030

<752>

INVESTIGATOR(S): Zingmark, R.G.
AFFILIATION: Dept. of Biology, University of
South Carolina
TITLE: Phytoplankton of Kiawah Island, South
Carolina
PURPOSE: Annual survey of phytoplankton
diversity.
SPONSOR(S): Environmental Research Center,
University of South Carolina
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Typical species
succession cycle of estuarine
phytoplankton.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; marine; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: microorganisms; algae

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TAXA: PHYTOPLANKTON, 228 SPECIES

ADDED KEYWORDS: phytoplankton; seasonal
variations; succession

PRIMARY PARAMETERS INVESTIGATED: diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plankton net

NUMBER OF SAMPLING SITES: 14

SUPPORTING DATA COLLECTED: associated
microorganisms; hydrological data

STUDY SITE(S): SC

GEOGRAPHIC DESCRIPTION: Charleston County;
Kiawah River; Stono River; Kiawah Island

TYPE OF DATA: raw; reduced

COMPUTER AND LANGUAGE: IBM 360; PORTRAN

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The objectives of this portion of
the Kiawah study were to describe the
seasonal succession of species, to measure
the changes in the species diversity of
phytoplankton at each station over time,

to calculate the differences in species
diversity of phytoplankton among the
sampling stations at each sampling date,
and to identify the dominant ("important")
species of phytoplankton in three types of
communities around Kiawah Island (oceanic,
estuarine, and freshwater coastal ponds).
It is crucial that a continuing monitoring
program be established to serve as a means
of detecting and documenting the
biological effects of the development of
Kiawah Island. The effects may only be
temporary until development is completed,
but if the effects are permanent, they
should and would be properly documented.

REFERENCES: Zingmark, 1975

ADDRESS: Dr. Richard Zingmark

Baruch Institute

University of South Carolina

Columbia, SC 29208

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NBIP ACCESSION NUMBER: SC/020

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SOUTH DAKOTA
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(SEE ALSO 180, 184, 210, 569, 835)

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INVESTIGATOR(S): Churchill, C.L.
AFFILIATION: Chemistry Dept., Dakota State College
TITLE: Effect of Silt and Silt Removal in a Prairie Lake
PURPOSE: Comparison of a silt polluted lake with a sewage polluted lake and construction of silt traps to control silt inflow.

SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Spring run-offs from Lake Herman watershed cause large increases in iron, phosphorus, and nitrogen which contribute to the summer algal blooms and thus to ensuing winter fish kills.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: ALGAE, 34 SPECIES
ADDED KEYWORDS: silting; prairies; iron; phosphorus; nitrogen; algal blooms; fishkills; sewage treatment; effluents; siltation; nutrients; agriculture; waste water; eutrophication
PRIMARY PARAMETERS INVESTIGATED: numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): column sedimentation; Sedgewick-Rafter counter
NUMBER OF SAMPLING SITES: 4 on Lake Herman; 3 on Lake Madison
SAMPLING FREQUENCY: weekly;
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): SD
GEOGRAPHIC DESCRIPTION: Lake County; Lake Herman; Lake Madison
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: A surveillance program has been maintained on two shallow, warm water prairie lakes and their tributaries. One of these lakes, Lake Madison, is domestically polluted with the effluent from the sewage treatment plant of Madison, South Dakota. The other, Lake Herman, is polluted due to siltation caused by run-off from a large, intensively farmed watershed. This surveillance program has resulted in comparisons of chemical nutrients and biota of a heavily silted lake with those of a relatively unsilted, but domestically polluted lake. The surveillance program on the Lake Herman tributaries has also led to conclusions regarding nutrient levels in successive spring run-offs. During the summers of 1969 and 1970 a total of seventeen gabion-type silt traps were constructed across the major feeder streams on the Lake Herman watershed in order to retard lake siltation. The traps were of several types and were constructed in locations with different types of creekbeds and different water-flow rates in order to evaluate which combinations of design and location were most effective.

The traps were successful as filters for large debris but had limited success as silt-retaining devices. However, erosion occurred around or under many of the traps thus diminishing their effectiveness.

REFERENCES: Brashier, et al, 1973
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Dakota State College
Madison, SD 57042
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NBIP ACCESSION NUMBER: SD/028

<754>

INVESTIGATOR(S): Churchill, C.L.
AFFILIATION: Chemistry Dept., Dakota State College
TITLE: Effects of Dredging on the Nutrient Levels and Biological Populations of a Lake
PURPOSE: Survey of chemistry and biology of a prairie lake before and during dredging.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Usual seasonal changes in organisms-several chemical changes described in report.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: PLANKTON, 38 SPECIES; CHLOROPHYTA, 11 SPECIES; EUGLENOPHYTA, 2 SPECIES; DIATOMS, 12 SPECIES; CYANOPHYTA, 9 SPECIES; COPEPODA, 2 SPECIES; CLADOCERA, 2 SPECIES
ADDED KEYWORDS: plankton; phytoplankton; zooplankton; green algae; diatoms; blue-green algae; copepods; cladocerans; dredging; silting
PRIMARY PARAMETERS INVESTIGATED: numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): column sedimentation; Sedgewick Rafter Counter
NUMBER OF SAMPLING SITES: 4
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): SD
GEOGRAPHIC DESCRIPTION: Lake County; Lake Herman
TYPE OF DATA: raw; summarized
ABSTRACT: Lake Herman, a shallow warm water prairie lake, has been monitored for chemical nutrients and planktonic algae before and during a dredging project. The major change in the lake with the commencement of dredging activity was a 300% increase in both ortho-phosphate and total phosphorus. Calcium and total hardness decreased slightly and silica and turbidity were judged to have increased slightly. There were apparently no accompanying changes in planktonic algae, either in population densities or genera present. The silt and water removed with dredging was deposited in a low lying area near the lake, where the silt settled out and the water was returned to the lake. The water in this silt deposit area was also monitored. It was found to be as much as 2 pH units closer to neutrality than the lake water and to have a higher conductivity (up to 10% higher) than the lake water. Early in the dredging season,

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this water in the silt deposit area had high levels of ortho-phosphate (0.90 mg PO₄/liter). But over a four month period, as dredging proceeded, the ortho-phosphate in the silt deposit area water decreased until it was only about half as great (0.19 mg PO₄/liter) as the level in the lake before dredging began.

REFERENCES: Churchill and Brashier, 1972

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NBIP ACCESSION NUMBER: SD/029

<755>

INVESTIGATOR(S): Flake, L.D.; Vohs, P.A.
 AFFILIATION: Dept. of Wildlife and Fisheries
 Sciences, South Dakota State University

TITLE: Importance of Wetland Types to Duck
 Production and to Non-game Bird
 Populations.

PURPOSE: To develop capabilities of assessing
 and mitigating the impacts of water
 resource development on wetland habitat
 and waterfowl production and to define
 habitat requirements of waterfowl and
 selected non-game birds which may be used
 as indicator species in mitigating or
 enhancing wetland habitat.

SPONSOR(S): Water Resources Institute; South
 Dakota Agricultural Experiment Station

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increase in drought
 conditions and subsequent decline in
 breeding waterfowl in South Dakota with
 decline in mixed grass prairie due to
 plowing.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 grassland; wetland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife; indicator species
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds

TAXA: ANAS PLATYRHYNCHOS; ANAS ACUTA; ANAS
 STREPERA; ANAS DISCORS; ANAS CRECCA; ANAS
 CLYPEATA; AYTHYA AMERICANA; AYTHYA
 VALISNERIA; AYTHYA AFFINIS; AYTHYA COLLARIS

ADDED KEYWORDS: mallard ducks; pintail ducks;
 gadwall ducks; blue-winged teals;
 green-winged teals; redhead ducks;
 canvasback ducks; american wigeon;
 northern shoveler ducks; lesser scaup
 ducks; ring-necked pheasants; ducks;
 agriculture; pheasants; habitat
 modification; drought

PRIMARY PARAMETERS INVESTIGATED:
 distribution; diversity; habitat
 characterization; productivity

NUMBER OF SAMPLING SITES: 476

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): 3D

GEOGRAPHIC DESCRIPTION: Coteau des Prairies;
 Coteau du Missouri

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 370; FORTRAN

STATISTICS EMPLOYED: regression/correlation

analysis; multivariate analysis

ABSTRACT: Wetland characteristics, adjacent
 upland conditions and corresponding
 populations of breeding waterfowl and
 waterfowl broods were surveyed on 500
 quarter sections in 125 clusters
 proportionally stratified within eight
 physiographic strata in South Dakota. The
 estimated total of breeding pairs was
 1,067,500 in 1973 and 439,600 in 1974.
 Drought conditions occurred concurrent
 with the reduced 1974 populations.
 Blue-winged teal (ANAS DISCORS) was the
 major species followed by mallard (ANAS
 PLATYRHYNCHOS), pintail (ANAS ACUTA), and
 gadwall (ANAS STREPERA). Less than five
 percent of the total breeding pairs was
 composed of diving ducks (AYTHYA).
 Striking differences in densities of
 breeding pairs occurred between the major
 physiographic regions of the state.
 Waterfowl densities were highest in the
 glaciated eastern half of South Dakota,
 particularly in the northern periphery of
 the Coteau des Prairies and in the major
 portion of the Coteau du Missouri. The
 non-glaciated western half of the state
 had relatively low waterfowl densities but
 contributed 21.6 percent in 1973 and 32.3
 percent in 1974 of the total breeding
 pairs.

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 South Dakota State University
 Agricultural Experiment Station
 Brookings, SD 57006

TELEPHONE: (605) 688-6121

NBIP ACCESSION NUMBER: SD/030

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INVESTIGATOR(S): Gardner, W.S.

AFFILIATION: Plant Science Dept., South
 Dakota State University

TITLE: Plant Bioindicators for Air Pollution
 PURPOSE: To identify present and future air
 pollution levels in South Dakota using
 plant bioindicators.

SPONSOR(S): South Dakota State University

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

CHANGE(S) OBSERVED: Ozone air pollution
 injury in South Dakota has decreased since
 1970.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 forest; coniferous; deciduous; grassland

LEVEL(S) OF STUDY: organism; population;
 region

MANAGEMENT FOCUS: environmental impact;
 indicator species; resource planning;
 pollution control; power generation

ORGANISMS, MAJOR TYPES: plants; vascular
 plants; trees; shrubs; herbs

TAXA: POPULUS TREMULOIDES; MEDICAGO SATIVA;
 PINUS PONDEROSA; GLADIOLUS SPP; NICOTIANA
 TABACUM; GOSSYPIUM HIRSUTUM

ADDED KEYWORDS: quaking aspens; alfalfa;
 ponderosa pines; gladiolus; tobacco;
 cotton; air pollution; PAN; fluorides;
 sulfur dioxide; ozone

PRIMARY PARAMETERS INVESTIGATED: kill;
 toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 survey; index of injury

NUMBER OF SAMPLING SITES: 1-18; variable

SAMPLING FREQUENCY: seasonal; irregular

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STUDY SITE(S): SD

TYPE OF DATA: raw; literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: Ozone injury symptoms appeared on tobaccoes (NICOTIANA TABACUM)-Turkish in the greenhouse and on Wisconsin 38 in field plots at Brookings, South Dakota in 1970. In 1971, ozone injury appeared on greenhouse and field-grown plants of Bel-W3, Bel-C, and Turkish. Ozone fleck was most severe in southeast and east-central South Dakota. A decreasing amount of injury was observed in northeast, central, west-central and southwest South Dakota. Bel-W3 showed injury at eight locations while Turkish, Bel-C and Bel-B were injured only in the eastern parts of the State. Bel-W3 was a reliable monitor of air pollution episodes when plants were continuously produced and observed in the greenhouse at Brookings. New injury appeared on newly matured leaves and older leaves as dark gray to black flecks that turned brown to tan to white with age. Periodic ozone occurrences were recorded by new flecks appearing generally on tissue of younger age. Plant indicators for the pollutants peroxyacetyl-nitrate, fluoride and sulfur dioxide showed no injury in South Dakota.

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NBIP ACCESSION NUMBER: SD/019

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INVESTIGATOR(S): Linde, D.A.

AFFILIATION: South Dakota Dept. of Game, Fish, and Parks

TITLE: Grouse Harvest Regulations Study

PURPOSE: To develop grouse harvest regulations annually for the State of South Dakota that permit the harvest of the yearly surplus of sharptailed grouse, prairie chicken, sage grouse, and ruffed grouse.

SPONSOR(S): State of South Dakota; FWS

SPONSOR CATEGORY: state government; private corporation

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Better grassland areas converted to wheat production and prairie chicken range has diminished in size.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland

LEVEL(S) OF STUDY: region

MANAGEMENT FOCUS: wildlife; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: TYMPANUCHUS CUPIDO; BONASA UMBELLUS;
CENTROCERCUS UROPHASIANUS; PEDIOECETES
PHASIANELLUS

ADDED KEYWORDS: sharp-tailed grouse; grouse;
prairie chickens; sage grouse; ruffed
grouse; habitat modification; management
measures

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; growth; harvest; kill;
mortality; numbers; reproduction; sex;

size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
dancing and strutting ground survey;
transect; broad survey; bag checks; hunter
questionnaire

NUMBER OF SAMPLING SITES: numerous

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora;
climatological data

STUDY SITE(S): SD

TYPE OF DATA: summarized

STATISTICS EMPLOYED: percentile

ABSTRACT: The annual abundance of breeding sharptailed grouse, greater prairie chicken, sage grouse and ruffed grouse are estimated each year based on dancing and strutting ground surveys. Actual reproductive success is gathered on the above species through hunter bag checks. Reproductive success is gathered with random brood surveys and actual kill is estimated by the use of hunter questionnaires.

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NBIP ACCESSION NUMBER: SD/UU2

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INVESTIGATOR(S): Parrish, L.P.

AFFILIATION: EPA

TITLE: Mercury Concentrations in Fish in Lake Oahe, South Dakota

PURPOSE: To determine existing levels of mercury in fish compared to previous studies.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Mercury concentrations remained the same in some sport fishes and increased in others.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: fisheries; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish

TAXA: STIZOSTEDION VITREUM; ESOX LUCIUS;
ICTALURUS PUNCTATUS; MORONE CHRYSOPS;
STIZOSTEDION CANADENSE; POMOXIS
NIGROMACULATUS; POMOXIS ANNULARIS; PERCA
FLAVESCENS

ADDED KEYWORDS: walleyes; northern pikes;
pikes; channel catfishes; white basses;
basses; saugers; crappies; yellow perch;
perches; catfishes; mercury; heavy metals

PRIMARY PARAMETERS INVESTIGATED:

distribution; residues; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
gill nets; trap nets

SAMPLING FREQUENCY: seasonal

STUDY SITE(S): SD

GEOGRAPHIC DESCRIPTION: Stanley County; Sully
County; Haakon County; Oahe ReservoirTYPE OF DATA: raw; reduced; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: An intensive survey was conducted
during the period April 16 to September

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27, 1972, to determine the mercury content of sport fish in Oahe Reservoir, South Dakota. All total mercury concentrations equal to or greater than 0.5 ppm were considered significant. Thirty-six percent of the fish sampled from Cheyenne Arm of the Oahe Reservoir contained mercury at a concentration equal to or greater than 0.5 ppm. Fish with the highest concentrations of mercury were found in the upper arm or Foster Bay area with 50 percent or more of each species containing hazardous levels of mercury. Both middle and lower areas contained fishes with sufficient concentrations of mercury to represent potential health hazards. It was recommended that signs be posted to warn the general public of the potential health hazard from consuming fish taken from this body of water.

REFERENCES: EPA, 1973

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NBIP ACCESSION NUMBER: CO/068

<759>

INVESTIGATOR(S): Pengra, R.M.
AFFILIATION: Microbiology Dept., South Dakota
State University

TITLE: The Role of Nitrogen-Fixing Organisms
in Soil Fertility

PURPOSE: To study the role of symbiotic and
non-symbiotic nitrogen-fixing organisms in
primary input and maintenance of soil
nitrogen in South Dakota.

SPONSOR(S): South Dakota Agricultural
Experiment Station

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increase of some and
decrease of other species of native
legumes under grazing pressure and
destruction of habitat and therefore loss
of some species from strip-mine areas.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
range; power generation

ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses;

microorganisms; bacteria; algae

TAXA: LEGUMINOSAE (FABACEAE); RHIZOBIUM SPP;
AZOTOBACTER SPP; AZONONAS SPP; CLOSTRIDIUM
SPP; KLEBSIELLA SPP; OPUNTIA POLYACANTHA;

ARTEMISIA LUDOVICIANA

ADDED KEYWORDS: legumes; plains pricklypears;
gray sageworts; herbaceous sages;

Louisiana sages; sages; prickly pears;

habitat modification; strip mining;

grazing; nitrogen fixation

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration;
numbers; productivity; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection

NUMBER OF SAMPLING SITES: all grassland areas
of the state

SAMPLING FREQUENCY: seasonal; irregular

STUDY SITE(S): SD

TYPE OF DATA: summarized

ABSTRACT: The current shortage and high cost
of nitrogenous fertilizers makes it
imperative that we use every source of
nitrogen most efficiently. Of high
priority on this list of nitrogen sources
is atmospheric nitrogen and the agents of
biological nitrogen fixation that enable
us to use it. We are studying the
rhizobium-legume association of cultivated
and native legumes in an effort to learn
how we may use both more efficiently. The
distribution and occurrence of
non-symbiotic, nitrogen-fixing bacteria
and algae is also being assessed.

REFERENCES: Shave and Pengra, 1974;

Schneeweis, 1975

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NBIP ACCESSION NUMBER: SD/007

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INVESTIGATOR(S): Perkins, K.

AFFILIATION: Sioux Falls College

TITLE: Unionid Mussels of South Dakota

PURPOSE: To provide distributional and
relative abundance data on unionid mussels
in South Dakota and attempt to relate
these data to pollution levels.

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Major loss of unionid
mussels probably related to increased
organic pollutants.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;

environmental impact; fisheries; indicator
species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; mollusca

TAXA: CLADOCERA; UNIONIDAE, 20 SPECIES

ADDED KEYWORDS: mussels; unionid mussels;
waste water

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; bsd; distribution; diversity;
habitat characterization; kill; numbers;

sex; size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

hand picking

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): SD

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: This project is in the early
stages, but is concerned with the
gathering of distributional and relative
abundance of freshwater mussels. As even
eliminated species may be identified by
long lasting shells it is possible to

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compare data on living specimens with data on eliminated species. Besides durable calcareous values, longevity of line, permanence of location in adults, and filter feeding qualify these organisms as ideal stream monitors.

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NBIP ACCESSION NUMBER: SD/024

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INVESTIGATOR(S): Rice, L.A.
AFFILIATION: South Dakota Dept. of Game, Fish, and Parks
TITLE: Grassland Management Practices as They Affect Prairie Chicken Populations
PURPOSE: To monitor spring breeding populations and determine population status under different grazing management systems.
SPONSOR(S): Arthur Carter
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Overall decline in prairie chicken spring population levels with marked population increases on rest rotation grazing system.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: TYMPANUCHUS CUPIDO; PEDIOECETES PHASIANELLUS; AGROPYRON SMITHII; STIPA VIRIDULA; CAREX FILIFOLIA; CAREX ELBOCHARIS; SPHAERALCEA COCCINEA; VICIA AMERICANA; OPUNTIA POLYACANTHA; ARTEMISIA FRIGIDA; PSORALIA SPP
ADDED KEYWORDS: greater prairie chickens; prairie chickens; sharp-tailed grouse; grazing; grouse; western wheatgrasses; green needle grasses; threadleaf sedges; scarlet globemallows; american vetches; prickly pears; fringed sageworts; scurfpeas; management measures; sedges
PRIMARY PARAMETERS INVESTIGATED: distribution; emigration; habitat characterization; immigration; mortality; migratory patterns; natality; numbers; productivity; reproduction; stress; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): breeding ground surveys; pole density method; cable-chain drag; radiotelemetry
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora; terrain
STUDY SITE(S): SD
GEOGRAPHIC DESCRIPTION: Lyman County; Stanley County; Jones County; Fort Pierre National Grasslands
TYPE OF DATA: summarized
STATISTICS EMPLOYED: regression/correlation analysis

ABSTRACT: Trend estimates of prairie chicken (TYMPANUCHUS CUPIDO) populations in South Dakota have indicated a decline in the past 20 years. With such a decline occurring, there is a need to determine habitat requirements and population dynamics of prairie chickens on mid-grass prairie habitats in South Dakota. Range management systems (deferred and rest-rotation) should be evaluated to determine their effects on prairie chicken populations. Attempts were made to census prairie chicken booming grounds throughout the state. A total of 158 grounds were censused with an average 6.57 males per ground. Five 4-square mile study areas were established and cover mapped. Two study areas contained rest-rotation pastures, two deferred-rotation, and one private pasture. Vegetative (height and density) resulting from deferred and rest-rotation systems was determined by pole-density measurements. Nesting use on the two grazing systems was determined with the use of a cable-chain drag. Deferred-rotation pastures averaged 0.00089 nests per acre while rest-rotation averaged 0.0012. Vegetative species at each nest and brood site was determined by a square-frame sampling method. Pole-density methods were used to determine vegetative quantity at the same sites.

REFERENCES: Rice and Carter, 1974
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NBIP ACCESSION NUMBER: SD/005

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INVESTIGATOR(S): Rice, L.A.
AFFILIATION: South Dakota Dept. of Game, Fish, and Parks
TITLE: Age Determination of South Dakota Deer Populations by Dental Cementum Layers
PURPOSE: To determine population status of deer herds within established hunting units by hunter harvest, road kills, and reproductive potentials.
SPONSOR(S): Arthur Carter
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population increases due to underharvest.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS; ODOCOILEUS HEMIONUS
ADDED KEYWORDS: white-tailed deer; mule deer; deer; management measures
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; harvest; immigration; kill; mortality; natality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): incisor collection; road check; locker

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check; hunter submission; fetal numbers
NUMBER OF SAMPLING SITES: statewide
SAMPLING FREQUENCY: continuous; seasonal
STUDY SITE(S): SD
GEOGRAPHIC DESCRIPTION: East River; West River
TYPE OF DATA: summarized
ABSTRACT: A total of 30,860 envelopes (13,563
East River and 17,297 West River) were
mailed to hunters during the 1974 South
Dakota deer season requesting them to
submit incisors from deer they killed.
Usable incisors totaled 14,442 (88 percent
of the 16,348 received) which was 55
percent of the projected kill for East
River and 60 percent for West River.
Comparisons between buck-doe ratios from

hunter-submitted incisors with those
calculated from hunter report cards showed
similar results for both East River (172
bucks/100 doe vs 167) and West River (147
bucks/100 doe vs 145). Paired incisors
from each of 40 deer were used to
determine if structure of the annular
cementum layers was similar between teeth
from the same deer. Tentative results from
these comparisons indicated as high as 20
percent error could occur in determining
age structures of any one deer herd by
counting annular rings.

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WBIP ACCESSION NUMBER: SD/006

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INVESTIGATOR(S): Barrass, A.N.
AFFILIATION: Austin Peay State University
TITLE: Frosty Morn Research Project
PURPOSE: To monitor chemical effluent from holding lagoon, as well as potential problem algae that would interfere with waste treatment.
SPONSOR(S): Frosty Morn Meat, Inc.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: There has been a biomass increase, dissolved solids increase, and a species decrease.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; microorganisms; algae
TAXA: NOSTOC SPP; ANABAENA SPP; GLOEOCAPSA SPP; OSCILLATORIA SPP
ADDED KEYWORDS: effluents; lagoons; sewage treatment; phytoplankton; zooplankton; green algae; blue-green algae; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass; bod; diversity; numbers
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; hydrological data; water quality data
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Red River; Frosty Morn Lagoon; Montgomery County
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; modeling, deterministic
ABSTRACT: Chemical effluent and algae are being monitored in this project. Whether or not they would interfere with sewage treatment is one objective. Green and blue-green algae, as well as a few invertebrates are the organisms being studied. Thus far, there has been an increase in biomass and dissolved solids and a decrease in species diversity and numbers.
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NBIP ACCESSION NUMBER: TN/029

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INVESTIGATOR(S): Blaylock, B.G.
AFFILIATION: Union Carbide Corp.
TITLE: Effects of Radiation and Energy-Related Pollutants on Aquatic Ecosystems
PURPOSE: To determine the effects of radiation and energy related pollutants on

aquatic organisms.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Frequency of chromosome aberration decreased or exposure to chronic radiation decreased.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact; radiological; pollution control
ORGANISMS, MAJOR TYPES: animals; invertebrates; insecta
TAXA: CHIRONOMUS TENTANS
ADDED KEYWORDS: genetics; chironomids; waste water
PRIMARY PARAMETERS INVESTIGATED: sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): chromosomal aberration determination
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: radiation background
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Roane County; Clinch River; White Oak Creek; White Oak Lake; Oak Ridge, TN
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; mode; regression/correlation analysis; contingency table analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: TN/024

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INVESTIGATOR(S): Dennis, S.D.
AFFILIATION: TVA
TITLE: CORBICULA Invasion - Upper Clinch River
PURPOSE: To document changes in CORBICULA population size and range in the upper Clinch River and determine effects of this invasion on native mussel fauna.
SPONSOR(S): TVA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: The CORBICULA population has continued to increase at Kyles Ford, Tennessee over 3 years - upper limit of population is 2 miles above Kyles Ford.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; indicator species; range
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca
TAXA: CORBICULA MANILENSIS; MOLLUSCA, 44 SPECIES
ADDED KEYWORDS: aquatic clams; population effects; population dynamics; adaptation; species introduction; mussels; clams
PRIMARY PARAMETERS INVESTIGATED: distribution; growth; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quantitative samples

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NUMBER OF SAMPLING SITES: one major and other
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): TN; VA
GEOGRAPHIC DESCRIPTION: Upper Clinch River
TYPE OF DATA: raw; summarized

ABSTRACT: CORBICULA MANILENSIS is an asiatic species of freshwater mussel which was introduced to the United States in the 1950's in California, where it was sold as fish bait. It has since spread over most of the country including the Tennessee Valley where it thrives in great numbers often causing problems by clogging water intake structures. CORBICULA were found to be continuously distributed from the headwaters of Norris Lake upstream to Kyles Ford, Tennessee. Series of square foot samples for CORBICULA taken over a two-year period revealed an increase of more than 55 per square foot sampled between 1973 and 1974. Substantial increases in average length and weight of CORBICULA were also observed. CORBICULA populations at Kyles Ford seem to be continually increasing in both numbers and size of individuals. Continued quantitative sampling of CORBICULA and native mussel species will be done to determine if and when the CORBICULA population reached an equilibrium, and what effect this abundance of asiatic mussels has upon the native mussel population.

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NBIP ACCESSION NUMBER: TN/043

<766>

INVESTIGATOR(S): DeSelm, H.R.
AFFILIATION: Ecology Program, University of Tennessee
TITLE: Flora and Vegetation of the Glades and Barrens of the Valley and Ridge Province
PURPOSE: To find and sample vegetation and soils at such sites and to follow through time.
SPONSOR(S): University of Tennessee
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Those not destroyed by man seem stable.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna; grassland
LEVEL(S) OF STUDY: organism; population; community; region
MANAGEMENT FOCUS: range
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: habitat modification; succession
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat

characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): walking and line transects
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: monthly; irregular
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Rhea County; Meigs County; Roane County; Hamilton County; Anderson County
TYPE OF DATA: raw
ABSTRACT: This is glade and barren vegetation. The former is well-represented in the Central (Nashville) Basin of Tennessee and the latter well-represented on the rim but present almost all over the state. It resembles other glade and barren vegetation floristically and vegetationally. We are attempting to determine whether vegetation controls and species adaptation are similar.
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NBIP ACCESSION NUMBER: TN/005

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INVESTIGATOR(S): DeSelm, H.R.
AFFILIATION: Ecology Program, University of Tennessee
TITLE: Flora of the Hay Prairie; Changes in Flora and Vegetation with Drainage
PURPOSE: To examine prairie and determine vegetation change and conversion from grass to tree-dominated communities.
SPONSOR(S): University of Tennessee
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1954
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Forest invasion with loss of plant taxa.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna; grassland
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: habitat modification; invasion; succession
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): walking transects
SAMPLING FREQUENCY: annual; irregular
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Coffee County
ABSTRACT: This is the only vegetation with truly prairie aspect and such (some) prairie flora in Tennessee. It is a USNPS National Natural Landmark and has recently been purchased by the Tennessee Conservation Dept. as a natural area.
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NBIP ACCESSION NUMBER: TN/007

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INVESTIGATOR(S): DeSelm, H.R.; Clebsch, E.E.C.; Thor, E.
AFFILIATION: Ecology Program, University of Tennessee
TITLE: Vegetation of the Burned and Unburned Areas of Highland Rim Forest Experiment Station
PURPOSE: Response of herbs, shrubs, and tree sprouts in prescribed-burn hardwoods.
SPONSOR(S): University of Tennessee
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed diversity on control plots is decreasing as understory herb and shrub frequency decreases and trees grow beyond the sampling line (3 feet above soil). As diversity decreases, the numbers of taxa confined to this treatment declines.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; savanna; grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: PLANTS, 200 SPECIES
ADDED KEYWORDS: habitat modification; prescribed burning; oaks
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; growth; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field collections; line transects
NUMBER OF SAMPLING SITES: 9 regular; other irregular
SAMPLING FREQUENCY: annual
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Franklin County; Highland Rim Forest Experiment Station
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: This paper reports the effects of annual and periodic surface fires on understory vegetation of upland oak forests at the Highland Rim Forest Experiment Station, Franklin County, Tennessee. This study contributes to an understanding of this vegetation, to the autecology of its understory constituents and may contribute to an understanding of the maintenance of graminoid-forb openings and understory in this vegetation.
REFERENCES: DeSelm, et al, 1973
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TELEPHONE: (615) 974-3065
NBIP ACCESSION NUMBER: TN/006

<769>

INVESTIGATOR(S): Dimmick, R.W.
AFFILIATION: Dept. of Forestry, University of Tennessee
TITLE: Wildlife Food Plots on Private Lands
PURPOSE: To measure the impact of food plots established in pine plantations on the density and species composition of bird

and mammal communities which develop over time.

SPONSOR(S): FWS; Tennessee Wildlife Resources Agency
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Ground vegetation increased in density; quail population increased, then declined; small mammals and rabbits increased; but song birds showed no measurable changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; forestry
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; shrubs; herbs; grasses
TAXA: COLINUS VIRGINIANUS; ZENAIIDA MACHOURA; SYLVILAGUS SPP
ADDED KEYWORDS: bobwhites; mourning doves; cottontail rabbits; habitat modification; quails; doves; management measures; loblolly pines; pines
PRIMARY PARAMETERS INVESTIGATED: diversity; harvest; home range size; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): flush census; call counts; snap-trapping
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Rhea County; Roane County
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: Population densities of bobwhites, cottontails, and mourning doves were determined twice annually by flush censuses over a period of four years, following initial conversion of a hardwood forest to loblolly pine. The project is ongoing, and shall continue at least two more years. Secondary projects include seasonal censuses of songbirds using call counts, and snap-trapping techniques for small mammals.
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NBIP ACCESSION NUMBER: TN/013

<770>

INVESTIGATOR(S): Harris, W.P.
AFFILIATION: Environmental Sciences Div., Oak Ridge National Laboratory
TITLE: Walker Branch Watershed - Cycling and Transport of Contaminants
PURPOSE: Analysis of processes influencing deposition, cycling, and transport of elements.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

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CHANGE(S) OBSERVED: Changes occurred in forest succession, primary productivity, seasonal litter, bird, and small mammal dynamics.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: forestry; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses; microorganisms; bacteria; fungi
ADDED KEYWORDS: coal; litter; decomposition; succession; primary productivity; air pollution; models; transport
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; bod; growth; habitat characterization; mortality; physiology; productivity; reproduction; sex; size/weight; territory size
NUMBER OF SAMPLING SITES: 298 general inventory plots; 24 intensive plots
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: hydrological data; terrain; water quality data
STUDY SITE(S): TN
GEOGRAPHIC DESCRIPTION: Walker Branch stream; Melton Hill Reservoir
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM; FORTRAN
STATISTICS EMPLOYED: analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; modeling, deterministic
ABSTRACT: The biogeochemical cycles of elements are regulated by both biotic and abiotic processes. The objective of the Walker Branch Watershed study is to investigate biogeochemical cycles of forested landscapes such that the fate of chemical releases to the environment can be quantitatively related to basic processes influencing: (1) atmospheric deposition, (2) storage within ecosystem components, (3) biological responses to perturbations and (4) eventual release from the landscape system to groundwater and eventually aquatic systems. This research increases our knowledge of the integrated landscape behavior and theoretical insights into the elemental cycling of complex ecosystems. This knowledge is necessary to the development of analytical models of material transport that take into account total landscape behavior of the fate of chemical releases to the environment. The research on Walker Branch Watershed represents a significant rescaling of the project to emphasize specific questions related to the biogeochemistry of an integrated landscape unit.
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Oak Ridge, TN 37830
TELEPHONE: (615) 483-8611 ext. 3-6570
NBIP ACCESSION NUMBER: TN/028

<771>

INVESTIGATOR(S): Hill, D.
AFFILIATION: Forestry, Fisheries, and Wildlife Div., TVA
TITLE: Stream Recovery
PURPOSE: To evaluate recovery of stream from fisheries standpoint after pollution abatement.
SPONSOR(S): TVA
SPONSOR CATEGORY: federal government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: On the North Fork Holston River, recovery was not apparent after 2 years. On the Tuckasegee River recovery is apparent.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; insects
ADDED KEYWORDS: rotenone; piscicides; waste water; management measures
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): rotenone; Surber sampler
NUMBER OF SAMPLING SITES: 10-14
SAMPLING FREQUENCY: quarterly
STUDY SITE(S): VA; NC
GEOGRAPHIC DESCRIPTION: North Fork Holston River; Tuckasegee River
ABSTRACT: None provided.
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Forestry Bldg.
Norris, TN 37828
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NBIP ACCESSION NUMBER: TN/042

<772>

INVESTIGATOR(S): Pelton, M.R.
AFFILIATION: Dept. of Forestry, University of Tennessee
TITLE: Natural History and Ecology of the Black Bear in the Great Smoky Mountains
PURPOSE: To delineate various aspects of the natural history and ecology of the black bear, specifically: density, distribution, food habits, movements, age structure, reproduction, activities, and bear-human interactions.
SPONSOR(S): University of Tennessee
Agricultural Experiment Station
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population appears to be stable.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: URSUS AMERICANUS

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ADDED KEYWORDS: black bears; bears;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; emigration; growth; habitat
characterization; home range size;
immigration; mortality; migratory
patterns; natality; numbers; physiology;
reproduction; sex; size/weight; territory
size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live-trapping; radiotelemetry
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): TN; NC
GEOGRAPHIC DESCRIPTION: Blount County; Sevier
County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance;
regression/correlation analysis;
non-parametric analysis

ABSTRACT: Population parameters of the black
bear in the Great Smoky Mountains National
Park are being monitored yearly. Factors
affecting density, distribution,
dispersal, natality, and mortality are
being delineated.

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NBIP ACCESSION NUMBER: TN/025

<773>

INVESTIGATOR(S): Rossman, J.H.
AFFILIATION: Tennessee State Water Quality
Control Div.

TITLE: Duck River Pre- and Post-impoundment
Survey

PURPOSE: To define, through chemical and
benthological studies, the water quality
in the Duck River before, during, and
after construction of two TVA reservoirs.

SPONSOR(S): Tennessee State Water Quality
Control Div.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Four changes noted during
construction phase; first dam should start
impounding water in 1976.

ECOSYSTEM OR BIONE TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
indicator species; water quality

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; bacteria; algae

ADDED KEYWORDS: benthic organisms;
construction; impoundments; habitat
modification; phytoplankton

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers;
productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Surber sampler; screens; nets; grab
sampler; Wisconsin plankton net

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: quarterly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; hydrological data; water
quality data

STUDY SITE(S): TN

GEOGRAPHIC DESCRIPTION: Coffee County;
Bedford County; Marshall County; Maury
County; Duck River

TYPE OF DATA: raw

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: TN/031

<774>

INVESTIGATOR(S): Styron, C.E.

AFFILIATION: St. Andrews Presbyterian College

TITLE: Effects of Simulated Radioactive
Fallout on a Terrestrial Arthropod
Community

PURPOSE: To assess impact of 1.44 Ci of
Cs-137 simulated fallout (chronic
low-level beta and gamma radiation) on an
arthropod community of a fescue field.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: Natural population cycles
for 76 arthropod and 2 molluscan taxa
observed for a 7-year period, with no
detectable radiation effect.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact;
radiological

ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; mollusca

TAXA: PESTUCA ARUNDINACEA; ARTHROPODA, 67
SPECIES

ADDED KEYWORDS: radioactive fallout; beetles;
mites; flies; millipedes; wasps; crickets;
spiders; gnats; weevils; arachnids

PRIMARY PARAMETERS INVESTIGATED: numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
pitfall traps; soil cores; biocoenometer

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): TN

GEOGRAPHIC DESCRIPTION: Oak Ridge National
Laboratory

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
non-parametric analysis; modeling,
deterministic

ABSTRACT: Responses of arthropod communities
to ionizing radiation and the interactions
of radiation with other environmental
parameters are being investigated in (1)
studies of biological and physical
dosimetry of beta and gamma radiation from

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simulated fallout in a grassland area, (2) long-term field observations on interactions of the fallout radiation with seasonal changes in composition and structure of the arthropod community, and (3) short-term laboratory studies on interactions of fallout radiation with population dynamics of selected insect species. Beta- and gamma-radiation levels in the simulated fallout area were determined by thermoluminescent dosimetry. Lithium fluoride microdosimeters attached to grasshoppers and crickets in the fallout field indicated that these closely related organisms received significantly different radiation doses owing to differences in habitat. Numbers of soil-, litter-, and grass-inhabiting arthropods collected in the simulated-radioactive-fallout field varied significantly among months and taxa. There was no significant difference in variation between arthropod communities of field enclosures before application of the simulant. The only significant differences among numbers of individuals in taxa

comprising the arthropod communities of control and contaminated areas occurred 4 months after contamination. No significant increase in species composition dissimilarity between the contaminated and control areas appeared during the second year following application of the fallout. Consequently the threshold for effects of fallout radiation on species composition of the arthropod community must be above the approximately 13 rads/day delivered over this time. Data on exposure of laboratory populations of FOLSOMIA (Collembola) to beta radiation from Sr-90y fallout indicate that population dynamics were affected primarily by sensitivity of fertility rates rather than by sensitivity of adults. Dose rates estimated to give an LD 50-30 or LD 50-60 for adults were more than twice as high as dose rates required to reduce fertility rates to zero.

REFERENCES: Styron and Dodson, 1972; Styron and Dodson, 1973

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 NBIP ACCESSION NUMBER: NC/016

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TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
(SEE ALSO 180, 210, 236, 238, 267, 370, 376,
502, 505, 749)

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INVESTIGATOR(S): Alexander, B.G.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Northeast Texas Game Management Survey
PURPOSE: To gather basic game population data
for basis of establishing game harvest
regulations.
SPONSOR(S): Texas Parks and Wildlife Dept.;
FWS
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1952
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population fluctuations
resulting from changes in land use,
habitat conditions, etc.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; deciduous;
wetland
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: wildlife; range; resource
planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees; shrubs; herbs; grasses
TAXA: ODOCOLEUS SPP; SCIURUS CAROLINENSIS;
SCIURUS NIGER; SCIURUS SPP; ANAS SPP;
BRANTA SPP; LEPUS SPP; PROCYON SPP; UROCYON
SPP; CANIS LATRANS; DASYPOUS SPP
ADDED KEYWORDS: deer; gray squirrels; fox
squirrels; squirrels; ducks; geese;
rabbits; raccoons; foxes; coyotes;
armadillo; census; management measures;
population dynamics
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; home range size;
kill; mortality; migratory patterns;
natality; numbers; reproduction; sex;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
check stations; hunter questionnaire; bag
checks; game processing facilities; band
returns; census investigations
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; soils
STUDY SITE(S): TX
TYPE OF DATA: raw; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: This project is primarily
responsible for monitoring game population
trends, range conditions, harvest,
mortality, reproduction, and factors
affecting the increase or decrease of game
populations. Data resulting from the
investigations are reviewed and form the
basis for hunting regulations governing
the various game animals and birds of the
northeast Texas area.
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Mt. Pleasant, TX 75455
TELEPHONE: (214) 572-3474
NBIP ACCESSION NUMBER: TX/090

<776>

INVESTIGATOR(S): Anderson, J.W.; Armstrong,
H.W.
AFFILIATION: Dept. of Biology, Texas A and M
University
TITLE: Effects of Oil and Oilfield Brine
Effluent on Benthic Organisms in Trinity
Bay, Texas
PURPOSE: To determine to what extent the
benthic organisms and communities
surrounding a separator platform are being
affected (beneficially or adversely) by
oily brine discharge and oil levels in the
sediments.
SPONSOR(S): American Petroleum Institute
SPONSOR CATEGORY: trade association
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Decrease in number of
species but an increase in individuals of
species present compared to a similar
study in 1971 not due to oilfield but
possibly to freshwater influence.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; mollusca;
annelida
TAXA: ANNELIDA, 20 SPECIES; MOLLUSCA, 8
SPECIES; CRUSTACEA, 19 SPECIES; INSECTA, 4
SPECIES; PLATYHELMINTHES, 3 SPECIES;
NEMERTEA, 2 SPECIES; BRYOZOA, 1 SPECIES;
ASCHELMINTHES, 2 SPECIES; FORAMINIFERA, 1
SPECIES
ADDED KEYWORDS: jointed worms; flatworms;
proboscis worms; moss animalcules; round
worms; worms; oil spills; sediments;
isopods; amphipods; decapods; benthic
organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; numbers; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Ekman dredge
NUMBER OF SAMPLING SITES: 15
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Chambers County;
Trinity Bay; Galveston Bay
TYPE OF DATA: raw; reduced
ABSTRACT: None provided.
ADDRESS: Dr. Jack Anderson
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TELEPHONE: (713) 845-6131 ext. 59
NBIP ACCESSION NUMBER: TX/070

<777>

INVESTIGATOR(S): Arnold, K.A.
AFFILIATION: Texas Agricultural Experiment
Station
TITLE: Rare Fauna of Texas
PURPOSE: To assess present knowledge of
animals considered to be rare, endangered,
or potentially in either of these
categories in Texas; assess interaction of
these species; and determine human land
use in their ranges.
SPONSOR(S): Texas Agricultural Experiment
Station

TEXAS

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SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
CHANGE(S) OBSERVED: Continuing habitat loss
and conflict with human uses and economics.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
river; lake; aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; wildlife;
indicator species; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; birds
TAXA: DENDROICA CHRYSOPARIA; ALLIGATOR
MISSISSIPPIENSIS; TYMPANUCHUS CUPIDO
ADDED KEYWORDS: habitat modification;
american alligators; golden-cheeked
warblers; prairie chickens; alligators;
warblers
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; diversity; habitat
characterization; home range size;
mortality; migratory patterns; numbers;
reproduction; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mail survey; radiotelemetry
NUMBER OF SAMPLING SITES: determined by
species or habitat studied
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): TX
TYPE OF DATA: raw; reduced; summarized;
literature-derived
ABSTRACT: Basic approaches are through
habitat and distributional surveys and by
life history studies. We have completed a
limited habitat survey for Golden-cheeked
Warbler and have on-going studies of
reproduction and mortality of young in the
American alligator and habitat utilization
in relation to vegetation by Attwater's
prairie chicken.
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Sciences
Texas A&M University
College Station, TX 77843
TELEPHONE: (713) 845-6751
NBIP ACCESSION NUMBER: TX/006

<778>

INVESTIGATOR(S): Arnold, K.A.
AFFILIATION: Texas Agricultural Experiment
Station
TITLE: Avian Populations in Relation to
Habitat and Human Populations
PURPOSE: To study avian populations as they
relate to human populations and economics,
to study effects of habitat alteration on
avian populations, and to resolve
bird-human conflicts with minimum
disturbance to either.
SPONSOR(S): Texas Agricultural Experiment
Station
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1967
PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increasing conflicts
between bird populations especially those
that are granivorous and flock in large
numbers. Continued habitat loss is
occurring.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: STURNUS VULGARIS; PASSER DOMESTICUS;
CASSIDIX MEXICANUS; MOLOTHRUS ATER;
QUISCALUS QUISCULA
ADDED KEYWORDS: starlings; sparrows;
great-tailed grackles; grackles;
brown-headed cowbirds; habitat
modification; population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity;
emigration; growth; habitat
characterization; home range size;
immigration; kill; mortality; migratory
patterns; natality; numbers; reproduction;
sex; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
banding; observation; collection
SAMPLING FREQUENCY: continuous; daily
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Brazos Valley;
Tanzania, East Africa
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: modeling, deterministic;
modeling, stochastic
ABSTRACT: This study has examined population
dynamics in two species in detail and to a
lesser extent, two others (CASSIDIX
MEXICANUS and MOLOTHRUS ATER; STURNUS
VULGARIS and QUISCALUS QUISCULA). A second
part of the study is presently examining
relationships of migratory and resident
insectivorous species on the Serengeti
National Park, Tanzania. Resource
utilization of avian species is being
examined in relation to human use and
modification of these same habitats.
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NBIP ACCESSION NUMBER: TX/007

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INVESTIGATOR(S): Blankenship, L.H.
AFFILIATION: Texas Agricultural Research and
Extension Center
TITLE: The Optimum Use of Wildlife Resources
in Central and Southwest Texas: the
Effects of Strip Treatment by Herbicide on
the Plant and Animal Communities.
PURPOSE: To determine the effects of strip
pattern of herbicide application on the
species composition, density and
production of grass, forbs, and shrubs;
the distribution and numbers of deer; and
the differential use by deer of treated
and untreated strips.
SPONSOR(S): Texas Agricultural Experiment
Station; FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973

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TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
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PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A large percent of canopy cover was eliminated with a subsequent increase in the density of medium to tall grasses and shrub regrowth. Deer quality apparently has improved.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; wildlife; range

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses

TAXA: ODOCOLEUS VIRGINIANUS; PLANTS, 65 SPECIES

ADDED KEYWORDS: deer; white-tailed deer; herbicides; management measures: tordon
PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; distribution; emigration; habitat characterization; home range size; numbers; productivity; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

aerial surveys; ground observations; pellet-group plots; radiotelemetry; permanent vegetation plots; forage production enclosures; collections

SAMPLING FREQUENCY: seasonal; daily; monthly; annual; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Zavala County; Chaparrosa Ranch; Rio Grande Plain

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; median; analysis of variance; regression/correlation analysis

ABSTRACT: A 4600 acre pasture was sprayed with Tordon in a strip pattern. Treated strips varied from 900 ft to 2640 ft and untreated strips from 300 ft to 900 ft. Vegetation surveys were based on permanent plots and wire enclosures. Deer population data were collected by aerial and ground observations, pellet-group counts, and radiotelemetry. Although the canopy was reduced by the herbicide, there seemed to be little decrease in stem counts. In some locales the stem count increased due to sprouting or regrowth. Forage production was improved on treated sites but deer apparently used treated and untreated strips at nearly the same intensity. The wider strips of 1/2 mile were used as frequently as narrower strips probably due partly to the screening effect of dead stems and regrowth. Additional studies based more on range site influence will be initiated.

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NBIP ACCESSION NUMBER: TX/059

<780>

INVESTIGATOR(S): Bovey, R.W.

AFFILIATION: Range Science Dept., Texas A and M University

TITLE: Monitoring of Herbicides in the Environment

PURPOSE: To determine the fate and longevity (residues) of herbicides used in weed and brush control on rangeland and pasture lands.

SPONSOR(S): ARS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1964

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Change with each new herbicide to determine its fate in soil, vegetation, and water sources.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; aquatic; freshwater; lake

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: environmental impact; range; pollution control; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses

TAXA: ILEX VOMITORIA

ADDED KEYWORDS: herbicides; picloram

PRIMARY PARAMETERS INVESTIGATED:

distribution; growth; harvest; kill; mortality; physiology; residues

SAMPLING FREQUENCY: continuous; monthly

SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; water quality data

STUDY SITE(S): TX

TYPE OF DATA: literature-derived

STATISTICS EMPLOYED: mean; analysis of variance

ABSTRACT: Over a two year period no treatment differences were noted in 4-amino-3,5,6-trichloropicolinic acid (picloram) concentrations recovered from grass and yaupon tissues treated with 1.12 kg/ha of picloram in mixture with dimethyl sulfoxide (DMSO) and surfactant. Less than 1 micrograms of picloram per gram of fresh weight of grass or yaupon was present in aerial tissue 6 mo. after treatment in yaupon stem tissues 1 mo. after treatment, and in yaupon root tissue 5 days after treatment. Tissues sampled 1 yr. after treatment were devoid of picloram residue; tissues sampled 1 yr. after retreatment had levels ranging from 0.04-0.26 micrograms/g. The April application of 1.12 kg/ha of picloram plus 5.0 percent I-77 plus 10.0 or 25 percent of DMSO produced more effective canopy reduction of yaupon 1 yr. after treatment than did other herbicide treatments or dates of treatment. Increased canopy reduction by retreatment the second year suggests that I-77 rather than DMSO was the effective component in the spray mixtures.

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TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
(CONTINUED)

<781>

INVESTIGATOR(S): Britton, J.C.
AFFILIATION: Dept. of Biology, Texas
Christian University
TITLE: Unionid Mollusks of Texas Drainage
Systems
PURPOSE: To identify and monitor densities
and distributions of unionid mollusks in
Texas waters.
SPONSOR(S): Texas Christian University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Introduction of the
non-unionid genus CORBICULA.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
range; water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mollusca; shellfish
TAXA: MOLLUSCA, 22 GENERA
ADDED KEYWORDS: impoundments; channelization;
habitat modification; density; clams;
species introduction
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; growth; habitat
characterization; numbers; reproduction;
sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
dredge; scuba; snorkling; collection
NUMBER OF SAMPLING SITES: irregular
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Sabine River; Neches
River; Trinity River; San Jacinto River;
Brazos River; Colorado River; Guadalupe
River; San Antonio River; Nueces River;
Rio Grande River
TYPE OF DATA: raw; reduced; literature-derived
COMPUTER AND LANGUAGE: Xerox Sigma 9; APL
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: This project is a continuing effort
to monitor unionid populations in the
state of Texas and to evaluate effects of
impoundments, channelization, and other
environmental changes upon the composition
of the population. Funding is irregular,
hence data collection is sporadic.
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NBIP ACCESSION NUMBER: TX/019

<782>

INVESTIGATOR(S): Brownlee, S.L.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Black Gap Wildlife Management Area
Development
PURPOSE: To develop sound management
practices and harvest guidelines and
recommendations which can be used to deer
management within the Trans-Pecos Region
of Texas.
SPONSOR(S): Texas Parks and Wildlife Dept.

SPONSOR CATEGORY: state government
DATE OF INITIATION: 1948
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Removal of livestock from
the management area has enabled the
vegetation to recover from extreme overuse
and the drought of the 1950's.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: ODOCOLEUS HEMIONUS
ADDED KEYWORDS: mule deer; deer; management
measures; livestock; census; grazing;
drought
PRIMARY PARAMETERS INVESTIGATED: age;
harvest; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
public hunts; collections; observations;
census
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Brewster County
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; analysis of
variance
ABSTRACT: The Black Gap Wildlife Management
Area provides the Department with land
upon which controlled research of game
species can be accomplished. This project
attempts to demonstrate management
practices with emphasis upon desert mule
deer.
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NBIP ACCESSION NUMBER: TX/123

<783>

INVESTIGATOR(S): Chaney, A.H.
AFFILIATION: Dept. of Biology, Texas A and I
University
TITLE: Population Dynamics and Interaction of
Rodent Species at Site 55, Kleberg County,
Texas
PURPOSE: To monitor small rodent populations
in association with a nearby hypersaline
environment.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Periodic fluctuations in
certain species with dominance of one
species and increase of incidence of
Cutebra parasites.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
savanna
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: wildlife; indicator
species; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: PEROMYSCUS LEUCOPUS; SIGMODON HISPIDUS;
PEROGNATHUS HISPIDUS; PEROGNATHUS
HEBBIAMI; REITHRODONTOMYS FULVESCENS;
BATOMYS TAYLORI; ONYCHOMYS LEUCOGASTER;

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TEXAS

Standard Federal Region 6

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ORYZOMYS PALUSTRIS; RATTUS RATTUS

ADDED KEYWORDS: rodents; population dynamics; wood mice; cotton rats; plains pocket mice; merriam pocket mice; fulvous harvest mice; pygmy mice; grasshopper mice; rice rats; roof rats; rats; mice; management measures

PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; emigration; growth; habitat characterization; home range size; immigration; mortality; natality; numbers; productivity; reproduction; sex; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

capture-recapture-marking

NUMBER OF SAMPLING SITES: 100

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated flora;

climatological data; soils; terrain

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Kleberg County;

Baffin Bay

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;

percentile; analysis of variance

ABSTRACT: The population of rodents has been monitored monthly for the past 6 years. In that period 414 PEROMYSCUS LEUCOPUS were toe clipped, 479 SIGMODON HISPIDUS and approximately 400 of the other species. Various population parameters have been determined and are currently monitored.

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NBIP ACCESSION NUMBER: TX/015

<784>

INVESTIGATOR(S): Cook, R.L.

AFFILIATION: Wildlife Division, Texas Parks and Wildlife Dept.

TITLE: Texas White-Tailed Deer Program

PURPOSE: The management of the white-tailed deer resources of Texas through manipulation of seasons, bag limits, and harvest rates and range and habitat recommendations to be implemented by land operators.

SPONSOR(S): Texas Parks and Wildlife Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1950

PROJECT DURATION: over five years

CHANGE(S) OBSERVED: An annual increase in numbers of hunters in the field and number of deer harvested, while the amount and quality of habitat decreased.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; savanna; grassland

LEVEL(S) OF STUDY: organism; population;

community; ecosystem; region

MANAGEMENT FOCUS: wildlife; range; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; trees;

shrubs; herbs; grasses

TAXA: ODOCOILEUS VIRGINIANUS

ADDED KEYWORDS: white-tailed deer; deer; legal regulation; management measures;

habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; growth; habitat

characterization; harvest; home range

size; kill; mortality; productivity;

reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

random sample surveys; check stations;

telemetry studies; food habits

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;

associated flora

STUDY SITE(S): TX

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile;

analysis of variance;

regression/correlation analysis; modeling;

deterministic

ABSTRACT: This program oversees, plans, and

guides all the white-tailed deer surveys

and studies in Texas.

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NBIP ACCESSION NUMBER: TX/109

<785>

INVESTIGATOR(S): Cornaby, B.W.; Willingham, C.A.

AFFILIATION: Battelle Columbus Laboratories

TITLE: Selected Coastal Zone Ecosystems in

the Gulf of Mexico in Relation to Gas

Pipelining Activities

PURPOSE: To document with field work and

interpretive findings relative to

potential impacts in near-shore and

coastal marshes and dunes of gas pipelines.

SPONSOR(S): Offshore Pipeline Committee

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Habitat conversion, loss

of production on levees, and creation of

canals of different flushing patterns.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

wetland; aquatic; marine; estuarine

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: environmental impact;

indicator species; water quality;

right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; birds; mammals; invertebrates;

crustacea; insects; plants; vascular

plants; trees; shrubs; herbs; grasses

ADDED KEYWORDS: decapoda; habitat

modification; gas pipelines; erosion; food

chains; species diversity; arthropods;

benthic organisms

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; habitat

characterization; harvest; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

quadrat clipping; transects sweep nets;

soil cores; Hydrolab Model II;

Clarke-Bumpus sampler; Emery sampler

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;

soils; terrain; water quality data

STUDY SITE(S): TX; LA; MS; FL

TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
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<785> CONT.

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
non-parametric analysis

ABSTRACT: This research was initiated when it was determined that little or no previous field work had been done on the relationship of gas pipelines and facilities to ecological systems. Experimental design utilized control and pipeline transects. Responses of a variety of environmental aspects were examined including 24 terrestrial and 25 aquatic-related parameters. Findings were tested with one, two, and three-way analysis of variance and correlation analysis. The study has permitted evaluations of erosion and the use of vegetation in reducing it, conversion of one type of habitat to another, and changes in production levels of organic matter (which is exported to the near and offshore food webs). Although aspects of soil, plants, and animals have been altered by pipelining, the alterations are more of the nature of lowered carrying capacity and increases in habitat diversity than removal of any functioning component.

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NBIP ACCESSION NUMBER: OH/056

<786>

INVESTIGATOR(S): Daniel, W.S.

AFFILIATION: Texas Parks and Wildlife Dept.

TITLE: Trinity-Brazos Game Management Survey

PURPOSE: To formulate annual game harvest recommendations, to determine annual population indices and trends of the various small game species so as to direct the hunting public to areas having surpluses, and to isolate factors limiting reproduction and/or fawn survival in selected Trinity-Brazos deer herds.

SPONSOR(S): Texas Parks and Wildlife Dept.;
FWS

SPONSOR CATEGORY: state government; federal
government

DATE OF INITIATION: 1958

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: General downward trend in all major game species (white-tailed deer, bobwhite quail, and squirrel), but upward trend in coyote and bobcat populations.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; savanna;
grassland

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; range;
recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; plants; vascular plants;
trees; shrubs; herbs; grasses;
microorganisms; bacteria; protozoa

TAXA: ODOCOLEUS VIRGINIANUS; ZENAIIDA

MACROURA; CANIS LATRANS; MELEAGRIS

GALLOPAVO; COLINUS VIRGINIANUS

ADDED KEYWORDS: white-tailed deer; deer;
quails; mourning doves; doves; rabbits;
squirrels; coyotes; turkeys; management
measures; legal regulation; browse
conditions

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; habitat
characterization; harvest; home range
size; kill; mortality; natality; numbers;
productivity; reproduction; sex;
size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Hawn walking deer cruise census; mobile
deer cruise census lines; deer track
counts; spotlight deer counts; quail
whistle counts; turkey gobbler counts;
time-area squirrel counts; coyote track
counts; browse utilization surveys; deer
reproduction studies; acorn surveys

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
terrain

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Freestone County

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; mode; percentile

ABSTRACT: The primary purpose of this study is to conduct field investigations and to determine population indices and related information on turkey, deer, and small game species. This information is used as a basis for insuring the proper harvest so as to avoid depletion and waste of the resource. Activities scheduled have been carried out on an annual basis since initiation of the project in 1958. Another phase of the study was initiated in 1966 when it became evident that fawn production and/or survival was much lower than could reasonably be expected. The study is attempting to determine the magnitude of losses and the principal causal factors involved. A final report on fawn production is scheduled for completion in the spring of 1976.

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NBIP ACCESSION NUMBER: TX/097

<787>

INVESTIGATOR(S): Dodd, J.D.

AFFILIATION: Range Science Dept., Texas A and
M University

TITLE: Fire and Herbicide Grassland
Restoration

PURPOSE: To determine the effects of
prescribed burning and herbicide
application on herbage production and
wildlife habitat in grassland ecosystems.

SPONSOR(S): Texas Agricultural Experiment
Station; Various Industrial Companies

SPONSOR CATEGORY: private corporation;
teaching institution

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

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TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
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PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Prescribed burning and herbicide treatments have increased herbage production and wildlife habitat has been improved.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna; grassland
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; shrubs; herbs; grasses
TAXA: PASPALUM DILATATUM; PASPALUM FLICATULUM; PASPALUM URVILLEI; ANDROPOGON SCOPARIUS; PAPPOPHORUM BICOLOR; CONDALIA OBOVATA; CONDALIA OETUSIFOLIA; ACACIA BERLANDIERI; ACACIA FARNESIANA; ACACIA RIGIDULA; ACACIA TORTUOSA
ADDED KEYWORDS: prescribed burning; herbicides; dallisgrasses; brownseed paspalum; little bluestems; pink pappusgrasses; lotewood condalia; guajillo; klu bush; sweet acacia; blackbrush acacia; habitat modification
PRIMARY PARAMETERS INVESTIGATED: biomass; growth; habitat characterization; harvest; kill; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): quadrats; circular plots; ten-point frame; transects; clipping; exclosures
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Colorado County; Goliad County; Zavala County; Rio Grande Plain
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis
ABSTRACT: Herbicide applications are effective in reducing woody plant canopy cover. This reduction in cover is accompanied by an increase in herbage production. Over time, the grass species composition shifts from low producing annuals and weak perennials to the high producing perennials. A single herbicide application to fallow riceland controls weed density. This results in rapid conversion to a grassland that provides high forage production and habitat for Attwater's Prairie Chickens. Prescribed burning reduces wood plant stature and density. This results in a shift in grass and forb species composition with an increase in herbage production. However, the surviving woody plants sprout and a significant increase in number of stems/plant occurs. Studies have shown that a prescribed burn every 4 years is adequate to control woody plant stature and density and to maintain high herbage production. All techniques have been of value in maintaining and improving wildlife habitat.
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<788>

INVESTIGATOR(S): Dronen, N.O.
AFFILIATION: Dept. of Biology, Texas A and M University
TITLE: Sewage Disposal on Agricultural Soils: Chemical, Microbiological, and Parasitological Implications
PURPOSE: To investigate the effects of sewage on agricultural lands (parasitology, bacteriology, and virology).
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Enrichment of local river with sewage containing human pathogens (primarily bacteria).
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; viruses; bacteria; protozoa
TAXA: ENTAMOEBA SPP; GIARDIA SPP; STRONGYLUS SPP; TAENIA SPP; HAEMONCHUS SPP
ADDED KEYWORDS: waste water; sewage treatment; eutrophication; platyhelminthes; nematodes
PRIMARY PARAMETERS INVESTIGATED: distribution; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard field sampling; soil chemistry; microbiological assays
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated microorganisms; soils; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Choncho County; Choncho River; San Angelo
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: We attempt to monitor the impact of the use of sewage on the soil chemistry, microbiological implications, and parasites.
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NBIP ACCESSION NUMBER: TX/035

<789>

INVESTIGATOR(S): Ellis, J.E.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Chaparral Wildlife Management Area
PURPOSE: To test various game animal census techniques, to determine the effects of hunting on game animal populations, and to monitor vegetative changes on the study area.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969

TEXAS

Standard Federal Region 6
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(CONTINUED)

<789> CONT.

PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Improved range conditions have been observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; shrubs; herbs; grasses
TAXA: ODOCOLEUS VIRGINIANUS; PECARI TAJACU; COLINUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; deer; collared peccaries; peccaries; bobwhites; quails; management measures; grazing; legal regulation; javelinas
PRIMARY PARAMETERS INVESTIGATED: age; distribution; habitat characterization; harvest; home range size; kill; mortality; natality; numbers; reproduction; sex; size/weight; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): check stations; transects; aerial census; walking census; roadside counts; roost counts; track counts; home range studies
NUMBER OF SAMPLING SITES: 15,200 acre study area
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Dimmit County; LaSalle County
TYPE OF DATA: raw; literature-derived
ABSTRACT: Plant species have been monitored since 1969 in an attempt to provide an annual picture of the trend in plant composition and growth. Each transect is checked during the summer months with additional plots being surveyed during the winter to determine forb production. Data from this job is also used to determine the effect of grazing pressure on vegetation. In another phase of the study, aerial surveys, roadside counts, roost counts, track counts, and home range studies are used to estimate the size of game and predator populations and to determine harvest quotas for public hunts.
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NBIP ACCESSION NUMBER: TX/089

<790>

INVESTIGATOR(S): Emery, W.H.P.
AFFILIATION: Dept. of Biology, Southwest Texas State University
TITLE: Distribution and Abundance of HYDRILLA VERTICILLATA in the San Marcos River
PURPOSE: To monitor the abundance and spreading range of this recently introduced weedy aquatic plant.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1974

PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Rapid expansion of HYDRILLA in past two years.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs
TAXA: HYDRILLA VERTICILLATA
ADDED KEYWORDS: species introduction; habitat modification; population effects; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization
NUMBER OF SAMPLING SITES: 4 to 6
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Hays County; San Marcos River; Spring Lake
TYPE OF DATA: raw
ABSTRACT: None provided.
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San Marcos, TX 78666
TELEPHONE: (512) 245-2178
NBIP ACCESSION NUMBER: TX/011

<791>

INVESTIGATOR(S): Fox, S.F.
AFFILIATION: Dept. of Biology, Boston University
TITLE: Natural Selection in the Lizard, UTA STANSBURIANA
PURPOSE: To show differential survival in field populations of 3 biological levels: biochemical, morphological, and behavioral.
SPONSOR(S): NSF; Yale University, Sigma Xi
SPONSOR CATEGORY: federal government; teaching institution; societies and other organizations
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decreased morphological variation at each generation. Survivors are behaviorally different and more stereotyped.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles
TAXA: UTA STANSBURIANA; YUCCA SP.
ADDED KEYWORDS: lizards; side-blotched lizards; territoriality; genetics
PRIMARY PARAMETERS INVESTIGATED: age; behavior; habitat characterization; home range size; mortality; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): shade box thermometer; Dwyer wind meter; time-watch structural association; sky cover determined by inspection; electrophoresis
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: daily
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): TX

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GEOGRAPHIC DESCRIPTION: Winkler County
TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis; non-parametric analysis
ABSTRACT: Natural selection, acting through
differential survivorship of juveniles
from a natural population of UTA
STANSBURIANA from western Texas, was found
on three biological levels of
organization: behavioral, morphological,
and enzymatic. Juveniles were studied
intensively for two summers in the field.
Accumulation of information collected from
individuals permitted a direct comparison
of survivors and non-survivors. Survivors,
when compared to non-survivors, were
active less frequently and only during
specific weather conditions as well as
associated with only particular plant
species. Non-survivors were probably
eating less desirable foods (as evidenced
by increased fecal production without
concomitant increase in growth), and were
active over longer periods of the day,
therefore, subjecting themselves to more
diverse weather conditions. In addition,
survivors were generally older and larger.
Solely on the basis of size and ecological
behavior, survivors could be distinguished
from non-survivors with an accuracy of 79%
using discriminant function analysis. Both
juveniles and adults defend territories
over the summer. The territories of
survivors were qualitatively different
from those of non-survivors. Increased
densities of YUCCA and shelter holes were
found on territories of survivors. Also,
survivors' territories were more diverse
than the territories of non-survivors.
Selective elimination of behavioral
extremes demonstrated the action of
stabilizing selection. Individual
survivors, compared to non-survivors, were
characterized by narrower behavioral
phenotypic breadth, i.e. were more
behaviorally specialized. Comparison of
scale characters showed prevalence of
stabilizing selection. Directional and
disruptive selection, found less
frequently, was thought to be temporally
transient. This population showed evidence
of directional asymmetry for bilateral
characters, but no differential
survivorship was observed with respect to
the degree of asymmetry. The phenotypes of
three isozyme-synthesizing loci showed
differential survivorship when adults were
compared to juveniles. Of these three
polymorphisms, one (POM) is probably
maintained by heterosis. A horizontal
study of juveniles over time showed no
differential survivorship of isozyme
phenotypes, although the heterozygotes at
one locus exhibited significantly greater
survivorship than did the heterozygotes
over the summer only. It was concluded
that the fitness of each phenotype changes

over time.

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NBIP ACCESSION NUMBER: MA/002

<792>

INVESTIGATOR(S): Gilmore, G.H.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: An Ecological Study of the Plankton
and Benthos in Lavaca Bay, Texas
PURPOSE: To determine the effects of
freshwater inflow on the plankton and
benthos assemblage of Lavaca Bay.
SPONSOR(S): Texas Water Development Board
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Species diversity and
standing crop of the benthic organisms
varied directly with salinity of water.
ECOSYSTEM OR BIOHE TYPE(S): aquatic;
freshwater; river; marine; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: fisheries; resource
planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; microorganisms; algae
TAXA: PHYTOPLANKTON, 71 SPECIES;
ZOOPLANKTON, 174 SPECIES
ADDED KEYWORDS: standing crop; chlorophylls;
benthic organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration;
numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Peterson grab; zooplankton net with
flowmeter; otter trawl
NUMBER OF SAMPLING SITES: 26
SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms; climatological
data; hydrological data; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Calhoun County;
Lavaca River; Lavaca Bay; Navidad River
TYPE OF DATA: raw; reduced
COMPUTER AND LANGUAGE: UNIVAC 1106
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: The study was typified by
above-normal freshwater inflow. In fact,
the average rate of flow during the
eight-month period was 65 percent greater
than that recorded for the previous 34
years. Daily inflow varied between about
200 and 11,500 cfs during this study.
Species diversity was great and was
related to above-normal river inflow. The
phytoplankton study found 71 taxa while
the zooplankton study identified 174 taxa,
61 of which were freshwater forms. In both
studies, fresh, brackish, and marine forms
were found. Species diversity and standing
crop of bottom organisms seemed to vary
directly with salinity during the study
period. The dynamic nature of the estuary
during the eight-month period, along with
the covariability of the many parameters
involved, greatly reduced our ability to

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make meaningful judgements as to the relationship between standing crops and river flow.
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NBIP ACCESSION NUMBER: TX/027

<793>

INVESTIGATOR(S): Gladney, W.J.
AFFILIATION: ARS
TITLE: Fluctuations of Populations of Lone Star Ticks at Kerr Wildlife Management Area
PURPOSE: To monitor seasonal fluctuations of ticks and to determine populations of ticks in relation to numbers and kinds of domestic and wild animals in specific pastures.
SPONSOR(S): ARS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Numbers of ticks increased in spring yearly, but populations drastically decreased in pastures after animals were removed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; invertebrates; insects
TAXA: AMBLYOMMA AMERICANUM
ADDED KEYWORDS: lone star ticks; ticks; seasonal variations; population effects; habitat modification; grazing; prairies; cattle; deer; sheep
PRIMARY PARAMETERS INVESTIGATED: distribution; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): carbon dioxide-emitting tick traps
NUMBER OF SAMPLING SITES: several fixed and movable sites in each pasture
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; climatological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Edwards Plateau
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The project is designed to weekly sample populations of lone star ticks at several locations in several separate pastures of the Kerr Wildlife Management Area. These pastures are stocked with different ratios of cattle, deer, and sheep. Deer include native, white-tailed, and exotic species. Populations of ticks are monitored by standard carbon dioxide-emitting tick traps. Data are related to season of the year and populations of animals.
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NBIP ACCESSION NUMBER: TX/087

<794>

INVESTIGATOR(S): Hofstetter, R.P.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Oyster Studies, Galveston Bay
PURPOSE: To monitor fluctuations in population levels of the oyster on public reefs in Galveston Bay and to provide information useful in management of the oyster fishery.
SPONSOR(S): Texas Parks and Wildlife Dept.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1952
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Variable changes in population levels due to identified and unidentified environmental factors.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca
TAXA: CRASSOSTHEA VIRGINICA
ADDED KEYWORDS: american oysters; oysters; habitat modification; population effects
PRIMARY PARAMETERS INVESTIGATED: age; distribution; growth; habitat characterization; harvest; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sample oyster dredge; oyster tongs
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: monthly; irregular
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Chambers County; Galveston County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; median
ABSTRACT: None provided.
ADDRESS: Mr. Robert Hofstetter
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Seahrnook, TX 77586
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NBIP ACCESSION NUMBER: TX/018

<795>

INVESTIGATOR(S): Hopkins, S.H.
AFFILIATION: Dept. of Biology, Texas A and M University
TITLE: Shell Dredging in San Antonio Bay, Texas
PURPOSE: To serve as a basis for an environmental impact statement by Army Corps of Engineers on shell dredging in this bay.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Bottom fauna were wiped out by dredging with recovery in 20 years. But swimming fauna was not damaged.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife

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ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds; invertebrates; crustacea;
mollusca; shellfish
TAXA: FISHES, 83 SPECIES
ADDED KEYWORDS: whooping cranes; dredging;
benthic organisms; oysters; mining;
submarine mining; oysters; decapods
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; mortality;
numbers; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
otter trawl; core samples
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: San Antonio Bay;
National Wildlife Refuge
TYPE OF DATA: reduced; summarized
ABSTRACT: This study was to ascertain the
effects of dredging buried oyster shell.
FISH AND INVERTEBRATES were sampled along
all shores of the National Wildlife
Refuge, in San Antonio Bay. Benthic fauna
was sampled in the deeper parts of the bay
system. Biological data was correlated
with hydrographic data and with changes
made by dredging.
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College Station, TX 77843
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NBIP ACCESSION NUMBER: TX/103

<796>

INVESTIGATOR(S): Kiel, W.H.
AFFILIATION: King Ranch
TITLE: Trends in Productivity and Populations
of Bobwhite Quail, Turkeys, and
White-Tailed Deer
PURPOSE: To monitor trends in relation to
habitat and game management factors.
SPONSOR(S): King Ranch
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Extreme fluctuations
occurred in quail and turkey productivity.
Generally low productivity of deer
occurred but with relatively high
population density.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; savanna; grassland
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: COLINUS VIRGINIANUS; MELEAGRIS
GALLOPAVO; ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: bobwhites; quails; turkeys;
white-tailed deer; deer; management
measures; habitat modification; population
effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
harvest; kill; numbers; reproduction; sex;
size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial census; quail wing collections;

counts; hunter kill records
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Kleberg County; Jim
Wells County; Nueces County; Willacy
County; Brooks County; Kenedy County; King
Ranch
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: TX/052

<797>

INVESTIGATOR(S): Rothmann, R.G.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Patuxent Basin Game Management Survey
7401-0940
PURPOSE: To formulate harvest regulations for
deer and antelope and to determine annual
population trends of various game species.
SPONSOR(S): Texas Parks and Wildlife Dept.;
FWS
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1965
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A more efficient
utilization of wildlife resources and an
increase in hunter recreation through use
of game management practices.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; range;
recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees; shrubs; herbs; grasses;
microorganisms; viruses; bacteria
TAXA: ODOCOILEUS HEMIONUS; ODOCOILEUS
VIRGINIANUS; ANTILOCAPRA AMERICANA; PECARI
TAJACU; PHAEGIANUS COLCHICUS; RINUS
MICROPHYLIA; MELEAGRIS GALLOPAVO; COLINUS
VIRGINIANUS; CALLIPEPLA SQUAMATA;
TYPANUCHUS PALLIDICINCTUS; ZENAIDA
MACROURA; BROMUS CATHARTICUS; PROSOPIS
JULIFLORA; JUNIPERUS PINCHOTII; CONDALIA
OBTUSIFOLIA; QUERCUS VIRGINIANA
ADDED KEYWORDS: species introduction;
prairies; brush; deer; antelope;
pronghorn antelopes; management measures;
turkeys; quails; pheasants; white-tailed
deer; prairie chickens; bobwhites
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; kill; mortality;
numbers; reproduction; sex; size/weight;
stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hahn cruise lines; spotlight lines;
roadside transects; crow call counts;
aerial transects; questionnaires;
observation; reports; hunter surveys; game
warden estimates
SAMPLING FREQUENCY: continuous; seasonal
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data

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STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Colorado River;
Brazos River; Concho River; Pecos RiverTYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: During the past 10 years, continuous studies have been conducted regarding the supply of game available in the project area. Data derived from these studies include estimates of white-tailed deer and antelope herd increments, sex ratios, and average density with emphasis on surplus populations of these game animals. Roadside counts of bobwhite and quail have been made in key areas and these data used as an index to define areas of high population density. Turkey roost counts and hen-poult counts have been used to determine winter survival and reproductive success. Booming ground counts of lesser prairie chicken were utilized to determine population levels of broodstock. Field observations of range conditions were used to determine reproductive success of prairie chicken which was substantiated by check station data. The relative success of exotic game bird releases was determined through periodic inspections of gray francolin and Afghan white-winged pheasant release sites. Crow counts have been utilized to determine the extension of occupied range and population density of pheasant transplants. Periodic checks of range conditions throughout the project area has provided valuable data relative to the survival, reproduction, home ranges, and population levels of all game species. These studies should be continued to allow the formulation of appropriate harvest regulations on these fluctuating game populations and thereby allow the most efficient harvest of surplus animals without endangering the broodstock levels of game populations.

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NBIP ACCESSION NUMBER: TX/120

<798>

INVESTIGATOR(S): Lay, D.W.

AFFILIATION: Texas Parks and Wildlife Dept.

TITLE: Red Cockaded Woodpecker Investigations

PURPOSE: To determine the status and ecological requirements of the red cockaded woodpecker in Texas.

SPONSOR(S): Texas Parks and Wildlife Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

CHANGE(S) OBSERVED: Loss of many colonies because normal timber cutting removes the kind of trees needed by the woodpeckers for nesting and roosting.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species;

wildlife; forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; plants; vascular plants; trees

TAXA: DENDROCOPOS BOREALIS; PINUS PALUSTRIS

ADDED KEYWORDS: red cockaded woodpeckers;

woodpeckers; longleaf pines; pines;

habitat modification; logging; nests;

nesting sites

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; distribution; habitat

characterization; home range size;

natality; numbers; reproduction; territory

size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

banding; observation; movement studies;

tree measurements

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): TX

ABSTRACT: Fewer than 500 red cockaded

woodpeckers are estimated as remaining in

the 7.5 million acres of pine and

pine-hardwood forests of East Texas. A

national census estimate for 1971 was

2,939 in the southern pine forests of the

United States. The species is endangered

because it requires older, more mature

pines than are available (usually more

than 50 years old). It does not adapt to

the modern forest of young pines. The kind

of tree used by the red cockaded

woodpecker is less profitable for the

commercial timber owner. Growth is slower

and the mortality rate is higher than that

of younger pines. Normal timber cutting

removes the kind of trees needed by the

woodpeckers for nesting and roosting. Most

forest properties of the future will have

no red cockaded woodpeckers because the

trend is toward rotations of less than 50

years. Management guidelines for

preserving the woodpeckers habitat were

developed in this study.

REFERENCES: Lay, et al, 1975

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NBIP ACCESSION NUMBER: TX/088

<799>

INVESTIGATOR(S): McCarley, H.

AFFILIATION: Dept. of Biology, Austin College

TITLE: Vocalization Studies of Red Wolves

(CANIS RUPUS)

PURPOSE: To provide field techniques and data

for location and censusing of red wolves,

coyotes, and hybrid types within red wolf

geographic range.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Gradual decrease in

numbers of red wolves and concomitant

increase in coyotes and hybrid types.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert; grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species

ORGANISMS, MAJOR TYPES: animals; vertebrates;

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mammals
TAXA: CANIS RUFOUS; CANIS LATRANS
ADDED KEYWORDS: red wolves; wolves; coyotes;
census; population effects; management
measures
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
howl responses; electronic siren; tape
recordings
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): TX
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: TX/091

<800>

INVESTIGATOR(S): McKinney, L.D.
AFFILIATION: Texas A and M University
TITLE: The Effects of Shell Dredging and
Siltation from Dredging on Organisms
Associated with Oyster Reefs
PURPOSE: To monitor changing population
levels before, during, and after dredging
near oyster reefs.
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: The short term effects
were that the animals either were killed
or moved off the reefs due to siltation,
and the populations returned to normal
over a period of several years.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; marine; coastal;
estuarine
LEVEL(S) OF STUDY: organism; population;
community
MANAGEMENT FOCUS: environmental impact;
pollution control
ORGANISMS, MAJOR TYPES: animals;
invertebrates; shellfish
ADDED KEYWORDS: dredging; siltation; oysters;
barnacles
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration;
growth; immigration; kill; mortality;
numbers
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: daily; weekly; monthly;
quarterly
SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Refugio County;
Guadalupe River; San Antonio Bay
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile
ABSTRACT: The effects of shell dredging and
siltation from dredging on organisms
associated with oyster reefs are to be

published in "Shell Dredging and Its
Influence on Gulf Coast Environments".
REFERENCES: Bouma, et al, 1976
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NBIP ACCESSION NUMBER: TX/107

<801>

INVESTIGATOR(S): Moseley, F.N.
AFFILIATION: Central Power and Light Co.
TITLE: Thermal Effects on the Ecology of Cox
Bay, Texas
PURPOSE: Before and after ecology of a small
estuary resulting from the operation of a
steam electric generating station.
SPONSOR(S): Central Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: No significant changes as
a result of thermal input. Normal seasonal
changes were observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; pollution
control; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea;
microorganisms; algae
TAXA: BENTHIC ORGANISMS, 100 SPECIES
ADDED KEYWORDS: thermal effluents;
phytoplankton; zooplankton; benthic
organisms; power plants; coal; fossil
fueled power plants
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; emigration;
immigration; numbers; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
travls; seines; plankton nets; Emery dredge
NUMBER OF SAMPLING SITES: 11
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Calhoun County; E.S.
Joslin Power Station; Cox Bay
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM/360; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis
ABSTRACT: Baseline ecology was studied 2
years prior to power plant operation and
continued 4 years after power plant
operation. Nekton, phytoplankton,
zooplankton, and benthos were sampled at
all stations. Various analyses were
applied to the data, however no
significant effect due to power plant
operations was observed.
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NBIP ACCESSION NUMBER: TX/112

TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
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<802>

INVESTIGATOR(S): Moseley, F.N.
AFFILIATION: Environmental Affairs, Central Power and Light Co.
TITLE: Succession in a Once-Through Salt Water Cooling Lake
PURPOSE: To describe secondary production in a new once-through salt water cooling lake through time.
SPONSOR(S): Central Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tremendous increase in secondary production.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; fisheries; resource planning; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; shellfish; microorganisms; algae
TAXA: SCIAENOPS OCELLATA; CYNOCION NEBULOSUS; POGONIAS CROMIS; PENEAS OZTECUS; PENEAS SETIPERUS; PENEAS DUORANUM; CALLINECTES SAPIDUS
ADDED KEYWORDS: secondary productivity; succession; shrimp; penaeid shrimps; drums; channel drums; speckled squeteagues; black drums; white shrimp; blue crabs; crabs; decapods; thermal effluents
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; emigration; growth; immigration; mortality; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; seines; traps
NUMBER OF SAMPLING SITES: 13
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Nueces County; Barney M. Davis Lake
TYPE OF DATA: raw
ABSTRACT: We are studying the succession of a once-through cooling lake through time. The source of the cooling water is the Upper Laguna Madre and the discharge is into Cayo del Oso. Screen wash from the power plant is pumped into the cooling lake and provides continuous stocking for the lake. To date, very high growth rates have been observed on SCIAENOPS OCELLATA, CYNOCION NEBULOSUS, POGONIA CROMIS, and penaeid shrimp.
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NBIP ACCESSION NUMBER: TX/113

<803>

INVESTIGATOR(S): Murphy, C.E.

AFFILIATION: Dept. of Biology, Texas Christian University
TITLE: Influence of Thermal Discharge on Fish Species Diversity in Eagle Mountain Lake, Tarrant and Wise Counties, Texas.
PURPOSE: Attempt to ascertain species diversity and distribution pattern of fishes as influenced by thermal discharge from the Texas Electric Company Steam Electric Plant.
SPONSOR(S): Texas Electric Service Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: No adverse effects were noted in fish. Fish accumulated during one cold period in discharge area.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; water quality; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 24 SPECIES
ADDED KEYWORDS: thermal effluents; fossil fueled power plants; species diversity; piscicides
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gill nets; seines; electrofishing gear; hook and line; rotenone; K-Factor
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: monthly
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Tarrant County; Wise County; Eagle Mountain Lake
TYPE OF DATA: raw; reduced
COMPUTER AND LANGUAGE: Xerox Sigma 9; APL
STATISTICS EMPLOYED: mean; mode; median; regression/correlation analysis
ABSTRACT: A qualitative and quantitative study of fish populations in selected areas, both under the influence of thermal discharge and without the influence of thermal discharge, from the Texas Electric Service Company Steam Electric Plant was made. The purpose of the study was to attempt to ascertain species diversity and distribution pattern of fishes as influenced by the thermal discharge from the Steam-Electric Plant.
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Port Worth, TX 76129
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NBIP ACCESSION NUMBER: TX/020

<804>

INVESTIGATOR(S): Murray, H.D.
AFFILIATION: Dept. of Biology, Trinity University
TITLE: Ocular Parasite, PHILOPHTHALMOS INEGALURUS, Waterfowl, and the Intermediate Hosts, TAREBIA GRANIPERA and MELANOIDES TUBERCULATA
PURPOSE: To monitor the distribution and spread of the trematode parasite in south Texas, to determine the importance of the parasite to man, and to devise treatment for the parasite.
SPONSOR(S): PI

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Standard Federal Region 6
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SPONSOR CATEGORY: private individuals
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Level of parasite infections have increased and geographical area has increased.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; invertebrates; mollusca
TAXA: MELANOIDES TUBERCULATA; TABEBIA GRANIPERA; PHILOPHTHALMUS INEGALURUS
ADDED KEYWORDS: parasites; diseases; population effects; management measures; snails; trematodes; gastropods
PRIMARY PARAMETERS INVESTIGATED: distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
NUMBER OF SAMPLING SITES: 75
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: hydrological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Bexar County; Comal County; San Antonio River; Comal Creek; Brackenridge Park; Landa Park
TYPE OF DATA: raw; literature-derived
ABSTRACT: Established populations of MELANOIDES TUBERCULATA and TABEBIA GRANIPERA were reported in South Texas. Inasmuch as both species are introduced from the Orient and inasmuch as both species serve as intermediate hosts for human parasites in the Orient, these snails stimulate medical and ecological interest. At present, the snails seem to be of no medical significance in this country. Both species occur in San Antonio, Bexar County, Texas; and, since last year, populations of both species have been observed in New Braunfels, Comal County, Texas. Presently no records occur for San Marcos, Texas; however, they are expected.
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NBIP ACCESSION NUMBER: TX/110

<805>

INVESTIGATOR(S): Noble, R.L.; Kelley, J.R.; Strawn, R.K.
AFFILIATION: Dept. of Wildlife and Fisheries Sciences, Texas A and M University
TITLE: Intensive Catfish Culture and Its Effect on a Thermally Modified Reservoir
PURPOSE: To evaluate cage culture of catfish and its effects on water quality and fish populations in a cooling reservoir.
SPONSOR(S): Texas Power and Light; Texas Agricultural Experiment Station
SPONSOR CATEGORY: private corporation; state government; teaching institution
DATE OF INITIATION: 1971

PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Fish populations have changed in response to introduced exotics (TILAPIA AUREA) rather than in relation to culture activities.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 22 SPECIES; TILAPIA AUREA
ADDED KEYWORDS: channel catfishes; freshwater drums; grizzard shad; carps; blue tilapia; bluegills; largemouth basses; catfishes; drums; shad; tilapia; basses; thermal effluents; spooico introduction; cooling water; life history
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; mortality; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): gillnets; hoopnets; seines; electrofishing gear
NUMBER OF SAMPLING SITES: 9-10
SAMPLING FREQUENCY: monthly; irregular
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Henderson County; Trinidad Lake; Trinidad Plant, Texas Power and Light
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: Channel catfish were cultured in cages. Limnological and water quality parameters were monitored. Fish population abundance and distribution were monitored using gillnets, hoopnets, and seines by fishing at regular intervals from 1971 to 1975. Population estimates were obtained on blue tilapia and largemouth bass by mark-recapture. Life history information will be analyzed on principal species. Population of TILAPIA, inadvertently introduced in the late 1960's, has reached nearly 2000 pounds per acre and has caused changes in abundance of many species of fishes.
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NBIP ACCESSION NUMBER: TX/042

<806>

INVESTIGATOR(S): Plapp, P.W.
AFFILIATION: Dept. of Entomology, Texas A and M University
TITLE: Pesticide Residues in Agricultural Commodities and Environments
PURPOSE: To determine residues of pesticides in agroecosystems.
SPONSOR(S): USDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Buildup until 1972 of residues occurred in cotton agroecosystems

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but sharply declined since then as measured in studies with snakes, our chief indicator organisms.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles
TAXA: AGKISTRODON PISCIVORUS; AGKISTRODON CONTORTRIX; NATRIX ERYTHROGASTER; NATRIX RHOMBIFERA; NATRIX SIPEDON
ADDED KEYWORDS: snakes; cottonmouths; water moccasins; copperheads; plain-bellied watersnakes; common watersnakes; pesticides; habitat modification; agriecosystems
PRIMARY PARAMETERS INVESTIGATED: physiology; reproduction; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live collection
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Brazos County; Robertson County; Brazos River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; median
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: TX/117

<807>

INVESTIGATOR(S): Pulich, W.M.
AFFILIATION: University of Dallas
TITLE: Golden-Cheeked Warbler
PURPOSE: To set forth management procedures and determine population numbers while studying biological aspects.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations of golden-cheeked warblers are eliminated whenever cedar brakes are destroyed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: endangered species
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: DENDROICA CHRYSOPARIA
ADDED KEYWORDS: golden-cheeked warblers; management measures; habitat modification; population effects; warblers
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; migratory patterns; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: 3 original
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Dallas County; Bosque County; Kendall County

ABSTRACT: One of the serious problems facing the golden-cheeked warbler is loss of habitat. Drastic land clearing operations for agriculture and urbanization have been underway since the mid-1940's. Because the species has a narrow tolerance for habitat requirements, a particular population is eliminated whenever a cedar brake is destroyed. One cannot leave a few old junipers and expect the species to remain. Typical blocks or acreages of cedar brakes up to several hundred acres, and ideally blocks of 1000 acres or more, should be left to insure the preservation of the golden-cheeked warbler. Because it does have special habitat requirements there must be careful management planning for this species. Private land owners should be urged to consider retaining cedar brakes for this bird and subsidy payments for set-aside acreage should be incorporated into agricultural programs. At the present rate of clearing, juniper suitable for nesting birds may be eliminated by the turn of the century.

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NBIP ACCESSION NUMBER: TX/106

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INVESTIGATOR(S): Raun, G.G.
AFFILIATION: Dept. of Biology, Angelo State University
TITLE: Population Studies of Small Mammals in West-Central Texas
PURPOSE: To monitor changes in populations of six species of rodents on a test plot.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: All populations have fluctuated violently during the period--low to high to low at present time.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; grassland
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: SIGHMODON HISPIDUS; PEROMYSCUS LEUCOPUS; PEROGNATHUS HISPIDUS; PEROGNATHUS MERRIAMII; REITHRODONTOMYS FULVESCENS; BAIONYS TAYLORI
ADDED KEYWORDS: population effects; succession; cotton rats; rats; wood mice; pocket mice; mice; harvest mice; pygmy mice; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; behavior; diversity; emigration; growth; home range size; immigration; mortality; natality; numbers; reproduction; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live trap; mark and release
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;

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associated flora
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Tom Green County;
Concho River; O.C. Fisher Reservoir
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: We monitor changes in population
densities over a long term period in an
effort to determine causes for such
fluctuations and identify possible
competitive interactions that might be
studied in detail under controlled
conditions.

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NBIP ACCESSION NUMBER: TX/072

<809>

INVESTIGATOR(S): Spencer, G.E.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Southeast Texas Game Management Survey
PURPOSE: To inventory population trends,
habitat conditions, and other factors
influencing wildlife populations within
the described area; and also, to recommend
harvest regulations.

SPONSOR(S): Texas Parks and Wildlife Dept.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1957
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Restoration of deer and
turkey as well as pheasant introductions.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland;
wetland

LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals

ADDED KEYWORDS: management measures; species
introduction; population effects; deer;
turkeys; pheasants; legal regulation

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; habitat characterization;
harvest; kill; mortality; natality;
numbers; productivity; sex; size/weight;
stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): TX

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: TX/115

<810>

INVESTIGATOR(S): Stutzenbaker, C.D.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: State-Wide Waterfowl Program
PURPOSE: Monitor waterfowl populations and

prepare management recommendations.

SPONSOR(S): Texas Parks and Wildlife Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Waterfowl populations are
generally declining.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; marine; coastal;
estuarine

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birdsTAXA: ANAS PLATYRHYNCHOS; ANAS PULVIGULA;
ANAS ACUTA; ANAS SPP; ANAS CRECCA; BRANTA
CANADENSIS; ANSER ALBIFRONSADDED KEYWORDS: mallard ducks; mottled ducks;
pintail ducks; ducks; green-winged teals;
looser snow geese; canada geese;
white-fronted geese; geese; management
measures; leadPRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; growth; habitat
characterization; harvest; mortality;
migratory patternsDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
population estimates; banding; mail
surveys; wing collection; gizzard
collection

NUMBER OF SAMPLING SITES: 1 to 10

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): TX

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: During the 1973-74 and 1974-75

Texas waterfowl seasons, a total of 4,379
duck gizzards representing 17 species were
collected in 82 Texas counties. The
gizzard from each bird was accompanied
with a wing and data tag indicating date
and location information. Wings were not
retained from birds collected at public
hunt check stations. The wings and
gizzards were kept frozen and were
transported to the Murphree Management
Area near Port Arthur for analysis. The
gizzards were analyzed immediately after
closure of the hunting seasons. The wings
were used to identify the gizzard as to
species, sex and age where possible.
Records were maintained of lead ingestion
and food items for each gizzard sample.
Wings from 1973-74 birds with lead
ingestion were catalogued and forwarded to
the Colorado Div. of Wildlife along with
wings from birds showing no evidence of
lead ingestion. Atomic absorption
Spectrophotometer tests were run on the
wing sample. The sample of leaded to
non-leaded wings showed a lack of good
correlation. While the two year lead
ingestion investigation did little to
answer major questions concerning lead
poisoning in waterfowl, it did accomplish
its original purpose of providing an
insight into the magnitude of the level of
lead ingestion in Texas by geographic zone
and by species.

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NBIP ACCESSION NUMBER: TX/111

TEXAS

Standard Federal Region 6
Fish and Wildlife Service Region 2
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INVESTIGATOR(S): Traveek, M.S.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Texas Waterfowl
PURPOSE: To monitor waterfowl populations occurring in the state of Texas.
SPONSOR(S): Texas Parks and Wildlife Dept.
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Panhandle: Increase in irrigation resulting in increase in waterfowl habitat.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; aquatic; freshwater; lake
LEVEL(S) OF STUDY: population; ecosystem; region
MANAGEMENT FOCUS: wildlife; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
ADDED KEYWORDS: population dynamics; census; management measures; irrigation; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; habitat characterization; harvest; immigration; kill; mortality; migratory patterns; numbers; productivity; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census; observations; tagging procedures
SUPPORTING DATA COLLECTED: associated flora; climatological data; hydrological data
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Texas Panhandle
TYPE OF DATA: summarized
ABSTRACT: We monitor waterfowl populations and waterfowl habitat occurring in the state of Texas and try to control the various factors influencing annual populations i.e., harvest regulations, habitat loss and/or enhancement, natural mortality (disease, etc). The main objective is to provide the public with a stable or increasing population of waterfowl each year to be enjoyed through recreational and/or aesthetic purposes.
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TELEPHONE: (806) 655-3631
NBIP ACCESSION NUMBER: TX/101

<812>

INVESTIGATOR(S): Waggerman, G.L.
AFFILIATION: Texas Parks and Wildlife Dept.
TITLE: Survey and Status of the White-Winged Dove in Texas Federal Aid Project PR-W-30-R
PURPOSE: To insure a population of white-winged doves at a level that will best meet present and future requirements.
SPONSOR(S): Texas Parks and Wildlife Dept.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1951
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: A decline in native brush acreage and establishment of citrus trees caused a shift in nesting habitat preferences, and the population of

whitewings declined initially in the early 50's but has been making a slow comeback.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; savanna

LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: ZENAIIDA ASIATICA
ADDED KEYWORDS: white-winged doves; doves; habitat modification; nests; management measures; orchards
PRIMARY PARAMETERS INVESTIGATED: age; distribution; habitat characterization; harvest; kill; mortality; migratory patterns; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): breeding survey; nest transects; hunter survey; mortality-band analysis
NUMBER OF SAMPLING SITES: most surveys total county in all suitable habitats
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): TX
GEOGRAPHIC DESCRIPTION: Rio Grand Valley
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis

ABSTRACT: The annual spring breeding census revealed 529,173 whitewings, an increase of 0.6 percent above the 1973 census. Sixty-four percent of the whitewings utilized citrus orchards as nesting habitat. A whitewing coo-count census in counties of Upper South Texas revealed a population of 155,780 birds which was a 400 percent increase over the last survey in 1969 which had 30,000 whitewings. Nesting conditions in the Lower Rio Grande Valley were good in 1974 with 42 percent of the eggs laid fledging young on study transects. Whitewing production was calculated to be 1.67 and 2.82 young per pair of breeding adults for citrus and brush nesting areas, respectively. A four-day whitewinged dove hunting season was held on September 1, 2, 7 and 8, 1974. A total of 298,926 whitewings was shot with 238,614 bagged. An estimated 38,642 mourning doves were taken during whitewing season. Hunter success in 1974 was measured at 6.9 whitewings per hunter-day compared to 5.89 in 1973.

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NBIP ACCESSION NUMBER: TX/095

<813>

INVESTIGATOR(S): Ward, C.H.
AFFILIATION: Dept. of Biology, Rice University
TITLE: Maximum Utilization of Water Resources in a Planned Community Eutrophication Studies
PURPOSE: To assess impact of planned community development on aquatic habitats of a particular watershed.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years

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TEXAS

Standard Federal Region 6
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PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Increasing nutrient
supply in lakes occurred with increasing
potential for supporting algal growth.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; aquatic; freshwater;
stream; lake

LEVEL(S) OF STUDY: organism; population;
ecosystem

MANAGEMENT FOCUS: environmental impact;
resource planning; pollution control;
water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

ADDED KEYWORDS: eutrophication; algal blooms

PRIMARY PARAMETERS INVESTIGATED: biomass;

BOD; distribution; diversity; growth;

habitat characterization; physiology

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

plankton nets; EPA bioassay techniques

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: monthly;

SUPPORTING DATA COLLECTED: associated flora;

associated microorganisms; climatological

data; hydrological data; soils; terrain;

water quality data

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Montgomery County;

Conference Center Lake; Panther Branch

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; median;

percentile; regression/correlation

analysis; modeling, stochastic

ABSTRACT: The monthly occurrence and
distribution of algae in several aquatic
habitats in The Woodlands, a planned
community near Houston, Texas, was studied
over an 8 month period. The distribution
of the edaphic algae in Woodlands soil was
also determined and the indigenous aquatic
vascular plants were tabulated. Nutrient
limitation studies were also conducted on
low flow water, stormwater, and wet
weather pond water samples collected in
The Woodlands. For comparative purposes,
nutrient limitation studies were also
conducted on stormwater samples from
Hunting Bayou, a developed community near
Houston, Texas.

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NBIP ACCESSION NUMBER: TX/057

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INVESTIGATOR(S): Whitson, P.D.

AFFILIATION: Dept. of Biology, University of
Northern Iowa

TITLE: Vegetation Dynamics: Boot Canyon, Big
Bend National Park, Texas

PURPOSE: To define major climatic factors
influencing germination and seedling
survival of woody species, especially
trees.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Massive germination of
QUERCUS GREVESII between 1964 and 1969
with 73% survival to 1973.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; mountain

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: forestry; recreation;

resource planning

ORGANISMS, MAJOR TYPES: plants; vascular

plants; trees; shrubs

TAXA: CUPRESSUS ARIZONICA; QUERCUS GRAVESII;

PINUS PONDEROSA; PINUS CEMBRIOIDES; QUERCUS

GRANIFERA; PSEUDOTSUGA MENZIESII; JUNIPERUS

DEPPEANA; JUNIPERUS FLACCIDA; ACER

GRANDIDENTATUM

ADDED KEYWORDS: arizona cypresses; graves
oaks; ponderosa pines; piñons; gray oaks;
douglas firs; alligator junipers; drooping
junipers; big tooth maples; junipers;
maples; firs; oaks; pines; cypresses;

weather conditions; population dynamics

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; growth; habitat

characterization; mortality; natality;

numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

plots

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): TX

GEOGRAPHIC DESCRIPTION: Brewster County; Big

Bend National Park; N. Chihuahuan Desert;

Boot Canyon; Chisos Mountains

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: None provided.

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UTAH

Standard Federal Region 8
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(SEE ALSO 68, 71, 77, 180, 203, 928)

<815>

INVESTIGATOR(S): Bates, J.W.
AFFILIATION: Utah State Div. of Wildlife Resources
TITLE: Utah Power Plant Project (Huntington)
PURPOSE: To determine changes in the physiological structure of mammals within the study area.
SPONSOR(S): Utah State Div. of Wildlife Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Physiological changes were observed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOLEUS HEMIONUS; EUTAMIAS SPP; PEROMYSCUS MANICULATUS
ADDED KEYWORDS: fossil fueled power plants; mule deer; chipmunks; whitefooted deer mice
PRIMARY PARAMETERS INVESTIGATED: physiology; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): ground collection; hair sampled during hunt; trapping
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Emery County
TYPE OF DATA: raw
ABSTRACT: None provided.
ADDRESS: Mr. Jim Bates
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Wildlife Resources Office
455 W. Railroad Ave.
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Price, UT 84501
TELEPHONE: 637-3310
NBIP ACCESSION NUMBER: UT/014

<816>

INVESTIGATOR(S): Bates, J.W.
AFFILIATION: Utah State Div. of Wildlife Resources
TITLE: Game-Range Studies
PURPOSE: To determine changes in range use, trends, and conditions.
SPONSOR(S): Utah State Div. of Wildlife Resources
SPONSOR CATEGORY: state government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in range trend and utilization.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; indicator species; range
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals; plants; vascular plants; trees; shrubs; herbs; grasses
TAXA: ARTEMISIA TRIDENTATA; BETULA LENTA; AMELANCHIER SP; SYMPHORICARPOS ALBUS

ADDED KEYWORDS: sagebrush; bitterbrush; cliffroses; mountain mahogany; serviceberries; snow berries; habitat modification; population effects
PRIMARY PARAMETERS INVESTIGATED: growth
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): ground surveys
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Carbon County; Emery County; San Juan County; Garfield County
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: UT/015

<817>

INVESTIGATOR(S): Clay, D.H.
AFFILIATION: Utah Cooperative Wildlife Research Unit, Utah State University
TITLE: Bighorn Sheep in Canyonlands National Park
PURPOSE: To determine distribution and abundance of bighorn in the park, to determine extent of human encroachment, and to determine the daily and seasonal movements of bighorn.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Length of study is too short to determine changes although cattle grazing obviously limits bighorn distribution.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: OVIS CANADENSIS
ADDED KEYWORDS: bighorn sheep; sheep; habitat modification; livestock; cattle; grazing
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; migratory patterns; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): spotting scope; aerial census; radiotelemetry
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora; terrain
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: San Juan County; Grand County; Colorado River; Green River; Canyonlands National Park
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean
ABSTRACT: This being the first investigation of bighorn sheep in Canyonlands National Park, the study is a very basic one. The population in the park is estimated as between 100 and 150 animals. Productivity appears to be good for desert bighorn with 30% for the first year and 58% for the second. The distribution of bighorn in the Park is related to permanent water sources and adequate vegetation. It has been

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severely limited by livestock grazing.
There appears to be a definite vertical
migration of the rams - higher elevations
in the summer and lower during the fall
through spring.

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NBIP ACCESSION NUMBER: UT/003

<818>

INVESTIGATOR(S): Crocker-Bedford, D.C.
AFFILIATION: Utah State University
TITLE: Utah Prairie Dog (CYNOMYS PARVIDENS)
Ecology
PURPOSE: To identify for the Utah prairie
dog: past and present distribution, past
and present population, population trends,
habitat requirements, and interactions
with cattle.

SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Number of Utah prairie
dogs: 95,000 estimated to have occurred in
1920, 8,800 in 1970, and 3,000 in 1973.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species;
range

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; shrubs;
herbs

TAXA: CYNOMYS PARVIDENS
ADDED KEYWORDS: prairie dogs; population
effects; models; cattle; grazing
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; harvest; home range
size; numbers; sex; size/weight; territory
size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
livetrapping; cover estimates of
vegetation; soil samples

NUMBER OF SAMPLING SITES: 33 colonies for
habitat characteristics; 3 colonies for
livestock interactions

SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; soils; terrain

STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Iron County; Garfield
County; Piute County; Wayne County; Sevier
County

TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM/360; FORTRAN; ALGOL
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: The overall objective of this study
was to gain insights into the range
interactions of Utah prairie dogs and
cattle, especially short-term competition.
The study was conducted near Panguitch,
Utah, during 1974 and 1975. Three dogtowns
were studied on an intensive basis:
"Uppercrested" represented dogtowns higher
than 2200 meters MSL which had been
planted with crested wheatgrass,
"Oldfield" represented dogtowns near
fields of alfalfa, and "Lowercrested"
represented dogtowns below 2200 meters MSL
that were not near alfalfa. Direct
observations were made of Utah prairie
dogs to determine their diets. Trapping
provided data for estimates of population
sizes and prairie dog weights. Cattle
diets were based upon a cattle diet model.

REFERENCES: Crocker-Bedford, 1976
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NBIP ACCESSION NUMBER: UT/065

<819>

INVESTIGATOR(S): Gearheart, R.A.
AFFILIATION: Environmental Engineering Div.,
Utah State University
TITLE: Spray Irrigation of Lagoon Effluent
PURPOSE: To monitor biological and chemical
effects of wastewater.

SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in nitrates
occurred due to decomposition of organics
and oxidation of ammonia in sewage.
Changes that did occur had no apparent
effect on the removal capacity of any of
the soils during the test period.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
wetland; aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: pollution control; water
quality
ORGANISMS, MAJOR TYPES: microorganisms;
viruses; bacteria; algae

TAXA: STREPTOCOCCUS SPP
ADDED KEYWORDS: phytoplankton; diatoms; fecal
streptococci; fecal coliforms; waste
water; ammonia; nitrates; phosphorus;
phosphates; coliform bacteria

PRIMARY PARAMETERS INVESTIGATED: biomass;
natality; mortality; numbers

NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: soils; water
quality data

STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Cache County; Bear
River

TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: Burroughs; FORTRAN 4
STATISTICS EMPLOYED: mean; modeling,
stochastic

ABSTRACT: All soils provided very good
removal of the three bacterial indicators.
There was a definite difference in the
degree of removal between the Drainage
Farm soil and Parleys. Draper and Nibley

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fell between these two, but also showed some discrepancy. The primary reason for the much better removal by Drainage Farm soil over the other three was the texture. This soil was by far the most dense, therefore providing for removal by the three mechanisms of straining, bridging, and straining and sedimentation. Drainage Farm soil (clay) provided the best bacteriological removal with Nibley (silty clay loam) second, then Draper (sandy loam), and Parleys (silty loam) last. An increase in nitrate over the amounts present in the sewage was observed. The source of this increase came from the decomposition of organics present in the sewage and initially in the soils. Another source was the oxidation of ammonia present in the sewage resulting from organic degradation in the oxidation ponds.

REFERENCES: Tinkey and Gearheart, 1975

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NBIP ACCESSION NUMBER: UT/064

<820>

INVESTIGATOR(S): Gifford, G.F.

AFFILIATION: Range Science Dept., Utah State University

TITLE: Hydrology of the Pinyon-Juniper Type
PURPOSE: To determine the hydrologic impact of vegetation manipulations within the pinyon-juniper ecosystem.

SPONSOR(S): Utah Agriculture Experiment Station; BLM; OWRT

SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes were observed in plant cover, microclimate, runoff, erosion, soil moisture storage, and water quality.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: environmental impact; forestry; range; resource planning; water quality

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs

TAXA: PINUS EDULIS; JUNIPERUS OSTEOSPERMA

ADDED KEYWORDS: runoff; sediments; pinyons; junipers; logging

PRIMARY PARAMETERS INVESTIGATED: biomass; kill; mortality

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): sediment production; sap velocity; heat-pulse technique

NUMBER OF SAMPLING SITES: 1-2

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data; hydrological data; soils; water quality data

STUDY SITE(S): UT

GEOGRAPHIC DESCRIPTION: San Juan County;

Beaver County

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis

ABSTRACT: Runoff and sediment production from a chained pinyon-juniper site in both southeastern and southwestern Utah was measured from about June 6 to October 1 over a 5 year period (1968-1972) using .04-hectare (0.11 acre) runoff plots. Treatments evaluated included chained-with-debris-windrowed, chained-with-debris-in-place, and natural woodland. All treatments were fenced to exclude livestock. Runoff events occurred at both sites during only 2 years (1968, 1970) of the study. Results indicate that chained-with-windrowing plots yield from 1.2 to 5 times more water during a runoff event than respective woodland plots. Runoff from debris-in-place plots was equal to or less than that measured from the natural woodland for all storms. Runoff data and sediment indexes indicate that when runoff exceeds about 0.1 cm from the woodland, from 1.6 to 6 times more sediment can be expected from windrowed sites than from adjacent woodland. Sediment yields from debris-in-place sites were similar to those from adjacent unchained woodland for all storms during this study.

REFERENCES: Gifford, 1973; Gifford, et al, 1973; Shaw, et al, 1974, Gifford, 1975; Loope, 1972

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NBIP ACCESSION NUMBER: UT/001

<821>

INVESTIGATOR(S): Grandison, J.L.

AFFILIATION: Utah State Div. of Wildlife Resources

TITLE: VTN Biological Survey

PURPOSE: Define home range, habitat utilization areas, migration patterns, and population parameters of large mammals on Utah Oil Shale Tracts Ua and Ub.

SPONSOR(S): White River Oil Shale Corp.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Migration of mule deer to White River riparian area in spring and subsequent summer utilization of same. Grazing affects migration patterns.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: ODOCOLEUS HEMIONUS; CANIS LATRANS

ADDED KEYWORDS: mule deer; deer; coyotes; oil shales; habitat modification; seasonal variations; grazing; livestock

PRIMARY PARAMETERS INVESTIGATED: distribution; emigration; habitat

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characterization; harvest; home range
size; immigration; kill; migratory
patterns; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
radiomonitoring; observation
SAMPLING FREQUENCY: weekly
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Uintah County; White
River; Oil Shale Tracts Ua and Ub
TYPE OF DATA: raw; summarized
ABSTRACT: Project at this time is completed
for period 2/7/75 - 10/25/75. Deer appear
in numbers on tracts after removal of
wintering sheep in April. Utilization of
tracts is strongly connected to White
River riparian area during summer and fall
seasons. Population appears highly
productive relative to other desert
populations because of abundant forage
during fawning period on riparian areas.
Subsequent movements and changes in use
are to be monitored during next 13 months.
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64 E. Main Street
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TELEPHONE: (801) 789-3103
NBIP ACCESSION NUMBER: UT/022

<822>

INVESTIGATOR(S): Heggen, A.W.
AFFILIATION: Utah State Div. of Wildlife
Resources
TITLE: Mammalian Physiological Monitoring
Adjacent to a Coal-Fired Power Plant
PURPOSE: Document changes, if any, in certain
mammalian physiological parameters before
and after construction of a coal-fired
electrical generation plant.
SPONSOR(S): Utah Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Program to date has been
gathering baseline data. Only one year of
experience since beginning of power
generation. Early indications are that
heavy metal accumulation may be occurring.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; savanna; grassland
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; power
generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: ODOCOLEUS HEMIONUS; PEROMYSCUS SPP;
MICROTUS SPP
ADDED KEYWORDS: mule deer; deer; white-footed
mice; mice; voles; heavy metals; fossil
fueled power plants; habitat modification;
air pollution; coal
PRIMARY PARAMETERS INVESTIGATED: age;
physiology; residues; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
live trapping; snap-trapping
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; annual;

SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Emery County; Sanpete
County; Huntington River; Huntington Power
Station

TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 370/158; FORTRAN IV
STATISTICS EMPLOYED: mean; median
ABSTRACT: During the period December 9, 1974,
through March 12, 1975, field collections
of mule deer blood samples were
accomplished at the Huntington Canyon site
and the Lassen Draw control site. Ideal
trapping conditions occurred at both sites
throughout the trapping period, and
sampling took place at regular intervals.
Concentrations of arsenic, mercury,
copper, zinc, lead, cadmium, iron,
calcium, magnesium, and potassium were
measured in the blood, kidney, liver, and
hair. Some significant disparities occur,
perhaps indicating differences in the
amounts of these metals in the forage
uptake or soils.
REFERENCES: Heggen, 1975
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NBIP ACCESSION NUMBER: UT/042

<823>

INVESTIGATOR(S): Helm, W.T.
AFFILIATION: Wildlife Science Dept., Utah
State University
TITLE: Effects of Channelization on Fish and
Invertebrate Populations and Habitat in
the Logan River, Utah
PURPOSE: To measure effects of channel
changes on standing crop, species
composition, and production of insects and
fish.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decline in numbers in
channeled area although too soon to be
specific.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
mountain; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea
TAXA: SALMO TRUTTA; PROSOPHUS WILLIAMSONI;
CATOSTOMUS ARDENIS; RHINICHTHYS OSCULUS;
CYPHRINUS CARPIO; SALMO CLARKI; GILA ATRARIA
ADDED KEYWORDS: channelization; habitat
modification; population effects; flood
control; benthic organisms; brown trouts;
mountain whitefishes; cutthroat trouts;
utah suckers; speckled dace; utah chubs;
carps; ephemeropterans; plecopterans;
trichopterans; coleopterans; dipterans
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; emigration; growth;
habitat characterization; home range size;
immigration; migratory patterns; numbers;
productivity; reproduction; size/weight;
secondary productivity

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DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear; basket samplers
NUMBER OF SAMPLING SITES: 3
SUPPORTING DATA COLLECTED: associated fauna;
water quality data
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Cache County; Logan
River; Blacksmith Fork River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
non-linear estimation

ABSTRACT: Stream channelization projects are receiving much criticism because of alleged detrimental effects on streams and the associated flora and fauna. At the present time, we are lacking the quantitative information necessary to predict changes in fish and invertebrate populations following certain stream alterations as prescribed under the National Environmental Policy Act of 1969. In the intermountain west, most studies of stream channelization have been on highway construction projects. This proposal is directed at flood control projects which is a second major type of alteration in this region. Objectives are to determine changes in physical environment following channelization, to estimate populations and production of fish and invertebrates in altered and unaltered sections of the river, define ecological requirements of fish, and follow responses of populations.

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NBIP ACCESSION NUMBER: UT/040

<824>

INVESTIGATOR(S): Hill, A.C.
AFFILIATION: Environmental Studies Lab
TITLE: Vegetational, Air Quality, and Soil
Analysis of the Area Associated with the
North Emery Generation Station
PURPOSE: Provide data to support
environmental impact statements and
reports for the new power station as to
vegetation conditioning, distribution and
quantity, air quality background before
the plant starts, and soil conditions
before and after plant starts operation.
SPONSOR(S): Utah Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: No biotic changes due to
effluents observed. Only effects observed
were due to construction site preparation,
roads, and mining operations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; grassland
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; forestry; indicator
species; range; resource planning;

pollution control; power generation
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs
ADDED KEYWORDS: air pollution; fossil fueled
power plants; construction; mining;
habitat modification; coal
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plot samples; observations; photography;
chemical analysis
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: continuous; seasonal;
monthly; annual
SUPPORTING DATA COLLECTED: associated fauna;
atmospheric chemistry; climatological
data; soils; terrain
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Emery County;
Cottonwood Creek; Geron Creek; San Rafael
River; North Emery Power Plant
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: UNIVAC; FORTRAN
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis;
non-parametric analysis
ABSTRACT: None provided.
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University of Utah
391 Chipeta Way
Salt Lake City, UT 84108
TELEPHONE: (801) 581-7591
NBIP ACCESSION NUMBER: UT/030

<825>

INVESTIGATOR(S): Hill, A.C.
AFFILIATION: Environmental Studies Lab
TITLE: Vegetation Investigations in the
Vicinity of the Huntington Power Plant,
Huntington, Utah
PURPOSE: To monitor vegetation and air
quality, and to describe the environmental
factors which affect these resources.
SPONSOR(S): Utah Power and Light Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: No biotic changes due to
effluents were observed. Only effects
observed were due to construction site
preparation, roads, and mining operations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; grassland
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; forestry; indicator
species; range; resource planning;
pollution control; power generation
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: air pollution; fossil fueled
power plants; construction; mining;
habitat modification; coal
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; physiology
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plot samples; observations; photography;
chemical analysis
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: continuous; seasonal;
monthly; annual

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UTAH

Standard Federal Region 8
Fish and Wildlife Service Region 6
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NBIP ACCESSION NUMBER: UT/035

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SUPPORTING DATA COLLECTED: associated fauna;
atmospheric chemistry; climatological
data; soils; terrain
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Emery County;
Huntington Creek
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: UNIVAC; FORTRAN
STATISTICS EMPLOYED: mean; percentile;
non-parametric analysis
ABSTRACT: None provided.
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University of Utah
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TELEPHONE: (801) 584-7591
NBIP ACCESSION NUMBER: UT/029

<826>

INVESTIGATOR(S): Olson, B.C.
AFFILIATION: Utah State Div. of Wildlife
Resources
TITLE: Statewide Wildlife Management
Investigation and Survey-Big Game Range
Inventory
PURPOSE: To determine vegetative types,
composition, production, age, and form
class of vegetation; upper and lower
limits; and land ownership of the critical
wildlife (deer) ranges in Utah.
SPONSOR(S): Utah State Div. of Wildlife
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Critical deer ranges are
changing from browse (sagebrush) dominated
communities to perennial grass communities.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial;
desert; forest; coniferous; deciduous;
grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: wildlife; range; resource
planning
ORGANISMS, MAJOR TYPES: animals;
invertebrates; mammals; plants; vascular
plants; trees; shrubs; herbs; grasses
TAXA: URSUS AMERICANUS; CERVUS ELAPHUS; BISON
BISON; FELIS CONCOLOR; ANTILOCAPRA
AMERICANA; OVIS CANADENSIS; ODOCOILEUS SP;
ALCES ALCES
ADDED KEYWORDS: population effects; grazing;
deer; sagebrush
PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; habitat characterization;
productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
modified line-point method
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): UT
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: IBM 370/158 OS; COBOL
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: None provided.
ADDRESS: Mr. Brent C. Olson
Game Biologist
Utah State Div. of Wildlife
Resources

<827>

INVESTIGATOR(S): Parrish, L. P.
AFFILIATION: EPA
TITLE: Jordan River Study
PURPOSE: Short term intensive survey on water
quality and biological activity in the
Jordan River system.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Kinds of benthic
organisms fluctuate downstream from Utah
Lake. The main cause of decreases of
benthic fauna in some areas was attributed
to organic pollution.
ECOSYSTEM OR BIOHE TYPE(S): aquatic;
freshwater; stream
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: environmental impact;
fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; annelida
TAXA: PLECOPTERA, 3 SPECIES; EPHEMEROPTERA, 7
SPECIES; TRICHOPTERA, 8 SPECIES;
COELENTERATA; PORIFERA; COLEOPTERA, 5
SPECIES; HEMIPTERA; ODONATA, 3 SPECIES;
AMPHIPODA; DIPTERA, 5 SPECIES
ADDED KEYWORDS: benthic organisms;
eutrophication; industrial chemicals;
waste water; habitat modification;
population effects
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; emigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; Peterson dredge; sieves;
mesh dip nets; electroshock; count; release
NUMBER OF SAMPLING SITES: 26
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Utah County; Salt
Lake County
TYPE OF DATA: summarized; literature-derived
ABSTRACT: The first of the studies in the
Basin consisted of a short-term, intensive
water quality study of Emigration Canyon
conducted during the week of June 19-25,
1972. Also included in this study was a
limited nutrient investigation of the
Jordan River in the vicinity of a proposed
impoundment on the river. A second
intensive effort during the period August
14-26, 1972, involved the entire length of
the Jordan River from Utah Lake to the
Great Salt Lake, and was focused on water
quality and biological activity in the
river. The study was conducted to
supplement previous data obtained by the
Utah Water Pollution Committee and the
Utah Department of Fish and Game in their
program of pollution abatement and
control, and river use classification. All
sampling locations used in these
investigations were developed in
conjunction with State needs and consisted
of: (1) stations presently being sampled
by the State, (2) newly established

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stations developed to provide more detailed information in certain areas, and (3) sampling sites where historic data was available within the study areas but not included in the present State sampling program.

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NBIP ACCESSION NUMBER: CO/067

<828>

INVESTIGATOR(S): Porcella, D.B.
AFFILIATION: Utah State University
TITLE: The Effects of Artificial
Destratification on the Water Quality and
Microbial Populations of Hyrum Reservoir
PURPOSE: To assess changes in nutrients
(nitrogen, phosphorus, and carbon),
bacteria, and algae (direct counts,
chlorophyll a, and diversity) before and
after destratification.
SPONSOR(S): OWRT; State of Utah
SPONSOR CATEGORY: state government; federal
government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: As a result of
destratification, some changes in
succession of bacteria and algae were
found and significant changes in oxygen,
temperature, and algae resulted.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: fisheries; indicator
species; water quality
ORGANISMS, MAJOR TYPES: microorganisms;
bacteria; algae
TAXA: ALGAE, 28 SPECIES
ADDED KEYWORDS: impoundments;
destratification; nutrients; algal blooms
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): IN
SITU analysis; laboratory analysis
NUMBER OF SAMPLING SITES: 4
SAMPLING FREQUENCY: ; seasonal
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Cache County; Hyrum
Reservoir; Little Bear River
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: Burroughs 6700; FORTRAN
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
multivariate analysis
ABSTRACT: Hyrum Reservoir, Utah, was studied
for one year and then for a year following
the initiation of artificial
destratification. The redistribution of
dissolved oxygen to the lower depths of
the reservoir significantly increased the

amount of habitat suitable for trout. The
annual APHANIZOMENON bloom increased
during that first year after initiating
destratification. The nitrogen cycle and
the vertical distribution of bacteria were
altered as a result of the elimination of
the thermocline. During destratification
the total suspended solids were correlated
with the total coliforms. In summary, the
water quality of Hyrum Reservoir was
highly affected by annual runoff, spring
and fall overturns, and destratification.
Sediments, the increased APHANIZOMENON
bloom, higher epilimnetic nutrient
concentrations, more uniform microbial,
and nutrient distributions all resulted
from these hydraulic factors working
singly and in combination.

REFERENCES: Drury, et al, 1975

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NBIP ACCESSION NUMBER: UT/020

<829>

INVESTIGATOR(S): Post, F.J.
AFFILIATION: Dept. of Biology, Utah State
University
TITLE: Bacterial Ecology of Sewage Oxidation
Ponds
PURPOSE: Determine changes in a number of
bacterial groups from raw sewage as it
passes through a series of oxidation ponds
with an attempt to model the
results--chemical and physical data also
collected.
SPONSOR(S): OWRT
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Coliform and enterococcus
die away fairly rapidly and alternate with
time of year. The rise and fall of major
dominant bacteria is also seasonal.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
mountain; aquatic; stream
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: indicator species;
pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms;
bacteria
TAXA: ESCHERICHIA COLI; STREPTOCOCCUS FAECALIS
ADDED KEYWORDS: thermophilic bacteria
treatment; oxidants; sewage treatment;
models; ponds; seasonal variations;
coliform bacteria; pathogens
PRIMARY PARAMETERS INVESTIGATED: BOD; habitat
characterization; kill; numbers
NUMBER OF SAMPLING SITES: 9
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data;
hydrological data; water quality data
STUDY SITE(S): UT
GEOGRAPHIC DESCRIPTION: Cache County; Logan
sewage ponds
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: Burroughs B6700;
FORTRAN
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis

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ABSTRACT: A small 24 hr retention time sewage oxidation pond in Logan, Utah has been studied to determine if any relationship exists between the population levels of certain bacteria and selected physical factors of the environment. A high degree of relationship has been found between outlet water temperature and certain groups of special fecal indicators. Fecal enterococci (as measured by the KF method) proved to be the most sensitive to environmental conditions. Fecal *ESCHERICHIA COLI* was also highly sensitive. This last group proved to be more sensitive than the coliform group as a whole.

REFERENCES: Post, F.J., 1970

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<830>

INVESTIGATOR(S): Post, F.J.
AFFILIATION: Dept. of Biology, Utah State University

TITLE: Biology of the Great Salt Lake, Utah
PURPOSE: Study of the ecology of the biota of Great Salt Lake with special reference to the bacteria, invertebrates, and algae. Included is a specific study on nitrogen cycling.

SPONSOR(S): OWRT; Utah State University
SPONSOR CATEGORY: federal government; teaching institution

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A yearly cycle of algal blooms are followed by invertebrates then by bacteria. No nitrification or nitrogen fixation was observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
resource planning; pollution control

ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insects;
microorganisms; viruses; bacteria; algae;
protozoa

TAXA: ARTEMIA SALINA; EPHYDRA GRACILIS;
DUNALIELLA SALINA; DUNALIELLA VIRIDIS;
HALOBACTERIUM SPP; HALOCOCCUS SPP

ADDED KEYWORDS: anostracans; dipterans; brine shrimp; shrimp; brine flies; flies;
succession; population effects; habitat modification; saline lakes; nitrogen cycle; eutrophication

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; habitat characterization; numbers; physiology; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection

NUMBER OF SAMPLING SITES: 9

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms; climatological
data; hydrological data; water quality data

STUDY SITE(S): UT

GEOGRAPHIC DESCRIPTION: Box Elder County;
Great Salt Lake; Rozel Point

TYPE OF DATA: raw

ABSTRACT: We are determining the biological ecology of Great Salt Lake and its chemical and physical environment. Nitrogen cycling as a factor in biota changes is also being measured.

REFERENCES: Post, 1975; Post, 1970

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NBIP ACCESSION NUMBER: UT/032

<831>

INVESTIGATOR(S): Rushforth, S.R.

AFFILIATION: Dept. of Botany and Range
Science, Brigham Young University

TITLE: Environmental Monitoring and
Correlation to Algal Floras in Utah Lake,
Utah

PURPOSE: To determine environmental
parameters responsible for determining
algal floras.

SPONSOR(S): NSF; Brigham Young University

SPONSOR CATEGORY: federal government;
teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The floristic type
changes according to environmental
parameters in different years, resulting
in varying eutrophic conditions.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
indicator species; recreation; pollution
control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: APHANIZOHEKON FLOS-AQUAE; ANABAENA

SPIROIDES; CERATIUM; HIRUNDINELLA; MASTOIXIA
GRANULATA

ADDED KEYWORDS: eutrophication; diatoms;
primary productivity; algal blooms

PRIMARY PARAMETERS INVESTIGATED: biomass;
diversity; habitat characterization;
numbers; productivity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
surface collections

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna;
associated microorganisms; hydrological
data; water quality data

STUDY SITE(S): UT

GEOGRAPHIC DESCRIPTION: Utah County; Utah Lake

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: analysis of variance;
regression/correlation analysis; serial
autocorrelations

ABSTRACT: Utah Lake is a shallow desert lake
that demonstrates gross eutrophication.
Our studies have shown that certainly some
of this is cultural but a good deal is
natural. Diatom changes in core samples
have been noted and fossil diatoms

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compared to recent forms. These studies show that changes have occurred but that dominant species are rather similar through the last several thousand years.
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NBIP ACCESSION NUMBER: UT/011

<832>

INVESTIGATOR(S): Stoddart, L.C.
AFFILIATION: Wildlife Science Dept., Utah State University
TITLE: Population Dynamics, Movement, and Home Range of Black-Tailed Jackrabbits in Curlew Valley, Northern Utah
PURPOSE: The long-term objective of the jackrabbit study is to describe observed changes in rabbit density in terms of mortality and natality rates and to relate changes in these two parameters to variation in environmental factors.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: In the past 12 years jackrabbit numbers have changed through one and one-half cycles with density indexes ranging from 190 to 5.5.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: LEPUS CALIFORNICUS; CANIS LATRANS
ADDED KEYWORDS: population effects; jackrabbits; coyotes; rodents; mortality rates; genetics; rabbits
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; home range size; mortality; natality; numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census; collections
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): UT; ID
GEOGRAPHIC DESCRIPTION: Engineering Laboratory (ID)
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: regression/correlation analysis; multivariate analysis; modeling; deterministic
ABSTRACT: The long-term objective of the jackrabbit study in Curlew Valley, Utah and on the Idaho National Engineering Laboratory is to describe observed changes in rabbit density in terms of mortality and natality rates, and to relate changes in these two population parameters to variation in environmental factors. Spring rabbit-density in Curlew Valley has been observed to change by a factor of 60.

Changes appear to be largely determined by variation in mortality rates, as shown with K-factor analysis. Mortality of the population from fall-spring and of adults from spring-fall is modified to reflect variations in coyote feeding behavior with changes in rabbit numbers as indicated by coyote food habits studies in Curlew Valley. Juvenile loss from birth-fall is correlated with the coyote/rabbit ratio and some yet unknown density related mortality factor(s). Evidence also exists of "carry-over" in juvenile mortality. High loss rates from density related factors were observed for 2-3 years after the population declined. Controlled experiments are now being designed to investigate genetic and/or behavioral changes associated with the high rates of juvenile mortality.

REFERENCES: Gross, et al, 1974; Stoddart, 1975
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NBIP ACCESSION NUMBER: UT/067

<833>

INVESTIGATOR(S): Tanner, W.W.
AFFILIATION: Life Sciences Museum, Brigham Young University
TITLE: Basic Ecological Studies of Certain Reptile Species Inhabiting the Nevada Test Site
PURPOSE: To examine the population densities, home range, and biotic community relationships of reptiles at various stations within the Nevada test site.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Yearly variables - wide range in precipitation resulting in modified plant production which in turn affected species reproduction and behavior.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; mountain
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles; plants; shrubs; herbs
TAXA: COLEONYX VARIEGATUS; CROTAPHYTUS COLLARIS; CROTAPHYTUS WISLIZENII; SAUROMALUS OBESUS; CALLISAURUS DRACONOIDES; SCELOPORUS MAGISTER; SCELOPORUS OCCIDENTALIS; UTA STANSBURIANA; PHRYNOSOMA PLATYRHINOS; CNEIDOPHORUS TIGRIS; LEPTOTYPHOLOPS HUMILIS; DIADOPHIS REGALIS; SALVADORA HEXALEPIS; CHIONACTIS OCCIPITALIS; TANTILLA PLANICEPS
ADDED KEYWORDS: weather conditions; geckos; collared lizards; chuckwalla; gridiron tail; utas; horned toads; whiptailed lizard; snakes; population effects; life history
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; emigration; growth; habitat characterization; home range size; immigration; migratory patterns;

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reproduction; sex; size/weight; territory
size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
grid study plots

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated

microorganisms; climatological data;
terrain

STUDY SITE(S): UT

GEOGRAPHIC DESCRIPTION: Mojave Desert

TYPE OF DATA: raw; literature-derived

STATISTICS EMPLOYED: mean; percentile

ABSTRACT: The Nevada test site is so situated as to lie in both the hot desert area (Frenchman Flat) and extending from this Mojave type environment to the higher intermediate elevations of sagebrush and on to the higher elevations of juniper and pinyon pines such as Ranier Mesa. This diverse terrain provides a variety of reptile habitats and a diversity of species for which little basic ecological information of a detailed nature was available before the basic studies were undertaken in 1959. This research involved study of the basic ecological and life history phenomenon of the reptiles in five selected study plots. Considerable raw data must yet be summarized and published.

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NBIP ACCESSION NUMBER: UT/070

<834>

INVESTIGATOR(S): Wagner, P.W.

AFFILIATION: Utah State Div. of Wildlife
Resources

TITLE: State Raptor Survey - Northeastern
Portion of Utah

PURPOSE: To determine raptor abundance by
species, evaluate land use practices and
their effect on raptor populations,
monitor rare and endangered raptors within
state boundaries, and provide training to
personnel of other agencies.

SPONSOR(S): BLM; Utah State Div. of Wildlife
Resources

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1975

PROJECT DURATION: one year or less

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increased osprey
population as a result of Flaming Gorge
impoundment.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; tundra;
alpine; mountain; aquatic; freshwater;
river; reservoir

LEVEL(S) OF STUDY: population; region

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; forestry;
indicator species; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: FALCONIFORMES; STRIGIFORMES

ADDED KEYWORDS: vultures; owls; raptors;
population effects; nesting sites;
management measures

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; emigration;
habitat characterization; immigration;
mortality; migratory patterns; natality;
numbers; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
specific observation routes

SAMPLING FREQUENCY: monthly; annual; irregular

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain

STUDY SITE(S): UT

GEOGRAPHIC DESCRIPTION: Daggett County;

Duchesne County; Uintah County; Green River

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Raptor population studies are in progress to determine key habitat and to evaluate resident population, nesting population, migratory population, and seasonal population, 1975-1976. The work is being done in the northeastern portion of state of Utah.

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NBIP ACCESSION NUMBER: UT/051

<835>

INVESTIGATOR(S): Wikstrom, J.H.

AFFILIATION: Intermountain Forest and Range
Exp. Sta., FS

TITLE: Forest Range Resources Evaluation

PURPOSE: To maintain a continuing assessment of forest resource supplies and demands at local, state, regional, and national levels; to develop solutions to related problems of data collection and analysis; and to provide technical leadership and coordination in the development of resource information required for planning the management of forest and related lands and developing program policies.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1928

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The condition and use of the forest and range resources are changing.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; deciduous;
grassland; tundra; alpine; wetland;
mountain; aquatic; freshwater; stream;
river; lake; reservoir

LEVEL(S) OF STUDY: population; community;
ecosystem; region

MANAGEMENT FOCUS: indicator species; resource
planning

ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses

TAXA: PINUS PONDEROSA; PSEUDOTSUGA MENZIESII;
PINUS CONTORTA

ADDED KEYWORDS: logging; management measures;
ponderosa pines; pines; douglas firs;
firs; lodgepole pines; pinyon pines;
fires; parasites

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; growth; habitat
characterization; mortality; numbers;
productivity; residues

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DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial photographs; observation
NUMBER OF SAMPLING SITES: varies
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): MT; ID; UT; NV; WY; CO; AZ;
NM; SD
GEOGRAPHIC DESCRIPTION: Rocky Mountain States
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: UNIVAC; IBM; CDC;
XEROX; FORTRAN; COBOL
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis; modeling,
stochastic

ABSTRACT: The forest situation in the Rocky Mountain States is studied by describing the forest supply and timber supply outlook, and discussing some problems and opportunities for increasing timber output. Statistical tables, land class areas, ownership of the land, growing stock volumes, net annual growth, mortality, roundwood products output, and logging residues are also included in the study.

REFERENCES: Green and Setzer, 1974

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NBIP ACCESSION NUMBER: UT/045

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VERMONT

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INVESTIGATOR(S): Dickinson, N.R.; Garland, L.E.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Winter Deer Range Survey
PURPOSE: To determine the location of winter deer ranges and the factors that influence deer welfare.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1897
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in deer utilization reflected a change in climatic conditions, land use, and succession, especially winter range. Changes in winter mortality rates reflect changes in harvest levels, climatic conditions, and population levels.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; wildlife; indicator species; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; succession; winter habitats; snow; malnutrition; deer; habitat modification
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; emigration; habitat characterization; immigration; mortality; migratory patterns
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field cruises; aerial census; aerial photographs
NUMBER OF SAMPLING SITES: between 100-160
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated flora; climatological data; terrain
STUDY SITE(S): VT
GEOGRAPHIC DESCRIPTION: Orange County; Windham County; Windsor County
TYPE OF DATA: raw; summarized; literature-derived
ABSTRACT: A total of 84 wintering areas were located and mapped in 1974-75. Aerial surveys and past browse areas were relied upon for mapping the regions. Emphasis was placed on Orange, Windham, and Windsor Counties, but future studies will be concentrated in other parts of the state.
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TELEPHONE: (802) 485-7566
NBIP ACCESSION NUMBER: VT/006

<837>

INVESTIGATOR(S): Dickinson, N.R.; Garland, L.E.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Identification of Conflicts Between Land Use and Winter Deer Range
PURPOSE: To minimize losses of existing

winter deer range arising from conflicting land use in order to perpetuate existing deer herds and associated recreational opportunities.

SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1897
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Possible change was avoided by mitigation.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; wildlife; forestry; range; recreation; resource planning; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; deer; management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field cruises
NUMBER OF SAMPLING SITES: varies
SAMPLING FREQUENCY: continuous; irregular
SUPPORTING DATA COLLECTED: associated flora
STUDY SITE(S): VT
TYPE OF DATA: raw; summarized; literature-derived
ABSTRACT: Areas where land development threatened deer wintering areas were identified, and these were considered for prevention of winter range loss. Only one major conflict was noted, and as a result of possible serious impact on the wintering area, the developer involved modified his building plans. Paper industries are generally in compliance with wildlife recommendation such as leaving shelter reservation areas. Many other areas were checked for possible conflicts, but in many cases, no problems seemed to emerge.
REFERENCES: Dickinson and Garland, 1974; Dickinson and Garland, 1975
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NBIP ACCESSION NUMBER: VT/007

<838>

INVESTIGATOR(S): Fuller, R.W.
AFFILIATION: School of Natural Resources, University of Vermont
TITLE: Woodcock Banding and Habitat Use
PURPOSE: To determine habitat use and values to blue-winged woodcock, mortality, and migrational information from banding Vermont woodcock.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Observed direct changes in habitat which were probably due to weather conditions.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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forest; coniferous; deciduous; wetland
 LEVEL(S) OF STUDY: organism; population;
 community
 MANAGEMENT FOCUS: wildlife; forestry
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds
 TAXA: PHILOHELA MINOR
 ADDED KEYWORDS: woodcocks; weather
 conditions; migration rates; population
 effects
 PRIMARY PARAMETERS INVESTIGATED: age;
 behavior; distribution; habitat
 characterization; kill; mortality;
 migratory patterns; natality; numbers;
 reproduction; sex; size/weight
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 live trapping; banding; radiotelemetry;
 breeding census; hunter kill; nest and
 brood survey; type mapping
 NUMBER OF SAMPLING SITES: numerous; two major
 study areas
 SAMPLING FREQUENCY: seasonal; daily; weekly;
 annual
 SUPPORTING DATA COLLECTED: associated fauna;
 associated flora; soils; terrain
 STUDY SITE(S): VT
 GEOGRAPHIC DESCRIPTION: Chittenden County;
 Addison County
 TYPE OF DATA: raw; summarized;
 literature-derived
 STATISTICS EMPLOYED: mean; mode; median;
 analysis of variance;
 regression/correlation analysis;
 contingency table analysis; multivariate
 analysis
 ABSTRACT: Extensive habitat changes have
 occurred in recent decades with
 significant changes in Vermont land
 ownership and use. The total effect on
 woodcock is poorly known and undocumented,
 but it appears at least to have induced
 relocation of some production and rearing
 areas. It may also have altered migration
 patterns and local availability of birds
 to hunters. Knowledge of breeding biology,
 productivity, natural mortality,
 exploitation, and habitat preferences or
 use is subjective or lacking. Potential
 exists for Vermont contributions to
 applied woodcock ecology. This study
 attempts to identify that potential
 through intensive observations on
 relatively small areas, preliminary to
 more extensive operations.
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 University of Vermont
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 NBIP ACCESSION NUMBER: VT/018

<839>

INVESTIGATOR(S): Fuller, R.W.
 AFFILIATION: School of Natural Resources,
 University of Vermont
 TITLE: Home Range Studies of Fisher (MARTES
 PENNANTI) and Selected Prey Species
 PURPOSE: Population status and distribution,
 predator-prey interactions, population
 dynamics, and movement and home range.

SPONSOR(S): CSRS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Population increase in
 Vermont (range extension in state) despite
 mortality from trapping.

ECOSYSTEM OR BIOHE TYPE(S): terrestrial;
 forest; coniferous; deciduous; wetland

LEVEL(S) OF STUDY: organism; population;
 community

MANAGEMENT FOCUS: endangered species;
 wildlife; forestry

ORGANISMS, MAJOR TYPES: animals; vertebrates;
 mammals; plants; vascular plants; trees;
 shrubs; herbs

TAXA: MARTES PENNANTI; ERITHIZON DORSATUM;
 LEPUS AMERICANUS; DOMASA UMBELLUS

ADDED KEYWORDS: fishers; porcupines; rabbits;
 ruffed grouse; management measures;
 population effects; trapping; predation;
 domestic animals; species introduction

PRIMARY PARAMETERS INVESTIGATED: age;
 behavior; distribution; growth; habitat
 characterization; harvest; home range
 size; kill; mortality; natality; numbers;
 reproduction; sex; size/weight; territory
 size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 necropsy; collection; live-trapping;
 tagging-release; radiotelemetry; census
 routes

NUMBER OF SAMPLING SITES: 10

SAMPLING FREQUENCY: seasonal; daily; weekly

SUPPORTING DATA COLLECTED: associated fauna;
 associated flora; climatological data;
 terrain

STUDY SITE(S): VT

GEOGRAPHIC DESCRIPTION: Essex County;
 Caledonia County; Orange County; Windsor
 County; Rutland County; Lamoille County;
 Washington County

TYPE OF DATA: raw; summarized;
 literature-derived

STATISTICS EMPLOYED: mean; mode; median;
 analysis of variance;
 regression/correlation analysis;
 contingency table analysis; non-parametric
 analysis

ABSTRACT: From 1959 through 1967, 124 fisher
 were released at porcupine problem areas
 in Vermont. Reduction in porcupine damage
 complaints, increased difficulty in
 locating porcupine concentrations, and
 observed reproduction among Vermont
 fishers suggested some degree of success
 had attended their release in the state.
 In fact, sportsmen's groups and
 individuals began to blame low populations
 of native grouse and hares on the
 increased occurrence of the fisher; this
 accusation has since been extended to
 include depredations on domestic poultry,
 cats, and dogs. As a consequence, requests
 are now being heard to open trapping and
 hunting seasons for the fisher even though
 proper biological information on which to
 base such a decision is lacking.

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NBIP ACCESSION NUMBER: VT/019

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INVESTIGATOR(S): Garland, L. E.; Dickinson, N. R.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Collection, Tabulation, and Analysis of the Legal Deer Harvest
PURPOSE: To determine the legal deer harvest.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1897
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Generally, increased harvests are noted over time, which are related to changes in habitat area and quality.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; deer; management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): deer report cards
NUMBER OF SAMPLING SITES: 400
SAMPLING FREQUENCY: annual
STUDY SITE(S): VT
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 370/145; PL 1
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Two harvest types were monitored for legal harvest by archery and firearms. Trends noticed include: firearm-harvested deer outnumber archery-killed deer by about ten to one, the sale of hunting licenses and hunter success increased, there were more residents hunting than non-residents, but the success rate for non-residents was greater. More does and fawns were harvested than adult males and antlerless males, and peak hunter pressure was during holidays and weekends.
REFERENCES: Dickinson and Garland, 1974; Dickinson and Garland, 1975
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NBIP ACCESSION NUMBER: VT/003

<841>

INVESTIGATOR(S): Garland, L. E.; Dickinson, N. R.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Collection, Tabulation, and Analysis of Deer Mortality from Causes other than Legal Hunting
PURPOSE: To determine the number of deer dying from causes other than legal hunting.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1938
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes occur in numbers of deer killed and their sex and age ratios.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; morbidity; predation
PRIMARY PARAMETERS INVESTIGATED: age; distribution; kill; mortality; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census
NUMBER OF SAMPLING SITES: various
SAMPLING FREQUENCY: continuous; annual
STUDY SITE(S): VT
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 370/145; PL/1
STATISTICS EMPLOYED: mean; actual numbers
ABSTRACT: The known deer mortality from causes other than legal hunting during 1974 are summarized: dogs, crops, wild predators, malnutrition, motor vehicles, illegal kill, and unknown causes are the major contributors. The number of deer killed by each is tallied for each county.
REFERENCES: Dickinson and Garland, 1974; Dickinson and Garland, 1975
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NBIP ACCESSION NUMBER: VT/004

<842>

INVESTIGATOR(S): Garland, L. E.; Dickinson, N. R.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Collection, Tabulation, and Analysis of Deer Age Composition and Physical Condition Data
PURPOSE: To determine deer age composition and physical condition.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1946
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in age structure and physical development result as the population density changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: organism; population; region
MANAGEMENT FOCUS: wildlife; indicator species; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; deer; antler development; management measures
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; harvest; kill; mortality; natality; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census; collections

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NUMBER OF SAMPLING SITES: 5-10
SAMPLING FREQUENCY: seasonal;
STUDY SITE(S): VT
TYPE OF DATA: raw; summarized
COMPUTER AND LANGUAGE: IBM 370/145; PL 1
STATISTICS EMPLOYED: mean; percentile;
multivariate analysis

ABSTRACT: Five deer checking stations were operated during the 16 day firearm season. Data obtained included the location of the kill, age of the deer as determined by tooth wear and replacement, number of antler points one inch or more, and antler beam diameter measured in millimeters. Field dressed weights were obtained whenever possible. The sample size, physical development of deer, and age composition were tabulated by county.

REFERENCES: Dickinson and Garland, 1974;

Dickinson and Garland, 1975

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NBIP ACCESSION NUMBER: VT/005

<843>

INVESTIGATOR(S): Hoekstra, T.W.

AFFILIATION: School of Natural Resources,
University of Vermont

TITLE: Carrying Capacity of the Spruce Fir
Northern Hardwoods for White-Tailed Deer
in Vermont

PURPOSE: To identify preference, availability, and quality of seasonal food items through observations of tame, free-ranging deer and to analyze vehicle-killed deer rumens.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Food habits of deer change from December-September due to phenology and snow depth.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous

LEVEL(S) OF STUDY: community

MANAGEMENT FOCUS: wildlife; forestry;
indicator species; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; microorganisms; fungi

TAXA: ODOCOILEUS VIRGINIANUS; PLANTS, 70
SPECIES

ADDED KEYWORDS: white-tailed deer; carrying capacity; seasonal variations; succession; management measures; logging; habitat modification

PRIMARY PARAMETERS INVESTIGATED: habitat characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
analysis of vegetation consumed by deer

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: weekly

STUDY SITE(S): VT

GEOGRAPHIC DESCRIPTION: Lamoille County

TYPE OF DATA: reduced

COMPUTER AND LANGUAGE: XEROX Sigma 6; FORTRAN

STATISTICS EMPLOYED: mean;
regression/correlation analysis;
non-parametric analysis; modeling,
deterministic

ABSTRACT: Numbers of white-tailed deer in Vermont were estimated to be 174,000 in 1970. Forest regeneration has been seriously reduced by the relative overabundance of deer although timber harvesting has declined since the 1950's. The forests therefore, have been unable to continuously supply the deer with early successional stages of vegetation which they need. In addition, hunter regulations have not significantly reduced the deer population to accommodate the changing habitat conditions. This study is intended to identify the carrying capacity of the existing forest and to successfully manage the other resources of Vermont, while bringing the deer population to an optimal level.

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NBIP ACCESSION NUMBER: VT/027

<844>

INVESTIGATOR(S): Marx, D.J.

AFFILIATION: Vermont Yankee Nuclear Power Corp.

TITLE: Ecological Studies of the Connecticut River, Vernon, Vermont

PURPOSE: Continuous assessment of biological impact of operation of the Vermont Yankee Nuclear Power Station.

SPONSOR(S): Vermont Yankee Nuclear Power Corp.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No significant changes observed attributable to operation of the power plant.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species;
radiological; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; insecta; annelida;
plants; vascular plants; herbs;
microorganisms; algae

TAXA: MORONE AMERICANA; PERCA FLAVESCENS;
MICROPTERUS DOLOMIEUI; CATOSTOMUS
COMMERSONI; CYPRINUS CARPIO; STIZOSTEDION
VITREUM; MELOSIRA VARIANS; MELOSIRA SPP;
ASTERIONELLA FORMOSA

ADDED KEYWORDS: nuclear power plants; thermal effluents; cooling towers; plankton; benthic organisms; entrainment; impingement; basses; perches; dipterans; trichopterans; plecopterans; ephemeropterans; rotifers

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; BOD; distribution; diversity;
growth; kill; mortality; numbers;
size/weight; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
fyke net; gill net; seins; Henson trap;

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Ekman dredge; Wisconsin plankton net;
tows; pumped samples
NUMBER OF SAMPLING SITES: 8
SAMPLING FREQUENCY: continuous; daily;
monthly; quarterly
SUPPORTING DATA COLLECTED: hydrological data;
water quality data

STUDY SITE(S): VT; NH; MA
GEOGRAPHIC DESCRIPTION: Windham County;
Connecticut River; Vernon Dam; Vermont
Yankee Nuclear Power Station

TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: mean;
regression/correlation analysis;
multivariate analysis

ABSTRACT: Vermont Yankee Nuclear Power Corporation began power generation at its nuclear generating station at Vernon, Vermont on November 22, 1972. Environmental studies have been conducted during construction and after operation of the plant. The plant is designed to operate in the "closed cycle" or "hybrid cycle" condenser cooling water mode. In the "closed cycle", the condenser cooling water is passed through mechanical draft cooling towers and recirculated through the condensers. A relatively small flow of heated water is discharged to the river. In the open cycle mode, cooling water is withdrawn from the river, passed once through the condenser and returned to the river. In the hybrid cycle mode, a fraction of the cooling water is diverted to cooling towers before discharge to the river. Tests were conducted operating the plant in all three cooling modes. Hydrothermal studies were made of river water temperature, thermal plumes, rate of change of river water temperature, dissolved oxygen survey, and a current survey near the intake structure. Biological studies were done in the vicinity of the Connecticut River affected by Vermont Yankee's heated discharge and at nearby locations outside the thermal plume. Biological studies were made of entrainment, plankton, benthic fauna, finfish, fish impingement, and live fish held in cages. The data do not indicate a discernible impact on the ecosystem of the Connecticut River which may be ascribed to Vermont Yankee's operation, even including operation in hybrid or open cycle mode.

REFERENCES: Binkerd and Countryman, 1974;
Aquatec, Inc., 1975a,b; Aquatec, Inc.,
1974; Aquatec, Inc., 1973; Webster-Martin,
Inc., 1971

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NBIP ACCESSION NUMBER: VT/012

<845>

INVESTIGATOR(S): Pagel, C.W.
AFFILIATION: Vermont Dept. of Water Resources
TITLE: A Study of the Influence of Pulp and
Paper Wastes on the Benthos of Southern

Lake Champlain

PURPOSE: To continue to monitor water quality trends in southern Lake Champlain.

SPONSOR(S): Vermont Dept. of Water Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Major changes consisted of a reduction in the number of species. A rapid population increase of *LIMNODRILUS HOFFMEISTERI* (Tubificidae) was observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
indicator species; recreation; pollution
control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; shellfish; annelida;
microorganisms; algae

TAXA: BENTHIC ORGANISMS, 143 SPECIES

ADDED KEYWORDS: pulp mills; benthic
organisms; industrial chemicals;
sediments; phosphorus; sludge; fingernail
clams; clams; worms; sponges; poriferans;
coelenterates; platyhelminthes;
aschelminthes; species diversity

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; growth; numbers;
size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

Ekman dredge; sieves

NUMBER OF SAMPLING SITES: 72

SAMPLING FREQUENCY: seasonal; monthly;
irregular

SUPPORTING DATA COLLECTED: associated fauna;
hydrological data; soils; terrain; water
quality data

STUDY SITE(S): VT

GEOGRAPHIC DESCRIPTION: Addison County (VT);
Essex County (NY); Lake Champlain;
Ticonderoga Bay

TYPE OF DATA: raw; reduced; summarized;
literature-derived

COMPUTER AND LANGUAGE: XEROX Sigma 6; FORTRAN
STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance

ABSTRACT: The bottom fauna was studied in relation to pulp and paper wastes in southern Lake Champlain. A pulp and paper mill ceased operations in 1971 leaving behind an enormous sludge deposit in Ticonderoga Bay. The paper company opened a new mill 6 km down lake. The influences of the new mill's effluent on the benthos in southern Lake Champlain have been studied since 1972. A station near the diffuser line of the paper mill was sampled on a year-round basis to compare community changes and life cycles. A pollution tolerant oligochaete, *LIMNODRILUS HOFFMEISTERI*, had increased overwhelmingly. During July 1974, the tubificids accounted for over 54,000 organisms per sq. meter. Species of Chironomidae, Sphaeriidae, and other benthic groups have disappeared or been substantially reduced in the diffuser line area. Substantial quantities of suspended solids, BOD, and phosphorus are reaching the lake through the waste effluent. Recent additions of alum are suspected to cause a lower pH and significant

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flocculation in the diffuser area. Analyses were also conducted of biomass, species diversity, community coefficients, chemistry, fish stomachs, and ecological distribution factors. The sludge bed in Ticonderoga Bay indicated signs of slight recovery except for mid-channel stations which may have been agitated by barge traffic. The fingernail clam, SPHARIUM STRIATUM, apparently has been eliminated from this area of the lake. The number of oligochaetes decreased in relation to the remaining benthic community.

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NBIP ACCESSION NUMBER: VT/024

<846>

INVESTIGATOR(S): Wallin, J.A.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Wild Turkey Restoration
PURPOSE: To establish self-sustaining populations of wild turkeys.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: In seven years, the population went from zero to huntable.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: MELEAGRIS GALLOPAGO
ADDED KEYWORDS: turkeys; species introduction; management measures
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; habitat characterization; harvest; home range size; mortality; natality; physiology; reproduction; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; harvest bird counts
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: continuous; seasonal
STUDY SITE(S): VT
TYPE OF DATA: summarized
COMPUTER AND LANGUAGE: IBM 360; FORTRAN
ABSTRACT: Basically, we employ a trap-and-transfer project within the state to establish populations throughout the state. Habitat and population are evaluated through gross field observation. Spring and fall hunting seasons are now conducted.

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NBIP ACCESSION NUMBER: VT/025

<847>

INVESTIGATOR(S): Willey, C.H.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Furbearer Investigations
PURPOSE: To determine beaver population trends as a basis for management.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population has varied statewide but generally remained stable to increasing.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: CASTOR CANADENSIS
ADDED KEYWORDS: canadian beavers; census; management measures; population dynamics; beavers
PRIMARY PARAMETERS INVESTIGATED: distribution; harvest; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): questionnaires
NUMBER OF SAMPLING SITES: statewide
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): VT
TYPE OF DATA: raw; summarized
ABSTRACT: None provided.
ADDRESS: Charles H. Willey
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TELEPHONE: (802) 828-3371
NBIP ACCESSION NUMBER: VT/015

<848>

INVESTIGATOR(S): Willey, C.H.
AFFILIATION: Vermont Fish and Game Dept.
TITLE: Black Bear Investigations
PURPOSE: To determine and evaluate population dynamics, bear physical aspects, and factors influencing annual harvests as a basis for sound management of Vermont's black bear population.
SPONSOR(S): Vermont Fish and Game Dept.; FWS
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: From 1968 to 1972, there was a subtle decline in bear population and age structure. Since 1973, the population has been improving.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: URSUS AMERICANUS
ADDED KEYWORDS: black bears; management measures; population dynamics; bears
PRIMARY PARAMETERS INVESTIGATED: age; distribution; harvest; kill; natality; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

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hunter questionnaires; legal reports
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): VT
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: Multiscan
STATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: The project attempts to pursue the physical parameters which account for fluctuating annual harvests. Primary factors involved were age, sex, reproduction, and vulnerability. Other components related to the harvest were cover type, time of day, and bear activity prior to kill. To effectively manage the black bear population, these aspects must be studied, summarized, and evaluated.

REFERENCES: Willey, 1971; Willey, 1973; Willey, 1974

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NBIP ACCESSION NUMBER: VT/014

<849>

INVESTIGATOR(S): Worley, I.A.
AFFILIATION: Botany Dept., University of Vermont
TITLE: Land Use Effects Upon Sedimentation and Ecological Dynamics of Vermont Wetlands
PURPOSE: To enhance resolution of bio-geophysical events at two Vermont wetlands from post-Wisconsin to present, and to monitor continuing community changes.
SPONSOR(S): University of Vermont
Agricultural Experiment Station
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The sequence of wetland formation may be described as follows:
oligotrophic lake (11,800-6,800 BP);
eutrophic lake (6,800-2,000 BP); marsh and bogs in bays (2,000 BP - present); outlet clogged by growth with pond rise 60 years ago; and continuous wetland-complex

changes at present.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; lake
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; recreation; resource planning; water quality
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs; grasses; non-vascular plants; lichens; microorganisms; algae
TAXA: SPHAGNUM SPP; ACER RUBRUM; ALNUS SP; CHAMAEDAPHNE SP; LEMNA SPP
ADDED KEYWORDS: sphagnum; cotton grasses; red maples; maples; alders; leather leaves; duckweeds; sedges; water willows; succession; pollen; peat; nutrients; palynology; sediments
PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; habitat characterization; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial photography; peat coring; tree ring counts
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna; hydrological data; soils; terrain; water quality data
STUDY SITE(S): VT
GEOGRAPHIC DESCRIPTION: Chittenden County; Colchester Bog; Shelburne Pond
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; contingency table analysis
ABSTRACT: Having established the principal history of Colchester Bog and Shelburne Pond, Vermont, since the end of the Wisconsin, this project now monitors the rapidly changing wetlands (marshes, carrs, swamps, bogs, laggs, etc.) from aerial photography and surface sampling. Community changes are mapped at irregular intervals of every 2-3 years. Community patterns in space and time are correlated with water quality, hydrologic patterns, and sedimentary dynamics.
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NBIP ACCESSION NUMBER: VT/030

VIRGINIA
Standard Federal Region 3
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(SEE ALSO 236, 409, 418, 434, 502, 610, 657,
765, 902, 905)

<850>

INVESTIGATOR(S): Bishop, J.W.
AFFILIATION: Dept. of Biology, University of
Richmond
TITLE: Impact of Storms on Westhampton Lake,
Virginia
PURPOSE: To analyze the changes in physical,
chemical, and biological properties
following storms.
SPONSOR(S): University of Richmond
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Growth of algae decreased
briefly, then increased before returning
to prestorm level.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; lake
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: environmental impact; water
quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: SELENASTRUM CAPRICORNUTUM
ADDED KEYWORDS: phytoplankton; runoff;
weather conditions; nitrates; models;
phosphorus
PRIMARY PARAMETERS INVESTIGATED: growth;
productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection; bioassay
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data
STUDY SITE(S): VA
GEOGRAPHIC DESCRIPTION: Henrico County;
Little Westham Creek, Westhampton Lake
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean;
regression/correlation analysis; modeling,
deterministic
ABSTRACT: Several ephemeral features related
to storms were measured in Westhampton
Lake. The lake is in Richmond, Virginia
and receives runoff from various kinds of
land surfaces that are associated with
urbanization. After storms, levels of
turbidity, nitrate, phosphate, and carbon
dioxide increased and those of alkalinity
decreased. Values of these properties
returned to prestorm levels within several
(1-7) days. The maximum assimilation
numbers (photosynthesis per unit
chlorophyll) of phytoplankton decreased
shortly after storms, then increased
beyond the prestorm level, and returned to
the prestorm level within several days. No
consistent temporal patterns in the
concentrations of chlorophyll were
detected. Data on precipitation,
tributaries, and the lake were combined in
an attempt to construct models to predict
the quality of water and primary
productivity in the lake.
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NBIP ACCESSION NUMBER: VA/006

<851>

INVESTIGATOR(S): Bodkin, N.L.
AFFILIATION: Dept. of Biology, Madison College
TITLE: Flora of Massanutten Mountain
(Virginia) and Shale Barren Endemics in
the Massanutten Mountain Range
PURPOSE: To survey and inventory vascular
plants of Massanutten Mountain and to
study their migration onto mid-Appalachian
shale barrens.
SPONSOR(S): Madison College
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in number of
endemics on Devonian Shales.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species;
resource planning
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs
TAXA: ERIOGONUM ALLENII; TRIPOLIUM
VIRGINICUM; CLEMATIS ALBICOMA; ALLIUM
OKYPHILUM
ADDED KEYWORDS: buckwheats; umbrella plants;
clovers; clematis; wild onions; migration
rates; succession
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization
NUMBER OF SAMPLING SITES: Devonian outcrops
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; soils; terrain
STUDY SITE(S): VA; WV
GEOGRAPHIC DESCRIPTION: Warren County;
Pendleton County; Rockingham County;
Shenandoah County; Shenandoah River;
Passage Creek; Potomac River (South
Branch); Fort Valley; Massanutten
Mountains; Appalachian Mountains
TYPE OF DATA: raw; literature-derived
ABSTRACT: Associational subunits occur
throughout the eastern deciduous biome and
often these communities are expressions of
edaphic conditions. One of the most lucid
examples of the development of a
distinctive flora in response to edaphic
factors can be found within the oak
forests of the mid-Appalachians. In this
region, shale barren communities occur and
are vegetationally distinct from the
climax normally developing in the area.
Strict endemics and frequently occurring
indicator species make up these
floristically unique complexes.
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NBIP ACCESSION NUMBER: VA/033

<852>

INVESTIGATOR(S): Gregory, R.A.
AFFILIATION: Virginia State Water Control
Board
TITLE: Virginia State Water Control Board

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Biological Monitoring Program
PURPOSE: To define existing water quality in relation to aquatic life, to define the nature and extent of pollution problems, and to provide background data.
SPONSOR(S): Virginia State Water Control Board
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Program has not been operational long enough to show statewide trends although localized changes have been noted.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; reservoir; marine; estuarine
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; annelida
ADDED KEYWORDS: benthic organisms; habitat modification
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; Ekman dredge; Ponar sampler
NUMBER OF SAMPLING SITES: 120
SAMPLING FREQUENCY: annual;
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): VA
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The primary network relies solely on information from sampling benthic macroinvertebrate organisms. Data obtained from benthic macroinvertebrate sampling gives an indication of the quality of the natural waters they inhabit because of their sensitivity to environmental stresses. These animals differ in their ability to survive conditions of low dissolved oxygen. This difference forms the basis of the "indicator organism concept" which holds that, when considering organic pollution, the kinds of organisms present, together with their relative densities and overall numbers, indicate the water quality of the stream they inhabit.
REFERENCES: Gregory, 1975
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Virginia State Water Control Board
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Richmond, VA 23230
TELEPHONE: (804) 786-6683
NBIP ACCESSION NUMBER: VA/046

<853>

INVESTIGATOR(S): Kator, H.I.
AFFILIATION: Virginia Institute of Marine Science
TITLE: Responses of Selected Bacterial and Fungal Populations in a Salt Marsh Environment to Crude Oil
PURPOSE: To monitor changes in heterotrophic, chitinoelastic, and cellulytic petroleum-utilizing bacteria and

saprophytic fungi following an oil spill in a salt marsh.

SPONSOR(S): American Petroleum Institute
SPONSOR CATEGORY: trade association
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: No significant changes observed in bacterial populations with time except for petroleum utilizers which increased markedly.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; marine; estuarine
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: microorganisms; bacteria; fungi
ADDED KEYWORDS: decomposers; oil spills; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): micro-corer
NUMBER OF SAMPLING SITES: 3
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; water quality data
STUDY SITE(S): VA
GEOGRAPHIC DESCRIPTION: York County; York River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; regression/correlation analysis
ABSTRACT: The research is designed to monitor, isolate, and characterize selected microbial populations in a salt marsh in response to the addition of crude oil. Total heterotrophic bacteria, yeast and fungi, petroleum-utilizing bacteria, chitinoelastic and cellulytic bacterial levels are monitored over time immediately after the oil spill. In conjunction with the field work, closed flasks are inoculated with marsh sediments plus crude oil as laboratory "controls". Bacterial population levels and hydrocarbon degradation are measured in flasks. In addition, biopolymers such as chitin or cellulose are added to flasks to determine biopolymer-hydrocarbon degradation patterns.
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NBIP ACCESSION NUMBER: VA/070

<854>

INVESTIGATOR(S): Kelso, D.P.
AFFILIATION: Dept. of Biology, George Mason University
TITLE: Northern Virginia Stream Survey
PURPOSE: To establish baseline condition of streams and monitor future changes.
SPONSOR(S): Parsons, Brinkerhoff, Quade, and Douglas
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increased siltation following house construction.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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forest; coniferous; deciduous; aquatic;
freshwater; stream; reservoir; marine;
estuarine
LEVEL(S) OF STUDY: organism; community
MANAGEMENT FOCUS: environmental impact;
indicator species; range; resource
planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insecta;
mollusca; shellfish; annelida; plants;
vascular plants; trees; shrubs; herbs;
grasses; non-vascular plants; lichens
ADDED KEYWORDS: aquatic plants; benthic
organisms; construction; silting
PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; Hester-Dendy substrates;
seines; hand picking
NUMBER OF SAMPLING SITES: 200, about 1/2
square mile.
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): VA
GEOGRAPHIC DESCRIPTION: Fairfax County;
Loudoun County; Prince William County;
Fauquier County; Potomac Drainage; Burke
Lake; Accotink Lake; Occoquan Lake
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: percentile
ABSTRACT: The fauna and flora of the
watersheds of Fairfax County, Va., and
particularly the aquatic fauna are being
inventoried to determine baseline
conditions prior to implementation of
stormwater management plans. It is hoped
that similar work can later be expanded to
other parts of Northern Virginia.
Reexamination of the streams is sporadic
and associated with instructional field
trips of George Mason University ecology
classes.
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NBIP ACCESSION NUMBER: VA/010

<855>

INVESTIGATOR(S): Levy, G.P.
AFFILIATION: Dept. of Biological Sciences,
Old Dominion University
TITLE: Vegetational Studies in the Great
Dismal Swamp
PURPOSE: To study forest dynamics and plant
succession.
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Have established baseline
data and projected long-term trends, i.e.
reduction in ground water levels.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

forest; coniferous; deciduous; wetland;
aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; grasses
ADDED KEYWORDS: succession; habitat
modification
PRIMARY PARAMETERS INVESTIGATED: age;
biomass; diversity; growth; harvest;
numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
stratified random sampling; circular
quadrats; bitterlick variable plot radius
NUMBER OF SAMPLING SITES: 13
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils
STUDY SITE(S): VA
GEOGRAPHIC DESCRIPTION: Drummond Lake;
Chesapeake County; Great Dismal Swamp
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
contingency table analysis
ABSTRACT: Basic phytosociological studies of
the vegetational types of the Great Dismal
Swamp are in progress to determine: (1)
basic quantitative and qualitative
composition, (2) investigations of various
age classes, and (3) basic soil and
microclimatic data. Purposes are to
determine what is present and how it is
changing. Identification of controlling
factor complexes i.e. water, substrate,
nutrients, etc., is also accomplished.
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NBIP ACCESSION NUMBER: VA/038

<856>

INVESTIGATOR(S): Naughton, O.E.
AFFILIATION: FWS
TITLE: Aquatic Plant Control Using Herbicides
in a Large Potable Water Supply Reservoir
PURPOSE: To evaluate pre- and post-treatment
changes in the ecological system of
Chickahominy Reservoir
SPONSOR(S): COE
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Endothall and diquat
treatment controlled weeds for the year
after treatment, however, recovery of the
weeds was rapid. There were no
detrimental effects to aquatic animals.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; resource
planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
plants; vascular plants; herbs;
microorganisms; algae

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TAXA: EGERIA Densa; LYNGBYA SP; LEPOMIS
MACROCHIRUS; LEPOMIS GIBBOSUS; MICROPTERUS
SALMOIDES; POMOXIS NIGROMACULATUS;
CENTRARCHUS MACROPTERUS; CHAENOBRYTTUS
GULOSUS; MORONE AMERICANA; ESX NIGER;
NOTEMIGONUS CRYSOLEUCAS; ALOSA
PSEUDOHARENGUS; ANGUILLA ROSTRATA; AMIA
CALVA; ICTALURUS NEBULOSUS; LEMNA SP;
WOLFFIA PUNCTATA; CERATOPHYLLUM DEMERSUM

ADDED KEYWORDS: herbicides; endothall;
diquat; isopods; duckweeds; water meal;
coontails; blue-green algae; bluegills;
black crappies; pumpkinseeds; largemouth
basses; warrmouths; white perches; chain
pickerels; alewives; golden shiners; eels;
brown bullheads; pesticides; management
measures; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; BOD; diversity; growth; habitat
characterization; harvest; kill; numbers;
physiology; productivity; residues;
size/weight; stress; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear; artificial
substrates; aerial photography; quadrants

NUMBER OF SAMPLING SITES: 2

SAMPLING FREQUENCY: seasonal; daily; monthly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Charles City County;
New Kent County; Chickahominy Reservoir

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis

ABSTRACT: Chickahominy Reservoir was treated
with diquat and endothall to control

EGERIA. Concentrations of diquat persisted
in plants for 55 days, in water for 14

days, and in hydrosols for 11 months. No
diquat was found in fish muscle tissue.

Endothall was found in water for 14 days
and plants for 20 days, but was not found

in hydrosols or fish. Vegetative organic
detritus occurred in weed infested areas

after treatment. Equilibrium was recovered
as phytoplankton increased after 6-7

weeks. Macrophyte biomass (24-76 percent)
was oxidantly decomposed. EGERIA was

reduced 94 percent after 369 days in the
deep quadrant, but only 6 percent in the

shallow quadrant. Filamentous algae
increased. No change was found by IN SITU

monitoring of invertebrate populations
with floating artificial substrates. Small

bluegill showed increased growth rates one
year after treatment. Seventy-two percent

of the anglers polled believed the
treatment alleviated the weed problem and

increased fishing and boating enjoyment.
Aerial photography showed that the

treatment opened significant amounts of
water and shoreline to fishing. Studies in

artificial pools showed that persistence
of chemicals in water was decreased by the

addition of plants and sediment, but was
not affected by water hardness or water

movement. Increased water hardness
decreased diquat toxicity but did not

affect endothall toxicity. Carbon dioxide
production in treated pools exceeded

oxygen consumed. Killed plants released
phosphorus and nitrogen. Bioassay tests
showed that the toxicity of diquat and the
mixture was greater than endothall
toxicity for 5 species of plants. Odonates
were not killed by the herbicides at
recommended treatment rates. Goldfish
avoided diquat and the mixture of field
treatment rates. Histological and
physiological examination of fish exposed
to the herbicides showed no harmful
changes at field treatment rates. TLM
values were determined for 4 species of
fish.

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NBIP ACCESSION NUMBER: VA/022

<857>

INVESTIGATOR(S): Maughan, O. E.
AFFILIATION: Virginia Polytechnic Institute
and State University

TITLE: Smith Mountain Lake Habitat Improvement
PROJECT: To evaluate the impact of habitat

improvement (artificial reefs) in Smith
Mountain Lake.

SPONSOR(S): Virginia Commission of Game and
Inland Fisheries

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Bass and bluegill

congregate around the reef area. Primary
production is increased and this energy is

passed on up the food chain.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; reservoir

LEVEL(S) OF STUDY: organism; population;

community

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species; recreation;

resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; crustacea; insecta

TAXA: LEPOMIS SPP; MICROPTERUS SPP; MORONE

SAXATILIS; STIZOSTEDION VITREUM; ICTALURUS

SPP; POMOXIS ANNULARIS; CYPRINUS CARPIO;

DOROSOMA CEPEDIANUM

ADDED KEYWORDS: sunfishes; basses; walleyes;

cattfishes; crappies; carp gizzard shad;

habitat modification; management measures;

crayfishes

PRIMARY PARAMETERS INVESTIGATED: behavior;

habitat characterization; home range size;

immigration; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

scuba; underwater nets; fish traps;

telemetry equipment; hook and line; spear

guns

NUMBER OF SAMPLING SITES: 13

SAMPLING FREQUENCY: daily; weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

hydrological data; water quality data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Smith Mountain Lake

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;

percentile; regression/correlation

analysis; non-parametric analysis

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ABSTRACT: Research was initiated in April, 1973 to evaluate the use of artificial reefs in Smith Mountain Reservoir, Virginia. Objectives of the project are to assess artificial reefs in terms of: (1) construction costs; (2) preference of fishes for materials and locations; (3) sequence of occupation, permanence of station, and feeding habits of reef fishes; and (4) contribution of reef fishes to angler harvest.

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NBIP ACCESSION NUMBER: VA/023

<858>

INVESTIGATOR(S): Maughan, O.E.
AFFILIATION: Virginia Polytechnic Institute
and State University

TITLE: The Biological and Economic Impact of
Stream Alteration Work along Tributaries
of the Roanoke River, Charlotte County,
Virginia

PURPOSE: To evaluate the rate and degree of
recovery of stream ecosystems following
channelization in Virginia's Piedmont; to
evaluate cost/benefit relationships.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fish population is high
in channelized areas in summer and low in
winter. Reverse is true in nonchannelized
areas. Data are incompletely analyzed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; indicator
species; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; fish; invertebrates; crustacea

TAXA: FISHES, 33 SPECIES; BENTHIC ORGANISMS,
130 SPECIES

ADDED KEYWORDS: benthic organisms;
channelization; population effects;
management measures; habitat modification

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear

NUMBER OF SAMPLING SITES: 15

SAMPLING FREQUENCY: quarterly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Charlotte County;
Roanoke River

COMPUTER AND LANGUAGE: IBM 370/155; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
non-parametric analysis

ABSTRACT: The study is evaluating the impact
of stream channelization on fish and
benthic macroinvertebrates by evaluating
the rate and degree of recovery of fish
and benthic macroinvertebrate populations
of different age channels along small
Piedmont tributaries of the Roanoke River.
Data on physical characteristics along
channelized streams of three ages and a
control stream will be collected during
each of three years. Fish and benthic
macroinvertebrates population and habitat
along channelized sections of different
ages are collected quarterly and compared
with the control values. EX POST and EX
ANTE economic evaluations will be made to
determine the effectiveness of existing
benefit cost benefit estimates in
portraying project success on both
economic and ecological criteria.

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NBIP ACCESSION NUMBER: VA/024

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INVESTIGATOR(S): Musselman, L.J.
AFFILIATION: Dept. of Biology, Old Dominion
University

TITLE: Ecology of BUCKLEYA DISTICHOPHYLLA

PURPOSE: To determine population changes.

SPONSOR(S): PI

SPONSOR CATEGORY: private individuals

DATE OF INITIATION: 1969

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Destruction of part of
one population.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; mountain

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species

ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs

TAXA: BUCKLEYA DISTICHOPHYLLA

ADDED KEYWORDS: parasites; roots; hemlocks;
construction; roads; habitat modification

PRIMARY PARAMETERS INVESTIGATED:

distribution; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated flora;
soils

STUDY SITE(S): VA; NC; TN

GEOGRAPHIC DESCRIPTION: Appalachian Mountains

ABSTRACT: BUCKLEYA, a member of the
Sandalwood family, parasitizes a variety
of plants, although it seems to prefer
hemlock. It attaches to the host roots by
numerous round, white structures termed
haustoria. The genus BUCKLEYA contains
four species, three found in eastern Asia
and the fourth restricted to about ten
sites in the Appalachian Mountains of
Tennessee, North Carolina, and Virginia.
One population in North Carolina has been
severely reduced in numbers by construction
of an interstate highway. Another
population on the North Carolina-Tennessee
boundary has been destroyed by lumbering

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operations. BUCKLEYA, a shrub up to 15 feet high, is not an impressive plant at first encounter, but its extreme rarity, parasitic behavior, and disjunct eastern United States-eastern Asian distribution certainly makes it a fascinating plant very worthy of preservation.

REFERENCES: Musselman, 1974

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NBIP ACCESSION NUMBER: VA/053

<860>

INVESTIGATOR(S): Reed, J.R.

AFFILIATION: Dept. of Biology, Virginia
Commonwealth University

TITLE: Ecological Investigation of Lake Anna,
A Cooling Source for a Nuclear Power
Station

PURPOSE: To establish baseline
pre-operational ecological data on Lake
Anna.

SPONSOR(S): Virginia Electric and Power Co.

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in population
diversity and density of fishes.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population;

community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;

fisheries; recreation; water quality;

power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: MICROPTERUS SALMOIDES; ESOX NIGER;

POMOXIS NIGROMACULATUS; LECHEIS

MACROCHIRUS; MORONE SAXATILIS

ADDED KEYWORDS: largemouth basses; basses;

chain pickerels; pickerels; black

crappies; crappies; bluegills; striped

basses; nuclear power plants; thermal

effluents; habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; distribution; diversity; growth;

habitat characterization; mortality;

natality; numbers; reproduction; sex;

size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

gill nets; electrofishing gear; rotenone;

angling; seine

NUMBER OF SAMPLING SITES: 13

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; associated

microorganisms; atmospheric chemistry;

hydrological data; water quality data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Louisa County;

Spotsylvania County; North Anna River;

Lake Anna

TYPE OF DATA: raw; reduced; summarized;

literature-derived

COMPUTER AND LANGUAGE: IBM/370

STATISTICS EMPLOYED: mean; percentile;

analysis of variance;

regression/correlation analysis;

multivariate analysis

ABSTRACT: Fish populations have been monitored in a newly-created reservoir, Lake Anna. Effects of stocking, age and growth, as well as fecundity, biomass, food habits, and movement were studied for 3 1/2 years prior to operation of a nuclear power station. The reservoir has been affected by heavy metals from acid mine drainage in a major tributary, Contrary Creek. Heavy metal analyses of water, sediment, aquatic macrophytes, macrobenthos, plankton, and fish were conducted.

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NBIP ACCESSION NUMBER: VA/050

<861>

INVESTIGATOR(S): Rose, R.K.

AFFILIATION: Dept. of Biology, University of
Virginia

TITLE: Reproduction, Maturation, and
Aggression in Meadow Voles

PURPOSE: To learn the effects of season,
density, and age structure on the rate of
maturation in natural and perturbed
populations of the meadow vole (MICROTUS
PENNSYLVANICUS), and to document the
changes in levels of reproduction and
aggression over time.

SPONSOR(S): University of Virginia

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: MICROTUS PENNSYLVANICUS

does cycle at this southern latitude;

infant and juvenile mortality largely

explains the decline; and weight

distributions are not depressed in winter.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

grassland

LEVEL(S) OF STUDY: organism; population;

community

MANAGEMENT FOCUS: indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: MICROTUS PENNSYLVANICUS; PEROMYSCUS

LEUCOPUS; BLABINA BREVICAUDA

ADDED KEYWORDS: meadow voles; white-footed

mice; short-tailed shrews; voles; shrews;

population effects

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution; growth;

home range size; mortality; natality;

numbers; reproduction; sex; size/weight;

stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

MICROTUS grids; live traps; snap traps

NUMBER OF SAMPLING SITES: 6 grids; 6 off-grid
sites

SUPPORTING DATA COLLECTED: associated flora;

climatological data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Albemarle County

TYPE OF DATA: raw; reduced

COMPUTER AND LANGUAGE: CDC; FORTRAN

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STATISTICS EMPLOYED: mean; median;
percentile; analysis of variance;
regression/correlation analysis; modeling,
deterministic

ABSTRACT: The objectives of this research are to learn the effects of season, density, and age structure on the rate of maturation in natural and perturbed populations of the meadow vole, *MICROTUS PENNSYLVANICUS*, and to document the changes in levels of reproduction and aggression among individuals collected at regular intervals throughout the year. These studies include: (1) a comparison of winter growth rates of young males versus young females in control and adult-less populations, (2) a demographic study of control and experimental populations, (3) a complementary study of reproductive biology of autopsied meadow voles, and (4) examination of wounding levels in autopsied voles. Items (1) and (2) will be examined in four grids, each with 100 live traps in an area of 1.2 acre, at the Birdwood Tract of the University of Virginia, one mile west of Charlottesville. Meadow voles for items (3) and (4) will be collected in the same general area but at least 200 feet from any grid. Hypotheses under test pertain to: (1) the effect of adult males on maturation of young males during winter months; (2) the functional or adaptive significance of delayed maturation during winter months; and (3) the effects of density, season, sex, and reproductive condition on the level of aggression.

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<862>

INVESTIGATOR(S): Settle, F.H.
AFFILIATION: Virginia Commission of Game and Inland Fisheries
TITLE: Back Bay Aquatic Vegetation Trend Study
PURPOSE: To determine the effects of changes in salinity and turbidity levels upon submerged aquatic vegetation in Back Bay, Virginia.
SPONSOR(S): Virginia Commission of Game and Inland Fisheries
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Amount of aquatic vegetation has increased from 36 percent in 1969, to 88 percent in 1973 and decreased to 75 percent in 1974.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; population; ecosystem
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: plants; vascular

plants; herbs; microorganisms; algae
TAXA: MYRIOPHYLLUM SPP; POTAMOGETON SPP;
SAGITTARIA SPP; NITELLA SPP; NAJAS SPP;
ELEOCHARIS SPP; ELODEA SPP; VALLISNERIA
SPP; RUPPIA SPP; CHARA SPP

ADDED KEYWORDS: management measures;
turbidity; milfoil; naiads; redhead
grasses; sago; spike rushes; arrowheads;
widgeon grasses; muskgrasses; aquatic
plants

PRIMARY PARAMETERS INVESTIGATED:
distribution; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
transects

NUMBER OF SAMPLING SITES: 7 water transects;
264 vegetation sites

SAMPLING FREQUENCY: monthly; annual

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Back Bay

TYPE OF DATA: raw; summarized

ABSTRACT: Water samples are collected monthly on Back Bay. These samples are analyzed with a salinometer. Aquatic vegetation in samples is identified; quantity, quality, and species composition are determined; and volume is estimated. The pumping operation, which was designed to maintain a higher degree of salinity in the study area, was curtailed in the latter part of July 1974. This caused a decline of salt water in the Bay. The frequency of vegetation was sixteen percent higher than in 1973. Seventy-five percent of the samples contained milfoil in contrast to eighty-three percent in 1973.

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NBIP ACCESSION NUMBER: VA/062

<863>

INVESTIGATOR(S): Simmons, G.M.
AFFILIATION: Dept. of Biology, Virginia Polytechnic Institute and State University
TITLE: Preoperational Ecological Studies on Lake Anna, Virginia
PURPOSE: To characterize natural ecological state of the lake before addition of heat from nuclear reactors and circulation of lake water.
SPONSOR(S): Virginia Electric and Power Co.
SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in community stability with predictable seasonal changes.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; reservoir
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; radiological; recreation; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; mollusca; plants; vascular plants; herbs; microorganisms; algae
ADDED KEYWORDS: cooling lagoons;
phytoplankton; nuclear power plants;

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thermal effluents; benthic organisms;
eutrophication
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; habitat
characterization; mortality; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
artificial substrate; SCUBA
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: monthly; quarterly
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data
STUDY SITE(S): VA
GEOGRAPHIC DESCRIPTION: North Anna River;
Lake Anna; Louisa County
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
non-parametric analysis
ABSTRACT: Lake Anna, a 12,000 acre
impoundment in central Virginia has been
the object of chemical, physical, and
biological investigations since March
1972. The lagoon system will eventually
receive heated discharge from four nuclear
power reactors. Thermal stratification
occurs once a year and thermocline
formation is located at the mean depth
level. Primary productivity studies
indicate a eutrophic lake. Zooplankton
communities are still in a state of flux.
The artificial substrate sampling system
has proven to be a very quick, reliable
method of collecting numerous macrobenthic
samples.
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NBIP ACCESSION NUMBER: VA/051

<864>

INVESTIGATOR(S): Swan, F.R.
AFFILIATION: Dept. of Biology, West Liberty
State College
TITLE: Permanent Vegetational Plots in State
Parks of Maryland (Montgomery County) and
Virginia (Fairfax County)
PURPOSE: To monitor rates of vegetational
change in forests guaranteed preservation
in Montgomery County, Maryland, and
Fairfax County, Virginia.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in soil nitrogen,
phosphorus, and magnesium.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
wildlife; forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; shrubs; herbs; non-vascular
plants; lichens
ADDED KEYWORDS: succession; nitrogen;

phosphorus; magnesium; soil chemistry
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
point-centered quarter method; quadrats
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): MD; VA
GEOGRAPHIC DESCRIPTION: Montgomery County
(MD); Fairfax County (VA)
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean
ABSTRACT: Six upland forest stands in the
Washington, D.C., metropolitan area were
quantitatively sampled during July, 1968,
under a grant from the Conservation
Foundation. These included one regional
park in Montgomery County, Maryland, four
parks in Fairfax County, Virginia, and one
in Arlington County, Virginia. In July
1975, the same sampling procedure was
repeated in these locations along
approximately the same sample lines. Each
plot was one square meter. The nearest
four saplings and trees from the bottom
left corner of the plot were sampled by
the point-centered quarter method. There
were 20 plots sampled. Soil samples were
also collected in 1975. Locations of the
1975 plots were permanently marked so that
resampling could be done. Present plans
are to compare 1968 and 1975 data and to
correlate vegetational differences with
results of soil tests for nitrogen,
phosphorus and magnesium.
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NBIP ACCESSION NUMBER: WV/022

<865>

INVESTIGATOR(S): Woodin, S.A.
AFFILIATION: Dept. of Earth and Planetary
Sciences, Johns Hopkins University
TITLE: Infaunal Abundances in a Marine
Soft-Sediment Environment: The Importance
of Predation
PURPOSE: To evaluate and identify the
biological and physical disturbance agents
in a marine soft-sediment system and to
determine their importance as structuring
agents to the marine infaunal community.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Marked seasonal changes
in abundance due to seasonality of
biological disturbance agents.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; shellfish;
annelida
TAXA: CALLINECTES SAPIDUS; LIMULUS
POLYPHEMUS; GENNA GENNA; SPIONIDAE;
CIRRATULIDAE; ONUPHIDAE; NEREIS;

VIRGINIA

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CHAETOPTERIDAE

ADDED KEYWORDS: population effects;

predators; blue crabs; horseshoe crabs;

habitat modification; sediments

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; mortality; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

sieve

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): VA

GEOGRAPHIC DESCRIPTION: Tom's Cove

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; analysis of

variance; analysis of covariance;

non-parametric analysis

ABSTRACT: This research attempts to define

the importance of biological and/or

physical disturbance to the determination

of patterns of species abundance and distribution in a marine soft-sediment environment. Abundances of infauna and predators are manipulated in the field through the use of exclosures as well as by direct addition and removal of individuals. Seasonal samples of infauna are taken to establish their normal population fluctuations and size distributions. The changes in infaunal abundances both temporally and spatially are analyzed with respect to predator activity, competitor abundance, and physical factors by a combination of direct manipulative and indirect correlative techniques.

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NBIP ACCESSION NUMBER: MD/018

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WASHINGTON

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236, 292, 706, 708, 709, 711, 715, 723, 724)

<866>

INVESTIGATOR(S): Aldrich, L. E.
AFFILIATION: Dept. of Biology, Seattle
University
TITLE: Intertidal Ecology of Alki Point Area
of Puget Sound
PURPOSE: To provide information on plant and
animal populations and possible changes in
these populations over a long time period
of sampling.
SPONSOR(S): Dept. of Biology, Seattle
University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in population,
species, and numbers due to changes in
sewage disposal in area and heavy use as a
beach park area.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal; estuarine
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: environmental impact;
recreation; pollution control
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; microorganisms;
algae
TAXA: BENTHIC ORGANISMS, 20 SPECIES; ALGAE, 2
CLASSES
ADDED KEYWORDS: population effects; waste
water; management measures; habitat
modification; tides; benthic organisms
PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrat counts; transects; collection
NUMBER OF SAMPLING SITES: 3 linear transects
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Alki
Point; Puget Sound
TYPE OF DATA: raw
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: WA/103

<867>

INVESTIGATOR(S): Berryman, A.A.
AFFILIATION: Dept. of Entomology, Washington
State University
TITLE: Population Dynamics of the Fir
Engraver Beetle
PURPOSE: To predict numerical changes in
populations of SCOLYTUS VENTRALIS
infesting ABIES GRANDIS.
SPONSOR(S): Washington State University;
CSRS; NSF
SPONSOR CATEGORY: federal government;
teaching institution
DATE OF INITIATION: 1964
PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Tree susceptibility and
nematode parasitism influence the activity
of the fir engraver beetle.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: animals;
invertebrates; insecta; plants; vascular
plants; trees
TAXA: ABIES GRANDIS; SCOLYTUS VENTRALIS;
SULPHURETYLENCHUS ELONGATUS; ORGYIA
PSEUDOTSUGATA; PSEUDOTSUGA MENZIESII;
PICEA ENGELMANNII; PINUS PONDEROSA
ADDED KEYWORDS: beetles; nematodes; fir;
population effects; parasitism;
defoliation; douglas fir; engelmann
spruces; ponderosa pines; pines; spruces;
coleopterans; lepidopterans; nematodes
PRIMARY PARAMETERS INVESTIGATED:
distribution; growth; mortality; numbers;
physiology; productivity; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
flight traps; bark samples
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: weekly; annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated microorganisms
STUDY SITE(S): ID; WA; OR
GEOGRAPHIC DESCRIPTION: Latah County; Inland
Empire
TYPE OF DATA: raw; reduced; summarized;
literature-derived
COMPUTER AND LANGUAGE: IBM 360/67; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
modeling, deterministic; modeling,
stochastic
ABSTRACT: Populations of the fir engraver
reached epidemic proportions and then
declined to a very low level over the
study period. However, population density
within infested trees showed an inverse
relationship to overall population trend.
The population trend over the past 40
years was associated to some degree with
rainfall deficits and with Douglas fir
tussock moth outbreaks. An hypothesis is
presented for the population behavior of
the fir engraver; population fluctuations
being determined by the quantity of
susceptible trees and ultimately regulated
by intraspecific competition. Nematode
parasitism and interspecific competition
were regarded as modifying, and perhaps
sometimes regulating, abundance.
REFERENCES: Berryman, 1973
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NBIP ACCESSION NUMBER: WA/004

<868>

INVESTIGATOR(S): Blahn, T.H.
AFFILIATION: NMFS
TITLE: Studies to Determine the Biological
Effects of Contaminants and Dredging
Alterations on the Aquatic Environments of
the Lower Columbia River and Its Estuary
PURPOSE: To provide a sound basis on which
management and regulatory decisions are
formulated and to enhance and protect the

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aquatic resources of the Columbia River, and to obtain criteria for water quality standards that relate to specific contaminants and or alterations.

SPONSOR(S): NMFS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Fish were adversely affected by gas supersaturation, temperature increases, and chemical pollutants. Littoral zone and benthic communities were decreased by dredging and material disposal on shore.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; reservoir

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; recreation; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; microorganisms; algae

TAXA: FISHES, 50 SPECIES; CRUSTACEA, 4 SPECIES; BENTHIC ORGANISMS, 25 SPECIES; ZOOPLANKTON, 37 SPECIES

ADDED KEYWORDS: benthic organisms; zooplankton; dredging; nuclear power plants; industrial chemicals

PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; growth; habitat characterization; mortality; migratory patterns; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress; territory size; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Ekman dredge; Ponar dredge; Clark Bumbus apparatus; beach seine; sonic detection; observation

SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly; quarterly; irregular

SUPPORTING DATA COLLECTED: associated fauna; hydrological data; water quality data

STUDY SITE(S): WA; OR

GEOGRAPHIC DESCRIPTION: Trojan Nuclear Plant; Columbia River; Willamette County; Columbia County; Clatsop County; Cowlitz County; Clark County; Wahkiakum County

TYPE OF DATA: raw; summarized; literature-derived

STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; analysis of covariance; regression/correlation analysis

ABSTRACT: A variety of studies are in progress or completed as follows: (1) floating laboratory for study of aquatic organisms and their environment, (2) a pictorial record of the hatching and early development of the eulachon, (3) studies on effects of supersaturation of dissolved gases on fish, (4) gas supersaturation research, (5) thermal pollution of Columbia River (smelt), (6) occurrence of fish near the Kalama Nuclear Power Plant Site, Columbia River, (7) effect of

chemical fire retardants on the survival of juvenile salmonids, (8) mortality of adult eulachon (THALICHTHYS PACIFICUS) subjected to sudden increases in water temperature, and (9) effect of gas supersaturated Columbia River water on the survival of juvenile chinook and coho salmon.

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NBIP ACCESSION NUMBER: WA/025

<869>

INVESTIGATOR(S): Chew, K.K.

AFFILIATION: College of Fisheries, University of Washington

TITLE: A Survey of the Invertebrates and Algae of the Puget Sound Beaches of Metropolitan Seattle

PURPOSE: To define intertidal organisms present, delineate communities, and examine data for possible perturbation caused by nearby subtidal sewage outfalls.

SPONSOR(S): City of Seattle

SPONSOR CATEGORY: city government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Seasonal changes in the occurrence and abundance of intertidal organisms are being monitored. Unexplainable size differences in some species have been noted.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; indicator species; range; pollution control

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; algae

TAXA: BENTHIC ORGANISMS, 300 SPECIES; ACMAEA PARADIGITALIS; LACUNA CARINATA

ADDED KEYWORDS: diatoms; phytoplankton; benthic organisms; sewage treatment; waste water; seasonal variations; limpets; snails

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; harvest; numbers; reproduction; size/weight; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transect; sieves; artificial substrate

NUMBER OF SAMPLING SITES: 108

SAMPLING FREQUENCY: monthly; quarterly

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: King County; Puget Sound

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: CDC/6500; COBOL; FORTRAN

STATISTICS EMPLOYED: mean; percentile; non-parametric analysis

ABSTRACT: We are employing quantitative as well as qualitative sampling methods to ascertain whether or not the intertidal animals and plants differ between five beaches in the Metropolitan Seattle area (Alki, Carkeek, Lincoln, Richmond, and West Point). A nine-digit code has been systematically assigned to each organism to allow computer analysis of the data.

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Our coding system is flexible so that additional animals and plants identified to various taxonomic levels are easily added. Our quarterly sampling schedule is yielding seasonal differences in the abundance of various organisms. This approach will allow calculation of species richness, species diversity, correlations between habitat types and various organisms, and correlations between sediment grain size and organisms present. Micro-algae are being studied with an original artificial substrate sampling block. Using this method, succession as well as changes in species richness and species diversity are followed monthly. We are also looking for possible growth differences in invertebrates and algal species which are common to all of the beaches. Preliminary work indicates two species (*ACMAEA PARADIGITALIS* - a limpet, and *LACUNA CANINATA* - a snail) are significantly larger at West Point beach. Four additional invertebrate and three algal species at different beaches are now being examined to determine any variation in their growth rates and population age-structure.

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NBIP ACCESSION NUMBER: WA/032

<870>

INVESTIGATOR(S): Cushing, C.E.

AFFILIATION: Ecosystems Dept., Battelle
Pacific Northwest LaboratoryTITLE: Effects and Behavior of Fossil Fuel
Effluents in Freshwater EcosystemsPURPOSE: To study the behavior, cycling
rates, and effects of fossil fuel
effluents in freshwater ecosystems and
environmental mediators of their transfer.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes observed in the
environment in the above parameters.ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lakeLEVEL(S) OF STUDY: organism; population;
community; ecosystemMANAGEMENT FOCUS: environmental impact;
pollution control; water quality; power
generationORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; microorganisms; bacteria; fungi;
algae; protozoaTAXA: CARASSIUS AURATUS; AQUATIC PLANTS, 11
SPECIES; ALGAE, 3 SPECIES; BIRDS;
INVERTEBRATES; ZOOPLANKTONADDED KEYWORDS: population dynamics; fossil
fueled power plants; heavy metals;
sediments; coalPRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; habitat characterization;
numbers; physiology; residues; stress;
toxicityDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
quadrats; plankton nets; dredges;
artificial substrates; water samplers

NUMBER OF SAMPLING SITES: one lake

SAMPLING FREQUENCY: continuous; seasonal;
monthly; irregularSUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
hydrological data; water quality data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Benton County;

Hanford Reservation; Gable Mountain Pond

TYPE OF DATA: raw; reduced; summarized;
literature-derivedCOMPUTER AND LANGUAGE: UNIVAC 1108; BASIC
STATISTICS EMPLOYED: mean; median; analysis
of variance; analysis of covariance;
regression/correlation analysis;
non-linear estimation; modeling,
deterministicABSTRACT: This project is designed to study
two aspects of fossil fuel effluent
components which enter freshwater
ecosystems: (1) the transfer coefficients
among food-web components and the effects
of environmental mediators and (2) the
effects, particularly sublethal, of these
effluent components upon ecosystem
components. The latter studies utilize
newly developed techniques with serum
protein electrophoresis as indicators of
sublethal stress.ADDRESS: Mr. Colbert E. Cushing
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P.O. Box 999

Richland, WA 99352

TELEPHONE: (509) 942-5685

NBIP ACCESSION NUMBER: WA/073

<871>

INVESTIGATOR(S): Eaton, R.L.

AFFILIATION: Zoology Dept., University of
WashingtonTITLE: Marine Shoreline Fauna of Washington:
Status SurveyPURPOSE: To identify threatened (endangered)
and potentially threatened species of
Washington's marine shorelands, and to
ascertain critical habitat requirements of
same.SPONSOR(S): Game and Ecology Depts.,
University of Washington

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decline in numbers of
several mammal and bird species due to
increased development, recreation, and
pollution.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland;
wetland; aquatic; freshwater; stream;

river; lake; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; wildlife;
recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

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fish; birds; mammals; invertebrates;
mollusca
TAXA: ANIMALS, 170 SPECIES
ADDED KEYWORDS: management measures
PRIMARY PARAMETERS INVESTIGATED:
distribution; habitat characterization;
mortality; migratory patterns; natality;
numbers; reproduction
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Puget Sound
TYPE OF DATA: summarized; literature-derived
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: WA/014

<872>

INVESTIGATOR(S): Edmondson, W.T.
AFFILIATION: Dept. of Zoology, University of Washington
TITLE: Control of Productivity and Population Characteristics in Aquatic Communities
PURPOSE: To study communities and populations in lakes that have been modified in definite ways or have special characteristics.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Dilution of salt lakes followed by large changes in biota. Mixing of a meromictic lake was followed by changes in chemistry and biota.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; algae
TAXA: CLADOCERA; ALGAE; COPEPODA; ROTIFERA
ADDED KEYWORDS: habitat modification; natural catastrophe; weather conditions; saline lakes; meromixis; cladocerans; copepods; rotifers; irrigation
PRIMARY PARAMETERS INVESTIGATED: biomass; mortality; natality; productivity; reproduction
SUPPORTING DATA COLLECTED: climatological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Grant County; Shohomish County; Hall Lake; Sorp Lake; Lake Lenore; Grand Coulee
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; regression/correlation analysis; contingency table analysis
ABSTRACT: Studies were made of lakes with special characteristics or lakes that have

been changed in particular ways that give insight to the processes controlling the communities. For instance, Soap Lake and Lake Lenore (salt lakes) in the lower Grand Coulee have been diluted with fresh water from an irrigation project. The species present and their abundance changed greatly. Hall Lake was meromictic for many years (incompletely mixed) but became mixed, giving information about the role of stratification.

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NBIP ACCESSION NUMBER: WA/030

<873>

INVESTIGATOR(S): Edmondson, W.T.
AFFILIATION: Dept. of Zoology, University of Washington
TITLE: Lake Washington Study
PURPOSE: To assess the effects of changes in the amount of sewage on Lake Washington, a study in lake fertilization.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Large changes in quantity and species composition of phytoplankton and much smaller changes in zooplankton.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: pollution control
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta
TAXA: CLADOCERA; ALGAE; INSECTA; COPEPODA; ROTIFERA
ADDED KEYWORDS: eutrophication; sewage treatment; waste water; cladocerans; copepods; rotifers
PRIMARY PARAMETERS INVESTIGATED: biomass; mortality; natality; numbers; productivity; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard limnological methods
NUMBER OF SAMPLING SITES: 1 major, several minor
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: climatological data; hydrological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Lake Washington
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis; contingency table analysis; multivariate analysis
ABSTRACT: For many years Lake Washington received treated sewage and responded by increased production of blue-green algae. The sewage was diverted in 1963-1968 and the lake has returned to a much less productive condition. Studies have been made on the chemical and biological response and the sedimentary record of the changes. The study has been treated as an

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experiment in lake fertilization.
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NBIP ACCESSION NUMBER: WA/031

<874>
INVESTIGATOR(S): Gessel, S.P.
AFFILIATION: College of Forest Resources,
University of Washington
TITLE: Regional Forest Fertilization Project
PURPOSE: To monitor growth of Douglas fir and
western hemlock with and without addition
of essential elements to forest.
SPONSOR(S): Private land owners
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Overall 20-25 percent
increase in growth rate and competition
changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous
LEVEL(S) OF STUDY: organism; population;
region
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees
TAXA: PSEUDOTSUGA MENZIESII; TSUGA
HETEROPHYLLA
ADDED KEYWORDS: firs; douglas firs; hemlocks;
western hemlocks; management measures;
competition; fertilizers
PRIMARY PARAMETERS INVESTIGATED: age; growth
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent plots
SUPPORTING DATA COLLECTED: associated flora;
soils; terrain
STUDY SITE(S): WA
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC 6400; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance
ABSTRACT: The project was designed to
determine response of Douglas fir and
western hemlock to 200 and 400 pounds of
nitrogen per acre applied as urea and also
to a complete fertilizer over a range of
ages, sites, soils, and geographic
locations. The effect of associated forest
stand manipulations such as thinning is
also included.
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NBIP ACCESSION NUMBER: WA/028

<875>
INVESTIGATOR(S): Gessel, S.P.
AFFILIATION: College of Forest Resources,
University of Washington
TITLE: Coniferous Forest Biome
PURPOSE: To study the dynamics of terrestrial
and aquatic ecosystems in the coniferous

forest biome.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Too numerous to list.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream; lake
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; forestry; resource
planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; insecta; plants; vascular
plants; trees; shrubs; herbs; grasses;
non-vascular plants; lichens;
microorganisms; bacteria; fungi; algae
ADDED KEYWORDS: logging; habitat
modification; management measures;
population effects; models
PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; diversity; emigration;
productivity
NUMBER OF SAMPLING SITES: 2 major sites
SAMPLING FREQUENCY: continuous; seasonal;
daily; weekly; monthly; quarterly; annual;
irregular
SUPPORTING DATA COLLECTED: associated
microorganisms; hydrological data; soils
STUDY SITE(S): WA; OR
GEOGRAPHIC DESCRIPTION: Lake Washington
drainage system; Andrews Experimental
Forest
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC, NOVA; FORTRAN;
BASIC
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; modeling, deterministic;
modeling, stochastic
ABSTRACT: The Coniferous Forest Biome
Research Program is analyzing the
structure, function, and behavior of
coniferous forest and associated aquatic
ecosystems. A centralized management
program uses systems analysis and computer
simulation models in integrating results
and predicting ecosystem responses to such
manipulations as fire, fertilization,
defoliation, and clearcutting.
Headquartered at the University of
Washington, the program employs one
hundred forty scientists and represents
universities and government research
laboratories in nine states.
REFERENCES: Gessel, et al, 1973
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NBIP ACCESSION NUMBER: WA/029

<876>
INVESTIGATOR(S): Gilbertson, L.G.
AFFILIATION: Quinault Indian Nation
TITLE: Productivity of Salmon Streams
PURPOSE: To monitor annual variation in
salmon production from several bodies of
water.

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SPONSOR(S): DOI
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Large variation in numbers of juvenile salmon, both in time and space.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: ONCORHYNCHUS SPP; SALMO SPP
ADDED KEYWORDS: management measures; habitat modification; salmon
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; growth; habitat characterization; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seines; electrofishing gear
NUMBER OF SAMPLING SITES: variable, but usually less than 10
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Grays Harbor County; Jefferson County; Quinalt River; Queets River; Lake Quinalt
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC/6400; FORTRAN; BASIC
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: WA/075

<877>

INVESTIGATOR(S): Grable, A.E.
AFFILIATION: Dept. of Biology, Walla Walla College
TITLE: Vegetation of the Touchet River Drainage System; Vegetational Study of Walla Walla County, Washington
PURPOSE: To provide baseline data for irrigation dam environmental impact statement.
SPONSOR(S): BR
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Species composition centered on retreating river bed during summer, with some high mountain species occurring fairly low in stream bed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: endangered species; environmental impact; indicator species; recreation; resource planning; right-of-way
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
ADDED KEYWORDS: impoundments; habitat modification; seasonal variations; irrigation
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): line transects
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Columbia County; Walla Walla County; Touchet River
TYPE OF DATA: raw; reduced
ABSTRACT: None provided.
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TELEPHONE: (509) 527-2483
NBIP ACCESSION NUMBER: WA/107

<878>

INVESTIGATOR(S): Gray, R.H.
AFFILIATION: Battelle Pacific Northwest Laboratories
TITLE: Effects of Water Quality Alteration on Fish Behavior
PURPOSE: To determine adult salmonid 24-hour swimming depth distribution in relation to gas supersaturated water; immediate response of juvenile salmonids to thermal discharges; and seasonal behavior, location and distribution of white sturgeon.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Juvenile chinook salmon in the Columbia River avoid temperatures 8 to 12 degrees above ambient. Adult fish in the Snake River spend 80 to 85 percent of their time below 2 meters, low enough to avoid gas-bubble symptoms.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; fisheries; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: ONCORHYNCHUS Tshawytscha; ACIPENSER TRANSHONTANUS
ADDED KEYWORDS: thermal effluents; gas bubble disease; chinook salmon; salmon; white sturgeons; sturgeons; hydroelectric power plants
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; home range size; migratory patterns; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): radiotelemetry; location and pressure tags; raceways
SAMPLING FREQUENCY: continuous; seasonal; daily; weekly
SUPPORTING DATA COLLECTED: hydrological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Snake River; Columbia

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River
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis
ABSTRACT: Study objectives are to develop
behavioral study methodology and to
investigate the use of fish behavior in
relation to assessment of environmental
impacts on aquatic ecosystems that result
from electric power generation. In one
phase of study, pressure sensitive
radio-frequency tags are being developed
to monitor behavior of adult salmonids in
response to gas supersaturated water
resulting from hydroelectric dams on the
lower Snake River. Additionally, fish
movements around dams and through fish
ladders are being monitored. An ancillary
project includes radio-tracking studies of
juvenile and adult white sturgeon
(ACIPENSER TRANSMONTANUS) to determine
their seasonal location, behavior, and
habits in the Hanford Reach of the
Columbia River. In another phase of study,
behavioral responses of juvenile salmonids
exposed to the simulated interface of a
river-power plant effluent are being
evaluated.

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NBIP ACCESSION NUMBER: WA/111

<879>

INVESTIGATOR(S): Haushild, W.I.
AFFILIATION: USGS
TITLE: The Influence of Industrial and
Municipal Wastes on Estuarine and Offshore
Waters (WA64-068C)
PURPOSE: To determine the effects of changes
in quantity and type of wastes on quality
(physical, chemical, and biological) of
receiving waters, the Duwamish River
estuary, and Puget Sound.
SPONSOR(S): City of Seattle
SPONSOR CATEGORY: city government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: There may have been a
change in dominance from marine to
freshwater algae in Duwamish River Estuary
with little change in marine biomass
during the spring-summer blooms.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river; marine; estuarine
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: pollution control; water
quality
ORGANISMS, MAJOR TYPES: microorganisms;
bacteria; algae
TAXA: SKELETONEMA COSTATUM; THALASSIOSIRA SP;
CYCLOTELLA SP
ADDED KEYWORDS: chlorophyll a; dissolved
oxygen; salt-wedge estuary; algal blooms;

primary productivity; waste water;
industrial chemicals
PRIMARY PARAMETERS INVESTIGATED: biomass;
BOD; distribution; growth; habitat
characterization; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
filtered samples; glass slides
NUMBER OF SAMPLING SITES: 12
SAMPLING FREQUENCY: continuous; seasonal;
weekly;
SUPPORTING DATA COLLECTED: climatological
data; hydrological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Green
River; Duwamish River Estuary; Puget Sound
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: modeling, deterministic
ABSTRACT: Phytoplankton productivity,
standing stock, and related environmental
factors were studied during 1964-66 in the
Duwamish River estuary, at Seattle,
Washington, to ascertain the factors that
affect phytoplankton growth in the
estuary. A knowledge of these factors in
turn permits the detection and evaluation
of the influence that effluent nutrients
have on phytoplankton production.
Nutrients probably were not the primary
factor controlling the timing of
phytoplankton blooms. The consistent
coincidence of blooms with minimum
fresh-water discharge and tidal exchange
during August throughout the study period
indicates that bloom timing probably was
controlled mostly by hydrographic factors
that determine retention time and
stability of the surface-water layer.
REFERENCES: Welch, 1969; Welch, et al, 1972;
Stoner, et al, 1975; Prych, et al, 1975;
Tilley and Haushild, 1975a,b
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DOI
Geological Survey
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NBIP ACCESSION NUMBER: WA/072

<880>

INVESTIGATOR(S): Hershberger, W.R.
AFFILIATION: College of Fisheries, University
of Washington
TITLE: Low Level Chronic Irradiation of Salmon
PURPOSE: To monitor and analyze the effects
of chronic low-level gamma irradiation of
chinook salmon eggs and alevins on all
phases of salmon life history.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1960
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Higher mortality and
decreased growth rate in small fish at
levels above 10 r/day (total dose - 800R).
Also, lower adult return and some
sterility at these levels.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries; radiological;
pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
TAXA: ONCOBRYNCHUS TSHAWYTSCHA
ADDED KEYWORDS: chinook salmon; king salmon;
salmon; radiation; gamma radiation;

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population effects; mortality rates;
genetics
PRIMARY PARAMETERS INVESTIGATED: age;
harvest; mortality; numbers; reproduction;
sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
histological analysis; genetic analysis
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Lake
Washington Ship Canal; Lake Washington
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC 6400; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; multivariate analysis
ABSTRACT: This program was originally planned
and designed to evaluate the effects of
radioactive effluent from nuclear reactors
on the salmon. One of the major problems
posed by placement of nuclear reactors on
major rivers is the long-term effects
exposure to chronic irradiation has on the
chinook salmon, which use the river as a
spawning and nursery area. To evaluate
these effects, chinook salmon eggs and
alevins were exposed to low levels of
gamma irradiation from a Co-60 source from
fertilization until the yolk sac was
completely absorbed. These fish were
compared with a similar stock that was not
exposed to irradiation. The level of
exposure was incrementally increased from
0.5 R/day in 1960 to 1.3 R/day in 1965,
2.8 R/day in 1966, 5.0 R/day in 1967, 10.0
R/day in 1968, 20.0 R/day in 1969, and
50.0 R/day in 1970. After a period of
rearing in freshwater, the fish were
released to migrate to sea where they
compete in the natural environment. The
effects of the irradiation are monitored
during the early development of the fish,
and when the fish return as adults from
the sea. Possible genetic changes are also
monitored in the returning adults and in
progeny.
ADDRESS: Dr. W.K. Hershberger
University of Washington
Seattle, WA 98195
TELEPHONE: (206) 543-7779
NBIP ACCESSION NUMBER: WA/077

<881>
INVESTIGATOR(S): Johnson, R.L.
AFFILIATION: Washington Dept. of Game
TITLE: Status of Bighorn Sheep in Washington
State
PURPOSE: To evaluate annually bighorn
populations in Washington and to necropsy
hunter-harvested sheep for incidence of
parasites and disease.
SPONSOR(S): Washington Dept. of Game
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decreased sightings in

some areas.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: OVIS CANADENSIS
ADDED KEYWORDS: californian bighorn sheep;
sheep; habitat modification; population
effects
PRIMARY PARAMETERS INVESTIGATED: harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
hunter sightings; necropsy of
hunter-harvested animals
SAMPLING FREQUENCY: annual
STUDY SITE(S): WA
ABSTRACT: Decreased sightings of bighorn
sheep in the Sinlahekin area of north
central Washington precipitated a
reevaluation of sheep in this area. Field
work for the study was done during the
hunting season and hunters cooperated in
gathering sighting information as well as
making harvested bighorns available for
examination. Over 3,200 hunters applied
for the five sheep permits authorized for
this unit. Hunters drawn for one of these
permits were notified and sent personal
letters explaining how they could help the
Game Department in reevaluating this sheep
population. Sightings of all bighorns by
hunters and Game Department personnel were
tabulated and harvested bighorns were
necropsied. Results of this study
indicated harvested sheep were in good
physical condition, and the sheep
population larger than previously
reported. No serious parasite or disease
problems were found. The status of bighorn
sheep in the Sinlahekin and other areas of
the state is reevaluated. Also included
are records of native mountain sheep in
Washington. Evidence of former habitation
such as skulls and skeletons or sightings
of native bighorns are tabulated and
located in the state.
REFERENCES: Johnson, 1975
ADDRESS: Rolf Johnson
Dept. of Game
Div. of Game Management
600 N. Capitol Way
Olympia, WA 98504
TELEPHONE: (206) 753-5728
NBIP ACCESSION NUMBER: WA/046

<882>
INVESTIGATOR(S): Katz, M.
AFFILIATION: Parametrix, Inc.
TITLE: Diesel Spill in Guemes Channel
PURPOSE: To determine biological effects,
extents, and duration of diesel spill on
south shore of Guemes Island.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Benthic, littoral
invertebrates rapidly repopulated area
with no lasting effects.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: population; community;
ecosystem

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MANAGEMENT FOCUS: environmental impact;
fisheries; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea

TAXA: GASTROPODA; OLIGOCHAETA; POLYCHAETA

ADDED KEYWORDS: benthic organisms; oil spills

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; habitat

characterization; kill; mortality;

numbers; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

beach transects

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: quarterly; irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Puget Sound; Guemes

Island

TYPE OF DATA: reduced

ABSTRACT: Diesel fuel escaped from barges and was driven by wind and tide onto beach of island. There was a heavy initial kill of littoral invertebrates. Some organisms were affected for about a month, primarily mollusks. Area began to repopulate rapidly and by fall the repopulation was complete. Surveys were taken a year later and repopulation was confirmed. No lasting damage was observed.

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Parametrix, Inc.

4122 Stone Way N.

Seattle, WA 98103

TELEPHONE: (206) 632-8150

NBIP ACCESSION NUMBER: WA/084

<883>

INVESTIGATOR(S): Martinsen, C.F.

AFFILIATION: Washington Dept. of Game

TITLE: Upland Game Bird Research; Habitat

Development and Access: Western Washington

Grouse Study; Waterfowl Research; Hunter

Harvest; Wildlife Stocking

PURPOSE: To determine upland bird

populations, and changes in habitat;

monitor agricultural changes in relation

to game population; determine waterfowl

production, habitat changes, and harvest;

and to develop methods of wildlife

stocking and establishment.

SPONSOR(S): Washington Dept. of Game

SPONSOR CATEGORY: state government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Many species declining due to human interference in past 15 years.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

desert; forest; coniferous; deciduous;

savanna; wetland; mountain; aquatic;

freshwater; stream; river; lake; marine;

estuarine

LEVEL(S) OF STUDY: population; community;

ecosystem

MANAGEMENT FOCUS: endangered species;

wildlife; range; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; annelids; plants; vascular

plants; trees

TAXA: DENDRAGAPUS SPP; CANACHITES SPP

ADDED KEYWORDS: grouse; habitat modification;

management measures; pheasants; forest

grouse; prairie grouse; sharp-tailed

grouse; chukar

PRIMARY PARAMETERS INVESTIGATED: age;

behavior; biomass; distribution;

diversity; emigration; growth; habitat

characterization; harvest; home range

size; immigration; kill; mortality;

migratory patterns; natality; numbers;

physiology; productivity; reproduction;

residues; sex; size/weight; stress;

territory size; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

hunter harvest; census; trapping and

banding; questionnaires; check stations

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: seasonal; weekly; annual

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data;

soils

STUDY SITE(S): WA

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;

percentile; regression/correlation analysis

ABSTRACT: For many years, upland bird studies

have been conducted in eastern Washington.

These studies deal with production and

harvest. The spring of 1974 showed the

pheasant brood-stock index in Regions One

and Two to be unchanged to down slightly

from that of 1973. Populations of

sharp-tail are found in portions of Region

One, Lincoln County, and in Region Three,

Douglas and Okanogan Counties. The prairie

grouse species were once found throughout

the dry land areas of eastern Washington.

During recent times, habitat manipulation

through range rehabilitation and crop land

expansion has resulted in decreased

habitat. This has accelerated in recent

years through rising grain prices and

cattle feeding costs.

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Div. of Game Management

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Olympia, WA 98504

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NBIP ACCESSION NUMBER: WA/033

<884>

INVESTIGATOR(S): Millenbach, C.

AFFILIATION: Washington Dept. of Game

TITLE: Steelhead Populations - Counts and

Catch of Adult Fish at Dams and Hatcheries

PURPOSE: Management of resource.

SPONSOR(S): Washington Dept. of Game

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1938

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: A strong decline in steelhead runs in the Columbia River has been observed.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; river

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact;

fisheries; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish

TAXA: SALMO GAIARDNERI

ADDED KEYWORDS: steelhead trouts; trouts;

management measures; dams

PRIMARY PARAMETERS INVESTIGATED: numbers

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DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
fish ladders; hatcheries; catch records
NUMBER OF SAMPLING SITES: 15-20
SAMPLING FREQUENCY: continuous; seasonal
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Columbia River; Snake
River; Columbia River, major dams
TYPE OF DATA: summarized
ABSTRACT: Steelhead and salmon and others are
counted at fishways at all Columbia River
dams and at a number of other dams and
hatcheries. Catch statistics are developed
from required steelhead punch cards.
ADDRESS: Mr. Cliff Millenbach
Chief of Fisheries Management
Dept. of Game
600 North Capitol Way
Olympia, WA 98504
TELEPHONE: (206) 753-5713
NBIP ACCESSION NUMBER: WA/021

<885>

INVESTIGATOR(S): Nelson, J.R.
AFFILIATION: Dept. of Forestry and Range
Management, Washington State University
TITLE: Evaluation of Alternative Land Uses in
the Ponderosa Pine Zone of Washington
PURPOSE: To monitor a wide spectrum of
ecosystem responses to a variety of
plausible treatments of overstocked mixed
conifer vegetation in order to prescribe
better land uses.
SPONSOR(S): Washington State University; FS;
Washington Dept. of Natural Resources
SPONSOR CATEGORY: federal government; state
government; teaching institution
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Long-term and short-term
changes in tree and understory response to
various logging, residue disposal,
mechanical, chemical, and fire treatment
processes plus animal responses to changes
in habitat.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; range; recreation;
resource planning; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees; shrubs; herbs; grasses
TAXA: CERVUS CANADENSIS; PINUS PONDEROSA;
PSEUDOTSUGA MENZIESII; AGROPYRON SPICATUM;
CALAMAGROSTIS RUBESCENS; CAREX GEYERI;
LUPINUS SPP; BALSAMORHIZA SPP; ARNICA
CORDIFOLIA; STIPA SPP; POA SPP; CEANOETHUS
SPP
ADDED KEYWORDS: cattle; ponderosa pines;
logging; habitat modification; prescribed
burning; elk; bitterbrush; lupines;
balsamroot; snowbushes; fescue;
wheatgrasses; pines; models
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution; growth;
habitat characterization; mortality;
numbers; productivity; reproduction;

residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard forest inventory procedures;
habitat analysis procedures; pellet-group
survey; breeding bird survey
NUMBER OF SAMPLING SITES: 72
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Cascade Mountains;
Colockum Creek watershed; WSU Colockum
Multiple-Use Research Unit
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM System 360 (67);
EAI Hybrid; DEC GT-40; FORTRAN
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
contingency table analysis; multivariate
analysis; non-parametric analysis;
modeling, deterministic; modeling,
stochastic
ABSTRACT: Early ponderosa pine forests were
semi-open and productive of timber with a
dense understory. After years of logging
and grazing the "type" has been reduced to
second growth scrub. Thinning and limited
clearing can only be economically
justified if factors such as increased
browse, better water regulation, and
enhanced esthetic and recreational values
were to be added to the increased timber
production. A computer model to
incorporate these various considerations
was developed. Necessary studies included
soil-vegetation relations, timber response
to thinning treatments, understory
response to overstory manipulations,
secondary responses of cattle and elk to
understory change, the effects of
overstory manipulation on snow
interception and retention, and changes in
esthetic and recreational values. Studies
were conducted in 4 phases: a
soil-vegetation correlation, ecosystem
reactions to vegetation manipulation,
elk-cattle interrelations, and development
of the decision model. Some of these
studies are still in progress.
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Dept. of Forestry and Range
Management
Washington State University
Pullman, WA 99163
TELEPHONE: (509) 335-5297
NBIP ACCESSION NUMBER: WA/001

<886>

INVESTIGATOR(S): Newman, J.H.
AFFILIATION: Western Washington State College
TITLE: Biological Indicators of Air Pollution
PURPOSE: To develop biological indicators
(naturally occurring wildlife) and to
monitor effects and extent of air
pollution.
SPONSOR(S): Western Washington State College;
EPA
SPONSOR CATEGORY: teaching institution;
federal government
DATE OF INITIATION: 1971
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Wildlife species can make
suitable bioindicators as shown by

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identification of fluoride intoxication in
blacktailed deer.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; wetland; mountain

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
wildlife; indicator species; pollution
control

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals

TAXA: ODOCOILEUS HEMIONUS; PEROMYSCUS
MANICULATUS; TYTO ALBA

ADDED KEYWORDS: mule deer; deer mice; barn
owls; air pollution; fluorides;
deer; rodents

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; diversity; growth;
mortality; migratory patterns; natality;
numbers; physiology; reproduction;
residues; sex; size/weight; stress;
toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field collections

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; atmospheric chemistry

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Whatcom County

TYPE OF DATA: raw; reduced; summarized;
literature-derived

ABSTRACT: Many air pollutants are known to
affect the health of domestic animals.
Little information is available on the
effects of air pollutants on wildlife.
This project is concerned with the effects
of air pollution (in particular fluoride)
on wildlife, including health effects and
biological transmission. Fluorosis has
been identified in deer and high levels
have been found in rodents and barn owls.
Studies are being conducted to determine
routes and reservoirs of accumulation in
deer and other animals. Studies are also
being conducted on the effects of fluoride
on birds.

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Huxley College of Environmental
Studies
Western Washington State College
Bellingham, WA 98225

TELEPHONE: (206) 676-3520

NBIP ACCESSION NUMBER: WA/061

<887>

INVESTIGATOR(S): Newman, J.R.
AFFILIATION: Western Washington State College

TITLE: Effects of Human Activity on the Bald
Eagle of Northwest Washington

PURPOSE: To determine the ecology of the
eagle and effect of human activity on the
wintering bald eagle of Washington.

SPONSOR(S): Western Washington State College

SPONSOR CATEGORY: teaching institution

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Bald eagles show
increasing sensitivity to human activity
with increasing age. Certain daily
activities of the eagle are more affected

than others.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream; marine; estuarine

LEVEL(S) OF STUDY: organism; population

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds

TAXA: HALIAEETUS LEUCOCEPHALUS

ADDED KEYWORDS: bald eagles; eagles; census;
habitat modification

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
habitat characterization; home range size;
immigration; kill; mortality; migratory
patterns; numbers; sex; stress; territory
size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
direct observation census

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Whatcom County;
Skojit County; Nooksack River

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis;
multivariate analysis

ABSTRACT: The northern race of the bald eagle
survives in large numbers in local areas.
During the winter, large numbers of bald
eagles migrate to northwest Washington to
feed on migrating (spawning) salmon.
Little information is known about its
winter ecology. These wintering areas are
being subjected to increasing human
activity and development. No information
is available on the effect of this
activity. The major goal of the project is
to determine the winter ecology of the
bald eagle and the impact of human
activity.

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NBIP ACCESSION NUMBER: WA/062

<888>

INVESTIGATOR(S): Page, T.L.

AFFILIATION: Ecosystems Dept., Battelle
Pacific Northwest Laboratories

TITLE: Columbia River Ecology Studies

PURPOSE: To characterize the aquatic ecology
of the Hanford Reach of the Columbia
River. This program is presently
associated with environmental monitoring
for nuclear power plants.

SPONSOR(S): Washington Public Power Supply
System

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Presently noting some
changes in the phytoplankton density
(increasing) and some species shifts.

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ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
microorganisms; algae
TAXA: PHYTOPLANKTON, 103 SPECIES;
TRICHOPTERA, 10 SPECIES; PYRRHOPHYTA;
PROTOZOA, 4 GENERA; PORIFERA; MOLLUSCA, 16
GENERA; PISHES, 39 SPECIES; INSECTA, 33
GENERA; EPHEMEROPTERA; INVERTEBRATES, 46
SPECIES; CYANOPHYTA, 35 SPECIES;
CRUSTACEA, 25 GENERA; CHLOROPHYTA, 18
SPECIES; CHRYSOPHYTA, 49 SPECIES; BRYOZOA,
2 SPECIES; ARACHNIDA, 2 SPECIES; AQUATIC
PLANTS, 6 SPECIES; ANNELIDA, 9 SPECIES;
BENTHIC ORGANISMS, 200 SPECIES
ADDED KEYWORDS: diplostracans; cyclopoidans;
calanoidans; dipterans; trichopterans;
chlorophylls; phaeophytin; phytoplankton;
nuclear power plants; thermal effluents;
diatoms
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; growth; habitat
characterization; kill; numbers;
productivity; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
closing net; gill net; trammel net; seine;
hoop net; trap; trout lines; hook and line
NUMBER OF SAMPLING SITES: 26
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: Benton County;
Franklin County; Columbia River; Hanford
Reach
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis
ABSTRACT: The program is designed to
characterize the Columbia River, near WNP
1-4, by providing base line ecological
data against which plant (nuclear power
station) impact can be measured later.
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Battelle Memorial Institute
P.O. Box 999
Richland, WA 99352
TELEPHONE: (509) 946-2936
NBIP ACCESSION NUMBER: WA/096

<889>

INVESTIGATOR(S): Parsons, L. D.
AFFILIATION: Washington Dept. of Game
TITLE: Big Game Status Report
PURPOSE: Yearly harvest and population
summaries for recommendation of hunting
seasons.
SPONSOR(S): Washington Dept. of Game
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Cyclic from weather
patterns along with changes in habitat

from silvicultural and agricultural
practices.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; deciduous;
savanna; grassland; tundra; arctic;
wetland; mountain
LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region
MANAGEMENT FOCUS: wildlife; range; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals; plants; vascular plants; trees;
shrubs; herbs; grasses; non-vascular
plants; mosses; microorganisms; viruses;
bacteria; fungi; algae; protozoa
TAXA: ODOCOILEUS SPP; CERVUS SPP; ALCES
ALCES; BANGIPER SP; ANTILOCAPRA AMERICANA;
OREANOS SPP; OVIS SPP; URSUS SPP; FELIS
SPP; CANIS SPP
ADDED KEYWORDS: american deer; old world
deer; elks; caribou; pronghorn antelopes;
mountain goats; sheep; bears; cats; dogs;
antelopes; goats; management measures;
black bears; deer
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; harvest; home range
size; immigration; kill; mortality;
migratory patterns; natality; numbers;
physiology; productivity; reproduction;
residues; sex; size/weight; stress;
territory size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field checks; checking stations; locker
forms; questionnaire surveys; biological
studies
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: continuous; seasonal;
weekly; monthly; quarterly; annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; climatological data;
soils; terrain
STUDY SITE(S): WA
COMPUTER AND LANGUAGE: IBM 360/65; IBM
370/158; COBOL
STATISTICS EMPLOYED: mean; mode; median;
percentile
ABSTRACT: Washington annually harvests more
black bear than any other state or
province in the range of this species.
Adjacent states and provinces also have
significant harvests, indicating that the
Pacific Northwest has a higher
concentration of these animals than
anywhere in North America. Western
Washington forest ranges contain many
bears and these cause damage to highly
valuable trees being raised for commercial
timber production. Prior to 1973, liberal
hunting seasons, predator classification,
and professional bear hunting were
utilized in attempting to control this
damage. Data from spring harvests of the
1973-1975 period were compared with those
of 1970-1972, when a much larger area was
open to bear hunting. Detailed summaries
are included of the 1973, 1974, and 1975
spring bear hunts under the unit concept.
Bear tag sales have increased by 82%
showing increased hunter interest. A new
book on bear hunting was published. It has
provided good crippling loss data. A
Washington State Hound Council list of
member clubs and officers is included. The
spring bear hunt should be continued in

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1976, modifying units where necessary to concentrate on areas where sports hunting can be most effective in controlling populations causing damage. After three years of trial, the unit concept for spring bear hunting should be recognized as a permanent management program.

REFERENCES: Parsons and Poelker, 1975

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TELEPHONE: (206) 753-5728

NBIP ACCESSION NUMBER: WA/005

<890>

INVESTIGATOR(S): Rickard, W.H.
AFFILIATION: Ecosystems Dept., Battelle
Pacific Northwest Laboratories
TITLE: Arid Lands Ecology (ALE)
PURPOSE: Biomonitoring and research and education in the shrub-steppe ecosystem of northwestern U.S.

SPONSOR(S): ERCA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1968

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Thirty years of time have contributed little to improvement of plant species composition on severely disturbed soil.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species; radiological; range; resource
planning; power generation; right-of-way

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; birds; mammals;
invertebrates; insecta; mollusca; plants;

vascular plants; shrubs; herbs; grasses
TAXA: BRANTA CANADENSIS; ODOCCILEUS HEMIONUS;

FULICA AMERICANA; ARDEA HERODIAS;

PEROGNATHUS PARVUS; TENEBRIONIDAE

ADDED KEYWORDS: darkling beetles; beetles;
canada geese; geese; mule deer; deer;
american coots; great blue herons; great
basin pocket mice; pocket mice; mice;
coots; herons; management measures

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; diversity; growth;
habitat characterization; harvest; home
range size; migratory patterns; numbers;
physiology; productivity; reproduction;
residues; sex; size/weight; stress;
territory size; toxicity; primary
production and consumer biomass

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
trap-mark-recapture; sight census

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: seasonal; monthly; annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;

soils; terrain

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Benton County;

Franklin County; Columbia River; Hanford
Reservation

TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
modeling, deterministic

ABSTRACT: This project concerns terrestrial
ecology of the shrub-steppe ecosystem in
the Pacific Northwest. The main study area
is the Arid Lands Ecology (ALE) Reserve, a
34,000 hectare tract of undeveloped land
representative of vegetation-types of the
shrub-steppe region and the adjacent
Hanford Works Reservation, on which
research and development is conducted by
laboratory contractors for ERDA.
Ecological studies are as broadly based as
possible using an ecosystem approach to
landscape with teams of investigators
representing a variety of disciplines.
Field studies are complemented by
manipulation of environments and by
laboratory experimentation.

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NBIP ACCESSION NUMBER: WA/074

<891>

INVESTIGATOR(S): Salo, E.O.
AFFILIATION: Fisheries Research Institute,
University of Washington
TITLE: Monitoring of Salmonid Outmigration of
Hood Canal

PURPOSE: Juvenile salmon of Hood Canal use
the area under development by the U.S.
Navy for its Trident Submarine Support
Facility as a principal migration route.
The effects are monitored.

SPONSOR(S): USN

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: No changes noted to date
due to facility operations.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine;
estuarine

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: environmental impact;
fisheries; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: ONCORHYNCHUS KETA; ONCORHYNCHUS

TSHAWYTSCHA; ONCORHYNCHUS KISUTCH;

ONCORHYNCHUS GORBUSCHA

ADDED KEYWORDS: dredging; construction;
habitat modification; chum salmon; chinook
salmon; coho salmon; pink salmon; salmon

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; habitat characterization;

immigration; mortality; migratory
patterns; numbers; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
beach seining; tow net;

mark-and-recapture; observation

NUMBER OF SAMPLING SITES: numerous

SAMPLING FREQUENCY: seasonal

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SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data;
water quality data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Kitsap County; Hood
Canal

COMPUTER AND LANGUAGE: CDC/6400; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance;
regression/correlation analysis

ABSTRACT: Hood Canal is an important
passageway and rearing area for four
species of salmon (chum, chinook, coho,
and pink) and for steelhead and cutthroat
trout. The United States Navy is
constructing the Trident submarine base on
the shoreline of the Bangor Annex, which
is located in Hood Canal about 5 miles
north of Seabeck, Washington. The
outmigrations of juvenile salmonids in
Hood Canal were monitored from March to
June 1975. This was the first phase of a
5-year study to assess the impact of
Trident pier construction on the
migrations of juvenile salmon. Our
principal objectives are to: (1) determine
the timing of migrations, diurnal
movements, and relative abundance; (2)
study the effects of piers on salmonid
migrations; and (3) measure environmental
conditions. The Big Beef Creek Fish
Research Station which is located on Hood
Canal is used as the base of operations.
Beach-seine hauls were made at weekly
intervals during the period of the spring
outmigration at four stations on the
shoreline of the Bangor Annex and at two
stations on the west side of Hood Canal
which served as control areas. Tow net
transects were conducted offshore. Tows
were made parallel to each shoreline and
diagonally across Hood Canal. Visual
surveys from small boats were conducted
along the shoreline in some areas. Chum
salmon smolts were the most abundant
salmonid and the peak of their migration
occurred during mid- to late May. Salmonids
were concentrated around the existing
piers; therefore, we plan to intensify our
studies on the attraction of salmonids to
pier areas in the spring of 1976.

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NBIP ACCESSION NUMBER: WA/056

<892>

INVESTIGATOR(S): Salo, E.O.

AFFILIATION: Fisheries Research Institute,
University of Washington

TITLE: Effects of Logging on the Fishery
Resources of the Clearwater River System

PURPOSE: To study the effects of logging on
the spawning, rearing, and ultimate
survival of anadromous salmonids.

SPONSOR(S): Washington Dept. of Natural
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Landslides caused a
decrease in biological production as a
result of sedimentation but recovery was
rapid after flush.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; aquatic; freshwater;
stream

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: fisheries; forestry;
resource planning; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; insecta; plants;
vascular plants; trees

TAXA: ONCORHYNCHUS KISUTCH; ONCORHYNCHUS

TSHAWYTSCHA; SALMO GAIARDNERI; SALMO CLARKI

ADDED KEYWORDS: primary productivity;
secondary productivity; logging; salmon;
trouts; coho salmon; chinook salmon;
rainbow trouts; cutthroat trouts;
population effects; habitat modification;
natural catastrophe

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; BOD; distribution;
diversity; emigration; growth; habitat
characterization; immigration; mortality;
migratory patterns; reproduction; stress;
toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
McNeil gravel samplers; Neill insect
samplers; seines; fyke nets

NUMBER OF SAMPLING SITES: numerous and
changeable

SAMPLING FREQUENCY: seasonal;

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
hydrological data; soils; terrain; water
quality data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Jefferson County;
Clearwater River; Stequaleho Creek

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: CDC/6400; FORTRAN

STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; non-parametric analysis

ABSTRACT: Sedimentation of streams producing
salmon and trout on the west side of the
Olympic Peninsula has caused concern.
Whether natural or man-caused, this
sedimentation has influences on fishery
resources ranging from negligible to
critical, depending on the state of the
life history of the fish and the intensity
of sedimentation. Research has shown that
high levels of fine silt (less than 3.3 mm
and 0.83 mm diameter) in spawning gravels
of salmon and trout adversely affect the
survival of eggs and embryos. On May 5,
1971, landslides were caused by the
construction of logging roads in the
watershed of Stequaleho Creek, a tributary
of the Clearwater River, Jefferson County,
Washington. The Fisheries Research
Institute and the College of Forest
Resources, in contract with the State of
Washington Department of Natural
Resources, are conducting studies of the
impact of these slides, as well as
naturally-occurring ones, on the fishery
resources of Stequaleho Creek and other

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tributaries of the Clearwater River.
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<893>

INVESTIGATOR(S): Schell, W.R.
AFFILIATION: College of Fisheries, University of Washington
TITLE: A Study of the Heavy Metals Concentration in the Aquatic Environment near the West Point Sewage Treatment Plant
PURPOSE: Baseline study for trace metals covering pelagic and intertidal biota, water, and sediment in sewage treatment areas compared with unpolluted control areas.
SPONSOR(S): City of Seattle
SPONSOR CATEGORY: city government
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Heavy metal concentrations did not exceed tentative EPA guidelines.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; estuarine
LEVEL(S) OF STUDY: organism; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; plants; vascular plants; herbs; non-vascular plants; microorganisms; algae
TAXA: ULVA SPP; FOCUS SPP; CEPHALOPODA SP; ECHINODERMATA
ADDED KEYWORDS: echinoderms; heavy metals; cadmium; lead; zinc; chromium; arsenic; mercury; cobalt; copper; decapods; sewage treatment; waste water; benthic organisms; sediments
PRIMARY PARAMETERS INVESTIGATED: size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): otter nets; Isaacs Kidd nets; plankton nets; Battelle large volume water sampler; gravity corer; Edmondson corer; Naskin bottles; beach seines
NUMBER OF SAMPLING SITES: 15
SAMPLING FREQUENCY: seasonal; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; hydrological data; water quality data
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Puget Sound
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC/6400; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis
ABSTRACT: Trace metal studies in the Central Puget Sound near METRO's West Point treatment plant were studied.
Consideration of trace metal transport

within the Elliot Bay and Central Puget Sound includes spatial-time distribution and phase fractionation from ambient water. Brief summaries of the results are presented in the individual progress reports prepared by the program leaders. Analyzed samples included water, biota, and sediment collected during joint cruises. Interpretation of the results collected up to this point will be premature and it must await a more complete analysis of all the factors that control the heavy metal behavior, i.e. the source intensity, the location, the hydrodynamics, the mixing conditions of the receiving waters, and the sorption/desorption mechanisms operating in the water column and sediment. Tentatively, it could appear from the analyses of water and particulate matter that the West Point outfall introduces little in the way of heavy metals to Puget Sound. The lack of obviously higher concentrations of trace metals in West Point water as compared to other stations further removed from major sewer outfalls, illustrates the difficulty in sampling a highly transient system such as Puget Sound. Data on Hg, Pb, and Zn content of organisms show higher concentrations near the West Point outfall, but at levels within the tentative guidelines recommended by EPA. In general, the data collected up to now are preliminary and background areas must be analyzed before conclusions are drawn. Sedimentation rate measurements using Lead-210 dating in combination with trace metal analysis of sediment cores provides a unique means of ascertaining possible trace metal enrichment in the top sediments. A large portion of this study has been devoted to the development of the analytical methodology which is continuously checked by intercalibration experiments.

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<894>

INVESTIGATOR(S): Songer, C.M.
AFFILIATION: Dept. of Biology, Western Washington State College
TITLE: Survival and Movement of the Western Big-Eared Bat, PLECOTUS TOWNSENDII, in Western Washington
PURPOSE: To continue monitoring of individually banded populations at 5 cave sites to determine survival, movement, and habitat selection.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1964
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Decline in population during period of banding but gradual recovery since termination of banding.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous
LEVEL(S) OF STUDY: organism; population

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MANAGEMENT FOCUS: endangered species;
indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: PLECOTUS TOWNSENDII

ADDED KEYWORDS: western big-eared bats;
vespertilionid bats; hibernation;
survival; caves; population effects

PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
home range size; migratory patterns;
natality; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
counts; banding

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna;
climatological data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Whatcom County;

Skagit County; Cowlitz County; Skamania
County; Klickitat; Trout Lake talus caves,
Mt. St. Helens lava caves; North Chuckanut
talus caves; Clyde Senger talus caves

TYPE OF DATA: raw; reduced; summarized

COMPUTER AND LANGUAGE: IBM 360/40; PL/1

STATISTICS EMPLOYED: mean; mode; median;
regression/correlation analysis

ABSTRACT: Over 800 PLECOTUS TOWNSENDII have
been banded near Bellingham, Cougar, and
Trout Lakes, Washington. Known survival of
133 females from Cougar is 46 per cent, 25
per cent, 13 per cent, and 10 per cent for
one, two, three, and four years,
respectively, after banding. The known
survival of males is lower. Twenty-five
per cent of 767 bats of both sexes from
all banding sites are known to have
survived for one year. Bands may cause
perforation of the wing membrane,
swelling, and sometimes infection. This
undoubtedly results in reduced survival of
banded individuals. Individuals are known
to move to other sites up to five miles
away even when it is snowing or below
freezing following the disturbance of
banding. Apparently, there is also
spontaneous movement from one cave to
another during the winter months. The
recovery rate at the site of banding, or
in nearby caves where bats are never seen
in large numbers is much higher than
recovery from other hibernacula several
miles away. Thus, it appears that several
partially isolated populations may exist
in one area. Recaptures from April to
August are from building at lower
elevation within 40 miles of the
hibernacula. Small numbers of bats have
been seen in the hibernacula area from
August to October.

REFERENCES: Senger, 1969; Senger, 1970;
Senger, 1972; Senger, 1974

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NBIP ACCESSION NUMBER: WA/017

<895>

INVESTIGATOR(S): Stober, Q.J.

AFFILIATION: University of Washington

TITLE: Ecological Assessment of the Effects
of Grand Coulee Pumped Storage Power
Generation on the Fishery Resources of
Banks Lake, Washington

PURPOSE: To establish an ecological baseline
for Banks Lake and determine the effects
of pump storage on the sport fishery.

SPONSOR(S): BR

SPONSOR CATEGORY: federal government

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Temperature and nutrient
gradient, primary production gradient,
seasonal changes in fish distributions,
water level fluctuations, and water
flushing rates all vary at times.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: FISHES, 19 SPECIES; PERCA FLAVESCENS;
STIZOSTEDION VITREUM; COREGONUS

CLUPEAPORMIS; ONCORHYNCHUS NERKA

ADDED KEYWORDS: yellow perch; lake
whitefishes; kokanee salmon; walleyes;
benthic organisms; chlorophyll a;
phytoplankton; zooplankton; drawdown;
primary productivity; population effects;
habitat modification; pumped storage;
irrigation

PRIMARY PARAMETERS INVESTIGATED: age;
distribution; diversity; growth; habitat
characterization; mortality; migratory
patterns; sex; size/weight; stress

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: seasonal; monthly; weekly

SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data;
hydrological data; water quality data

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Grant County; Banks
Lake; Grand Coulee Dam

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: mean; mode; median;
analysis of variance; analysis of
covariance; regression/correlation analysis

ABSTRACT: The overall objective of this
investigation was to establish an
ecological baseline for the multiple uses
of Banks Lake as an irrigation water
equalizing reservoir, a pumped storage
forebay reservoir, and an important sport
fishery resource. Study to date has
determined the characteristics of the lake
induced by irrigation water input and
withdrawal, the primary function of the
lake in the Columbia Basin Irrigation
Project. Routine operation of pump
generation units has not occurred due to
technical difficulties. Preliminary
testing of the units has yielded a minimal
amount of ecological data on which to
predict environmental impacts. Detailed
studies have focused on the physical and
chemical limnology, fish abundance and
distribution, and entrainment of larval,
juvenile, and adult fishes.

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NBIP ACCESSION NUMBER: WA/099

<896>

INVESTIGATOR(S): Taber, R.D.
AFFILIATION: College of Forest Resources,
University of Washington
TITLE: The Fauna of the Coniferous Forest,
Washington
PURPOSE: To elucidate basic population
biology of elk natural populations and
ecological consequences of natural and
man-caused changes.
SPONSOR(S): University of Washington;
Washington Dept. of Game; FS
SPONSOR CATEGORY: federal government; STATE
government; teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Rocky Mountain elk
population is increasing in Cedar River
watershed study area at the rate of 10-15%
per year.
ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; wetland
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; forestry;
indicator species; resource planning;
pollution control; water quality;
right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; birds; mammals;
plants; vascular plants; trees; shrubs;
herbs; grasses
TAXA: CERVUS ELAPHUS
ADDED KEYWORDS: rocky mountain elk; elk;
species introduction; population effects
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth; habitat
characterization; home range size;
mortality; migratory patterns; natality;
numbers; physiology; reproduction;
residues; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Lincoln index; pellet group index
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain
STUDY SITE(S): WA
GEOGRAPHIC DESCRIPTION: King County; Cedar
River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: CDC 6400; FORTRAN
STATISTICS EMPLOYED: mean; mode; median;
percentile; analysis of variance; analysis
of covariance; regression/correlation
analysis; contingency table analysis;
multivariate analysis; non-parametric
analysis; non-linear estimation; modeling,
deterministic
ABSTRACT: Rocky Mountain elk populations were
introduced in western Washington
1912-1920. Elk are spreading and
increasing. Our study aims to determine

landscape use patterns, impact on plant
and animal associates, and processes
through which elk populations are
eventually regulated.

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NBIP ACCESSION NUMBER: WA/035

<897>

INVESTIGATOR(S): Tillman, M.F.
AFFILIATION: Northwest Fisheries Center, NMFS
TITLE: Cetacean Task Unit
PURPOSE: To assess the status of exploited
and protected species of whales through
collection and analysis of enumerative,
distributional, and biological data.
SPONSOR(S): NMFS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1958
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Recovery of gray whale to
level of 11,000 adults as a result of
protection by international agreement.
ECOSYSTEM OR BIONE TYPE(S): aquatic; marine;
coastal
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: ESCHRICHTIUS ROBUSTUS; MEGAPTERA
NOVAEGLIAE; OBCINUS ORCA
ADDED KEYWORDS: gray whales; humpback whales;
killer whales; whales; legal regulation;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
growth; immigration; mortality; migratory
patterns; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
land station survey; vessel survey; aerial
survey; photointerpretation
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
climatological data; hydrological data
STUDY SITE(S): CA; WA; AK
GEOGRAPHIC DESCRIPTION: Monterey (CA); Puget
Sound (WA)
TYPE OF DATA: summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis;
contingency table analysis; non-parametric
analysis; non-linear estimation; modeling,
deterministic
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: WA/006

<898>

INVESTIGATOR(S): Wiberg, C.A.
AFFILIATION: Dept. of Biology, Central
Washington State College
TITLE: Cispus Educational and Research
Natural Area

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Standard Federal Region 10
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PURPOSE: To describe and monitor an 8000-acre natural area for the Cispus Environmental Learning Center.

SPONSOR(S): Cispus Environmental Learning Center; Central Washington State College

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Still in initial descriptive state, but observed changes due to use of area for environmental education.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; aquatic; freshwater; stream; river

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: environmental impact; wildlife; forestry; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; reptiles; fish; birds; mammals; invertebrates; insects; plants; vascular plants; trees; shrubs; herbs; grasses; lichens; liverworts; microorganisms; fungi

TAXA: PLANTS, 218 SPECIES; FUNGI, 185 SPECIES; AMPHIBIA, 6 SPECIES; REPTILES, 4 SPECIES; INSECTA, 105 FAMILIES

ADDED KEYWORDS: habitat modification

PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; habitat characterization; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; trapping

NUMBER OF SAMPLING SITES: highly variable

SAMPLING FREQUENCY: seasonal; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; soils; terrain

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Lewis County; Cispus River; Yellow Jacket River; Covell Creek

TYPE OF DATA: raw; summarized; literature-derived

STATISTICS EMPLOYED: mean; mode; median

ABSTRACT: Data is being collected on an 8,000 acre natural area (1200-5000 ft.

elevation) in the Cascade Range in Washington state. Initial effort is concentrated on the descriptive;

vegetative communities (vascular plants, bryophytes, fungi), amphibians, reptiles, birds, mammals, stream ecosystems (emphasis on insects), invertebrates (emphasis on insects), soils, and meteorological data.

The degradation of the ecosystem caused through use in teaching is also being monitored. The study is being carried on jointly by the Central Washington State College Biology Department and the Cispus Environmental Learning Center staff.

REFERENCES: Wiberg, 1973

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NBIP ACCESSION NUMBER: WA/043

<899>

INVESTIGATOR(S): Wildung, R. E.

AFFILIATION: Battelle Pacific Northwest Laboratories

TITLE: Influence of Soils and Sediments on the Chemical Behavior, Transport, and Biological Availability of Pollutants Arising from Energy Production

PURPOSE: To define effects of irrigation, fertilization, herbicide treatment, trace metals, and climatic factors on soil microbial decomposition processes and carbon flow.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in types, numbers, respiration rate, and ability to decompose organic matter with time and pollutant exposure.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; grassland

LEVEL(S) OF STUDY: organism

MANAGEMENT FOCUS: environmental impact; indicator species; radiological; pollution control

ORGANISMS, MAJOR TYPES: plants; vascular plants; shrubs; herbs; microorganisms; bacteria; fungi

TAXA: POA SECUNDA; AGROPYRON SPICATUM;

ARTEMESIA TRIDENTATA

ADDED KEYWORDS: irrigation; fertilizers; herbicides; pesticides; trace elements; soil microorganisms; decomposition; decomposers; climate; sagebrush; wild wheats

PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; habitat characterization; harvest; numbers; physiology; stress; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plate counts; litter decomposition

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: weekly; monthly

SUPPORTING DATA COLLECTED: associated microorganisms; soils

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Benton County; Hanford Project

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: WA/109

<900>

INVESTIGATOR(S): Wischnofsky, M. G.

AFFILIATION: FS

TITLE: Investigation of Big Game and Ranges

PURPOSE: To collect and analyze data for management plans.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

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WASHINGTON

Standard Federal Region 10

Fish and Wildlife Service Region 1

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<900> CONT.

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: The elk numbers are static, deer have declined, and snowshoe hares hit a cyclic low in 1970.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; grassland

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact;

wildlife; range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;

mammals; plants; vascular plants; shrubs

TAXA: CERVUS CANADENSIS; ODOCOLEUS HEMIONUS;

LEPUS AMERICANUS; DENDRAGapus FULIGINOSUS;

SALIX spp

ADDED KEYWORDS: management measures; habitat

modification; snowshoe hares; deer; hares;

rabbits; rocky mountain elk; willows

PRIMARY PARAMETERS INVESTIGATED: age; habitat

characterization; harvest; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

circular pellet-group plots

NUMBER OF SAMPLING SITES: 300

SUPPORTING DATA COLLECTED: associated fauna;

climatological data; soils

STUDY SITE(S): WA

GEOGRAPHIC DESCRIPTION: Yakima County;

Kittitas County; American Lake

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Pellet-group data indicate that elk

numbers are static, deer have declined, and snowshoe hares have reached the bottom of a down cycle. A sample of 300 plots containing 3 acres was read in the spring and fall of 1970. These readings were analyzed and compared with ones from the four previous years. Doe deer have been underharvested the last five years. The average life span of mule deer is seven years in the wild. Preservation from waste is a primary management consideration for this renewable resource. Observations of "hooting" blue grouse increased from 10 along transects in the spring of 1969 to 17 in 1970. Twenty-two of these observations were made in 1968. Age, form, and availability information was taken on 1050 willow plants during the spring of 1970. The willow population of Naches District is in very poor condition. Additional cutting and planting projects are needed to improve availability and distribution. Another observation of a decrease in big-game forage via scrub tree invasion of grassland was made near American Lake. These vegetation types should be restored to parkland.

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NBIP ACCESSION NUMBER: WA/034

WEST VIRGINIA
Standard Federal Region 3
Fish and Wildlife Service Region 5
(SEE ALSO 418, 689, 695, 733, 851)

<901>

INVESTIGATOR(S): Allen, T.J.
AFFILIATION: West Virginia Dept. of Natural Resources
TITLE: White-Tailed Deer Investigations
PURPOSE: To monitor population growth, mortalities, and physiological parameters.
SPONSOR(S): FWS; State of West Virginia
SPONSOR CATEGORY: federal government; state government
DATE OF INITIATION: 1949
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Large increase of deer population.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: ODOCOLEUS VIRGINIANUS
ADDED KEYWORDS: white-tailed deer; deer; management measures; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; growth; harvest; kill; mortality; numbers; productivity; reproduction; sex; size/weight; fawns per adult female
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): harvest data; mortality data; physiological data
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated flora; climatological data
STUDY SITE(S): WV
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN
STATISTICS EMPLOYED: modeling, deterministic
ABSTRACT: Detailed information on scope and type of mortality may help explain the apparent failure of deer populations in some areas to maintain themselves, or increase, while in other areas the herds continue to build despite lower productivity and higher reported mortalities. Prior research has shown regional differences in natality and mortality. However, the relationship between population levels and birth-death rates are under further study.
REFERENCES: Allen, 1973
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TELEPHONE: (304) 636-1767 ext. 42
NBIP ACCESSION NUMBER: WV/016

<902>

INVESTIGATOR(S): Carvell, K.L.
AFFILIATION: Div. of Forestry, West Virginia University
TITLE: Environmental Effects of Herbicidal Management on Electric Transmission Line Corridors
PURPOSE: To discover the total environmental impact of long-term herbicide treatment on electric transmission line corridors.
SPONSOR(S): Electric Power Research Institute

SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes have occurred in the composition of plant communities on electric transmission lines that have been under herbicidal management for many years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; aquatic; freshwater; stream
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; water quality; right-of-way
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; trees; shrubs; herbs; grasses; non-vascular plants; lichens
ADDED KEYWORDS: pesticides; habitat modification; management measures
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; growth; mortality
NUMBER OF SAMPLING SITES: 81
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated flora; hydrological data; water quality data
STUDY SITE(S): WV; NH; NJ; VA; LA; MN; OR; CA; GA
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: analysis of variance; regression/correlation analysis
ABSTRACT: Plant communities on herbicidally-managed electric transmission line corridors, under both selective spraying and blanket spraying, differ in many respects from plant communities on adjacent old fields which have no herbicide history. Herbicidally-managed plant communities are poorer in the number of perennial herbs, particularly showy summer and fall wildflowers. Plant communities spreading most rapidly on blanket-sprayed rights-of-way are those that invade new areas by root extension. These include many species of ferns, some shrubs, and certain perennial plants that are resistant to the herbicide program. Plant communities on selectively-sprayed line areas have vegetation much more similar to that of adjacent natural plant communities where herbicide is not used, but this depends on the target plants removed in spraying.
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NBIP ACCESSION NUMBER: WV/001

<903>

INVESTIGATOR(S): Hall, J.S.
AFFILIATION: Dept. of Biology, Albright College
TITLE: The Status of the Indiana Bat, MYOTIS SODALIS, and the Virginia Big-Eared Bat, PLECOTUS TOWNSENDII VIRGINIANUS, in the Monongahela National Forest, West Virginia
PURPOSE: To determine the distribution and population numbers of the endangered species, MYOTIS SODALIS and PLECOTUS TOWNSENDII VIRGINIANUS, in the Monongahela National Forest; and to make recommendations for their protection and conservation.

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WEST VIRGINIA
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SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: A marked decrease in population numbers of the Indiana bat and the Virginia big-eared bat in West Virginia from numbers known to occur in the mid 1950's.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: population; region
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: MYOTIS SODALIS; PLECOTUS TOWNSENDII
ADDED KEYWORDS: Indiana bats; Virginia big-eared bats; bats; caves; life history; management measures; CENSUS
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; mortality; migratory patterns; numbers; sex; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observations; photographic census; banding recovery
NUMBER OF SAMPLING SITES: 200 caves
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Monongahela National Forest
TYPE OF DATA: raw; reduced; summarized; literature-derived
ABSTRACT: MYOTIS SODALIS tends to aggregate in large numbers for hibernation in only a few caves. They are more sensitive to disturbance during hibernation than other species. Hibernating populations of this species are decreasing and disappearing at an alarming rate, especially in the eastern part of the range. This study provides information on the occurrence, distribution, and population numbers of hibernating colonies of MYOTIS SODALIS and PLECOTUS TOWNSENDII in caves within and adjacent to the Monongahela National Forest, West Virginia. Present data are compared to past known occurrences of the species in the area to indicate changes that are occurring in distribution and population. Recommendations are provided which would help to insure the protection of both of these endangered species in West Virginia.
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NBIP ACCESSION NUMBER: PA/043

<904>

INVESTIGATOR(S): Hocutt, C.H.
AFFILIATION: University of Maryland
TITLE: Fishes of the Greenbrier River, West Virginia

PURPOSE: To describe the distribution and general ecology of the fishes of the Greenbrier River and to present a review of stream evolution in the central Appalachians.

SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Natural introductions of biota via stream capture.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 70 SPECIES
ADDED KEYWORDS: natural introductions; evolution; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; emigration; immigration
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine; electrofishing gear
NUMBER OF SAMPLING SITES: 25
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; water quality data
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Monroe County; Greenbrier County; Pocahontas County; Mingo County; Greenbrier River Drainage; Upper Kanawha River; New River
TYPE OF DATA: raw; reduced; summarized; literature-derived
ABSTRACT: The upper Kanawha (New) River system played a major role in the distribution and dispersal of fishes since the Pliocene. The Greenbrier River, tributary to the New, was involved in numerous stream captures and transfers of fauna. For this reason, a field investigation of the fishes was initiated. A supplementary literature review is being conducted.
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TELEPHONE: (301) 689-3115
NBIP ACCESSION NUMBER: MD/031

<905>

INVESTIGATOR(S): LaBuy, J.L.
AFFILIATION: EPA
TITLE: Biological Survey of Rock Creek from Rockville, Md. to the Potomac River; Biological Survey of the Monocacy River and Tributaries from Gettysburg, Pa. to the Md. Route 28 Bridge; Biological Survey of Antietam Creek and some of its Tributaries from Waynesboro, Pa. to Antietam, Md.; and Biological Survey of the Upper Potomac River and Selected Tributaries
PURPOSE: These four studies listed above were primarily benthic studies with the purpose of developing adequate water quality data to be used in developing a comprehensive plan for the Potomac Basin. Projects made

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use of known data plus chemical, biological, and bacteriological analyses plus mine drainage and hydrological studies.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Improvements have occurred in the Potomac Basin, particularly in the upper basin.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; shellfish; annelida; microorganisms; bacteria; algae
TAXA: FISHES; DECAPODA; AMPHIFODA; ISOPODA; TRICHOPTERA; DIPTERA; EPHEMEROPTERA; COLEOPTERA; PLECOPTERA; ODONATA; NEUROPTERA; ANNELIDA; PLATYHELMINTHES; MOLLUSCA
ADDED KEYWORDS: benthic organisms; management measures
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber sampler; Ekman dredge; Petersen dredge
NUMBER OF SAMPLING SITES: 59
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated flora; hydrological data; water quality data
STUDY SITE(S): WV; MD; VA
GEOGRAPHIC DESCRIPTION: Potomac River; Shenandoah River; Antietam Creek; Rock Creek; Monocacy River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Our purpose is to disseminate data resulting from several biological studies conducted in the Potomac River Basin upstream from Great Falls, Maryland. Studies on the North Branch of the Potomac River and tributaries were specifically designed to supplement the "Interim Report-Mine Drainage Pollution of North Branch of the Potomac River 1966-1968" and the report on "Water Quality in the North Branch of the Potomac River between Cumberland and Luke, Maryland." Findings of these studies plus other sampling efforts provide an insight into the biological response of the aquatic environment to acid mine drainage and organic pollution in selected stream reaches. The community of bottom macro-organisms was selected as the indicator of the biological conditions in the stream since they serve as the preferred food source for higher aquatic forms and exhibit similar reactions to adverse stream conditions. The combination of limited locomotion and life cycles of one year or more for most benthic species

provide a long-term indicator of stream water quality.
REFERENCES: LaBuy, 1968
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EPA
303 Methodist Building
Wheeling, WV 26003
TELEPHONE: (304) 233-1272
NBIP ACCESSION NUMBER: WV/028

<906>

INVESTIGATOR(S): Lesser, W.A.
AFFILIATION: West Virginia Dept. of Natural Resources
TITLE: Aerial Beaver Census
PURPOSE: To determine population trends of beaver for the purpose of making trapping season recommendations.
SPONSOR(S): West Virginia Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Inconclusive to date, although there was an increase in beaver population for the 1973-1974 year.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland; aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: CASTOR CANADENSIS
ADDED KEYWORDS: beavers; trapping; population effects
PRIMARY PARAMETERS INVESTIGATED: distribution; harvest
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial survey; winter food cache counts
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Allegheny Plateau; Grant County; Tucker County; Randolph County Pendleton County
TYPE OF DATA: raw
ABSTRACT: The purpose of this survey is to determine trends in populations of beavers through aerial observation of food caches as a population index. This is done to correlate numbers of beavers existing from year to year with numbers of beavers trapped so as to make recommendations on trapping seasons. To date data are inconclusive but for the 1973-74 year a slight rise was indicated in beaver populations.
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NBIP ACCESSION NUMBER: WV/013

<907>

INVESTIGATOR(S): Lesser, W.A.
AFFILIATION: West Virginia Dept. of Natural Resources
TITLE: Big Game Annual Harvest Data
PURPOSE: To monitor the annual harvest of white-tailed deer, black bear, wild turkey, beaver, and fisher.
SPONSOR(S): West Virginia Dept. of Natural

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Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Increase in harvest of all species listed.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; wetland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: ODOCOLEUS VIRGINIANUS; URSUS AMERICANUS; MELEAGRIS GALLOPAVO; CASTOR CANADENSIS; MARTES PENNANTI
ADDED KEYWORDS: deer; black bears; turkeys; beavers; fishers; management measures; trapping; bears
PRIMARY PARAMETERS INVESTIGATED: age; harvest; kill; mortality; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): compulsory reporting system for hunters; sex and age data
NUMBER OF SAMPLING SITES: statewide
SAMPLING FREQUENCY: annual
STUDY SITE(S): WV
TYPE OF DATA: summarized
ABSTRACT: Comparative information is being compiled to facilitate the establishment of population trends of West Virginian big game. This is correlated with seasonal harvests of the big game for the purposes of obtaining information on net population trends and for providing indices for the regulation of hunting seasons.
REFERENCES: Allen, et al, 1974
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NBIP ACCESSION NUMBER: WV/014

<908>

INVESTIGATOR(S): Menser, H.A.; Bennett, O.L.
AFFILIATION: West Virginia University;
Southern West Virginia Regional Health Council
TITLE: Demonstration of Management Practices for the Disposal of Leachate from a Sanitary Landfill
PURPOSE: To study the feasibility of a land disposal system for the decontamination of leachate drainage from a municipal solid waste sanitary landfill.
SPONSOR(S): USDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Elimination of understory vegetation in sprayed leachate area and accumulation of toxic metals in native flora.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; ecosystem
MANAGEMENT FOCUS: environmental impact;

indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; herbs
TAXA: PESTUCA RUBRA; PHALARIS ARUNDINACEA; DACTYLIS GLOMERATA; BROCHUS INERMIS; CYNODON DACTYLON; PINUS STROBUS; PINUS VIRGINIANA; ACER RUBRUM; ROBINIA PSEUDOACACIA; SASSAFRAS ALBIDUM; QUERCUS ALBA; QUERCUS PRINUS; QUERCUS PALUSTRIS
ADDED KEYWORDS: management measures; leachates; contaminants; waste water; heavy metals; irrigation; manganese; zinc; nickel; copper; cobalt; habitat modification
PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; growth; harvest; mortality; physiology; residues; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): suction cup lysimeters; grab sampling
NUMBER OF SAMPLING SITES: 400-500
SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Brush Creek; Mercer County Landfill
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; median; analysis of variance
ABSTRACT: The research tests the use of soils and vegetation for improving the quality of leachate drainage from a sanitary landfill, and measures the environmental and ecological impact of leachate applied by spray irrigation. Experimental areas study the effects of lime and phosphate treatment of sprayed areas on toxic heavy metals in the soil, in ground water, and in native and cultivated plants. Lagoon aeration to improve air quality and effects of sprays on soil permeability are investigated. Results show decreases in chemical oxygen demand, electroconductivity, and soil acidity as leachate water passed through the system. Calcium, magnesium, sodium, and potassium in soils increased. Plants accumulated manganese, zinc, nickel, copper, and cobalt. Sprays eliminated understory species.

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NBIP ACCESSION NUMBER: WV/021

<909>

INVESTIGATOR(S): Summc, R.P.
AFFILIATION: FS
TITLE: Ten Year Forest Inventory
PURPOSE: To determine volume, growth, mortality, harvest, species size, and numbers.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Growth and change occurred in species numbers and mortality.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous

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LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: forestry
ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees
TAXA: PLANTS, 30 SPECIES
ADDED KEYWORDS: management measures;
mortality rates; population effects;
succession
PRIMARY PARAMETERS INVESTIGATED: growth;
harvest; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
permanent plots
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Monongahela National
Forest
TYPE OF DATA: summarized
STATISTICS EMPLOYED: analysis of variance
ABSTRACT: A 10-year timber inventory of 100
1/5-acre plots was made to determine
volume, growth, and mortality on the
Monongahela National Forest.
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TELEPHONE: (304) 636-1800
NBIP ACCESSION NUMBER: WV/015

<910>

INVESTIGATOR(S): Pack, J.C.
AFFILIATION: West Virginia Dept. of Natural
Resources
TITLE: Wild Turkey Studies
PURPOSE: To determine harvests, productivity,
and population structure of wild turkeys
by ecological regions.
SPONSOR(S): West Virginia Dept. of Natural
Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Research directed
management to alter seasons to allow two
fold increase in population of turkeys and
allow better monitoring of population
changes.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: MELEAGRIS GALLOPAVO
ADDED KEYWORDS: turkeys; population effects;
management measures
PRIMARY PARAMETERS INVESTIGATED: age;
distribution; emigration; harvest; home
range size; kill; natality; numbers;
productivity; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
checking station; mark-recapture; brood
observations; mast surveys
NUMBER OF SAMPLING SITES: 55
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: climatological data
STUDY SITE(S): WV
TYPE OF DATA: reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN;

PL1

STATISTICS EMPLOYED: mean; percentile
ABSTRACT: The objective of this project is to
determine the population dynamics of wild
turkeys through collection and analysis of
harvest, productivity, and band return
data; and to determine the role of hunting
regulations on harvests and hunting of
wild turkey in West Virginia. The
particular objective of this job is to
determine harvests, productivity, and
population structure of wild turkeys with
respect to ecological regions and to
determine hunting pressure and success of
turkey hunters. Over 300 private checking
stations were operated. Operators
collected turkey-kill information and were
paid nominal fees for collecting wingtips
and breast feathers. Kill tag information
was punched for automatic data processing
to allow harvest, productivity, license
class, banded turkeys, locality, and type
of weapon information to be assembled.

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NBIP ACCESSION NUMBER: WV/009

<911>

INVESTIGATOR(S): Pierce, B.E.
AFFILIATION: West Virginia Dept. of Natural
Resources
TITLE: Reservoir Investigations
PURPOSE: To monitor the fish populations of
existing reservoirs, and determine the
effects of various management programs
upon the fisheries.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes vary in the
specific reservoirs studied.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: fisheries; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish
ADDED KEYWORDS: management measures; habitat
modification; rotenone; piscicides
PRIMARY PARAMETERS INVESTIGATED: diversity;
growth; harvest; numbers; productivity;
reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
rotenone embayment sampling; netting;
electrofishing gear; creel surveys
NUMBER OF SAMPLING SITES: variable
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: hydrological data;
water quality data
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Sutton Reservoir;
Summerville Reservoir; Bluestone
Reservoir; East Lynn Reservoir; Stone Coal
Reservoir; Tygart Reservoir; Beech Fork
Reservoir; Burnsville Reservoir
TYPE OF DATA: summarized
STATISTICS EMPLOYED: mean; mode; median;
percentile
ABSTRACT: None provided.

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ADDRESS: Bert E. Pierce
Dept. of Natural Resources
P.O. Box 38
French Creek, WV 26218
TELEPHONE: (304) 924-6211
NBIP ACCESSION NUMBER: WV/018

<912>

INVESTIGATOR(S): Preston, H.R.
AFFILIATION: EPA
TITLE: Water Quality Monitoring
PURPOSE: To evaluate and monitor water quality trends as reflected by aquatic life.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1967
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fish fauna changes in composition and numbers observed in the Monongahela River (1967-1973) indicate improvement of water quality.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: environmental impact; fisheries; indicator species; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta; mollusca; shellfish; microorganisms; algae
TAXA: FISHES, 26 SPECIES
ADDED KEYWORDS: pollution; periphyton; phytoplankton; benthic organisms; platyhelminthes; ectoproteans
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers; residues; size/weight
NUMBER OF SAMPLING SITES: 20
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): WV; PA; OH
GEOGRAPHIC DESCRIPTION: Ohio River Drainage; Monongahela River
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: An aquatic life monitoring program was conducted on the mainstem Ohio River and the lower portions of the major tributaries during the period 1967 through 1970. The program consisted of periodic (3-6/year) collections of macroinvertebrates, periphyton, and phytoplankton at some twenty stations. Annual fish population collections were conducted at selected stations during the same period.
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Wheeling, WV 26003
TELEPHONE: FTS 444-1061
NBIP ACCESSION NUMBER: WV/020

<913>

INVESTIGATOR(S): Rieffenberger, J.C.
AFFILIATION: West Virginia Dept. of Natural

Resources

TITLE: Black Bear Studies IV-1
PURPOSE: To determine seasonal and nonseasonal bear mortalities and to provide an index of population trends and productivity.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1957
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Declining population as a result of decreasing habitat accompanied by increased density on best range.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: URSUS AMERICANUS
ADDED KEYWORDS: bears; black bears; population effects; mortality rates; seasonal variations; habitat modification
PRIMARY PARAMETERS INVESTIGATED: age; distribution; harvest; kill; mortality; natality; numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): hunter kills
NUMBER OF SAMPLING SITES: 50
SAMPLING FREQUENCY: seasonal; irregular
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Monongahela National Forest; Allegheny Mountains
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean; median; percentile
ABSTRACT: Procedures included: (1) nonseasonal kills are investigated as quickly as possible; (2) all mortality reports are analyzed to determine the approximate population based on known or assumed productivity and mortality rates; and (3) premolar teeth collected from bears are aged to determine population age structure and productivity. Current population estimate is approximately 600 bears-mortality rate = 20.8% as obtained from known aged animals. Reproductive rate = 32%, average hunter kill = 60, and average nonseasonal kill = 30 reported but more than 50 not reported.
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Elkins, WV 26241
TELEPHONE: (304) 636-1767 ext. 40
NBIP ACCESSION NUMBER: WV/010

<914>

INVESTIGATOR(S): Rieffenberger, J.C.
AFFILIATION: West Virginia Dept. of Natural Resources
TITLE: Black Bear Studies
PURPOSE: To determine movements of black bears and ascertain habitat preferences.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Road construction cut down bear habitat significantly. Bears avoid roads.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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forest; coniferous; deciduous
LEVEL(S) OF STUDY: ecosystem
MANAGEMENT FOCUS: wildlife; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: URSUS AMERICANUS
ADDED KEYWORDS: black bears; bears; habitat
modification
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; habitat characterization; home
range size; residues; size/weight; stress;
territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
radiotelemetry; traffic counters
SAMPLING FREQUENCY: weekly;
SUPPORTING DATA COLLECTED: associated flora;
climatological data
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Randolph County;
Pocahontas County; Shavers Fork; Tygart
River; Greenbrier River; Laurel River
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: IBM 360/75; FORTRAN;
PL/1
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Our procedure was: (1) capture bears
and attach radiotransmitter collars;
(2) determine age, sex, weight, and size of
individuals captured; (3) monitor radio
signals and plot location by UTM
coordinates each hour for 24 hour period;
(4) examine habitat conditions in areas
utilized and avoided to determine why
there is a preference; and (5) compare
movements to road network and to amount of
human usage of roads, forest types, and
weather conditions.
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NBIP ACCESSION NUMBER: WV/011

<915>

INVESTIGATOR(S): Samuel, D.E.
AFFILIATION: Forestry Div., West Virginia
University
TITLE: Effects of Surface Mining on Wildlife
PURPOSE: To determine the interrelationship
of surface mines and deer and fox
movements and population indices in West
Virginia and to determine numbers of
nesting vesper sparrows and ecology on
surface mines.
SPONSOR(S): West Virginia University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1974
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Deer utilize land bridges
extensively but avoid highwalls. Foxes
utilize all portions of mined sites and
sparrows nest extensively in mine sites.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; savanna
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals
TAXA: UROCYON CINEBBROARGENTUS; ODOCOILEUS
VIRGINIANUS; POECETES GRAMINEUS
ADDED KEYWORDS: foxes; sparrows; deer; gray
foxes; white-tailed deer; vesper sparrows;
habitat modification; strip mining
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
home range size; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
telemetry; direct observations; snow
tracks; sand tracks
NUMBER OF SAMPLING SITES: no set numbers
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna;
associated flora
STUDY SITE(S): WV
GEOGRAPHIC DESCRIPTION: Preston County
TYPE OF DATA: raw; summarized;
literature-derived
STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis; non-parametric
analysis
ABSTRACT: Quantitative data were collected
on; daily movement of deer over highwall
land bridges, winter deer movements, fox
activity, a survey of 29 mined sites,
vesper sparrow nesting, pellet counts, and
assessment of deer movement along the
edges of highwalls. Preliminary results
indicate that: deer utilize land bridges
extensively, but will not normally travel
over 600 feet to cross the highwall; deer
tend to avoid the areas within 300 feet of
long highwalls, vesper sparrows nest on
benches reclaimed with Kentucky fescue;
and foxes utilize all portions of most
mined sites.
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NBIP ACCESSION NUMBER: WV/006

<916>

INVESTIGATOR(S): Samuel, D.E.
AFFILIATION: Forestry Div., West Virginia
University
TITLE: Management of Ruffed Grouse on and
around Surface Mines in West Virginia
PURPOSE: To determine if past and present
reclamation has created habitat suitable
for grouse broods.
SPONSOR(S): FS; West Virginia University
SPONSOR CATEGORY: federal government;
teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Strip mining before 1960
was not harmful to ruffed grouse because
the mines were small, and smaller
equipment was used. Locust trees were
planted after mining was finished, and
volunteer species were plentiful. Since
1971, miners have been making large grassy
areas of the abandoned strip mines. This
is not beneficial to grouse.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; savanna
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates;

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birds

TAXA: BONASA UMBELLUS

ADDED KEYWORDS: ruffed grouse; grouse;
mining; reclamation; strip mining; broodsPRIMARY PARAMETERS INVESTIGATED: behavior;
home range size; territory sizeDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
telemetry; imprinting; snow track counts;
flush counts

NUMBER OF SAMPLING SITES: 3

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora

STUDY SITE(S): WV

GEOGRAPHIC DESCRIPTION: Preston County

TYPE OF DATA: raw; summarized;
literature-derivedSTATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
multivariate analysis; non-parametric
analysisABSTRACT: We are examining brood habitat by
telemetry on hens with broods, taking
imprinted broods into the area, and
measuring food and cover utilization.
Flush counts were conducted June,
1973-June 1974. Twelve birds flushed on
the bench, 45 at the base of spoil, 34
were 200 feet from the surface mine, and
30 were 400 feet from the mine.ADDRESS: Dr. David Samuel
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NBIP ACCESSION NUMBER: WV/007

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<917>

INVESTIGATOR(S): Allen, T.F.H.
AFFILIATION: Dept. of Botany, University of Wisconsin
TITLE: Multivariate Analysis of Phytoplankton and Periphyton in Lake Wingra
PURPOSE: To identify structure in community at different levels of organization.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Oscillations in species composition at different levels of organization with multiple stability points.
ECOSYSTEM OR BIONE TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: environmental impact; pollution control; water quality
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: PHYTOPLANKTON, 103 SPECIES
ADDED KEYWORDS: phytoplankton; periphyton; carbon-14; eutrophication
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; numbers; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transects; glass slides
NUMBER OF SAMPLING SITES: 1-5
SAMPLING FREQUENCY: weekly
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Dane County; Lake Wingra
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: Univac 1110; Datacraft; FORTRAN
STATISTICS EMPLOYED: mean; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis
ABSTRACT: None provided.
ADDRESS: Dr. Timothy Allen
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Madison, WI 53706
TELEPHONE: (608) 262-2692
NBIP ACCESSION NUMBER: WI/084

<918>

INVESTIGATOR(S): Allen, T.F.H.
AFFILIATION: Dept. of Botany, University of Wisconsin
TITLE: Changes in Community Structure of the Curtis Prairie
PURPOSE: To investigate ten 25 year permanent quadrats through time with emphasis on fundamental parameters of community change rather than individual species.
SPONSOR(S): University of Wisconsin
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Rapid species turnover occurred. Species find their own optimal environment on heterogeneous prairie.

ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; indicator species; recreation
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; grasses
TAXA: PLANTS, 88 SPECIES
ADDED KEYWORDS: prairies; fires; prescribed burning; succession
PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; habitat characterization; immigration; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): cover estimates; permanent quadrats
NUMBER OF SAMPLING SITES: 10
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: fire disturbance
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: University of Wisconsin Arboretum, Madison
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: UNIVAC 1108; FORTRAN
STATISTICS EMPLOYED: multivariate analysis; non-parametric analysis
ABSTRACT: Multivariate analyses of ten permanent quadrats over 25 years are used with ordination using to make data transformation.
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NBIP ACCESSION NUMBER: WI/085

<919>

INVESTIGATOR(S): Anderson, R.K.
AFFILIATION: College of Natural Resources, University of Wisconsin
TITLE: Prairie Chicken Census
PURPOSE: To evaluate management and to monitor status of the population.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Normal population fluctuations.
ECOSYSTEM OR BIONE TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: TYMPANUCHUS CUPIDO
ADDED KEYWORDS: management measures; population effects; prairie chickens; census
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; habitat characterization; numbers; productivity; reproduction; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; trapping-banding; census
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Portage County; Wood County; Marathon County
TYPE OF DATA: summarized
ABSTRACT: Prairie chicken populations are

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monitored annually by getting breeding male counts on breeding grounds. This is a continuing study which follows approximately 20 years of previous data.

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Stevens Point, WI 54481
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NBIP ACCESSION NUMBER: WI/004

<920>

INVESTIGATOR(S): Avery, R.L.

AFFILIATION: Wisconsin Dept. of Natural Resources

TITLE: Experimental Reclamation of Trout Streams through Chemical Treatment

PURPOSE: To test the hypothesis that trout carrying capacities, growth and survival rates, and angler use and harvest can be increased by removing abundant populations of nongame fishes with Antimycin A.

SPONSOR(S): Wisconsin Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Significant increase in brown trout growth, modest increases in survival, and greater angler use and harvest.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream

LEVEL(S) OF STUDY: population; community; ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; invertebrates; insects; mollusca

TAXA: SALMO TRUTTA; FISHES, 16 SPECIES;

INVERTEBRATES, 14 SPECIES

ADDED KEYWORDS: brown trout; management measures; antimycin A; piscicides; benthic organisms; crayfishes

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; diversity; growth; habitat

characterization; harvest; kill;

mortality; numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

electrofishing gear; Surber sampler;

invertebrate drift nets

SAMPLING FREQUENCY: continuous; seasonal; quarterly

SUPPORTING DATA COLLECTED: associated fauna; water quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Vernon County; Seas Branch Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

analysis of variance

ABSTRACT: Seas Branch Creek was electrofished in April, July, and September to determine the characteristics of the trout population present. The April population consisted of 850 domestic brown trout, 2 native brown trout, 16 domestic brook

trout, and 3 domestic rainbow trout having a total biomass of 478 pounds or 96 lb/acre. Overwinter survival of the fall, 1973 stock of age 0 brown trout was 50 percent. Overwinter survival of age I brown trout (stocked as age 0 fish in October, 1972) was 82 percent and 9 percent of the original stock remained. The September trout population consisted of 188 brown trout having a biomass of 200 pounds or 40 lb/acre. April to September survival of age I and age II brown trout was 21 percent and 26 percent, respectively. Angler exploitation of the April population of both age I and age II brown trout was 42 percent and accounted for 53 percent and 57 percent, respectively, of their population decline throughout the summer. Total survival since stocking of the age I and age II brown trout was 5 percent and 4 percent, respectively. Trichoptera, Diptera, Coleoptera (aquatic), Ephemeroptera, and Amphipoda were the 5 most important invertebrate orders in the benthos of Seas Branch Creek in 1974. Invertebrate populations in 1974 exceeded average invertebrate populations present during corresponding quarterly sampling periods prior to chemical treatment. Brachycentridae (caddisfly) was the only important invertebrate taxon which did not achieve or exceed its pretreatment abundance in 1974. In order of decreasing importance, Trichoptera, Diptera, Amphipoda, Ephemeroptera, terrestrial Coleoptera, and Decapoda (crayfish) were found in at least 1 out of every 3 trout stomachs collected from Seas Branch Creek during May and June. Relative importance of the major food items in trout stomachs was closely related to their relative abundance within the stream benthos.

REFERENCES: Avery, 1975

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Waupaca, WI 54981

TELEPHONE: (715) 258-7430

NBIP ACCESSION NUMBER: WI/030

<921>

INVESTIGATOR(S): Ball, J.R.

AFFILIATION: Wisconsin Dept. of Natural Resources

TITLE: Green Bay - Water Quality Investigation

PURPOSE: Determine eutrophic state of Green Bay and compare data to last investigation (10 year period).

SPONSOR(S): Wisconsin Dept. of Natural Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Slightly decreased plankton populations with minor increase in the intolerant organisms, PONTOPORRHA AFFINIS.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; lake

LEVEL(S) OF STUDY: organism; population; community; ecosystem

MANAGEMENT FOCUS: fisheries; indicator species; recreation; pollution control;

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water quality
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea; insecta;
microorganisms; algae
TAXA: PONTOPOREIA AFFINIS
ADDED KEYWORDS: eutrophication; plankton;
benthic organisms
PRIMARY PARAMETERS INVESTIGATED: biomass;
BOD; distribution; diversity; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Clarke-Bumpus; Kemmerer sampler; Ponar
dredge; Ekman dredge
NUMBER OF SAMPLING SITES: 60
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; associated
microorganisms; water quality data
STUDY SITE(S): WI; MI
GEOGRAPHIC DESCRIPTION: Door County (WI);
Brown County (MI); Green Bay; Lake
Michigan; Fox River
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean; median; percentile
ABSTRACT: The data indicates little change in
nutrient concentration, but a definite
improvement in dissolved oxygen
concentrations. This indicates a reduced
BOD load from the Fox River.
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465 Henry Hall
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TELEPHONE: (608) 266-0100
NBIP ACCESSION NUMBER: WI/034

<922>

INVESTIGATOR(S): Baumann, P.C.
AFFILIATION: Zoology Dept., University of
Wisconsin
TITLE: Lake Wingra, 1837-1973: A Case History
of Human Impact
PURPOSE: To chronicle the major changes
occurring in the biological community of
Lake Wingra and their causes since 1837.
SPONSOR(S): NSF
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Hydrologic, aquatic
macrophyte, invertebrate, and fish
community changes. Also management
practice changes.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake
LEVEL(S) OF STUDY: population; community;
ecosystem
MANAGEMENT FOCUS: environmental impact;
fisheries; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; plants;
vascular plants; herbs
TAXA: AQUATIC PLANTS, 32 SPECIES; BENTHIC
ORGANISMS, 52 SPECIES; FISHES, 29 SPECIES
ADDED KEYWORDS: management measures; habitat
modification; species introduction;
bluegills; basses; milfoil; aquatic plants
PRIMARY PARAMETERS INVESTIGATED: diversity;
habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

sampling
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Dane County; Lake
Wingra
TYPE OF DATA: reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: Lake Wingra is a shallow, eutrophic
lake bordered on one side by the City of
Madison and on the other by the University
of Wisconsin Arboretum. This study
recounts the history of the biological and
hydrographic changes which occurred in the
lake between 1837 and 1973. In the early
1900's, the area, depth, and drainage
patterns of the lake and adjoining
wetlands were extensively altered by the
activities of man. Early management
practices (e.g. introduction of carp in
the late 1800's, fish rescue and stocking
operations during the 1930's, and carp
removal programs during the 1930's, 1940's
and 1950's) had marked and often
unexpected effects. The lake once had
extensive bordering marshes, diverse
aquatic macrophyte communities, and large
northern pike and yellow perch
populations. It now has few connecting
marshes, dense stands of Eurasian water
milfoil, and is dominated by stunted
bluegill and yellow bass. The number of
macroinvertebrate species has been
reduced; and many larger forms have been
eliminated. Since 1969, Lake Wingra and
its watershed have been a major study site
of the International Biological Program.
Hopefully, ecosystem concepts derived from
this project and the lessons of history
will facilitate more ecologically sound
management decisions.
REFERENCES: Baumann, et al, 1974
ADDRESS: Dr. Paul C. Baumann
Zoology Dept.
University of Wisconsin
Madison, WI 53711
TELEPHONE: (608) 262-5395
NBIP ACCESSION NUMBER: WI/019

<923>

INVESTIGATOR(S): Baumann, P.C.
AFFILIATION: University of Wisconsin
TITLE: An Evaluation of the Use of Antimycin
A for Stream Reclamation in the Rock
River, Wisconsin
PURPOSE: To evaluate stream management by
poisoning a carp population and restocking
game fish.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Changes in fish
populations and fisheries return during
pre-treatment and post-treatment and also
in macrophyte abundance.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river
LEVEL(S) OF STUDY: organism; population;
community; ecosystem
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries;
recreation; resource planning

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WISCONSIN

Standard Federal Region 5

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(CONTINUED)

<923> CONT.

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; plants;
vascular plants; herbs

TAXA: GAMMARUS PSEUDOLIMNAEUS; HYALELLA AZTECA
ADDED KEYWORDS: antimycin a; management
measures; habitat modification; census;
carps; bullheads; fishkills; piscicides;
aquatic plants; amphipods; isopods

PRIMARY PARAMETERS INVESTIGATED: diversity;
habitat characterization; harvest; kill;
numbers; size/weight; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
creel census; seine

NUMBER OF SAMPLING SITES: 6

SUPPORTING DATA COLLECTED: associated flora

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Dodge County;

Washington County; Rock River

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean; percentile;

analysis of variance

ABSTRACT: An evaluation was made of a
reclamation attempt by the Wisconsin Dept.
of Natural Resources on the Rock River,
using Antimycin A. Studies of one section
2 and 3 years post-treatment, and another
section pre- and one year post-treatment
indicate little or no benefit to the
angler. The major fish species taken both
before and after treatment were bullhead.
Gamefishing improvement appeared to be
maintained by continued stocking. Angling
pressure did not increase after treatment,
and numbers of non-local anglers remained
quite small. Nine non-target, native fish
species were eliminated and had not
returned three years after treatment.
GAMMARUS PSEUDOLIMNAEUS were killed in the
laboratory at dosage levels used in the
Rock River (15ppb). Aquatic macrophytes
increased greatly in abundance after
treatment, causing recreational and
winterkill problems.

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NBIP ACCESSION NUMBER: WI/020

<924>

INVESTIGATOR(S): Carline, R.F.

AFFILIATION: Wisconsin Dept. of Natural
Resources

TITLE: Effects of Hydraulic Dredging on the
Ecology of Wild Trout Populations in
Small, Spring-Fed Ponds

PURPOSE: To assess response of trout
populations to increased life-span and
changes in fishing pressure and harvest;
and to determine effects of dredging
physico-chemical characteristics of ponds
and on benthos and plankton.

SPONSOR(S): Wisconsin Dept. of Natural
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Trout populations,

fishing, and harvest have increased since
dredging. Benthic communities were
decimated after dredging and then
recolonized.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
plants; vascular plants; non-vascular
plants

TAXA: SALVELINUS PONTINALIS; SALMO TRUTTA;
SALMO GAIRDNERI; FISHES, 16 SPECIES;
BENTHIC ORGANISMS, 20 SPECIES; INSECTA, 6
SPECIES

ADDED KEYWORDS: brook trouts; brown trouts;
rainbow trouts; parasites; dredging;
siltation; ponds

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; emigration; growth;
habitat characterization; harvest;
immigration; mortality; numbers;
reproduction; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear; temperature recorder;
Ekman dredge

NUMBER OF SAMPLING SITES: 6

SAMPLING FREQUENCY: seasonal; quarterly

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Wolf River; Langlade
County

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: RPG; FORTRAN

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis

ABSTRACT: Spring ponds are a valuable natural
resource because they provide trout
fishing and contribute water of high
quality to many trout streams, yet little
is known about the ecology of trout in
spring ponds. High populations of wild
trout, especially brook trout, inhabit
many spring ponds. However, a relatively
large number of ponds have deep deposits
of silt and are evolving to a bog-like
condition. In some ponds only a foot or
two of water overlays several feet of
silt. Over the past 15 years, the Bureau
of Fish Management and private
organizations have been removing silt
deposits from selected spring ponds to
increase the living space for trout and to
provide greater fishing opportunities.
This study was planned with a 3-year
predredging phase and a 5-year
postdredging phase. The fourth year of
postdredging phase was completed in 1974.
The final year of study will be completed
in 1975.

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NBIP ACCESSION NUMBER: WI/026

<925>

INVESTIGATOR(S): Christenson, L.M.

AFFILIATION: Wisconsin Dept. of Natural
Resources

WISCONSIN
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WBIP ACCESSION NUMBER: WI/044

<925> CONT.

TITLE: Murphy Flowage Studies
PURPOSE: Evaluation of liberalized angling regulations and experimental fish management techniques.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Decline of native northern pike population due to heavy stocking of same species.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; reservoir
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 11 SPECIES
ADDED KEYWORDS: management measures; northern pikes; bluegills; aquatic plants; drawdown
PRIMARY PARAMETERS INVESTIGATED: emigration; growth; harvest; mortality; numbers; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; creel census; nets
SAMPLING FREQUENCY: annual; continuous
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Rusk County; Murphy Flowage
TYPE OF DATA: summarized
ABSTRACT: Monitoring of fish populations in Murphy Flowage between 1955 and 1960 indicated the development of an overabundant, slow-growing population of bluegills. In 1960 and 1961, attempts to improve bluegill growth by mechanical thinning failed, apparently because only the larger bluegills were removed. Since the flowage already had a good northern pike population, it was suggested that increasing this predator population might result in controlling of bluegill numbers and hence, improving growth. To test this hypothesis, the flowage was stocked with northern pike in 1963 at a rate of 47 large fingerlings per acre. This rate met the intent of approximately doubling the northern pike population in the flowage and was much greater than those stocking rates usually reported in the literature (1-5 pike/acre). Because heavy stocking failed to effectively increase the northern pike population, this work considers only briefly the impact of stocking on the bluegill population. Instead, emphasis is placed on a description of the interaction between the stocked fish and the native northern pike population. In regard to this interaction, angling statistics, population density, mortality, and movement are compared before and after the 1963 stocking. Data cover a 15-year period from 30 April 1955 through 31 May 1970.
REFERENCES: Snow, 1969; Snow, 1971; Johnson, 1969; Beard, 1973; Churchill and Snow, 1964; Snow and Beard, 1972
ADDRESS: Lyle M. Christenson
Wisconsin Dept. of Natural Resources

<926>

INVESTIGATOR(S): Christenson, L.M.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Lawrence Creek Studies
PURPOSE: To evaluate angling regulations and in-stream habitat development of brook trout.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Strong brook trout population response (positive) to habitat improvement.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALVELINUS FONTINALIS
ADDED KEYWORDS: brook trout; management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: growth; harvest; mortality; migratory patterns; numbers; productivity; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; creel census
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Adams County; Marquette County; Lawrence Creek
TYPE OF DATA: summarized
ABSTRACT: The effects of different angling regulations on a wild brook trout population and fishery were studied at Lawrence Creek, which contains a dense population of this species and has a reputation for "good trout fishing". When minimum size limit was raised to 9 inches during the 1958-60 seasons, the catch was dramatically reduced, angling success indices declined, and fishing pressure declined. Simultaneously, the growth of trout declined and instances of higher-than-normal summer and winter mortality due to natural causes reduced the possibility of stockpiling enough Age Group II brook trout to provide a yield (in terms of both number and pounds) comparable to one which includes a significant percentage of Age Group I brook trout as well. Adoption of the 9-inch limit did improve the reproductive capacity of the brook trout population. In trout streams where spawning habitat is available but spawners are scarce, suitable size limits provide an appropriate management tool for increasing reproductive potential.
REFERENCES: Hunt, 1968; Hunt, et al, 1962; Hunt and Brynildson, 1964; Hunt, 1969; Hunt, 1966; Hunt, 1970
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NBIP ACCESSION NUMBER: WI/045

<927>

INVESTIGATOR(S): Christenson, L.M.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Lake Winnebago Studies
PURPOSE: To monitor status of various fish species and establish life-history of selected fish species.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1955
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Fluctuation in populations of certain fish species.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: FISHES, 36 SPECIES
ADDED KEYWORDS: population effects; habitat modification; management measures
PRIMARY PARAMETERS INVESTIGATED: age; growth; harvest; mortality; reproduction; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nets; trawls
SAMPLING FREQUENCY: seasonal
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Winnebago County; Lake Winnebago
TYPE OF DATA: raw; summarized
ABSTRACT: Studies have been conducted concerning the feeding habits, life histories, and management aspects of several species of fish inhabiting Lake Winnebago.
REFERENCES: Priegel, 1963; Priegel, 1964; Priegel, 1969 a,b; Priegel, 1967; Priegel, 1966; Priegel, 1971; Priegel and Wirth, 1975
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NBIP ACCESSION NUMBER: WI/046

<928>

INVESTIGATOR(S): Copes, P.A.
AFFILIATION: Dept. of Biology, University of Wisconsin
TITLE: Ecology of HYBOGNATHUS HANKINSONI, Brassy Minnow
PURPOSE: To study the general ecology, distribution, and abundance of the brassy minnow.
SPONSOR(S): PI

SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1965
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The abundance of the brassy minnow in central Wisconsin waters is decreasing.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: fisheries; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: HYBOGNATHUS HANKINSONI
ADDED KEYWORDS: brassy minnows; minnows; population effects; life history
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; growth; habitat characterization; harvest; home range size; immigration; mortality; migratory patterns; numbers; productivity; reproduction; sex; size/weight
NUMBER OF SAMPLING SITES: 20
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; hydrological data
STUDY SITE(S): WI; WY; ND
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; mode; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis; non-linear estimation; modeling, deterministic; modeling, stochastic
ABSTRACT: The ecology of the brassy minnow is being studied. This includes the life history, habitat, reproduction, distribution, and abundance. Lakes and streams in Wisconsin, North Dakota, and Wyoming are being monitored, but only the waters of central Wisconsin showed a decrease in the brassy minnow abundance.
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NBIP ACCESSION NUMBER: WI/082

<929>

INVESTIGATOR(S): Creed, W.A.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Deer Population Measurements and Harvest Recommendations in Management Units--Study 209
PURPOSE: To develop annual harvest recommendations which will maintain deer populations near established unit goals.
SPONSOR(S): Wisconsin Dept. of Natural Resources; FW3
SPONSOR CATEGORY: state government; federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Hunting and weather induce major changes in deer numbers.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

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TAXA: ODOCILLEUS VIRGINIANUS

ADDED KEYWORDS: white-tailed deer; deer;
management measuresPRIMARY PARAMETERS INVESTIGATED: age;
distribution; harvest; kill; mortality;
numbers; sex

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: climatological data

STUDY SITE(S): WI

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: The primary objective of the variable quota system is to maintain deer populations at established goals by harvesting prescribed numbers of deer from each unit. Basic to the system is the maintenance of current information on deer population levels, production and mortality, and impact of harvests. Objective measurement and interpretation of these factors on a statewide basis is essential to development of sound harvest recommendations. STATUS: This study is essentially an annual survey function, geared to gathering and interpreting the basic information required for sound harvest proposals. Efforts are continuing to increase survey precision and efficiency. Standards for harvest recommendations have been, and continue to be upgraded through development of formalized procedures. Better forecasting of the impact of winter severity on overwinter survival and subsequent fawn production will lead to further improvements within the next several years. In 1959, Wisconsin's deer-aging program was reorganized to obtain age samples from selected, individual units. The program has since expanded considerably; from 8,000 to 12,000 deer are now aged annually in 40 to 50 units. Along with deer harvest figures, this program has provided much of the basic information required for construction of unit population histories. We have continued to apply procedures adapted from Eberhardt (1960) and Severinghaus and Maguire (1955) for determining buck mortality, population levels, and adult sex ratios. Fawn:doe ratios are derived from direct field observations reported for the months of July through September. The primary factor limiting more accurate population estimates using buck harvest as a base has been our inability to accurately gauge non-hunting mortality. Consequently, most sex-age-kill calculations appear to produce minimum population estimates. Methods to adjust these estimates to more closely approximate actual populations are being explored.

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NBIP ACCESSION NUMBER: WI/056

<930>

INVESTIGATOR(S): Fitzgerald, G.P.

AFFILIATION: Private Consultant

TITLE: Nutrition of Great Lakes' CLADOPHORA

PURPOSE: Study nutritional needs and
demonstrate use of IN SITU algae as
indicators of nutrient sources (pollution).

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Seasonal and geographical
changes occurred in nutritional status of
algae.ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: organism; community

MANAGEMENT FOCUS: indicator species;

pollution control; water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

TAXA: CLADOPHORA SPP

ADDED KEYWORDS: seasonal variations; algal
blooms; population effects; aquatic
plants; eutrophicationPRIMARY PARAMETERS INVESTIGATED: biomass;
physiology

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: water quality data

STUDY SITE(S): WI

TYPE OF DATA: reduced; summarized

STATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: Bioassays can be used to evaluate the amount of a particular nutrient or nutrients available to algae or aquatic weeds in a water sample or to assess the nutritional status of IN SITU plants. These bioassay techniques have been applied to inland lake renewal projects and in testing the effectiveness of algicide application.

REFERENCES: Fitzgerald, 1975; Fitzgerald, 1972; Fitzgerald, et al, 1973; Fitzgerald, 1974; Fitzgerald, et al, 1973; Fitzgerald, et al, 1975

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NBIP ACCESSION NUMBER: WI/072

<931>

INVESTIGATOR(S): Greenberg, B.

AFFILIATION: Dept. of Biological Sciences,
University of Illinois-Chicago CircleTITLE: Effect of Extremely Low Frequency, Low
Intensity Electromagnetic Fields on Soil
Arthropods in NaturePURPOSE: Long-term evaluation of the Navy's
Sanguine Communications System in terms of
mite and springtail population cycles and
predator-prey proportions comparing
exposed and control groups at Wisconsin
test facility.

SPONSOR(S): USN

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: No significant
demographic changes could be attributed to
sanguine antenna electromagnetic fields.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;

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forest; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact;
indicator species
ORGANISMS, MAJOR TYPES: animals;
invertebrates; crustacea
TAXA: ARTHROPODA, 4 ORDERS
ADDED KEYWORDS: springtails; mites;
electromagnetic radiation; population
density; predator-prey relationships;
radiation; collembolans; acarines;
arthropods
PRIMARY PARAMETERS INVESTIGATED: mortality;
natality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Tullgren funnels
NUMBER OF SAMPLING SITES: 15
SAMPLING FREQUENCY: seasonal; monthly
SUPPORTING DATA COLLECTED: associated flora;
soils
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Sawyer County;
Ashland County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance; multivariate analysis
ABSTRACT: Study of long-term impact of
extremely low intensity antenna radiations
and electromagnetic fields rules out any
effect on the structure of microarthropod
populations living in various habitats.
REFERENCES: Greenberg, 1972; Greenberg, 1973;
Greenberg and Ash, 1974
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NBIP ACCESSION NUMBER: IL/010

<932>

INVESTIGATOR(S): Greenberg, B.
AFFILIATION: Dept. of Biological Science,
University of Illinois-Chicago Circle
TITLE: Effect of Extremely Low Frequency, Low
Intensity Electromagnetic Fields on
Metabolic Rates of Animals Living in Nature
PURPOSE: To determine oxygen consumption and
respiratory quotient of slugs, two species
of earthworms, a wood louse, and the
redbacked salamander living under the U.S.
Navy's Sanguine Antenna at the Wisconsin
Test Facility.
SPONSOR(S): USN
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: unknown
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: No significant changes
have occurred after 6 years exposure.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial;
forest; deciduous
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact;
indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; invertebrates; crustacea;
insecta; annelida
TAXA: ONISCUS ASELLUS; LUMBRICUS TERRESTRIS;

LUMBRICUS ROBELLUS; ARION SP; PLETHODON
CINEREUS
ADDED KEYWORDS: woodlice; lice; earthworms;
redworms; worms; slugs; salamanders;
redbacked salamanders; radiation;
predation; prey
PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Gibson differential respirometer;
collection
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Sawyer County;
Ashland County
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; analysis of
variance
ABSTRACT: Study of long-term impact of
extremely low frequency, low intensity
antenna radiations and electromagnetic
fields at the Navy's Sanguine Wisconsin
Test Facility continued in summer, 1973,
with population analysis of soil
arthropods in 9 test and 6 control plots.
In 1973, 13 out of 19 plots and subplots
had fewer arthropods than in 1972. The
even distribution--7 test and 6 control
plots--rules out a Sanguine effect.
Evidence for a stabilized
micropredator-prey system is the absence
of significant differences in proportions
of predators in 7 of 9 test and control
pairs, monthly and for the entire summer.
In 8 of 11 tests (73%) and 5 of 8 controls
(63%) there was also no significant shift
in proportions of predators between 1972
and 1973; the 6 significant shifts
occurred equally among tests and controls.
Predator densities in paired plots
monitored for 3 years have not differed
significantly. After 4 years of antenna
operation, Cryptostigmata:Collembola
ratios in test and control plots are
roughly the same, and approximate the 1969
pre-treatment ratios. Other data support
the hypothesis that 4 years of ELF
operation has not altered soil
microarthropod population structure near
the antenna.
REFERENCES: Greenberg and Ash, 1974
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NBIP ACCESSION NUMBER: IL/011

<933>

INVESTIGATOR(S): Grunewald, B.
AFFILIATION: University of Wisconsin-Milwaukee
TITLE: Environmental Studies at the Point
Beach Nuclear Plant
PURPOSE: To investigate and characterize the
crustacean zooplankton and periphytic
diatom populations in the area; to monitor
the water temperature; to characterize the
size distributions of the sediments in the
area; and to determine the gross beta
radioactivity levels of the sediments,
shoreline algae, and "aufwuchs" community
in the vicinity of the power plant.
SPONSOR(S): Wisconsin Electric Power Co.

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SPONSOR CATEGORY: private corporation
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: No changes in crustacean zooplankton, and slight change in periphytic diatoms in flumes, although several samples had higher levels of radioactivity.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: environmental impact; indicator species; radiological; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; microorganisms; algae
TAXA: DIATOMS, 49 SPECIES
ADDED KEYWORDS: nuclear power plants; diatoms; sediments; species diversity; periphyton; phytoplankton
PRIMARY PARAMETERS INVESTIGATED: diversity; mortality; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): plexiglas slides; plankton net; plastic webbing
NUMBER OF SAMPLING SITES: 6-14
SAMPLING FREQUENCY: monthly
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Manitowoc County; Lake Michigan; Two Creeks County Park
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: UNIVAC 1106
STATISTICS EMPLOYED: mean; percentile
ABSTRACT: This environmental research study was initiated in 1969 at the Point Beach Nuclear Power Plant. Parameters studied were based on the results of a preliminary study conducted during 1968. The area of the study extends from the shoreline east to the water intake crib about 1700 feet (518 meters) from shore, and about 1000 feet (300 meters) north and south of the plant site. The Two Creeks County Park located about 7000 feet (2100 meters) north of the plant site was chosen as a reference site.
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NBIP ACCESSION NUMBER: WI/081

<934>

INVESTIGATOR(S): Hager, D.C.
AFFILIATION: FS
TITLE: Bald Eagle--Osprey Nesting Survey
PURPOSE: To determine number of nests, number of breeding pairs, number of pairs successfully raising young, and number of young birds on eastern region national forests.
SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1963
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gradual increase in most breeding success parameters since 1963.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; wildlife; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: HALIAEETUS LEUCOCEPHALUS; PANDION HALIAETUS
ADDED KEYWORDS: population effects; bald eagles; eagles; ospreys; nesting sites
PRIMARY PARAMETERS INVESTIGATED: numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; aerial surveys
NUMBER OF SAMPLING SITES: eagles: 259 nests; ospreys: 123 nests
SAMPLING FREQUENCY: seasonal; annual
STUDY SITE(S): MN; WI; MI
GEOGRAPHIC DESCRIPTION: Nicolet National Forest; Superior National Forest; Chippewa National Forest
TYPE OF DATA: summarized
ABSTRACT: Eagle-osprey nest surveys are a cooperative undertaking of several agencies with the Forest Service. These include National and local Audubon Societies, Ornithological Societies, State Departments of Natural Resources, Fish and Wildlife Service, and Universities. The number of young eagles known to have reached fledging age on the seven National Forests of the Lake States was 192, nearly 30 more than in any previous year of the survey. Every Forest except the Nicolet had increases in number and successful nests and numbers of young eagles. Sixty-seven percent of the pairs that were observed incubating eggs successfully raised at least one young. This is the highest nesting success recorded since the survey was initiated. Osprey nesting activity is more difficult to survey than is that of the eagle because osprey nests are less permanent structures and pairs like to relocate their territories more frequently. There are 238 known nests. The number of active nests and number of young are somewhat less than last year. The Nicolet, Superior, and Chippewa National Forests all reported declines. The success rate of those nests that were occupied held fairly stable. Fifty-one percent of the active pairs successfully raised young. A number of nests were destroyed by windstorms.

REFERENCES: Hager, 1974; Hager, 1975; Ryel, 1975

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U.S. Forest Service
633 West Wisconsin Ave.
Milwaukee, WI 53203
TELEPHONE: (414) 224-3666
NBIP ACCESSION NUMBER: WI/065

<935>

INVESTIGATOR(S): Hickey, J.J.
AFFILIATION: Dept. of Wildlife Ecology,
University of Wisconsin
TITLE: Toxic Chemicals in a Lake Michigan Ecosystem

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PURPOSE: To determine (1) changes in residues of PCBs, DDE, and Dieldrin in bottom muds, amphipods, fish, and herring gulls in Upper Green Bay annually; and (2) their effects on herring gull reproduction.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1963

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: no

CHANGE(S) OBSERVED: The marked reproductive failures in herring gulls in the mid-1960's disappeared in 1975.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; birds

TAXA: LARVS ARGENTATUS

ADDED KEYWORDS: insecticides; pesticides;

herring gulls; gulls; eggshells;

sediments; PCB; DDE; dieldrin; amphipods

PRIMARY PARAMETERS INVESTIGATED: mortality;
natality

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection

NUMBER OF SAMPLING SITES: 1

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Door County; Green
Bay; Lake Michigan

ABSTRACT: PCB and DDE levels were traced back in time in Lake Michigan fish to 1949. None were present in the 1930's. In 1975, PCB increased to at least 1973 levels. DDE continues to fluctuate erratically in herring gull eggs during the past decade. This fluctuation also is taking place in eggshell thickness.

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NBIP ACCESSION NUMBER: WI/002

<936>

INVESTIGATOR(S): Hole, F.D.; Bockheim, J.G.
AFFILIATION: Soil Science Dept., University
of Wisconsin

TITLE: Factors Affecting The Incorporation of
Organic Matter into Soils

PURPOSE: To determine by means of
measurements over many decades the
proportion of organic matter in soil
profiles that comes from above-ground and
below-ground plant parts in prairie
ecosystems and forest ecosystems.

SPONSOR(S): University of Wisconsin;
Wisconsin Geological and Natural History
Survey

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1956

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Since 1956 we have been
able to get 3 points on curves showing
changes in percent nitrogen in different
soil horizons.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; savanna;
grassland; wetland

LEVEL(S) OF STUDY: organism; population;
community; ecosystem

MANAGEMENT FOCUS: environmental impact;
forestry; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; insecta; plants; vascular

plants; trees; shrubs; herbs; grasses;

non-vascular plants; lichens;

microorganisms; bacteria; fungi; algae

TAXA: ANDROPOGON SPP; QUERCUS ALBA; PLANTS,
400 SPECIES

ADDED KEYWORDS: collembolans; acarines;

arachnids; nitrogen cycle; carbon cycle;

soil horizons; soil microorganisms; soil

bacteria; succession; climate; weather

conditions

PRIMARY PARAMETERS INVESTIGATED: age;

biomass; habitat characterization;

harvest; productivity; residues

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plots

NUMBER OF SAMPLING SITES: 25

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; associated

microorganisms; climatological data;

hydrological data; soils; terrain; water

quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Dane County; Yahara
River; Lake Wingra

TYPE OF DATA: raw; summarized;

literature-derived

STATISTICS EMPLOYED: mean

ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: WI/024

<937>

INVESTIGATOR(S): Hunt, R.L.

AFFILIATION: Wisconsin Dept. of Natural

Resources; Cold Water Project

TITLE: Removal of Woody Streamside Vegetation
as a Technique for Managing Small Trout
Streams

PURPOSE: To test the hypothesis that trout
carrying capacities, growth rate of
trouts, and angler harvest and use can be
increased by replacing dense growths of
woody streambank vegetation with grasses
and weeds.

SPONSOR(S): Wisconsin Dept. of Natural
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Increased numbers and
weights of brook and brown trout, and
increased angler use and harvest.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream

LEVEL(S) OF STUDY: population; ecosystem

MANAGEMENT FOCUS: fisheries; recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

fish; plants; vascular plants; herbs;

grasses

TAXA: SALVELINUS FONTINALIS; SALMO TRUTTA

ADDED KEYWORDS: habitat modification;

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population effects; brook trouts; brown trouts; trouts
PRIMARY PARAMETERS INVESTIGATED: age; biomass; growth; habitat characterization; harvest; kill; mortality; numbers; productivity; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): electrofishing gear; aerial mapping; Surber sampler; drift nets
NUMBER OF SAMPLING SITES: 1 to 2 mile reaches of 3 streams
SAMPLING FREQUENCY: continuous; seasonal;
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Chippewa County; Portage County; Waushara County; Spring Creek; Little Plover River; Lunch Creek
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; analysis of variance; regression/correlation analysis; non-parametric analysis
ABSTRACT: In all Wisconsin trout streams, it would be desirable to increase growth rates of trout. These rates are normally far slower than the genetic capabilities of trout to grow. Growth is further influenced by available food and water temperature. Growth of trout is considered to be best in 55 to 65 degree F range. Yet, in a good brook trout stream this temperature is reached on less than 50 percent of the days in the year. Removal of trees and high shrubs from the banks of some trout streams has been proposed as a means to improve water temperature and increase the growth of aquatic plants which would support more benthic invertebrates, the organisms that constitute the bulk of the trout food supply. These stretches of stream would also be easier to fish than brushy, tree-lined reaches. The project involved collection of stream temperature data before and after brush removal, collection of trout population data before and after brush removal, and measurements of several physical characteristics of the stream channel before and after brush removal.
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Waupaca, WI 54981
TELEPHONE: (715) 258-2886
NBIP ACCESSION NUMBER: WI/029

<938>

INVESTIGATOR(S): Kempinger, J.J.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Northern Highland Fishery Research Project
PURPOSE: Long term monitoring to determine fish populations available and the degree to which they are utilized by anglers compared to natural mortality.
SPONSOR(S): FWS

SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1946
PROJECT DURATION: over five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: In Escanaba Lake, predators, in contrast to prey (panfish), maintained a relatively stable population. Each fish species has a characteristic mean rate of exploitation.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: fisheries
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; crustacea; insecta
TAXA: FISHES, 10 SPECIES; CRUSTACEA, 15 SPECIES
ADDED KEYWORDS: management measures; walleyes; northern pikes; pikes; muskellunge; smallmouth basses; largemouth basses; yellow perch; perch; pumpkinseeds; rock basses; bluegills; crappies; legal regulation; benthic organisms; cladocerans; copepods; amphipods; decapods; dipterans; trichopterans; ephemeropterans; coleopterans; odonotans; neuropterans
PRIMARY PARAMETERS INVESTIGATED: age; biomass; diversity; growth; habitat characterization; harvest; kill; mortality; natality; numbers; productivity; reproduction; sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): creel census
NUMBER OF SAMPLING SITES: 5
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Escanaba Lake; Pallette Lake; Spruce Lake
TYPE OF DATA: raw; reduced; summarized
COMPUTER AND LANGUAGE: UNIVAC 9400; R; P; G
STATISTICS EMPLOYED: mean; mode; median; analysis of variance
ABSTRACT: Five lakes in the Northern Highlands Fishery Research Area were established by the Conservation Commission in 1946 to study primarily the effect of liberalized fishing regulations with no size and bag limits or closed seasons on any species. A complete creel census was established in 1946 through which species composition, relative abundance, and harvest of the mixed warm water fish populations were determined. Variations in the fish population during a 24-year period were not attributable to liberalized angling regulations. Panfish populations exhibited extreme fluctuations but there is no reason to believe that fishing mortality accounted for any of the declines. The last panfish decline in the early and mid-1960's was probably due to the natural buildup of the northern pike population in the late 1950's and to the relatively constant walleye predator component.
REFERENCES: Kempinger, et al, 1975; Brynildson and Kempinger, 1970; Morsell, 1970; Kempinger, 1969; Brynildson and Kempinger, 1973; Avery, 1972; Churchill and Snow, 1964; Kempinger and Churchill, 1972; Churchill, 1963; Kempinger, 1972;

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Kempinger, 1968

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NBIP ACCESSION NUMBER: WI/026

improve regeneration and species composition. One-third of the total forest acreage as been cut since 1962, and most of the aspen acreage is scheduled for cutting before 1980. Cutting in ash stands will be limited until after 1980. Cutting in oak stands will be limited until after 1980.

REFERENCES: Kubisiak, 1973

ADDRESS: John F. Kubisiak

Wisconsin Dept. of Natural Resources

Sandhill Wildlife Area

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NBIP ACCESSION NUMBER: WI/061

<939>

INVESTIGATOR(S): Kubisiak, J.F.

AFFILIATION: Wisconsin Dept. of Natural Resources

TITLE: Deer and Ruffed Grouse Responses to

Management on the Sandhill Wildlife Area

PURPOSE: To evaluate changes in numbers and distribution of deer and grouse following harvests and habitat management.

SPONSOR(S): Wisconsin Dept. of Natural Resources; FWS

SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Both species respond rapidly (i.e., increase in numbers) to forest management practices.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: wildlife; forestry;

recreation

ORGANISMS, MAJOR TYPES: animals; vertebrates;

birds; mammals; plants; vascular plants;

trees; shrubs; herbs; grasses

TAXA: ODOCOLEUS VIRGINIANUS; BONASA UMBELLUS

ADDED KEYWORDS: white-tailed deer; deer;

ruffed grouse; grouse; management

measures; habitat modification; logging

PRIMARY PARAMETERS INVESTIGATED: age;

distribution; habitat characterization;

harvest; immigration; kill; mortality;

natality; numbers; reproduction; sex;

size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

permanent plots

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Wood County; Sandhill Wildlife Area

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: The prime objective at Sandhill is to improve the interspersed of cover types and age classes (and thus grouse populations) through a long-term program of planned disturbance, primarily pulpwood cutting. Further, we accomplish this objective primarily through commercial operations (timber sales). Standard forest management practices, with only minor modifications, are being applied on productive upland sites. Modifications include restriction of most pulpwood sales to 20 acres or less, and experimental strip cutting on a 395-acre aspen island. Shearing, hand-cutting, and controlled burning are being applied in cutover, submerchantable, and "offsite" stands to

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INVESTIGATOR(S): Mason, J.W.

AFFILIATION: Wisconsin Dept. of Natural Resources

TITLE: Monitoring of Water Quality of Selected Wisconsin Lakes

PURPOSE: To develop a data base on Wisconsin lakes of different types and trophic status for purposes of classification, management, and restoration.

SPONSOR(S): State of Wisconsin

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Eutrophic status of a number of Wisconsin lakes was determined.

ECOSYSTEM OR BIOME TYPE(S): aquatic;

freshwater; stream; river; lake; reservoir

LEVEL(S) OF STUDY: ecosystem

MANAGEMENT FOCUS: environmental impact;

fisheries; indicator species; recreation;

pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; microorganisms;

algae

ADDED KEYWORDS: zooplankton; trace elements;

eutrophication; habitat modification

PRIMARY PARAMETERS INVESTIGATED: biomass;

distribution; diversity; numbers

NUMBER OF SAMPLING SITES: 270

SAMPLING FREQUENCY: quarterly

STUDY SITE(S): WI

TYPE OF DATA: raw

ABSTRACT: Water quality data were collected quarterly from summer 1973 through spring 1974 on 185 Wisconsin lakes. Monitoring of selected lakes in the state began in 1966 under the Interagency Water Resources Research and Data Collection Program. Included in the original program were some of the largest and/or most valuable lakes in the state, and some lakes where water quality problems existed or threatened to develop. In July 1973, the monitoring program was expanded to include many additional lakes in all districts of the state. Water quality data on a larger number of lakes was needed for classification, management, protection, and rehabilitation purposes. The priority list of lakes selected was based on public use and interest, aesthetic or scientific considerations, and potential for degradation. A significant unpublished data base has been prepared on monitored lakes dating back to 1966.

REFERENCES: Mason, 1974

ADDRESS: John W. Mason

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3911 Fish Hatchery Rd.
Madison, WI 53711
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NBIP ACCESSION NUMBER: WI/008

<941>
INVESTIGATOR(S): Moe, T.A.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Pollution Investigation Survey
PURPOSE: To determine discharge effect upon aquatic macroinvertebrates.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1950
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Improved water quality in areas where discharges have been eliminated or treatment upgraded.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: invertebrates; crustacea; insecta; mollusca; shellfish; annelida
ADDED KEYWORDS: waste water; sewage treatment; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Surber net; Peterson grab; Ekman dredge
NUMBER OF SAMPLING SITES: 400
SUPPORTING DATA COLLECTED: associated flora; hydrological data; water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Polk County; Barron County; Crawford County; Buffalo River; St. Crux River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: None provided.
ADDRESS: Mr. Terry Moe
Dept. of Natural Resources
1300 W. Clairemont Ave.
Eau Claire, WI 54701
TELEPHONE: (715) 836-2951
NBIP ACCESSION NUMBER: WI/006

<942>
INVESTIGATOR(S): Moulton, J.C.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Experimental Grouse Management on the Stone Lake Area-Study 202
PURPOSE: To determine responses of ruffed grouse populations and harvests in relation to management costs during the first 18 years of a forest-wildlife habitat program.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1972

PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Setback of forest vegetation successions with periodic changes in grouse numbers.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: wildlife; forestry
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; trees; shrubs; herbs
TAXA: BONASA UMBELLUS
ADDED KEYWORDS: ruffed grouse; grouse; succession; management measures; population effects
PRIMARY PARAMETERS INVESTIGATED: age; distribution; habitat characterization; harvest; home range size; kill; mortality; natality; numbers; reproduction; sex; territory size
SAMPLING FREQUENCY: continuous; seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils; terrain
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Oneida County; American Legion State Forest
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The ruffed grouse has been one of the most thoroughly studied game birds in North America. As a result, habitat requirements are generally understood and numerous recommendations to improve habitats have been proposed. However, these recommendations have not been adequately coordinated with forest management objectives. Some of them are in direct conflict and would result in unwarranted costs. The most feasible recommendations for management of extensive forestlands relate only to the management of aspen. These recommendations have not been adequately tested. Thus, the need remains to evaluate a complete management program which incorporates Gullion's recommendations with other acceptable modifications of forest management. This evaluation is being carried out on the 3900-acre Stone Lake Experimental area in Oneida County. This area includes 40% aspen with the remaining acreage distributed among 13 other forest types. Management has been carried out since 1968 through informal agreements among field foresters, game managers, and researchers.
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Wisconsin Dept. of Natural Resources
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Rhinelander, WI 54501
TELEPHONE: (715) 369-3493
NBIP ACCESSION NUMBER: WI/059

<943>
INVESTIGATOR(S): Newberry, G.
AFFILIATION: Botany Dept., University of Wisconsin
TITLE: The Influences of a Sulfate Process Paper Mill on the Corticolous Lichens in the Immediate Vicinity of Mosinee, Wisconsin
PURPOSE: To illustrate the presence (or absence) of zones of lichen inhibition around a point source of sulfur dioxide pollution and to discover which lichens

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were present in each zone.
SPONSOR(S): University of Wisconsin
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1971
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: The corticolous lichens were most drastically affected northeast of the mill along the path of the prevailing winds. The fruticose lichen community on tree bark were the most severely damaged. The crustose community was the lichen group appearing to be the least damaged.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; indicator species
ORGANISMS, MAJOR TYPES: plants; non-vascular plants; lichens
TAXA: ACER RUBRUM; QUERCUS BOREALIS; ULMUS AMERICANA; PINUS STROBUS
ADDED KEYWORDS: red maples; red oaks; white elms; white pines; air pollution; pulp mills; sulfur dioxide; industrial chemicals
PRIMARY PARAMETERS INVESTIGATED: diversity; numbers
NUMBER OF SAMPLING SITES: 80
SUPPORTING DATA COLLECTED: atmospheric chemistry
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Wisconsin River; Marathon County; Wocp County; Portage County
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: percentile; analysis of variance
ABSTRACT: The corticolous lichen communities on ACER RUBRUM, QUERCUS BOREALIS, ULMUS AMERICANA, and PINUS STROBUS were examined along transects in the vicinity of a sulfate paper mill in Mosinee, Wisconsin. The lichens were most drastically affected northeast of the mill where a normal crustose lichen community persisted to within 6.5-10 km of the paper mill, a normal foliose community was observed at a distance of 13-16 km but a normal fruticose community did not occur within 21 km NE of the mill. This distribution pattern corresponded with reduced atmospheric SO₂ concentrations calculated as the distance from the paper mill increased.
REFERENCES: Newberry, 1974
ADDRESS: Gillian Newberry
Herbarium-Birge Hall
University of Wisconsin-Madison
Madison, WI 53706
TELEPHONE: (608) 262-2599
NBIP ACCESSION NUMBER: WI/001

<944>

INVESTIGATOR(S): Redmond, D.G.
AFFILIATION: MALCO Environmental Sciences
TITLE: Phytoplankton Entrainment Study near Kewaunee Nuclear Power Plant
PURPOSE: To determine the effects of condenser passage and plume entrainment on

the phytoplankton community.
SPONSOR(S): Wisconsin Public Service Corp.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Minor increases of primary productivity in the plume areas have been observed.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: environmental impact; power generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
ADDED KEYWORDS: primary productivity; entrainment; nuclear power plants; thermal effluents; phytoplankton; species composition; chlorophylls; carbon-14
PRIMARY PARAMETERS INVESTIGATED: physiology; productivity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Kemmerer sampler
NUMBER OF SAMPLING SITES: 6
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Kewaunee County; Lake Michigan; Kewaunee Nuclear Power Plant
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: CDC 6400; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance
ABSTRACT: Effects of entrainment have been assessed at Kewaunee during pre-operational as well as operational periods from March 1973 through the present. Intake-discharge sampling occurs monthly and plume sampling occurs from April through November. Phytoplankton samples are analyzed for abundance, species composition, chlorophyll A concentration, and carbon-14 fixation rates on a monthly basis.
ADDRESS: Mr. Darrell G. Redmond
Malco Environmental Sciences, Inc.
1810 Frontage Rd.
Northbrook, IL 60062
TELEPHONE: (312) 564-0700 ext. 238
NBIP ACCESSION NUMBER: IL/038

<945>

INVESTIGATOR(S): Rusch, D.H.
AFFILIATION: Wisconsin Cooperative Wildlife Resources Unit, FWS
TITLE: Factors Influencing Nest Use, Nest Density, and Productivity of Bald Eagles in Northern Wisconsin
PURPOSE: To relate eagle nesting and productivity to eagle food habits, food resources, and human disturbance.
SPONSOR(S): FWS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Data on the effect of human disturbance is still being analysed. Food habit studies suggest that fish is the principal food item and most of the food is obtained within three miles of the nesting site.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; aquatic;

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freshwater; stream; river; lake
LEVEL(S) OF STUDY: population; community;
region
MANAGEMENT FOCUS: endangered species;
forestry; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds
TAXA: HALIAEETUS LEUCOCEPHALUS
ADDED KEYWORDS: population effects; nesting
sites; bald eagles; raptors; habitat
modification; eagles
PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; habitat characterization;
home range size; numbers; reproduction;
territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observation; interview; collection of food
remains
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: water quality data
STUDY SITE(S): WI
TYPE OF DATA: raw; reduced; summarized;
literature-derived
STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis;
contingency table analysis
ABSTRACT: The basic objective of this study
was to determine the relationships between
number and distribution of eagles and
human disturbance and food resources
available to eagles.
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226 Russell Laboratories
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Madison, WI 53706
TELEPHONE: FTS 262-2671
NBIP ACCESSION NUMBER: WI/017

<946>

INVESTIGATOR(S): Salamun, P.J.
AFFILIATION: Botany Dept., University of
Wisconsin-Milwaukee
TITLE: The Regeneration of the American Yew
(TAXUS CANADENSIS) from Intensive Deer
Browsing
PURPOSE: To observe the rate of recovery of
the American yew (TAXUS CANADENSIS)
following an intensive destruction by deer
in the winter of 1965-66.
SPONSOR(S): University of Wisconsin-Milwaukee
Field Station; Wisconsin Dept. of Natural
Resources
SPONSOR CATEGORY: teaching institution; state
government
DATE OF INITIATION: 1966
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Little regeneration for
the first three years, some growth in the
next two years, and rather rapid growth
during the year 1974-75.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; wetland
LEVEL(S) OF STUDY: organism; community;
ecosystem
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs
TAXA: TAXUS CANADENSIS
ADDED KEYWORDS: american yews; yews;

predation; succession; enclosures; habitat
modification; deer
PRIMARY PARAMETERS INVESTIGATED: age; growth;
habitat characterization; mortality;
reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
direct measurements
NUMBER OF SAMPLING SITES: 3
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
climatological data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Ozaukee County;
Mudlake; Cedarburg Bog
TYPE OF DATA: raw
STATISTICS EMPLOYED: mean;
regression/correlation analysis

ABSTRACT: The stands of yew in the upland
forest and on two of the islands in the
large bog have been under surveillance
since the Field Station was acquired in
1964. The general condition of these
shrubs was excellent until they were
heavily browsed by deer during the winters
of 1965-66 and 1966-67. Because this
browse pressure severely depleted some of
the best concentrations of these shrubs,
it was decided to erect several enclosures
in an attempt to save some of them from
total destruction and to note the degree
of recovery while they were under
protection. With the cooperation of the
Wisconsin Department of Natural Resources,
three wire-mesh enclosures varying in size
from 15 feet by 15 feet to 15 feet by 30
feet (depending upon the size of the shrub
clusters), were erected in the fall of
1967. One was placed on the island
immediately east of the Field Station
boundary and two were set up on the large
island at the northeast end of Mud Lake.
Observations for the two years showed
little or no change during the first year
of protection and only slight, but not
measurable, improvement during the second
year. Some of the shrubs outside of the
enclosure also seemed to show some
improvement during the second year,
probably because of the high deer kill in
this area during the 1968 hunting season.
It is presumed that at least five to
fifteen years of protection will be needed
for significant recovery of the yews in
these overbrowsed areas.

REFERENCES: Salamun, 1969
ADDRESS: Peter J. Salamun
Botany Dept.
University of Wisconsin-Milwaukee
Milwaukee, WI 53201
TELEPHONE: (414) 963-4213 ext. 4290
NBIP ACCESSION NUMBER: WI/025

<947>

INVESTIGATOR(S): Serns, S.L.
AFFILIATION: Wisconsin Dept. of Natural
Resources
TITLE: Effects of a Minimum Size Limit on the
Walleye Population of Big Crooked Lake,
Wisconsin
PURPOSE: To identify any changes in the
population dynamics and structure of a
walleye population under the influence of
a 15-inch minimum length limit.
SPONSOR(S): Dairyman's Country Club;
Wisconsin Dept. of Natural Resources

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SPONSOR CATEGORY: state government; societies
and other organizations

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Decreased growth of
walleye population, buildup of walleye
numbers under size limit, and decrease in
the numbers over the size limit.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; lake

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: fisheries

ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish

TAXA: STIZOSTEDION VITREUM

ADDED KEYWORDS: walleyes; population
dynamics; management measures

PRIMARY PARAMETERS INVESTIGATED: age;
biomass; growth; harvest; mortality;
numbers; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
scale reading; jaw tags; creel census

SAMPLING FREQUENCY: annual

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Vilas County; Big
Crooked Lake

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; percentile;
regression/correlation analysis

ABSTRACT: The walleye population of Big
Crooked Lake was studied for five years
after the establishment of a 15-inch (381
mm) minimum length limit. There was a
trend toward a build-up of fish under the
size limit and a decrease in the number of
walleyes over the size limit. The growth
of the entire walleye population was
significantly less in 1974 and 1975 than
in 1971. The angler harvest of walleyes
above the size limit decreased four-fold
through the five-year study. As the number
of walleyes under the size limit increased
during the study so did the incidence of
LYMPHOCYSTIS disease.

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NBIP ACCESSION NUMBER: WI/068

<948>

INVESTIGATOR(S): Swenson, W.A.

AFFILIATION: Center for Lake Superior
Environmental Studies

TITLE: Measurement of the Effects of Erosion
Control on Aquatic Life in the Nemadji
River and its Tributaries

PURPOSE: Identification of changes in
abundance, distribution, reproductive
behavior, and survival associated with
suspended solid load in the Nemadji River.

SPONSOR(S): EPA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in abundance -
major fish and benthic species are related
to changes in water quality.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; river

LEVEL(S) OF STUDY: community; ecosystem
MANAGEMENT FOCUS: fisheries; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; crustacea; insecta;
mollusca; shellfish

TAXA: STIZOSTEDION VITREUM; CATOSTOMUS
COMMERSONI; SALMO GAIARDNERI; SALMO TRUTTA;
SALVELINUS FONTINALIS; CYPRINIDAE;
PLECOPTERA; EPHEMEROPTERA; DIPTERA;
TRICHOPTERA; COLEOPTERA; ODONATA;
OLIGOCHAETA; NEMATODA; AMPHIPODA;
COLLEMBOLA

ADDED KEYWORDS: walleyes; rainbow trouts;
brook trouts; brown trouts; trouts;
benthic organisms; management measures;
succession

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
diversity; emigration; growth;
immigration; migratory patterns;
reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
electrofishing gear; trap-nets;
Hester-Dendy sampler; Hess sampler; Surber
net; Ponar dredge

SAMPLING FREQUENCY: seasonal; weekly; monthly
SUPPORTING DATA COLLECTED: associated
microorganisms; climatological data; water
quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Douglas County;
Nemadji River; Lake Superior

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of
covariance; regression/correlation analysis

ABSTRACT: The Nemadji aquatic life studies
were initiated as part of a Red Clay
Erosion Control Demonstration Project. The
aquatic life phase is defining effects of
reduced sedimentation on aquatic life in
the basin. Field and laboratory studies
are involved in defining effects of
turbidity and sedimentation on fish and
benthic communities. Effects on the
species complex, distribution, abundance,
reproduction, and behavior are being
investigated.

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NBIP ACCESSION NUMBER: WI/038

<949>

INVESTIGATOR(S): Vogt, R.C.

AFFILIATION: Zoology Dept., University of
Wisconsin

TITLE: Distribution, Ecology, and Life
History of Wisconsin Amphibians and
Reptiles

PURPOSE: To determine the population levels,
ecological requirements, distribution, and
methods of management for reptiles and
amphibians in Wisconsin.

SPONSOR(S): Wisconsin Dept. of Natural
Resources; Milwaukee Public Museum;
University of Wisconsin

SPONSOR CATEGORY: state government; museum;
teaching institution

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

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PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Populations of many species have diminished markedly.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; savanna; grassland; wetland; aquatic; freshwater; river; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species; range; pollution control
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibians; reptiles
TAXA: GRAPTENYS PSEUDOGEOGRAPHICA; RANA PIPIENS; CHRYSOMYS MARGINATA; CHELYDRA SERPENTINA; Hyla CHRYSOSCELIS; Hyla VERSICOLOR; SISTRURUS CATENATUS; ELAPHE VULPINA
ADDED KEYWORDS: population effects; pesticides; leopard frogs; frogs; snakes; turtles
PRIMARY PARAMETERS INVESTIGATED: age; behavior; biomass; distribution; diversity; emigration; growth; habitat characterization; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; reproduction; sex; size/weight; territory size; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): mark and recapture; observation; laboratory analyses; laboratory rearing
NUMBER OF SAMPLING SITES: numerous
SAMPLING FREQUENCY: seasonal; daily
SUPPORTING DATA COLLECTED: associated fauna; associated flora; terrain
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Vernon County; Iowa County; Dodge County; Mendota Lake; Mississippi River; Wisconsin River; Chippewa River; Black River; St. Croix River; Rock River
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile; multivariate analysis
ABSTRACT: Primary interest involves the protection and maintenance of reptiles and amphibians in their natural habitats in Wisconsin and the study of their interactions in the environment. Ecological and behavioral relationships as well as taxonomy are most heavily pursued. Although I have been inventorying all reptiles, the main field of research involves turtles, snakes, and frogs. Long term population monitoring is being done with turtles and soon with snakes.
REFERENCES: Hine, et al, 1975; Vogt, 1975
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NBIP ACCESSION NUMBER: WI/083

<950>

INVESTIGATOR(S): Wagner, R.O.
AFFILIATION: Dept. of Biology, University of Wisconsin-Platteville
TITLE: Prairie Distribution Study
PURPOSE: Personal curiosity.

SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1956
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Prairie deterioration.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland
LEVEL(S) OF STUDY: community
MANAGEMENT FOCUS: right-of-way
ORGANISMS, MAJOR TYPES: plants; vascular plants; herbs; grasses
TAXA: PLANTS, 125 SPECIES
ADDED KEYWORDS: construction; habitat modification
PRIMARY PARAMETERS INVESTIGATED: distribution
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transect - 1500 contiguous meters
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: annual
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Iowa County; Grant County
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: This study is concerned with the distribution pattern of some prairie plants as determined by presence-absence along a 1500 meter transect in 1 meter units. Potential for changes over a 20-year period as a result of varying treatment of the right-of-way by railroad maintenance and changes resulting in the vegetative cover are being investigated.
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NBIP ACCESSION NUMBER: WI/079

<951>

INVESTIGATOR(S): Weisensel, D.C.
AFFILIATION: Wisconsin Dept. of Natural Resources
TITLE: Drainage Basin Surveys; Primary Monitoring Network
PURPOSE: To determine water quality through biological methods.
SPONSOR(S): Wisconsin Dept. of Natural Resources
SPONSOR CATEGORY: state government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Local changes due to upgrading the discharges of industries and municipalities.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river
LEVEL(S) OF STUDY: organism; population; community
MANAGEMENT FOCUS: fisheries; wildlife; indicator species; recreation; resource planning; pollution control; water quality
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; microorganisms; algae
ADDED KEYWORDS: management measures; sewage treatment; waste water; industrial chemicals; algal blooms; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: BOD; distribution; diversity; kill; mortality; numbers; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): Peterson dredge; Ekman dredge; Surber net
NUMBER OF SAMPLING SITES: 50-75
SAMPLING FREQUENCY: seasonal

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SUPPORTING DATA COLLECTED: associated flora;
water quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Green Bay; Sheboygan
River; Wolf River; Fox River; Menominee
River; Oconto River; Twin River; Kewaunee
River; Duck River; Pesticide River; Pensaukee
River

TYPE OF DATA: summarized

STATISTICS EMPLOYED: analysis of variance

ABSTRACT: None provided.

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NRIP ACCESSION NUMBER: WI/011

<952>

INVESTIGATOR(S): White, J.R.

AFFILIATION: Dept. of Fisheries and Wildlife,
State of WisconsinTITLE: Response of Trout Populations to
Habitat Change in Four Wisconsin StreamsPURPOSE: To evaluate effects of stream
habitat management and other habitat
variables (such as streamflow discharge,
sediment load, and vegetation) in terms of
trout abundance.SPONSOR(S): Wisconsin Dept. of Natural
Resources

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1954

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Trout abundance responded
to restoration of abused habitat and to
intensive restructuring of natural but
rather unfavorable stream morphology.
These responses were strong but weak
response occurred to minor management of
good habitat. Stream discharges had great
influence on abundance.ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: environmental impact;
fisheries; indicator species; resource
planningORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; plants; vascular plants; trees;
shrubs; herbs; grassesTAXA: SALMO TRUTTA; SALMO GAIEDNERI;
SALVELINUS FONTINALIS; CATOSTOMUS
COMMERSONI; COTTUS BAIRDIADDED KEYWORDS: brook trouts; trouts; brown
trouts; rainbow trouts; white suckers;
mottled sculpins; habitat modification;
sediments; discharge rates; irrigationPRIMARY PARAMETERS INVESTIGATED: age;
biomass; distribution; emigration; growth;
habitat characterization; harvest;
immigration; kill; mortality; natality;
numbers; productivity; reproduction; sex;
size/weightDATA COLLECTING DEVICE(S) OR PROCEDURE(S):
mark and recapture techniques;
electrofishing gear; Peterson formulaNUMBER OF SAMPLING SITES: 4 streams ranging
from 3.5 to 15 miles in length

SUPPORTING DATA COLLECTED: associated fauna;

associated flora; hydrological data;
terrain; water quality data

STUDY SITE(S): WI

GEOGRAPHIC DESCRIPTION: Dane County;
Waushara-Adams County; Polk County;
McKenzie Creek; Big Roche-a-Cri Creek;
Black Earth Creek; Mt. Vernon Creek

TYPE OF DATA: raw; reduced; summarized

ABSTRACT: Two of the general problems in
management of trout streams are to
determine: (1) how to protect and alter
the physical shape of channels to benefit
trout populations, and (2) how habitat and
fishes are affected by withdrawal of water
for irrigating crops or for other human
uses. Big Roche-a-Cri Creek in the sand
plain of central Wisconsin was studied
with regard to these problems. By fencing
and by purchase of land, farm livestock
were excluded from most parts of the
stream that had been grazed. Beaver and
their dams were removed from several areas
where they had impounded flow. Flow of
some parts of channels, dredged straight a
century before, was rerouted into former
meanders. Drought plus removal of water
for irrigation gave comparable lows in
springtime of 1959 and 1965. Wild
populations fluctuated greatly and were
highest in years of greatest flow, lowest
in drought. Habitat management provided a
favorable effect which was of strongest
benefit to the trout at times of low water.

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NRIP ACCESSION NUMBER: MI/040

<953>

INVESTIGATOR(S): Willard, D.E.

AFFILIATION: Institute for Environmental
Studies, University of Wisconsin

TITLE: Columbia Site Impact Study

PURPOSE: Documentation of the environmental,
economic, and social changes caused by the
coal-fired electrical station in Columbia,
Wisconsin.SPONSOR(S): Wisconsin Power and Light Co.; EPA
SPONSOR CATEGORY: private corporation;
federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Large scale changes in
wetland vegetation, changes in animal
population, and changes in vegetation as a
result of air pollution.ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; wetland; aquatic;
freshwater; stream; river

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species; pollution control; water quality;
power generationORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; reptiles; fish; birds; mammals;
invertebrates; crustacea; insecta;
annelida; plants; vascular plants; trees;
shrubs; herbs; non-vascular plants;
lichens; microorganisms; algaeTAXA: FISHES, 21 SPECIES; BIRDS, 127 SPECIES;
REPTILES, 7 SPECIES; AMPHIBIA, 6 SPECIES;

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MAMMALS, 21 SPECIES
ADDED KEYWORDS: coal; fossil fueled power plants; air pollution; sulfur dioxide; ozone; nitrous oxides; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: diversity; habitat characterization; residues
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): bird transects; plant quadrats; observation wells; bottom samplers; D-net samplers; fyke nets; minnow seines; fall traps
NUMBER OF SAMPLING SITES: 400+
SAMPLING FREQUENCY: continuous; seasonal; daily; weekly; monthly; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry; climatological data; hydrological data; soils; terrain; water quality data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Columbia County; Wisconsin River; Rocky Run River; Duck Creek; Columbia Generating Station; Mississippi River
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; median; percentile; regression/correlation analysis; modeling, deterministic
ABSTRACT: By late 1975 there will be more than one thousand coal-fired power generating stations in the United States. Projections indicate that this number will increase through the 1980's and 1990's. To date, there has been no complete study in the mid-West of the impact on the environment of the construction and operation of such generating stations. We are conducting such a study on the Columbia Generating Station at Portage, Wisconsin. Because this facility is located in the flood plain of the Wisconsin River, the study emphasis is on the impact on the aquatic environment. This study is a continuation and expansion of a four-year base line effort conducted at the University of Wisconsin-Madison with the support and cooperation of the State of Wisconsin Public Service Commission and three utilities: the Wisconsin Power and Light Company, the Wisconsin Public Service Corporation and the Madison Gas and Electric Company. The study is interdisciplinary in that it integrates investigations concerning aquatic invertebrates and fish, hydrogeology, wetlands ecology, land use, aesthetics, trace chemicals, water chemistry, chemicals hazardous to fish, air pollution monitoring and modeling, plant damage, meteorology, and remote sensing. The integration is the responsibility of a synthesis group. The Synthesis Group is further responsible to interactively provide organized information to a Siting Criteria and Data Base Group. This group is responsible for defining the data base and siting criteria which should be employed in power plant siting decisions.

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NBIP ACCESSION NUMBER: WI/035

<954>

INVESTIGATOR(S): Zavitzkowski, J.
AFFILIATION: Institute of Forest Genetics, North Central Forest Experiment Station, FS
TITLE: Radiobiology of Northern Forest Communities
PURPOSE: To study effects of gamma irradiation on various components of the northern deciduous forest ecosystems in northern Wisconsin.
SPONSOR(S): FS; ERDA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: no
CHANGE(S) OBSERVED: Selective elimination of radiosensitive plant species, reduced biomass production, reduced seed production, and loss of original structure of all forest strata.
ECOSYSTEM OR BIOHE TYPE(S): terrestrial; forest; deciduous
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; forestry; radiological
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses; non-vascular plants; lichens
TAXA: TREES, 28 SPECIES; SHRUBS, 16 SPECIES; PTERIDOPHYTES, 13 SPECIES; GRASSES, 12 SPECIES; SEDGES AND RUSHES, 16 SPECIES; FORBS, 108 SPECIES; LICHENS, 31 SPECIES; MAMMALS, 6 SPECIES; AMPHIBIA, 18 SPECIES; REPTILES, 15 SPECIES; BIRDS, 47 SPECIES
ADDED KEYWORDS: ferns; shrews; chipmunks; mice; voles; radiation effects; gamma radiation; leaf litter; cesium-137
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; growth; home range size; mortality; numbers; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; sample plots; trapping
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; weekly
SUPPORTING DATA COLLECTED: associated flora; climatological data
STUDY SITE(S): WI
GEOGRAPHIC DESCRIPTION: Oneida County; Enterprise Radiation Forest
TYPE OF DATA: raw; reduced; summarized; literature-derived
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis; non-linear estimation
ABSTRACT: Nine forest and three logging-road plant communities were sampled in the Enterprise Radiation Forest in northern Wisconsin. These communities were quantitatively described by simple ecological indicators and were classified as to forest cover types for the purpose of assessing compositional and structural change after gamma radiation. Lichens were studied to determine, both separately and combined, the effect of environmental change caused by irradiation damage to the

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larger plants of the forest, and the effect of direct radiation to the lichen thalli. A live-trap study of small-mammal populations was conducted monthly since 1970 along 2 grids totaling 8.9 ha in size as a reference against which observations

after irradiation can be compared.

REFERENCES: Zavitkovski, 1974; Erbsch, 1974;
Clausen, 1974; Buech, 1974ADDRESS: Mr. Jaroslav Zavitkovski
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TELEPHONE: (715) 362-7474

NBIP ACCESSION NUMBER: WI/005

WYOMING

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Fish and Wildlife Service Region 6
(SEE ALSO 180, 203, 208, 522, 835, 928)

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INVESTIGATOR(S): Beetle, A.A.
AFFILIATION: Range Management Dept.,
University of Wyoming
TITLE: Range Survey in Teton County, Wyoming
PURPOSE: To document the kind and rate of
vegetation change.
SPONSOR(S): Wyoming Agricultural Experiment
Station
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1946
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Deterioration and
elimination of the aspen community.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; grassland;
aquatic; freshwater; stream; lake
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: endangered species;
environmental impact; wildlife; indicator
species; range; recreation; resource
planning
ORGANISMS, MAJOR TYPES: animals; mammals;
plants; vascular plants; trees; shrubs;
herbs
TAXA: ANTILOCAPIRA AMERICANA; POPULUS
TRENULOIDES
ADDED KEYWORDS: elk; quaking aspens; aspens;
ungulates; population effects
PRIMARY PARAMETERS INVESTIGATED: age; habitat
characterization; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
crown standard techniques
NUMBER OF SAMPLING SITES: many
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; soils
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Teton County
ABSTRACT: Quaking aspen, both as an
individual tree and a community dominant
has played an important part in the
natural history of Teton County. Once
extensive stands, however, have become
severely altered in a trend of thirty
year's duration. There is a need to
evaluate the significance of this trend.
This research is partly a result of 25
years of observations within Teton County,
Wyoming, partly a result of an intensive
study of aspen in Wyoming under the
McIntyre-Stennis program, over the past
several years, and partly a result of a
survey of the literature on quaking aspen.
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TELEPHONE: (307) 766-4236 ext. D
NBIP ACCESSION NUMBER: WY/010

<956>

INVESTIGATOR(S): Bergstrom, R.C.
AFFILIATION: Div. of Microbiology and
Veterinary Medicine, University of Wyoming
TITLE: Lungworms (DICTIOCAULUS VIVIPARUS) in
Elk (CERVUS CANADENSIS NELSONI) in Teton
and Albany Counties, State of Wyoming
PURPOSE: To learn about DICTIOCAULUS SPP
prevalence in Rocky Mountain elk at

various times of the year and to counsel
elk management personnel so as to improve
elk herd health.

SPONSOR(S): University of Wyoming; PI
SPONSOR CATEGORY: teaching institution;
private individuals
DATE OF INITIATION: 1968
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Prevalence of
DICTIOCAULUS SPP larvae in elk feces and
numbers of worms as well as per cent of
infected lungs decreased during 1971-1973.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; range
ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals
TAXA: DICTIOCAULUS VIVIPARUS; CERVUS
CANADENSIS
ADDED KEYWORDS: lungworms; elk; management
measures; parasites; aschelminthes;
nematodes
PRIMARY PARAMETERS INVESTIGATED:
distribution; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
fecal samples; elk lungs
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: quarterly
SUPPORTING DATA COLLECTED: associated fauna
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Teton County; Snake
River; Jackson Lake Shores; Teton National
Park
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: We are determining the prevalence
of DICTIOCAULUS VIVIPARUS lungworm in elk
(percent positive for the worm) to learn
if management changes could be effected on
the National Elk Refuge and result in a
decrease of the percent incidence or
prevalence of the lungworm parasite.
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Zoology Dept.
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Laramie, WY 82070
TELEPHONE: (307) 766-2170
NBIP ACCESSION NUMBER: WY/002

<957>

INVESTIGATOR(S): Binns, N.A.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Effects of Rotenone Treatment on the
Fauna of the Green River, Wyoming
PURPOSE: To determine the short and long term
impact of rotenone exposure to fish and
aquatic fish food organisms, as well as
recovery time after such exposure.
SPONSOR(S): Wyoming Game and Fish Dept.; FWS
SPONSOR CATEGORY: federal government; state
government
DATE OF INITIATION: 1962
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Major changes in fauna
numbers and fauna composition noted in
impacted areas, as compared to control
stations.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
mountain; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species;
environmental impact; fisheries; indicator

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species
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; insecta

TAXA: FISHES, 14 SPECIES

ADDED KEYWORDS: rotenone; suckers;
piscicides; shiners; minnows; carps;
daces; whitefishes; brown trout; trout;
squawfishes; humpback suckers; suckers;
channel catfishes; catfishes; black
bullheads; bullheads; rainbow trout;
beetles; leeches; snails; stonefly nymphs;
recovery; mayflies; pesticides; benthic
organisms

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; kill; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Surber sampler; drift sampler; gill nets;
seines; electrofishing gear; dynamite
NUMBER OF SAMPLING SITES: 9 permanent; 5
temporary

SAMPLING FREQUENCY: weekly; monthly
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; water quality data

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Sweetwater County;
Green River

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean

ABSTRACT: From July, 1962 to October, 1964,
samples were taken of the invertebrates
and fishes of the Green River in
southwestern Wyoming to determine the
effects of rotenone treatment on the river
fauna. The river was treated in September,
1962. The reaction of the fauna to the
toxicant was investigated at the time of
treatment, and post-treatment population
levels of the fauna were followed closely
to establish the time needed for recovery
to pretreatment levels. The invertebrate
populations in the Green River were
drastically reduced by the rotenone
treatment, but began to reappear in the
upper 30 miles of the treated area within
one month. The lower treated area was
almost barren of invertebrate organisms
until the spring of 1963. By September,
1963, invertebrate numbers throughout the
treated area were equal to or greater than
those found prior to treatment, but
changes in the composition of the
invertebrate fauna were noticeable.
Sufficient fish food organisms to sustain
a fishable trout population were present
by the late summer of 1963. The river was
repopulated by flannelmouth suckers,
PANTOSTEUS suckers, reidside shiners,
speckled dace, fathead minnows, and carp.
These species, except for the carp, had
regained their pretreatment distribution
at the close of study. Whitefish and brown
trout required nearly two years to regain
their pretreatment distribution pattern.
Squawfish, humpback suckers, channel
catfish, and black bullheads did not
reappear after treatment apparently
because the only source of recruitment was
below Flaming Gorge Dam. Large numbers of
rainbow trout were planted in the treated
area six months after treatment and are
now supporting a successful trout fishery.

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NBIP ACCESSION NUMBER: WY/037

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INVESTIGATOR(S): Britt, T.J.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Big Game Survey, Upland Game Survey,
and Waterfowl Survey
PURPOSE: Determine population levels and
changes of elk, deer, antelope, bear, big
horn sheep, grouse, partridge, pheasant,
and waterfowl species in order to
formulate hunting seasons.

SPONSOR(S): Wyoming Game and Fish Dept.

SPONSOR CATEGORY: state government

DATE OF INITIATION: 1960

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Populations increase and
decrease with plant composition and
habitat changes.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; forest; coniferous; deciduous;
grassland; tundra; alpine; wetland;
mountain; aquatic; freshwater; stream;
river; lake; reservoir

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: wildlife; indicator
species; range; recreation; resource
planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; plants; vascular plants;
trees; shrubs; herbs

TAXA: CERVUS CANADENSIS; ODOCOILEUS HEMIONUS;
ODOCOILEUS VIRGINIANUS; URSUS AMERICANUS;
ANTHROPOUS AMERICANUS; OVIS LINNAEUS;
NEMOROPUS OBSCURUS; MONAS UMBELLUS;
CENTROCERCUS UROPHASIANUS; ALECTORIS
GABECA; PERDIX PERDIX; PHASIANUS
COLCHICUS; SYLVILAGUS AUDUBONI; ANAS SPP;
BRANTA CANADENSIS

ADDED KEYWORDS: elk; mule deer; white-tailed
deer; black bears; antelopes; bighorn
sheep; blue grouse; ruffed grouse; sage
grouse; chukar; hungarian partridges;
ring-necked pheasants; cottontail rabbits;
canada geese; himalayan snow cocks;
management measures; geese; deer; bears;
grouse; pheasants; rabbits; ducks

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; habitat characterization;
harvest; home range size; kill; mortality;
migratory patterns; numbers; productivity;
reproduction; sex

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
aerial census; transects; hunter surveys;
check stations; trapping and marking;
observation

NUMBER OF SAMPLING SITES: numerous sites

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated flora;
climatological data; soils; terrain

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Big Horn County;
Washakie County; Big Horn River; Big Horn
Lake; Big Horn Mountains

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; median;
percentile; modeling, deterministic;

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Serial autocorrelations
ABSTRACT: Project is oriented toward gathering information on game species to aid in formulation of hunting seasons and correct management objectives. Herd or flock composition and condition and habitat condition are primary approaches.
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NBIP ACCESSION NUMBER: WY/033

<959>

INVESTIGATOR(S): Collins, T.C.
AFFILIATION: University of Wyoming
TITLE: The Ecology of the Beaver on the Snake River Floodplain in Grand Teton National Park, Wyoming
PURPOSE: Enumerate and evaluate population dynamics, ascertain the significance of human use of floodplain on beaver behavior and influences of Jackson Lake Dam on population dynamics, and interrelationships of beaver with other wildlife.
SPONSOR(S): New York Zoological Society; NPS; University of Wyoming
SPONSOR CATEGORY: federal government; state government; teaching institution
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Indefinite to date--changes in time are largely seasonal and influenced by regulation of water flow by Jackson Lake Dam. Field work will require an additional 1-2 years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; wetland; aquatic; freshwater; stream; river; lake
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: environmental impact; wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; microorganisms; bacteria
TAXA: CASTOR CANADENSIS; FRANCISIELLA TULARENSIS
ADDED KEYWORDS: moose; river otters; muskrats; greater sandhill cranes; canada geese; floodplains; geese; cranes; otters
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; home range size; mortality; natality; numbers; reproduction; sex; size/weight; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): live trapping; tagging; line transects; vegetation analysis; starlight scope; aerial photography
NUMBER OF SAMPLING SITES: 77 colonies; over 400 miles of streams and channels
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated

microorganisms; hydrological data
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Teton County; Snake River; Buffalo Fork River; Jackson Lake Dam; Grand Teton National Park
TYPE OF DATA: raw; reduced
STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
ABSTRACT: The population dynamics of beaver on the Snake River floodplain in Grand Teton National Park are being determined by live trapping and tagging techniques. The population is monitored each year by re-trapping, observations, and returns from beaver that dispersed from the study area. Seasonal dynamics are greatly influenced by stream flow as regulated by Jackson Lake Dam. Cyclic activity (beaver establishment, eventual abandonment, habitat regrowth, and re-establishment) is being investigated by vegetation analysis of known age sites, both active and abandoned. The interrelationships of beaver to other wildlife, including competition with moose, are being investigated. The behavior of beaver in relation to human use of the floodplain is being evaluated. Habitat requirements, food habits by microanalysis techniques, stream dynamics, etc. are also under investigation.
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NBIP ACCESSION NUMBER: WY/017

<960>

INVESTIGATOR(S): Craighead, F.C.
AFFILIATION: Water Resources Research Institute, University of Wyoming
TITLE: A Comparison of Nesting Raptors at Moose, Wyoming 1947 versus 1975
PURPOSE: To determine changes and trends over a 28 year period in the number and species composition of nesting raptors, productivity, nesting success, and fledgling survival.
SPONSOR(S): New York Ind. Soc.; Environmental Research Institute; State University of New York-Albany
SPONSOR CATEGORY: societies and other organizations; private corporation; teaching institution
DATE OF INITIATION: 1975
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Decline in nesting population, reduction in egg production, and survival of young.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; tundra; alpine; mountain
LEVEL(S) OF STUDY: population; community; ecosystem
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; trees; shrubs; herbs
TAXA: RAPTORS, 17 SPECIES; BUTEO, 7 SPECIES; OTUS, 5 SPECIES; AQUILA SP; HALIAETUS SP; PANDION HALIAETUS; CORVUS CORAX; FALCO MEXICANUS

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ADDED KEYWORDS: hawks; owls; eagles; ospreys;
ravens; prairie falcons; nests; population
effects

PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; diversity; growth; habitat
characterization; home range size;
mortality; migratory patterns; numbers;
productivity; reproduction; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
observations

NUMBER OF SAMPLING SITES: 1-12 sq mi area
study

SAMPLING FREQUENCY: seasonal; daily

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
terrain

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Teton County; Snake
River; Grand Teton National Park

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: mean; median; percentile

ABSTRACT: A study on a twelve square mile
area at Moose, Wyo. was made of nesting
raptors in 1975 and compared with data
from a similar one conducted 28 years ago
in 1947. The total number of nesting
raptors had declined from 43 in 1947 to 29
pairs in 1975. Two species, the osprey
(PANDION HALIAETUS CAROLINENSIS) and the
prairie falcon (FALCO MEXICANUS) were no
longer nesting on or adjacent to the area.
No nesting screech owls (OTUS ASIO) were
found. The population was reduced by
fourteen pairs or 33 percent. The total
number of eggs produced and the number of
young to fledge was likewise lower. One
hundred twenty-eight eggs were produced in
the earlier year compared to 53 in 1975.
One hundred and ten young fledged in 1947
compared to 25 in 1975. If, as in the
earlier period, we consider the raven
(CORVUS CORAX SINUATUS) as an ecological
equivalent of a raptor, the total nesting
pairs were 40 in 1975 compared to 46 in
1947, or 87% of the original total
population--a 13% decrease. The raven
population had increased from 3 to 11
nesting pairs--a 366% increase. This
increase occurred at the expense of the
Buteo population--Swainson's (BUTEO
SWAINSONI) and red-tailed hawks (BUTEO
JAMAICENSIS). They exhibited a 53%
reduction. In 1975 19 out of 40 nesting
pairs of raptors and ravens successfully
nested--a 48% success. This compares with
a 93% success in 1947. If we consider only
raptors in 1975, there were 12 successful
nests out of a total of 29, or a 41%
success, as compared with 93% in 1947. In
1975, four species exhibited zero nesting
success, and the two most numerous
species, the red-tailed hawk and the
raven, had 43% and 64% nesting success
respectively. The success of the combined
BUTEO population was only 33%. Thus, the
raven, increasing in numbers over the
years, still reveals a higher nesting
success than the BUTEOS. In 1947 the raven
nesting success with fewer pairs was 100%
compared with the BUTEO success of 82%.

Only 60% of the sparrowhawks (FALCO
SPARVERIUS) successfully nested in 1975 as
compared to 100% in 1947.

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NBIP ACCESSION NUMBER: WY/008

<961>

INVESTIGATOR(S): DeByle, N.V.

AFFILIATION: Intermountain Forest and Range
Exp. Sta., FS

TITLE: Regeneration of Lodgepole Pine and
Nutrient Status of Areas Logged with
Varied Utilization Standards in Wyoming

PURPOSE: To determine the environmental
impacts, especially on water, soils, and
tree regeneration, of two levels of
utilization (high and conventional) and
four types of residue disposal associated
with lodgepole pine logging.

SPONSOR(S): FS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1971

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Slight increase in
several nutrients in soil following
logging, and increase in phenol
concentrations in soil solutions.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; mountain

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact;
forestry; water quality

ORGANISMS, MAJOR TYPES: plants; vascular
plants; trees; microorganisms; fungi

TAXA: PINUS CONTORTA

ADDED KEYWORDS: soil microorganisms;
lodgepole pines; pines; logging; clear
cutting; succession; habitat modification;
debris disposal; nutrients; phenols

PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; harvest; mortality; physiology;
residues; size/weight

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
field measures; sampling

NUMBER OF SAMPLING SITES: 4 plots

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated
microorganisms; hydrological data; soils;
water quality data

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Teton County

TYPE OF DATA: raw; summarized

STATISTICS EMPLOYED: mean; analysis of
variance

ABSTRACT: Conclusions reached at this time
are tentative. The study is still active
and at least two years of additional data
will be used in the final report. There
was an apparent slight increase in
concentrations of several nutrients in the
soil solutions at 0.6 and 1.2 m depths
following logging and debris disposal.
However, except for a flush of nutrients
following broadcast burning, there were no
apparent differences in soil solutions
under the four debris disposal treatments.
Phenol concentrations in soil solutions
especially under the near complete
utilization (chipped) treatments were much
greater than under the undisturbed forest.
The environmental impact, if any, from

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this increased phenol content has not been measured.

REFERENCES: Hart and DeByle, 1975
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TELEPHONE: (801) 752-1311
NBIP ACCESSION NUMBER: UT/006

<962>

INVESTIGATOR(S): Diem, K.L.
AFFILIATION: Dept. of Zoology, University of Wyoming
TITLE: White Pelican Population Dynamics, Molly Islands, Yellowstone National Park
PURPOSE: To monitor the breeding population status and annual productivity of the only white pelican colony breeding in a national park in Wyoming.
SPONSOR(S): NPS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1949
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major changes have been zero reproduction in 3 years since 1970 but this reproductive failure was never recorded before in the colony history.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; river
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
TAXA: PELECANUS ERTHROHYNCHOS; LARUS CALIFORNICUS; PHALACROCORAX AURITUS; HYDROPROGNE CASPIA
ADDED KEYWORDS: white pelicans; pelicans; california gulls; gulls; double-crested cormorants; cormorants; caspian terns; terns; nests; population effects; islands
PRIMARY PARAMETERS INVESTIGATED: age; behavior; mortality; migratory patterns; natality; numbers; productivity; reproduction; residues; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): periodic nesting; fledgling and mortality censuses; observation
NUMBER OF SAMPLING SITES: 1
SAMPLING FREQUENCY: seasonal; monthly; irregular
SUPPORTING DATA COLLECTED: climatological data; hydrological data
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Yellowstone Lake; Yellowstone National Park; Molly Islands
TYPE OF DATA: raw
ABSTRACT: The Molly Islands in Yellowstone Lake serve as the rookery for four species of water birds breeding in Yellowstone National Park. This rookery has created much public interest ever since its discovery, primarily because of the controversies involving one of the species, the white pelican. The white pelican requires relative isolation from man to assure perpetuation of the species. As human populations have spread over the North American Continent, they have

adversely influenced the size and distribution of these pelican populations. By 1932, only seven major white pelican breeding colonies remained in North America. It has been assumed by some investigators that populations of white pelicans of the late 1800's had been reduced as much as 50 percent by 1932. This investigation was initiated in 1949 to study the seasonal distribution and long-term survival capabilities of white pelican populations using a rookery located in a national park. Other colonial water birds closely associated with the white pelican breeding colonies were also studied. Species included were the California gull, the double-crested cormorant, and the Caspian tern.

REFERENCES: Diem and Condon, 1967
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NBIP ACCESSION NUMBER: WY/022

<963>

INVESTIGATOR(S): Diem, K.L.
AFFILIATION: Dept. of Zoology, University of Wyoming
TITLE: Some Ecological Aspects of California Gull Breeding Colonies in Albany County, Wyoming
PURPOSE: The major projects objectives are to monitor breeding population status, colony resting, annual productivity, qualitative character of eggs and adults, and migration movements.
SPONSOR(S): none
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1959
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Abandonment of one colony and enlargement of the second colony from an area of two acres to five acres.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: LARUS CALIFORNICUS
ADDED KEYWORDS: california gulls; gulls; nests; population effects
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; growth; habitat characterization; mortality; migratory patterns; natality; numbers; productivity; reproduction; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): fledgling and mortality censuses; observation; mark and release
NUMBER OF SAMPLING SITES: 2
SAMPLING FREQUENCY: seasonal; daily; weekly; monthly
SUPPORTING DATA COLLECTED: climatological data; hydrological data
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Albany County; Twin Buttes Lake; Bamforth Lake
TYPE OF DATA: raw
COMPUTER AND LANGUAGE: XEROX Sigma 7; FORTRAN
STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis;

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contingency table analysis; multivariate analysis

ABSTRACT: As a part of a long-term study of the biology of California Gulls in Wyoming, the young and their development received attention. It was hoped to accomplish three things: (1) establish a growth and developmental standard for the young gulls at the Bamforth Lake breeding colony; (2) develop criteria for aging young California Gulls from a distance as well as in the hand; and (3) develop a method of raising gull chicks in the laboratory and determine to what extent their development deviated from young gulls developing in a natural environment.

REFERENCES: Smith and Diem, 1972

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NBIP ACCESSION NUMBER: WY/023

<964>

INVESTIGATOR(S): Killough, T.J.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Wildlife Biology
PURPOSE: To monitor and evaluate biological data for purposes of game management and establishment of hunting seasons.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Major wildlife populations maintained.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; savanna; grassland; mountain
LEVEL(S) OF STUDY: population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; wildlife; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: ODOCOLEUS HEMIONUS; ANTILOCAPRA AMERICANA; OVIS CANADENSIS; MELEAGRIS GALLOPAVO; CENTROCERCUS UROPHASIANUS; DENDRAGAPUS OBSCURUS; PEDIOECETES PHASIANELLUS; PHASIANUS COLCHICUS; SYLVILAGUS FLORIDANUS; LEPUS AMERICANUS; SCIURUS NIGER; TAMIASCIURUS HUDSONICUS
ADDED KEYWORDS: deer; antelopes; bighorn sheep; sheep; turkeys; sage grouse; blue grouse; sharp-tailed grouse; pheasants; grouse; cottontail rabbits; rabbits; snowshoe hares; hares; fox squirrels; red squirrels; squirrels; habitat modification; management measures
PRIMARY PARAMETERS INVESTIGATED: age; distribution; habitat characterization; harvest; kill; mortality; migratory patterns; natality; numbers; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field observations; harvest data; indirect observation
NUMBER OF SAMPLING SITES: random
SAMPLING FREQUENCY: irregular
SUPPORTING DATA COLLECTED: associated fauna;

associated flora; climatological data; terrain

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Platte County; Goshen County; Laramie County; Albany County; Platte River

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; percentile;

modeling, stochastic

ABSTRACT: This project monitors wildlife populations on a seasonal basis to determine current level, distribution, and condition. Recommendations are made on harvest type and amount and habitat modification. Information is compiled and reported and public information is disseminated. Populations are monitored through direct and indirect indices and through harvest data.

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NBIP ACCESSION NUMBER: WY/027

<965>

INVESTIGATOR(S): Lockman, D.C.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Game Mammal, Upland Game Management; Furbearers and Non-Game Birds and Mammal Management
PURPOSE: To monitor and regulate populations of game and non-game birds and mammals at levels compatible with their habitats.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: state government
DATE OF INITIATION: 1948
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Habitat destruction by human population increase, improved livestock grazing systems, and increase in small and large scale water development projects.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; grassland; tundra; alpine; mountain
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; range; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; microorganisms; viruses; bacteria; protozoa
ADDED KEYWORDS: secondary productivity; habitat modification; management measures; grazing; livestock; cattle
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; harvest; immigration; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; size/weight
NUMBER OF SAMPLING SITES: varied according to species
SAMPLING FREQUENCY: seasonal; annual;
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Lincoln County; Sweetwater County; Green River; Bear River; Fontenelle Reservoir

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TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;

regression/correlation analysis
ABSTRACT: This project is designed to monitor and manage populations and habitats of game and non-game mammals and birds in southwestern Wyoming. Monitoring systems for game birds and mammals have been in effect since 1948 (approximately). Systems and methods for monitoring non-game populations and habitats will be implemented in the near future. The project is also designed to provide the maximum in recreational potential consistent with the maintenance of wildlife populations relative to their habitats. Habitat evaluations and cooperative projects with other resource agencies are conducted.

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Wyoming Game and Fish Dept.
180 W. Flaming Gorge
Green River, WY 82935

TELEPHONE: (307) 875-3223

NBIP ACCESSION NUMBER: WY/001

<966>

INVESTIGATOR(S): McGee, J.M.

AFFILIATION: Dept. of Zoology, University of Wyoming

TITLE: Effects of Prescribed Burning on the Structure and Function of a Sagebrush Ecosystem in Northwestern Wyoming

PURPOSE: To describe and evaluate the effects of habitat alteration by prescribed burning on the primary producers, avifauna, and small mammals within the sagebrush ecosystem.

SPONSOR(S): FS; NPS; New York Zoological Society

SPONSOR CATEGORY: federal government; societies and other organizations

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Tentative results are that bird species diversity increased following spring and fall burning, but arability decreased with time on each area.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; savanna; grassland

LEVEL(S) OF STUDY: population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; wildlife; range; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals; plants; vascular plants; trees; shrubs; herbs; grasses

TAXA: PLANTS, 110 SPECIES; BIRDS, 42 SPECIES; MAMMALS, 14 SPECIES

ADDED KEYWORDS: desert shrubs; prescribed burning; habitat modification; species diversity; primary productivity; secondary productivity

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; emigration; habitat characterization; home range size; immigration; kill; mortality; natality; numbers; productivity; reproduction; sex;

size/weight; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): census; live and snap traps; quadrat

NUMBER OF SAMPLING SITES: 1

SAMPLING FREQUENCY: seasonal; weekly; monthly

SUPPORTING DATA COLLECTED: associated fauna; associated flora

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Teton County; Buffalo Fork River; Tracy Lake; Burro Hill watershed; Bridger-Teton National Forest

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; mode; median; analysis of variance; regression/correlation analysis

ABSTRACT: In 1974, the Forest Service burned under prescription approximately 150 hectares of sagebrush-grassland range within the Bridger-Teton National Forest. The objectives were to decrease density of sagebrush and increase livestock forage production. This study was undertaken to evaluate the ecological impact of the fire on the vegetation, birds, and mammals associated with this ecosystem type. Parameters being estimated include primary and secondary productivity, density, standing crop, and consuming biomass of primary and secondary consumers. Changes of the parameters and other species-specific parameters due to prescribed burning will be evaluated in relation to stability and diversity of the structure and function of the ecosystem.

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University of Wyoming

Laramie, WY 82071

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NBIP ACCESSION NUMBER: WY/031

<967>

INVESTIGATOR(S): Parker, M.

AFFILIATION: Dept. of Zoology and Physiology, University of Wyoming

TITLE: Limnological Changes in Yellowstone Lake as Indicated by Sediment Diatoms

PURPOSE: To relate changes which have occurred over time in the planktonic diatom assemblage to changes in the lakes' water quality and changes in the watershed.

SPONSOR(S): NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Changes in numbers and cell volumes of the major planktonic diatom species.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; lake

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: environmental impact;

forestry; indicator species; recreation;

resource planning; pollution control;

water quality

ORGANISMS, MAJOR TYPES: microorganisms; algae

TAXA: CENTRALES, 8 SPECIES; PENNALES;

ARAPHIDINEAE, 17 SPECIES; BIRAPHIDINEAE,

85 SPECIES; MONORAPHIDINEAE, 17 SPECIES;

RAPHIDOIDINEAE

ADDED KEYWORDS: diatoms; plankton; siltation; eutrophication

PRIMARY PARAMETERS INVESTIGATED: numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

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sediment cores
NUMBER OF SAMPLING SITES: 3-4
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Yellowstone Lake;
Yellowstone National Park
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
contingency table analysis
ABSTRACT: Four sediment cores from different
areas in Yellowstone Lake were subsampled
at regular depth intervals. Each sediment
sample was prepared for microscopic
examination and enumeration of diatoms
according to a standard method. The
sediment samples were dated according to
already established sedimentation rates.
Changes over time of the following
parameters will be determined from the raw
diatom counts: (1) total number of
diatoms/gram sediment; (2) percentage
composition of the diatom assemblage; and
3) total cell volume of the major
planktonic diatom species/gram sediment.
Using information available on the
ecological requirements of the dominant
diatom species, we will document the
conditions which prevailed in the lake at
the time each sediment subsample was
deposited. Changes in lake conditions
during historic times will be compared
with records of human activities in the
Park (e.g. fire control) to identify any
possible cause-effect relationships. The
extent to which man may have altered the
natural lake conditions will be determined
by comparing the magnitude of historic
changes in diatom assemblages (0-100 years
ago) with changes in diatom assemblages
during prehistoric times (100-1000 years
ago).

ADDRESS: Dr. M. Parker
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University of Wyoming
Laramie, WY 82070
TELEPHONE: (307) 766-5182
NMIP ACCESSION NUMBER: WY/018

<968>

INVESTIGATOR(S): Pate, L.M.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: W-27-R-29 Big Surveys; W-50-R-24 Game
Bird Surveys
PURPOSE: To develop harvest recommendations
for big game, to collect and analyze
harvest data, and to analyze factors
affecting populations.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Population fluctuations
and trends are recorded.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; grassland
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: wildlife; range; resource
planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals
TAXA: ANTILOCAPRA AMERICANA; CERVUS

CANADENSIS; ODOCOILEUS HEMIONUS;
ODOCOILEUS VIRGINIANUS
ADDED KEYWORDS: antelopes; elk; mule deer;
white-tailed deer; management measures
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; harvest; kill; mortality;
migratory patterns; natality; numbers;
reproduction
NUMBER OF SAMPLING SITES: approximately 5,000
sq. miles in district
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Natrona County;
Converse County
TYPE OF DATA: raw; summarized
ABSTRACT: None provided.
ADDRESS: Mr. Larry Pate
Wyoming Game and Fish Dept.
1422 S. Penway
Casper, WY 82601
TELEPHONE: (307) 234-9185
NMIP ACCESSION NUMBER: WY/009

<969>

INVESTIGATOR(S): Pechacek, L.S.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Area Fisheries Management (Big Horn
River and Clark's Fork of the Yellowstone
River Drainages)
PURPOSE: To maintain populations, aquatic
habitats, and prepare fisheries use
inventories.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Increase in demand and
use, degradation of habitat, losses and
additions by locale of habitat.
ECOSYSTEM OR BIOME TYPE(S): aquatic;
freshwater; stream; river; lake; reservoir
LEVEL(S) OF STUDY: organism; population;
region
MANAGEMENT FOCUS: environmental impact;
fisheries; recreation; pollution control;
water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates;
fish; invertebrates; insects
TAXA: SALMONIDAE; SALMO SPP; SALVELINUS SPP;
CORNYNCHUS SPP; THYMALLUS SPP; CYPRINUS
SPP; LEPOMIS SPP; NOTROPIS SPP; PIMEPHALES
SPP; SEMOTILUS SPP; GAMBIOIDES SPP;
CATOSTOMUS SPP; ICTALURUS SPP; LOTA SPP;
MICROPTERUS SPP; PERCA SPP; STIZOSTEDION
SPP; POMOXIS SPP
ADDED KEYWORDS: trouts; salmon; graylings;
carps; sunfishes; shiners; minnows; chubs;
carpsuckers; suckers; bullheads;
catfishes; cods; basses; perches;
walleyes; saugers; crappies; habitat
modification; benthic organisms
PRIMARY PARAMETERS INVESTIGATED: age;
behavior; biomass; distribution;
emigration; growth; harvest; immigration;
kill; mortality; numbers; reproduction;
sex; size/weight
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
standard methods
SAMPLING FREQUENCY: continuous
SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data; water
quality data
STUDY SITE(S): WY

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GEOGRAPHIC DESCRIPTION: Bighorn River; Clarks
Fork River

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; median

ABSTRACT: None provided.

ADDRESS: Mr. Louis S. Pechacek
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Cody, WY 82414

TELEPHONE: PTS 587-3434

NBIP ACCESSION NUMBER: WY/028

<970>

INVESTIGATOR(S): Phillips, R.I.

AFFILIATION: Denver Wildlife Research Center,
FWS

TITLE: Effects of Coal Extraction and Related
Development on Wildlife

PURPOSE: To quantify the impact of coal
strip-mining and related construction
activities on wildlife species in a
representative area of southeast Montana.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Just started but no
changes observed to date.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
grassland

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals

TAXA: PEDIOECETES PHASIANELLUS; AQUILA
CHRYSAETOS; ODOCOLEUS HEMIONUS; LYNX RUFUS

ADDED KEYWORDS: pronghorn antelopes;
antelopes; mule deer; deer; golden eagles;
eagles; sharp-tailed grouse; grouse; strip
mining; construction; habitat
modification; bobcats

PRIMARY PARAMETERS INVESTIGATED: behavior;
distribution; physiology; emigration;
habitat characterization; home range size;
migratory patterns; natality; numbers;
reproduction; sex; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
radiotelemetry; observations

NUMBER OF SAMPLING SITES: 4

SAMPLING FREQUENCY: irregular

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain

STUDY SITE(S): MT; WY

GEOGRAPHIC DESCRIPTION: Bighorn County

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; analysis of
variance; multivariate analysis;
non-parametric analysis

ABSTRACT: The principal objective of this
study is to determine the long-term
effects of coal development on wildlife
populations. The 300 square mile study
area located along the Montana-Wyoming
border contains major coal leases. The
habitat types on the area are
representative of those on the Northern
Great Plains. Quantitative descriptions of

these types are being provided by the
Montana State University Reclamation
Research Project. Baseline population
surveys on small mammals, upland game
birds, big game, and raptors were
initiated in the spring and summer of
1974. "Key" use areas have been identified
for the major wildlife species.
Radiotracking studies on pronghorn
antelope, mule deer, and bobcats have
begun to quantify the movement and habitat
use patterns of these species in relation
to strip mining activities.

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Denver Wildlife Research Center
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Sheridan, WY 82801

TELEPHONE: (307) 672-3037

NBIP ACCESSION NUMBER: WY/046

<971>

INVESTIGATOR(S): Roop, L.J.

AFFILIATION: Wyoming Game and Fish Dept.

TITLE: Wyoming Grizzly Bear Study

PURPOSE: To determine the population status,
trend, and habitat requirements of grizzly
bear in Wyoming for future management.

SPONSOR(S): NPS; FWS; State of Wyoming; State
of Montana; State of Idaho

SPONSOR CATEGORY: federal government; state
government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Recent changes in
mortality, distribution, and man-caused
habitat modification are documented.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; tundra;
alpine; mountain

LEVEL(S) OF STUDY: organism; population;
community; ecosystem; region

MANAGEMENT FOCUS: environmental impact;
fisheries; wildlife; forestry; recreation;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
mammals

TAXA: URSUS ARCTOS; URSUS HORRIBILIS

ADDED KEYWORDS: grizzly bears; bears; habitat
modification; sex ratio; management
measures

PRIMARY PARAMETERS INVESTIGATED: age;
behavior; distribution; emigration;
habitat characterization; harvest; home
range size; immigration; kill; mortality;
migratory patterns; numbers; productivity;
sex; size/weight; territory size

NUMBER OF SAMPLING SITES: variable-maximum
that manpower allows

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; terrain

STUDY SITE(S): WY; MT; ID

GEOGRAPHIC DESCRIPTION: Park County; Teton
County

TYPE OF DATA: raw; summarized;
literature-derived

STATISTICS EMPLOYED: mean; analysis of
variance; regression/correlation analysis;
non-linear estimation; modeling,
deterministic

ABSTRACT: This project is a continuing
portion of an Interagency Grizzly Bear
Study Team project. Other agencies

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involved in the study include the National Park Service, U.S. Forest Service, Fish and Wildlife Service, and the states of Idaho, Montana, and Wyoming. The work described is a portion of the overall study effort, and is coordinated with projects underway in other parts of the Yellowstone grizzly range.

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NBIP ACCESSION NUMBER: WY/042

<972>

INVESTIGATOR(S): States, J.B.

AFFILIATION: Ecology Consultants, Inc.

TITLE: Ecological Investigations for Missouri Basin Power Plant Project

PURPOSE: Baseline definitions of existing terrestrial and aquatic environment, prediction of project impacts, and recommendations for mitigation and monitoring of impacts.

SPONSOR(S): Missouri Basin Power Project

SPONSOR CATEGORY: private corporation

DATE OF INITIATION: 1974

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: terminated

CHANGE(S) OBSERVED: Population changes for small mammals, big game, birds, periphyton, phytoplankton, benthic macroinvertebrates, and zooplankton.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; aquatic; freshwater; stream; river

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; water quality; power generation

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; mammals; invertebrates; insects; plants; vascular plants; trees; shrubs; herbs; grasses; microorganisms; bacteria; algae; protozoa

TAXA: AMPHIBIA, 5 SPECIES; REPTILES, 10 SPECIES; FISHES, 8 SPECIES; BIRDS, 18 SPECIES; MAMMALS, 14 SPECIES; INSECTA, 74 SPECIES; TREES, 6 SPECIES; SHRUBS, 11 SPECIES; FORBS, 24 SPECIES; GRASSES, 16 SPECIES; BACTERIA, 3 SPECIES; ALGAE, 35 SPECIES; PROTOZOA, 3 SPECIES

ADDED KEYWORDS: construction; impoundments; fossil fueled power plants; ephemeropterans

PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; migratory patterns; numbers; sex; size/weight; stress

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field sampling; aerial surveys

NUMBER OF SAMPLING SITES: 21

SAMPLING FREQUENCY: monthly

SUPPORTING DATA COLLECTED: hydrological data; soils; water quality data

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Platte County; Goshen County; Laramie River; North Platte River

TYPE OF DATA: raw; reduced; summarized;

literature-derived

STATISTICS EMPLOYED: mean; analysis of variance

ABSTRACT: Various components of terrestrial and aquatic ecosystems were sampled during a one year study. Sampling or studies included vegetation, soils, insects, small and large mammals, birds, algae, zooplankton, macroinvertebrates, fish, and water quality. Sampling locations were in the lower Laramie River drainage and areas near its confluence with the North Platte River (all in southeastern Wyoming). Assessment of impacts from construction and operation of a coal-fired power plant and a new reservoir were made. Mitigation effort and monitoring programs were recommended.

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Ecology Consultants, Inc.
P.O. Box 1057
Fort Collins, CO 80521

TELEPHONE: (303) 493-AR78

NBIP ACCESSION NUMBER: CO/053

<973>

INVESTIGATOR(S): Straley, J.H.

AFFILIATION: Wyoming Game and Fish Dept.

TITLE: Big Game Survey

PURPOSE: Development and maintenance of big game species-antelope, bear, sheep, moose, elk, and deer.

SPONSOR(S): Wyoming Game and Fish Dept.; FWS
SPONSOR CATEGORY: state government; federal government

DATE OF INITIATION: 1958

PROJECT DURATION: over five years

PROBABLE CONTINUATION: unknown

CHANGE(S) OBSERVED: Fluctuation in animal populations, habitat changes from timbering, brush spraying, and effects of hunting.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; tundra; alpine; mountain

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: endangered species; wildlife; range; recreation; resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals

TAXA: ALCES ALCES; ANTILOCAPRA AMERICANA;
OVIS CANADENSIS; CERVUS CANADENSIS;
ODOCOILEUS HEMIONUS; URSUS HORRIBILIS;
URSUS ARCTOS

ADDED KEYWORDS: moose; antelopes; sheep; elk; deer; bears; management measures; logging; herbicides

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; harvest; home range size; immigration; kill; mortality; migratory patterns; natality; numbers; productivity; reproduction; sex; size/weight; stress; territory size

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): marked animal recovery; pellet counts; mortality transects; ground census; aerial census

SAMPLING FREQUENCY: continuous

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Sublette County; Teton County

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TYPE OF DATA: reduced; summarized

ABSTRACT: We are analyzing factors which influence populations and determine population levels; determining sex, age, and distribution and movement throughout the year of harvested animals; determining the impact of the species upon the available habitat; and determining the compatibility between the species and its habitat.

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Pinedale, WY 82941

TELEPHONE: FTS 367-4764

NBIP ACCESSION NUMBER: WY/004

<974>

INVESTIGATOR(S): Sturges, D.L.

AFFILIATION: Rocky Mountain Forest and Range
Experiment Station, FS

TITLE: Stratton Sagebrush Hydrology Study

PURPOSE: To evaluate the hydrologic effects
of land management practices in the big
sagebrush type.

SPONSOR(S): FS; BLM

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1967

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Changes in vegetative
cover, composition, and ground cover from
different land management practices.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
grassland; mountain

LEVEL(S) OF STUDY: population; community;
ecosystem

MANAGEMENT FOCUS: environmental impact;
wildlife; range; water quality

ORGANISMS, MAJOR TYPES: plants; vascular
plants; shrubs; herbs; grasses

TAXA: ARTEMISIA TRIDENTATA; PESTUCA

IDAHOENSIS; POA SP; LUPINUS SP

ADDED KEYWORDS: sagebrush; big sagebrush;
idaho fescue; fescue; bluegrasses;
lupines; management measures

PRIMARY PARAMETERS INVESTIGATED: biomass;
distribution; habitat characterization;
harvest; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
capitance meter; transects

NUMBER OF SAMPLING SITES: 5 watersheds;
400-600 acres in size

SAMPLING FREQUENCY: seasonal; annual

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; hydrological data;
soils; water quality data

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Carbon County; Loco
Creek

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: mean; analysis of
variance; analysis of covariance;
regression/correlation analysis; modeling,
deterministic

ABSTRACT: Hydrologic and vegetative effects
of selected big sagebrush land management
practices are being evaluated. The first
land management practice that will be
evaluated is the chemical control of big

sagebrush. The study uses the paired
watershed approach. Sagebrush on one
watershed was sprayed in 1976. Future
management practices will be directed at
the management of blowing snow.

ADDRESS: Dr. David L. Sturges
Forest Service Research, USDA
Rocky Mountain Forest and Range
Expt. Sta.
Box 3313, University Station
Laramie, WY 82071
TELEPHONE: (307) 742-6621
NBIP ACCESSION NUMBER: WY/011

<975>

INVESTIGATOR(S): Taylor, D.L.

AFFILIATION: Dept. of Biology, Sterling
College

TITLE: Forest Fire Ecology: Biotic Succession
PURPOSE: Document biotic succession following
forest fire in Grand Teton and Yellowstone
National Parks.

SPONSOR(S): NPS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1965

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Three bird species have
been identified as being fire associated.
Greatest numbers of plant, bird, and
mammal species occur during the first
twenty-five years following fire.

ECOSYSTEM OR BIONE TYPE(S): terrestrial;
forest; coniferous; mountain

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact;
wildlife; forestry; indicator species;
resource planning

ORGANISMS, MAJOR TYPES: animals; vertebrates;
birds; mammals; invertebrates; insects;
plants; vascular plants; trees; shrubs;
herbs; grasses

TAXA: BIRDS, 19 SPECIES; MAMMALS, 12 SPECIES;
PLANTS, 81 SPECIES

ADDED KEYWORDS: succession; natural
catastrophe; fires; lodgepole pines; pines

PRIMARY PARAMETERS INVESTIGATED: diversity;
numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
Calhoun-Casby snap traps; live trapping
grids; permanent plots; strip transect

SAMPLING FREQUENCY: seasonal

SUPPORTING DATA COLLECTED: associated fauna;
associated flora; climatological data;
soils

STUDY SITE(S): WY

GEOGRAPHIC DESCRIPTION: Teton County; Park
County; Grand Teton National Park;
Yellowstone National Park

ABSTRACT: Seven areas that were burned in
Yellowstone National Park in 1966, 1960,
1954, 1942, 1910, 1856, and about 1665
were studied from 1965 through 1967 in
order to document the trends of biotic
succession in the development of lodgepole
pine communities. Results indicate that
there was an increase in the numbers of
plant, bird, and mammal species during the
first 25 years followed by a decrease in
the older communities. The data indicate
that elimination of forest fires will
limit ecological diversity within the Park
by reducing or eliminating certain plants
and animals that are present only in the
successional communities present before

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closure of the forest canopy.
REFERENCES: Taylor, 1973; Taylor, 1974
ADDRESS: Dr. D.L. Taylor
Biology Dept.
Sterling College
North Broadway, Sterling, KS 67579
TELEPHONE: (316) 278-2173 ext. 243
NBIP ACCESSION NUMBER: KS/011

<976>

INVESTIGATOR(S): Willy, R.W.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Analysis of Standing Crop of Fish in the Fontenelle-Green River Tailwaters
PURPOSE: To define trout populations in river based on harvest-associated data.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: State government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: fluctuations in biomass of trout with respect to changing pressure. Habitat parameters also affect crop.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; river
LEVEL(S) OF STUDY: population; ecosystem
MANAGEMENT FOCUS: environmental impact; fisheries; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
TAXA: SALMO GAIRDNERI; SALMO TRUTTA
ADDED KEYWORDS: rainbow trouts; brown trouts; trouts; management measures
PRIMARY PARAMETERS INVESTIGATED: age; biomass; distribution; diversity; growth; harvest; kill; mortality; reproduction
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): creel census
NUMBER OF SAMPLING SITES: contacts on 73 miles of river
SAMPLING FREQUENCY: monthly
SUPPORTING DATA COLLECTED: associated fauna; water quality data
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Sweetwater county; Green River
TYPE OF DATA: raw; reduced; summarized
ABSTRACT: The primary purpose of the project was to obtain information which would allow estimation of trout populations on Green River. In addition, age-growth, harvest, fisherman use, and food habits data were obtained.
ADDRESS: Robert Willy
Wyoming Game and Fish Dept.
351 Astlo Ave.
Green River, WY 82935
TELEPHONE: (307) 875-3223
NBIP ACCESSION NUMBER: WY/034

<977>

INVESTIGATOR(S): Wilson, R.W.
AFFILIATION: Wyoming Game and Fish Dept.
TITLE: Antelope, Deer, Elk, Moose, Bighorn Sheep, Black Bear, Pheasant, Sage Grouse, and Sharp-Tailed Grouse Studies
PURPOSE: For the recommending of hunting seasons.
SPONSOR(S): Wyoming Game and Fish Dept.
SPONSOR CATEGORY: state government
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Bighorn sheep populations are static; moose declined, now increasing; all other big game increasing; but birds declining.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland; mountain
LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: wildlife; recreation
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; mammals
TAXA: CERVUS CANADENSIS; ODOCOLEUS HEMIONUS; ALCEA ALCEA; ANTILOCAPRA AMERICANA; OVIS CANADENSIS; CENTROCEBUS UROPHASIANUS; PHASIANUS COLCHICUS; PEDIOECETES PHASIANELLUS; URSUS AMERICANUS
ADDED KEYWORDS: elk; mule deer; moose; antelopes; bighorn sheep; sage grouse; ring-necked pheasants; sheep; grouse; pheasants; sharp-tailed pheasants; black bears; bears; management measures
PRIMARY PARAMETERS INVESTIGATED: age; distribution; harvest; home range size; migratory patterns; numbers; reproduction; sex
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard species management techniques
SAMPLING FREQUENCY: seasonal; annual; irregular
STUDY SITE(S): WY
GEOGRAPHIC DESCRIPTION: Sheridan County; Johnson County; Campbell County
TYPE OF DATA: reduced; summarized
STATISTICS EMPLOYED: percentile
ABSTRACT: Our overall objectives are: (1) develop harvest recommendations; (2) analyze factors which influence populations; (3) determine distribution and movement; (4) determine herd composition and production; (5) determine sex and age of harvest; and (6) (when appropriate) determine the impact of the species upon available habitat and establish compatibility between the species and habitat.
ADDRESS: Mr. Roger Wilson
Wyoming Game and Fish Dept.
307 Mountain View Dr.
Sheridan, WY 82801
TELEPHONE: (307) 674-6507
NBIP ACCESSION NUMBER: WY/026

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<978>

INVESTIGATOR(S): Artmann, J.W.
 AFFILIATION: FWS
 TITLE: Woodcock Breeding Ground Survey
 PURPOSE: To provide an index to post-migrational male woodcock breeding population.
 SPONSOR(S): FWS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: variable
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Population in Atlantic region appears to be declining but central population is stable or slightly increasing.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; savanna; grassland; wetland
 LEVEL(S) OF STUDY: population
 MANAGEMENT FOCUS: wildlife; resource planning
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
 TAXA: PHILOHELA MINOR
 ADDED KEYWORDS: population effects; woodcocks; migration rates
 PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; habitat characterization; migratory patterns; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): survey routes
 NUMBER OF SAMPLING SITES: about 800-900 per year
 SAMPLING FREQUENCY: annual
 STUDY SITE(S): U.S., N-Eastern
 TYPE OF DATA: raw; summarized; literature-derived
 COMPUTER AND LANGUAGE: IBM 360/J65; ANSI; COBOL
 STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
 ABSTRACT: None provided.
 ADDRESS: Joseph W. Artmann
 Office of Migratory Bird Management
 Laurel, MD 20811
 TELEPHONE: (301) 776-4880 ext.305
 NBIP ACCESSION NUMBER: MD/036

<979>

INVESTIGATOR(S): Artmann, J.W.
 AFFILIATION: FWS
 TITLE: Woodcock Wing-Collection Survey
 PURPOSE: To measure relative woodcock breeding success, daily and seasonal hunting success, chronological distribution of harvest, and pesticides.
 SPONSOR(S): FWS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1959
 PROJECT DURATION: unknown
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Annual variations in productivity and hunting success have occurred but no long-term trends are evident at this point.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; grassland; wetland
 LEVEL(S) OF STUDY: population; region
 MANAGEMENT FOCUS: wildlife; recreation; resource planning
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
 TAXA: PHILOHELA MINOR
 ADDED KEYWORDS: woodcocks; pesticides; productivity; breeding surveys; breeding

grounds
 PRIMARY PARAMETERS INVESTIGATED: age; distribution; harvest; kill; mortality; migratory patterns; reproduction; residues; sex
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): nonrandom sampling of woodcock hunters
 NUMBER OF SAMPLING SITES: 16,000 wing samples annually
 SAMPLING FREQUENCY: annual
 SUPPORTING DATA COLLECTED: woodcock breeding grounds survey
 STUDY SITE(S): U.S., Eastern
 TYPE OF DATA: summarized; literature-derived
 COMPUTER AND LANGUAGE: IBM 360/J65; ANSI; COBOL
 STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
 ABSTRACT: None provided.
 ADDRESS: Joseph W. Artmann
 Office of Migratory Bird Management
 Laurel, MD 20811
 TELEPHONE: (301) 776-4880
 NBIP ACCESSION NUMBER: MD/037

<980>

INVESTIGATOR(S): Bock, C.E.
 AFFILIATION: Dept. of Environmental, Population, and Organismal Biology, University of Colorado, University of Colorado
 TITLE: Computer Analysis of Audubon Society Christmas Bird Counts
 PURPOSE: To code into an information retrieval system the data contained in Christmas counts on bird abundance patterns and population changes.
 SPONSOR(S): NSF
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1973
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: no
 CHANGE(S) OBSERVED: Numerous well-documented fluctuations, cycles, increases, and declines between 1962-1971.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; deciduous; tropical; savanna; grassland; tundra; arctic; alpine; wetland; mountain; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
 LEVEL(S) OF STUDY: population; ecosystem; region
 MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
 ADDED KEYWORDS: population effects
 PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; migratory patterns; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field observations
 NUMBER OF SAMPLING SITES: 8000
 SAMPLING FREQUENCY: annual
 STUDY SITE(S): U.S.; CN
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: CDC 6400; KRONOS 2
 STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis; multivariate analysis
 ABSTRACT: There is a widely recognized need among ornithologists and ecologists for

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population data covering many years and broad geographic areas. Such data are scarce, however, because of problems involved in their collection. The Audubon Society Christmas Bird Counts represent censuses of winter bird populations in the United States and Canada from 1900 to the present. They have never been extensively analyzed, and as such represent a vast collection of raw ecological data. Pilot studies indicate that Christmas Count data do detect real bird population trends and fluctuations, both on local and continent-wide scales. Count data cover sufficiently broad areas over long enough time periods to be very valuable, but their bulk makes them essentially inaccessible. This problem can be overcome by entering the counts into a computerized information retrieval system. One such system, TAXIR, currently is in operation at the University of Colorado. A pilot project indicates that it is well suited to Christmas Count data storage and analysis. This study includes plans: (1) to build a data bank containing 72 years of Christmas Counts using the TAXIR information retrieval system, (2) to conduct various analyses of these data, and (3) to make the counts available to ornithologists and ecologists who wish to use them.

ADDRESS: Dr. Carl E. Bock
E.P.O. Biology Dept.
University of Colorado
Boulder, CO 80302
TELEPHONE: (303) 492-7184
NBIP ACCESSION NUMBER: CO/055

<981>

INVESTIGATOR(S): Cade, T.J.
AFFILIATION: Section of Ecology and Systematics, Cornell University
TITLE: North American Peregrine Survey
PURPOSE: To determine numerical status and reproductive performance of North American peregrine populations at five year intervals.

SPONSOR(S): Cornell University
SPONSOR CATEGORY: teaching institution
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Continued population decline and increased reproductive failure.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; savanna; grassland; tundra; wetland
LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
MANAGEMENT FOCUS: endangered species; indicator species
ORGANISMS, MAJOR TYPES: animals; vertebrates; mammals
TAXA: FALCO PEREGRINUS
ADDED KEYWORDS: peregrine falcons; falcons; census; population dynamics; raptors
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; mortality; natality; numbers; productivity; reproduction; residues; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation
NUMBER OF SAMPLING SITES: many

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain

STUDY SITE(S): U.S.

TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis

ABSTRACT: Fifteen regions were surveyed in Canada and Alaska in 1970 to assess the current breeding status of the Peregrine (FALCO PEREGRINUS) in boreal America. About 237 known eyries were examined, 149 in the range of F. P. ANATUM, 56 in the range of F.P. TUNDRIUS, and 32 in the range of F.P. PEALEI. In the southern parts of the former breeding range in Canada, including the Maritimes, southern Labrador, southern Quebec, Ontario, Alberta, and Saskatchewan, only four pairs were found at 82 former eyries. An examination of 64 eyries in the taiga of Canada and Alaska yielded 34 occupied sites, and similar studies in the Arctic tundra produced 31 occupied eyries out of 53 examined. Of 32 eyries studied in the range of PEALEI, 23 were occupied. Both tundra and taiga populations have declined locally since 1966. Reproductive success among these northern falcons have diminished in association with eggshells that are 15-20 percent thinner than they were in these populations before 1947. There is a highly significant negative correlation between chlorinated hydrocarbon residue levels in egg contents (or adult tissues) and the thickness of eggshells. At the current rate of decline, the Peregrine may become extinct in North America in this decade.

ADDRESS: Dr. Thomas J. Cade
Ecology Dept.
Cornell University
Ithaca, NY 14850
TELEPHONE: (607) 256-5056
NBIP ACCESSION NUMBER: NY/065

<982>

INVESTIGATOR(S): Dickerman, M.B.
AFFILIATION: FS
TITLE: Resources Evaluation
PURPOSE: To make and keep current a comprehensive survey and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and range lands of the United States, its territories, and possessions, and of the supplies of such renewable resources including a determination of present and potential land activity.

SPONSOR(S): FS
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1928
PROJECT DURATION: unknown
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in forest land base and timber quantity and quality.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; grassland
LEVEL(S) OF STUDY: region
MANAGEMENT FOCUS: fisheries; wildlife; forestry; range; recreation; resource planning
ORGANISMS, MAJOR TYPES: animals; vertebrates;

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fish; birds; mammals; plants; vascular plants; trees; herbs
 ADDED KEYWORDS: management measures; logging
 PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; harvest; mortality; numbers; productivity; reproduction; residues; size/weight
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial survey; field samples
 NUMBER OF SAMPLING SITES: several thousand
 SUPPORTING DATA COLLECTED: associated flora; terrain
 STUDY SITE(S): U.S.
 TYPE OF DATA: summarized
 STATISTICS EMPLOYED: totals
 ABSTRACT: A comprehensive current survey of the present and prospective renewable resources of the forest and range lands of the United States, its territories, and possessions has been maintained since 1928. The requirements and supplies of such renewable resources, including a determination of present and potential land productivity, are analyzed.
 ADDRESS: M.B. Dickerman
 U.S. Forest Service
 12th and Independence Ave. S.W.
 Washington, DC 20250
 TELEPHONE: (202) 447-3732
 NBIP ACCESSION NUMBER: DC/005

<983>

INVESTIGATOR(S): Ferris, V.R.
 AFFILIATION: Dept. of Entomology, Purdue University
 TITLE: Systematics and Ecology of Soil and Freshwater Nematodes
 PURPOSE: To determine roles of nematode populations in natural and disturbed ecosystems, and to use nematode communities as indicators of ecological disturbance.
 SPONSOR(S): Purdue Agricultural Experiment Station; USDA
 SPONSOR CATEGORY: state government; federal government
 DATE OF INITIATION: 1965
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: When soil or water areas are disturbed, nematode communities change. The extent and kind of changes depend on the nature of the disturbance.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; deciduous; aquatic; freshwater; stream
 LEVEL(S) OF STUDY: community; ecosystem; region
 MANAGEMENT FOCUS: environmental impact; forestry; indicator species; water quality
 ORGANISMS, MAJOR TYPES: animals; invertebrates; annelida
 ADDED KEYWORDS: habitat modification; species diversity; nematodes
 PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection; screening; Baermann funnels
 NUMBER OF SAMPLING SITES: depends on study and size of area and diversity of habitats within area
 SAMPLING FREQUENCY: seasonal; monthly
 SUPPORTING DATA COLLECTED: associated flora;

climatological data; soils; terrain; water quality data
 STUDY SITE(S): U.S.
 GEOGRAPHIC DESCRIPTION: Tippecanoe County (IN); Lake George (NY); Oak Ridge (TN); Lake Wingra (WI)
 TYPE OF DATA: raw; summarized
 STATISTICS EMPLOYED: mean; non-parametric analysis
 ABSTRACT: We have data on nematode communities of many different kinds of soil and freshwater habitats throughout the United States. Intensive studies in deciduous forests show that nematode communities can be correlated with forest and soil type, and that species of the order Dorylaimida are good indicators of degree of disturbance. Nematode communities can also be used as indicators of water quality in streams.
 ADDRESS: Virginia R. Ferris
 Dept. of Entomology
 Purdue University
 West Lafayette, IN 47907
 TELEPHONE: (317) 749-2458
 NBIP ACCESSION NUMBER: IN/011

<984>

INVESTIGATOR(S): Fitzpatrick, J.P.
 AFFILIATION: Dept. of Biological Sciences, University of South Alabama
 TITLE: Systematics of the Crawfishes of North America (Decapoda: Astacidae and Cambaridae)
 PURPOSE: To recognize, identify, and analyze the several species of North American crawfishes, using standard taxonomic procedures, morphometrics, variance analysis, and other suitable methodology; and to establish evolutionary and geographic data.
 SPONSOR(S): PI
 SPONSOR CATEGORY: private individuals
 DATE OF INITIATION: 1959
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Several taxa have had range extensions and/or retractions in modern historical times, several surely as a result of man's activities.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
 LEVEL(S) OF STUDY: organism; population; region
 MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; indicator species
 ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; shellfish
 TAXA: PACIFASTACUS SPP; BARBICAMBARUS SP; CAMBARUS SPP; FALLICAMBARUS SPP; FAXONELLA SPP; HOBSEUS SPP; ORCONECTES SPP; PROCAMBARUS SPP; TROGLOCAMBARUS SP; BRANCHIOBELLELLIDAE; ENTOCYTHERIDAE
 ADDED KEYWORDS: crayfishes; life history; behavior patterns; population effects
 PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; home range size; immigration; sex; territory size
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): seine; dip net; digging; hand collecting; vernier calipers; scoring
 NUMBER OF SAMPLING SITES: numerous

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SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna
 STUDY SITE(S): U.S.; CN; Central America
 TYPE OF DATA: raw; reduced; summarized
 STATISTICS EMPLOYED: mean; percentile;
 analysis of variance;
 regression/correlation analysis;
 multivariate analysis
 ABSTRACT: A continuing study of the
 systematics, ecology, and evolution of the
 crayfishes of North America is being
 undertaken. Publications dealing with
 specific aspects of the work appear at
 regular intervals. The project is devoted
 to a thorough understanding of the
 principal aspects of a taxonomic unit
 rather than as a regional or
 subdisciplinary unit. Hopefully, the
 amassed data will further understanding of
 the identity of the several taxonomic
 units, their interrelationships, and the
 changes in the populations over historic
 and geologic time.
 ADDRESS: Joe Fitzpatrick
 Biology Dept.
 1307 Gaillard Drive
 University of South Alabama
 Mobile, AL 36688
 TELEPHONE: (205) 460-6361
 NBIP ACCESSION NUMBER: AL/Q02

<985>

INVESTIGATOR(S): Harman, W.J.
 AFFILIATION: Dept. of Zoology, Louisiana State
 University
 TITLE: Aquatic Oligochaetes of the
 Southeastern United States
 PURPOSE: To determine the species of Naididae
 in the Southeastern U. S. and some of
 their distributional parameters.
 SPONSOR(S): Louisiana State University
 SPONSOR CATEGORY: teaching institution
 DATE OF INITIATION: 1965
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Many species which we
 formerly thought had restricted
 distribution are now known to be
 widespread.
 ECOSYSTEM OR BIOME TYPE(S): aquatic;
 freshwater; stream; lake
 LEVEL(S) OF STUDY: organism
 MANAGEMENT FOCUS: indicator species
 ORGANISMS, MAJOR TYPES: animals;
 invertebrates; annelida
 TAXA: PRISTINA SPP; NAIS SPP; DERO SPP
 ADDED KEYWORDS: aquatic earthworms; worms;
 population effects
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; habitat characterization
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 dip nets
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: hydrological data
 STUDY SITE(S): U.S., Southeast
 TYPE OF DATA: summarized
 ABSTRACT: None provided.
 ADDRESS: Dr. Walter Harman
 Zoology Dept.
 Louisiana State University
 Baton Rouge, LA 70803
 TELEPHONE: (504) 388-1340
 NBIP ACCESSION NUMBER: LA/052

<986>

INVESTIGATOR(S): Jackson, J.A.
 AFFILIATION: Dept. of Zoology, Mississippi
 State University
 TITLE: Cooperative Purple Martin Survey
 PURPOSE: To monitor relative population
 levels of purple martins (PROGNE SUBIS)
 and their nest site competitors over a
 period of years. Our goal is to understand
 the population dynamics of this species
 and to identify those factors affecting
 change.
 SPONSOR(S): PI
 SPONSOR CATEGORY: private individuals
 DATE OF INITIATION: 1971
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Geographic differences in
 relative abundance and year to year
 variation possibly resulting from climatic
 factors, nest competitors, and
 urbanization.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 forest; coniferous; deciduous
 LEVEL(S) OF STUDY: organism; population;
 ecosystem
 MANAGEMENT FOCUS: wildlife; indicator species
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds
 TAXA: PROGNE SUBIS; PASSER DOMESTICUS;
 STERNA VULGARIS
 ADDED KEYWORDS: swallows; purple martin;
 house sparrows; starlings; competition;
 population effects; climate; habitat
 modification
 PRIMARY PARAMETERS INVESTIGATED: age;
 distribution; habitat characterization;
 mortality; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 questionnaires completed annually by 1500 -
 2000 cooperators
 NUMBER OF SAMPLING SITES: 1000 - 1500
 SAMPLING FREQUENCY: annual
 SUPPORTING DATA COLLECTED: associated fauna;
 associated flora; associated
 microorganisms; terrain
 STUDY SITE(S): U.S., Eastern; CN, Eastern
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: UNIVAC 1106; FORTRAN 5
 STATISTICS EMPLOYED: mean; percentile;
 analysis of variance;
 regression/correlation analysis;
 multivariate analysis; non-parametric
 analysis
 ABSTRACT: None provided.
 ADDRESS: Jerome Jackson
 Zoology Dept.
 P.O. Box 2
 Mississippi State University
 Starkville, MS 39762
 TELEPHONE: (601) 323-5722
 NBIP ACCESSION NUMBER: MS/036

<987>

INVESTIGATOR(S): Johnston, R.F.
 AFFILIATION: Museum of Natural History, The
 University of Kansas
 TITLE: Evolution in the House Sparrow
 PURPOSE: To document current states of size
 and color variables in North American
 samples of house sparrows and to compare
 these with English and European ancestors.
 SPONSOR(S): University of Kansas; NSF
 SPONSOR CATEGORY: teaching institution;

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federal government
 DATE OF INITIATION: 1962
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Deviations in sample means for color and size, changes in variance of samples, and change in north-south size clines.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; deciduous; savanna; grassland
 LEVEL(S) OF STUDY: organism; population
 MANAGEMENT FOCUS: indicator species
 ORGANISMS, MAJOR TYPES: animals; vertebrates; birds
 TAXA: PASSER DOMESTICUS; PASSER HISPANIOLEUSIS
 ADDED KEYWORDS: house sparrows; sparrows; succession; adaptation
 PRIMARY PARAMETERS INVESTIGATED: age; distribution; emigration; immigration; mortality; natality; numbers; productivity; reproduction; sex; size/weight
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): banding; netting
 NUMBER OF SAMPLING SITES: 100 plus
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data
 STUDY SITE(S): U.S.; CN
 GEOGRAPHIC DESCRIPTION: South America; Europe
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: Honeywell 63V; FORTRAN 5
 STATISTICS EMPLOYED: mean; mode; median; analysis of variance; analysis of covariance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-parametric analysis
 ABSTRACT: None provided.
 ADDRESS: Dr. Richard F. Johnston
 Museum of Natural History
 University of Kansas
 Lawrence, KS 66044
 TELEPHONE: (913) 864-3926
 NBIP ACCESSION NUMBER: KJ/007

<988>

INVESTIGATOR(S): Landrum, B.J.
 AFFILIATION: Smithsonian Institution, Smithsonian Oceanographic Sorting Center (SOSC)
 TITLE: Various Projects Generate Biological Collections which are Processed at SOSC Including Systematic and some Environmental Monitoring Projects
 PURPOSE: Primarily to expedite systematic biology by making sorted collections readily available to a wide range of specialists in the various taxa of invertebrates, vertebrates, and marine algae.
 SPONSOR(S): SI
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1962
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: New species, taxonomic revisions, zoogeographical distribution changes, changes in abundance, and variations have been observed or documented.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial;

tropical; wetland; aquatic; freshwater; lake; marine; coastal; estuarine
 LEVEL(S) OF STUDY: organism; population; community
 MANAGEMENT FOCUS: environmental impact
 ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; fish; invertebrates; crustacea; insecta; mollusca; shellfish; annelida; plants; vascular plants; herbs; non-vascular plants; lichens; microorganisms; algae; protozoa
 ADDED KEYWORDS: specimen banks; population effects
 SUPPORTING DATA COLLECTED: associated fauna; associated flora
 STUDY SITE(S): U.S.; MX; CN
 TYPE OF DATA: raw; summarized
 COMPUTER AND LANGUAGE: Honeywell 2015; COBOL
 ABSTRACT: The Smithsonian Oceanographic Sorting Center (SOSC) is a national facility which expedites the acquisition and use of biological information. The Sorting Center began in 1962 as a specimen processing laboratory: receiving, sorting, recording, curating, and distributing marine and freshwater specimens to scientists throughout the world. In recent years, SOSC's capabilities and interests have grown with the national concern for the environment and have responded to the increasing need for biological data critical to environmental impact statements. Consequently, services available from SOSC now include the design and implementation of collection-oriented programs basic to biological monitoring and baseline studies, the analysis and distribution of ocean bottom photographs, and a variety of data analyses and plotting programs. The science of systematics, however, remains at the core of the Sorting Center's services. It provides an identity-oriented base for ecological assessment by drawing from determinations of both the kinds of organisms and their relative abundance temporally and spatially.
 ADDRESS: Betty J. Landrum
 Smithsonian Institution
 Smithsonian Oceanographic Sorting Center
 Washington, DC 20560
 TELEPHONE: (202) 381-5642
 NBIP ACCESSION NUMBER: DC/015

<989>

INVESTIGATOR(S): Marshall, H.G.
 AFFILIATION: Dept. of Biological Sciences, Old Dominion University
 TITLE: Distribution of Phytoplankton in Coastal Waters of the Eastern United States
 PURPOSE: To determine the composition and distribution of phytoplankton (major groups, dominant species, etc.).
 SPONSOR(S): NSF
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1972
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Seasonal composition changes of major groups and species have been noted along the coast.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
 LEVEL(S) OF STUDY: population; community;

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region
 MANAGEMENT FOCUS: indicator species; range
 ORGANISMS, MAJOR TYPES: microorganisms; algae
 ADDED KEYWORDS: diatoms; dinoflagellates;
 coccolithophores; silicoflagellates;
 blue-green algae; pyrrhophyceans;
 phytoplankton; seasonal variations;
 population effects
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; habitat characterization;
 numbers; productivity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 from ships at sea
 SAMPLING FREQUENCY: seasonal; monthly;
 irregular
 SUPPORTING DATA COLLECTED: hydrological data
 STUDY SITE(S): U.S., Eastern
 TYPE OF DATA: raw; reduced; summarized
 ABSTRACT: A quantitative and qualitative
 distribution study of the phytoplankton
 composition is in progress for the coastal
 waters of eastern United States.
 Collections have been made since 1964,
 using samples from 22 cruises, at 584 sea
 stations.
 ADDRESS: Dr. Harold Marshall
 Dept. of Biological Science
 Old Dominion University
 Norfolk, VA 23508
 TELEPHONE: (804) 489-6287
 NBIP ACCESSION NUMBER: VA/015

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INVESTIGATOR(S): Robbins, C. S.
 AFFILIATION: FWS
 TITLE: Data Bank on Abundance of Breeding
 Birds in Different Habitats
 PURPOSE: To computerize breeding bird
 densities by habitat.
 SPONSOR(S): FWS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1937
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: unknown
 CHANGE(S) OBSERVED: Data not yet analyzed,
 but some birds are known to be rare or
 endangered species.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 desert; forest; coniferous; deciduous;
 tropical; savanna; grassland; tundra;
 arctic; alpine; wetland; mountain
 LEVEL(S) OF STUDY: organism; population;
 community; ecosystem; region
 MANAGEMENT FOCUS: endangered species;
 environmental impact; wildlife; forestry;
 indicator species; range; recreation;
 resource planning; pollution control;
 water quality; power generation;
 right-of-way
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds; plants; vascular plants; trees;
 shrubs
 ADDED KEYWORDS: census; population effects;
 breeding; species diversity
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; diversity; habitat
 characterization; numbers; territory size
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 spot-mapping census
 NUMBER OF SAMPLING SITES: 1000
 SAMPLING FREQUENCY: seasonal
 SUPPORTING DATA COLLECTED: associated flora;
 terrain
 STUDY SITE(S): U.S.; MX; CN

TYPE OF DATA: reduced; summarized;
 literature-derived
 COMPUTER AND LANGUAGE: IBM 360/65; COBOL
 STATISTICS EMPLOYED: mean
 ABSTRACT: This data bank permits retrieval of
 bird population data by bird species, by
 habitat type or dominant plant species, or
 geographic area. Data are based primarily
 on published sources, although some
 unpublished material has been added, some
 published errors corrected, and
 information needed for retrieval inserted
 (latitude, longitude, elevation, and age
 of stand). Conversion to metric
 measurements and computation of species
 diversity indices also have been added.
 ADDRESS: Chandler S. Robbins
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 Laboratory
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 TELEPHONE: (301) 776-4880
 NBIP ACCESSION NUMBER: MD/014

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INVESTIGATOR(S): Robbins, C. S.
 AFFILIATION: Migratory Bird and Habitat
 Research Laboratory, FWS
 TITLE: Breeding Bird Survey
 PURPOSE: To monitor regional and continental
 changes in bird populations.
 SPONSOR(S): FWS; Canadian Wildlife Service
 SPONSOR CATEGORY: federal government; other
 country
 DATE OF INITIATION: 1966
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: There has been an
 invasion of starlings in the west with
 cattle egrets and house finches invading
 in the east. Trends show a continuing
 increase in black-bird populations, a
 decrease in bluebirds, and a spread of the
 cardinal and tufted titmouse.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 desert; forest; coniferous; deciduous;
 tropical; grassland; tundra; alpine;
 wetland; mountain
 LEVEL(S) OF STUDY: organism; population;
 community; ecosystem; region
 MANAGEMENT FOCUS: endangered species;
 environmental impact; wildlife; forestry;
 indicator species; range; recreation;
 resource planning; pollution control;
 water quality; power generation;
 right-of-way
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds
 ADDED KEYWORDS: breeding birds; inventories;
 population effects
 PRIMARY PARAMETERS INVESTIGATED:
 distribution; diversity; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 three min. stops at 0.8 km intervals
 NUMBER OF SAMPLING SITES: about 1800
 SAMPLING FREQUENCY: annual
 SUPPORTING DATA COLLECTED: climatological
 data; terrain
 STUDY SITE(S): U.S.; CN
 TYPE OF DATA: raw; reduced; summarized
 COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN;
 RPG
 STATISTICS EMPLOYED: mean;
 regression/correlation analysis
 ABSTRACT: In the Breeding Bird Survey of
 North America, cooperators ran 982 survey

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routes in 1967 and 1,174 in 1968. All states except Hawaii and all Canadian Provinces except Newfoundland were included. Roadside routes are selected at random within 1-degree blocks of latitude and longitude. Each 24 1/2 mile route, with 3 min. stops spaced half a mile apart, is driven by automobile. All birds heard or seen at the stops are recorded on special forms, and the data are transferred to magnetic tape for analysis. The average number of birds of each species per route is tabulated by State and Province, presenting for the first time a record of the comparative abundance of each species across the continent. The sample size is given for each species recorded. A sophisticated analysis program here employed for the first time, is used to compute weighted mean values of the survey results for selected species at the State, stratum, regional, and continental level. The statistical significance of year to year changes at the 80, 90, 95, and 99 percent levels of probability are part of the computer output. An index for comparing populations of each species from year to year is established with 1968 as the base year. Maps show the breeding range and comparative abundance of selected species.

REFERENCES: Robbins and Van Velzen, 1969.

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NBIP ACCESSION NUMBER: MD/013

<992>

INVESTIGATOR(S): Rosenfield, A.

AFFILIATION: NMFS

TITLE: Shellfish Disease

PURPOSE: To determine epizootiology and etiologic agents (infectious and noninfectious) of shellfish diseases and to develop methods to prevent or control shellfish diseases and dissemination.

SPONSOR(S): NOAA

SPONSOR CATEGORY: federal government

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There have been massive oyster epizootics in upper Chesapeake Bay and Chincoteague Bay during 1965-1968, plus extensive blue crab mortalities along middle Atlantic coast.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal; estuarine

LEVEL(S) OF STUDY: organism; population; community; ecosystem; region

MANAGEMENT FOCUS: fisheries; recreation; resource planning; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; mollusca; shellfish; microorganisms; viruses; bacteria; fungi; protozoa

ADDED KEYWORDS: oysters; clams; mussels; scallops; crabs; shrimp; tumors; morbidity; decapods; diseases; parasites

PRIMARY PARAMETERS INVESTIGATED: kill; mortality; numbers; sex; size/weight; stress

SAMPLING FREQUENCY: continuous; seasonal;

daily; weekly; monthly; quarterly; annual; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated microorganisms; hydrological data

STUDY SITE(S): U.S.

TYPE OF DATA: raw; reduced; literature-derived

STATISTICS EMPLOYED: mean; mode; median; percentile

ABSTRACT: The pathological, parasitological, environmental, epizootiological, and zoogeographical relationships of shellfish parasites and diseases are being studied from all U. S. coasts. Shellfish designated for transplant from foreign and domestic sources are screened for micropathogens and lesions indicative of disease. Pathologic conditions are studied on the organ, tissue cell, and ultrastructural levels using light and electron transmission microscopy. Host responses are characterized and described. Cytochemical and histochemical techniques, plus IN VITRO culture methods are used to isolate, grow, diagnose, and describe shellfish micropathogens, suspected pathogens, and associated organisms.

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NBIP ACCESSION NUMBER: MD/045

<993>

INVESTIGATOR(S): Broughton, R.D.

AFFILIATION: FWS

TITLE: Indices of Predator Abundance in the Western United States

PURPOSE: To monitor trends in predator populations, particularly coyotes.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1972

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Westwide index for coyotes increased by 10% between 1972 and 1973, and again between 1973 and 1974, then decreased by 5% in 1975.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; desert; forest; coniferous; savanna; grassland; mountain

LEVEL(S) OF STUDY: population; community

MANAGEMENT FOCUS: endangered species;

environmental impact; wildlife; range

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: CANIS LATRANS; ANIMALS, 20 SPECIES

ADDED KEYWORDS: population effects; coyotes; predators; tracking

PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

visitation record; track evidence;

artificial scent stations; survey routes

NUMBER OF SAMPLING SITES: 400 routes

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; terrain

STUDY SITE(S): U.S., Western

TYPE OF DATA: raw; reduced; summarized

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COMPUTER AND LANGUAGE: Burroughs; FORTRAN
 STATISTICS EMPLOYED: mean
 ABSTRACT: None provided.

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NBIP ACCESSION NUMBER: UT/078

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INVESTIGATOR(S): Ruos, J.L.

AFFILIATION: FWS

TITLE: Mourning Dove Call-Count Survey

PURPOSE: To monitor annual change and
 long-term trends in the mourning dove
 breeding population from indices derived
 from the call-count survey.

SPONSOR(S): FWS

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1953

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gradual decline in
 numbers of mourning doves as derived from
 call-count survey indices.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
 desert; forest; coniferous; deciduous;
 savanna; grassland

LEVEL(S) OF STUDY: population; region

MANAGEMENT FOCUS: environmental impact;
 wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates;
 birds

TAXA: ZENAIIDA MACROURA

ADDED KEYWORDS: mourning doves; doves;
 breeding; population effects; management
 measures

PRIMARY PARAMETERS INVESTIGATED:
 distribution; habitat characterization;
 numbers

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 roadside plots; listening stations

NUMBER OF SAMPLING SITES: 1000

SAMPLING FREQUENCY: annual

SUPPORTING DATA COLLECTED: climatological data
 STUDY SITE(S): U.S.

TYPE OF DATA: summarized

COMPUTER AND LANGUAGE: IBM 360/65; FORTRAN IV
 STATISTICS EMPLOYED: mean; analysis of
 variance; regression/correlation analysis

ABSTRACT: Mourning dove breeding population
 levels have been determined from indices
 derived from the call-count survey. The
 survey is conducted once each year between
 May 20 and June 10. The numbers of doves
 heard per route at 20, 3-minute listening
 stations represents the primary sampling
 unit. Since 1953, the survey has been
 conducted by state and Federal Wildlife
 agency cooperators in the 48 conterminous
 United States. The primary sampling unit
 data are weighted by physiographic region,
 State, and management unit. Changes
 between years are determined from
 comparable data and are analyzed
 statistically to detect significant
 differences.

REFERENCES: Ruos, 1974

ADDRESS: James L. Ruos

FWS

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NBIP ACCESSION NUMBER: MD/039

<995>

INVESTIGATOR(S): Smith, G.R.

AFFILIATION: Museum of Zoology, University of
 Michigan

TITLE: Distribution of North American
 Freshwater Fishes

PURPOSE: To discover and describe the
 ecological determinants of freshwater fish
 distribution.

SPONSOR(S): University of Michigan

SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1959

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Cool-water and stenotopic
 species are decreasing and warm-water,
 eurytopic species are increasing.

ECOSYSTEM OR BIOME TYPE(S): aquatic;
 freshwater; stream; river

LEVEL(S) OF STUDY: organism; population;
 community

MANAGEMENT FOCUS: fisheries; water quality
 ORGANISMS, MAJOR TYPES: animals; vertebrates;
 fish

TAXA: FISHES, 168 SPECIES

ADDED KEYWORDS: population effects; maps

PRIMARY PARAMETERS INVESTIGATED:
 distribution; diversity; habitat
 characterization

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 standard methods; seines; electroshocking
 gear; nets

SAMPLING FREQUENCY: annual; irregular

SUPPORTING DATA COLLECTED: associated fauna;
 climatological data; hydrological data;
 water quality data

STUDY SITE(S): U.S., Midwest; U.S., Western

TYPE OF DATA: raw; reduced; summarized

STATISTICS EMPLOYED: multivariate analysis

ABSTRACT: The Fish Division of the University
 of Michigan Museum of Zoology has gathered
 local samples and associated ecological
 data from thousands of localities during
 the past 50 years. Three staff members are
 continuing this survey. The project
 involves the production of distribution
 maps for all species of North American
 freshwater fishes. Irregular-to-annual
 revisits are providing data on changes in
 species distribution and abundance.

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NBIP ACCESSION NUMBER: MI/063

<996>

INVESTIGATOR(S): Stansbery, D.H.

AFFILIATION: Museum of Zoology, Ohio State
 University

TITLE: Continuing Study of the Distribution
 and Systematics of Freshwater Fishes,
 Mollusks, and Crustaceans

PURPOSE: To study the distribution and
 systematics of freshwater fishes,
 mollusks, and crustaceans (with some
 collections of other animal groups, also),
 chiefly of eastern North America with
 emphasis given to the current status of

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threatened and endangered species.
 SPONSOR(S): Ohio State University
 SPONSOR CATEGORY: teaching institution
 DATE OF INITIATION: 1850
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Numerous species, once common, are now either extinct, extirpated from large areas of their former range, or nearly extinct due to habitat modification.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; stream; river; lake; reservoir
 LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
 MANAGEMENT FOCUS: endangered species; environmental impact; fisheries; wildlife; indicator species; range; resource planning
 ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; fish; birds; mammals; invertebrates; crustacea; mollusca
 ADDED KEYWORDS: crayfishes; habitat modification; benthic organisms
 PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; habitat characterization; reproduction
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): varied
 NUMBER OF SAMPLING SITES: several thousand
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated flora
 STUDY SITE(S): U.S., Eastern
 GEOGRAPHIC DESCRIPTION: Mississippi River System; Gulf of Mexico Drainage; St. Lawrence System
 TYPE OF DATA: raw
 ABSTRACT: The Ohio State University Museum of Zoology is engaged on a continuing program of study of the systematics and zoogeography of the animal life of eastern North America with emphasis on the freshwater fishes, mollusks, and crawfish.
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 Ohio State University
 Columbus, OH 43210
 TELEPHONE: (614) 422-8560
 NBIP ACCESSION NUMBER: OH/079

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INVESTIGATOR(S): Walker, C.R.
 AFFILIATION: FWS
 TITLE: National Pesticide Monitoring Program
 PURPOSE: To monitor pesticides, heavy metals, and other environmental contaminants in fish and wildlife relative to resource management responsibilities and Federal Working Group on Pest Management.
 SPONSOR(S): FWS
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1967
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Certain organochlorine pesticide residues (i.e. DDT) have decreased with EPA regulation, while others like toxaphene, chlordane, and HCB chlordane, have increased in specific areas in fish, starlings, and ducks.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
 LEVEL(S) OF STUDY: organism
 MANAGEMENT FOCUS: fisheries; wildlife

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds

TAXA: FISHES, 40 SPECIES; ANAS RUBRIPES; ANAS PLATYRHYNCHOS; STURNUS VULGARIS; HALIAEETUS LEUCOCEPHALUS

ADDED KEYWORDS: mallard ducks; black ducks; ducks; starlings; pesticides; heavy metals; duck wings; contaminants; management measures; DDT; toxaphene; chlordane; HCB chlordane; bald eagles; eagles

PRIMARY PARAMETERS INVESTIGATED: residues
 NUMBER OF SAMPLING SITES: fish, 100 stations; starlings, 120-130 sites; duck wings

SAMPLING FREQUENCY: annual;
 SUPPORTING DATA COLLECTED: soils; water quality data

STUDY SITE(S): U.S.
 TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; median; percentile; analysis of variance; regression/correlation analysis

ABSTRACT: Early in the development of the wildlife monitoring program, certain criteria were recognized as being important in the selection of species of wild animals suitable for pesticide monitoring purposes. Ideally, the forms selected should be geographically well distributed and they should be reasonably abundant and readily available for sampling. In addition, animals occurring near the top of food chains have the capacity to reflect residues in organisms occurring at lower levels in the same food chains. Based on these criteria, species chosen for monitoring include the starling (STURNUS VULGARIS), mallard (ANAS PLATYRHYNCHOS), and black ducks (ANAS RUBRIPES), and the bald eagle (HALIAEETUS LEUCOCEPHALUS). The black duck is substituted for the mallard in states where suitable numbers of mallards cannot be obtained. The monitoring objective was to ascertain on a national scale the amount of pesticides and related materials in components of the environment and trends of these levels with time through repeated sampling and analysis of environmental components. The Fish and Wildlife Service program consists of three elements: (1) freshwater fish, (2) mallard and black ducks, and (3) starlings.

REFERENCES: Dustman, et al, 1971; Johnson, et al, 1967; Walker, 1975

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 U.S. Fish and Wildlife Service
 Population Regulation Research Div.
 Washington, D.C. 20240

TELEPHONE: (202) 343-4101

NBIP ACCESSION NUMBER: DC/010

<998>

INVESTIGATOR(S): Webb, T.
 AFFILIATION: Dept. of Geological Sciences, Brown University
 TITLE: Plant Formations and Composition Changes
 PURPOSE: To assemble pollen data extracted from sediments located in North America and to map out contemporary distribution of pollen and map pollen distributions for selected times during the last 12,000 years.

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SPONSOR(S): NSF

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Observed major shifts in the composition and location of plant formations (e.g. deciduous forest, prairie, etc.) over last 12,000 years and observed major changes in vegetation since settlement by European man.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; savanna; grassland; tundra; arctic; wetland; aquatic; freshwater; lake

LEVEL(S) OF STUDY: community; ecosystem; region

MANAGEMENT FOCUS: forestry; resource planning

ORGANISMS, MAJOR TYPES: plants; vascular plants; trees; shrubs; microorganisms; algae; protozoa

TAXA: PINUS SPP; PICEA SPP; ABIES SPP; TSUGA SPP; LARIX SPP; BETULA SPP; POPULUS SPP; SALIX SPP; QUERCUS SPP; ACER SPP; ULMUS SPP; FRAXINUS SPP; TILIA SPP; PRUNUS SPP; CARYA SPP; JUGLANS SPP; PLATANUS SPP; SASSAPRAS SPP; CELTIS SPP; CORNUS SPP; Ostrya SPP; CARPINUS SPP; JUNIPERUS SPP; THUJA SPP; GLADITSIA TRIACANTHOS

ADDED KEYWORDS: pollen; pines; spruces; firs; hemlocks; tamaracks; birches; poplars; willows; oaks; maples; elms; ashes; basswoods; cherry; hickory; walnuts; sycamores; sassafras; hackberry; dogwoods; ironwoods; hop hornbeans; junipers; arborvitae; honey locusts; habitat modification; population effects

PRIMARY PARAMETERS INVESTIGATED:

distribution; migratory patterns; numbers

NUMBER OF SAMPLING SITES: 1000

STUDY SITE(S): U.S., N-Eastern; CN

TYPE OF DATA: raw; summarized;

literature-derived

COMPUTER AND LANGUAGE: IBM 360/70; FORTRAN

STATISTICS EMPLOYED: percentile;

regression/correlation analysis;

multivariate analysis

ABSTRACT: Mapping of modern pollen and vegetation data as well as principal component analysis of these data reveals the patterns in the vegetation to be quite evident in the pollen data. The pollen was extracted from the top 2 cm of short cores taken from 64 lakes in lower Michigan, and the vegetation data were derived from Forest Inventory records. Except for pine and poplar, the distribution of pollen values for individual genera parallels the distribution of vegetational values. Principal component analysis shows that the north-south gradient between mixed conifer-hardwood forests in the north and deciduous forests in the south occurs in both sets of data, and differences between the major forest types are also evident. By mapping and summarizing 478 pollen counts from surface samples at 406 locations in eastern North America, this study documents the relationships between the distributions of pollen and vegetation on a continental scale. The most common pollen types in this region are pine, birch, oak, and spruce. Maps showing isopercentage contours or isopolls for 13 important pollen types reflect the general

N-S zonation of the vegetation. The maps and tabulations of average pollen spectra for the six major vegetational regions indicate high values for the following pollen types in each region: (1) tundra-nonarboreal birch, sedge, and alder; (2) forest/tundra-spruce, nonarboreal birch and alder; (3) boreal forest-spruce, jack pine (type), and arboreal birch with fir in the southeastern part; (4) conifer/hardwood forest-white pine, arboreal birch, and hemlock with beech, maple, and oak in the southern part; (5) deciduous forest-oak, pine, hickory, and elm, with beech and maple in the northern part, and highest values of oak and hickory west of the Appalachian crest; and (6) southeastern forest-pine, oak, hickory, tupelo, and Myricaceae. In some cases, less abundant pollen types are diagnostic for the region, e.g., bald cypress in the southeast. In the conifer-hardwood region and southward, pollen of woods associated with deforestation and agriculture is abundant. The maps also show that much of southeastern U.S. and the area just to the east of Hudson Bay are in need of additional sampling. At 51 of the sites, absolute pollen frequencies (APF; grains/ml lake sediment) were obtained. These confirm the major conclusions from the percentage data, but differences are evident, e.g., the percentages of alder pollen peak in the tundra whereas alder APFs peak in the boreal forest, and spruce percentages peak in the forest-tundra whereas spruce APFs peak in the boreal forest. Because the APF data reflect the patterns of absolute abundance of individual taxa in the vegetation as well as the overall forest densities, future counts of modern pollen should include APF determinations. The effects of sedimentation processes on APF quantities indicate that APF samples should be obtained from moderate size lakes of similar morphology and hydrology and that, in each lake, several samples from the profundal zone should be pooled to create a sample representative of that lake.

REFERENCES: Webb, 1974; Davis and Webb, 1974

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NBIP ACCESSION NUMBER: RI/021

<999>

INVESTIGATOR(S): Wildung, R.E.

AFFILIATION: Battelle Pacific Northwest

Laboratories

TITLE: Potential for Plutonium Complexation in Soil and Uptake by Plants

PURPOSE: To define soil microbial processes influencing plutonium solubility and mobility in soil and uptake by plants.

SPONSOR(S): ERDA

SPONSOR CATEGORY: federal government

DATE OF INITIATION: 1973

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Change in types, numbers,

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and respiration rate of soil
microorganisms with time and exposure.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
desert; grassland
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact;
radiological; pollution control
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs; microorganisms; bacteria;
fungi
TAXA: HORDEUM SPP; GLYCINE SPP; MELICAGO SPP
ADDED KEYWORDS: heavy metals; radiation
effects; plutonium; soil microorganisms;
barley; soybeans; alfalfa
PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; harvest; mortality; numbers;
physiology; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plate counts; yield; physiological
indicators
SAMPLING FREQUENCY: daily; weekly; monthly
SUPPORTING DATA COLLECTED: associated
microorganisms; soils
STUDY SITE(S): U.S.
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis
ABSTRACT: None provided.
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NBIP ACCESSION NUMBER: WA/108

<1000>

INVESTIGATOR(S): Wildung, R.E.
AFFILIATION: Battelle Pacific Northwest
Laboratories
TITLE: Fate of Heavy Metals and Heavy Metal
Complexes in Soil
PURPOSE: To define soil microbial processes
influencing trace metal (arising from
agricultural-industrial activities)

solubility and mobility in soil and uptake
by plants.

SPONSOR(S): NIH
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1972
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Changes in types,
numbers, and respiration rates of soil
microorganisms and plant biochemistry with
time and metal exposure.
ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; deciduous; grassland
LEVEL(S) OF STUDY: organism
MANAGEMENT FOCUS: environmental impact;
indicator species; pollution control
ORGANISMS, MAJOR TYPES: plants; vascular
plants; herbs; microorganisms; bacteria;
fungi
TAXA: HORDEUM SPP; GLYCINE SPP
ADDED KEYWORDS: soil microorganisms; trace
elements; industrial chemicals;
fertilizers; air pollution; barley;
soybeans
PRIMARY PARAMETERS INVESTIGATED: biomass;
growth; harvest; mortality; numbers;
physiology; stress; toxicity
DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
plate counts; yield; physiological
indicators
SAMPLING FREQUENCY: daily; weekly; monthly
SUPPORTING DATA COLLECTED: associated
microorganisms; soils
STUDY SITE(S): U.S.
TYPE OF DATA: raw; reduced; summarized
STATISTICS EMPLOYED: mean; percentile;
analysis of variance;
regression/correlation analysis
ABSTRACT: None provided.
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GUAM

Standard Federal Region 9
Fish and Wildlife Service Region 1

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INVESTIGATOR(S): Marsh, J.A.
AFFILIATION: Marine Laboratory, University of Guam
TITLE: ACANTHASTER Monitoring Program in Guam and Micronesia
PURPOSE: Assess population levels and migrations of ACANTHASTER, assess reef damage caused by the starfish, evaluate effectiveness of the efforts of control teams, and observe possible coral recolonization.
SPONSOR(S): Govt. of Guam and Trust Territory of the Pacific Islands
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1970
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Extensive reef damage was caused by ACANTHASTER on four islands, severe localized damage occurred on four others, and ACANTHASTER populations declined between 1969 and 1972.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: population; community
MANAGEMENT FOCUS: endangered species; environmental impact; indicator species
ORGANISMS, MAJOR TYPES: animals; invertebrates
TAXA: ACANTHASTER PLANCI
ADDED KEYWORDS: crown-of-thorns; starfish; corals; population effects; natural catastrophe; reefs; tropical reefs
PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; habitat characterization; migratory patterns; numbers
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): bottom transects; snorkeling; feeding scar counts
NUMBER OF SAMPLING SITES: 18
SAMPLING FREQUENCY: annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): GUAM
TYPE OF DATA: raw; summarized
STATISTICS EMPLOYED: mean
ABSTRACT: The presence of large numbers of the crown-of-thorns starfish, ACANTHASTER PLANCI, and its devastating effect on live coral reefs around some Micronesian islands was first documented by a large-scale survey conducted in July and August, 1969. Eight of the 17 islands surveyed at that time had large populations or aggregations of starfish which were causing extensive reef damage. During the period from June, 1970, to May 1972, second surveys were made of Guam and 13 of the 16 Trust Territory islands originally surveyed in 1969. Four of these islands (Guam, Palau, Truk, and Ponape) still had large populations of ACANTHASTER. Third surveys, approximately a year after the second surveys, indicated the continued presence of large numbers of starfish on two (Truk and Ponape) of the seven islands visited. New surveys in 1971 on a small high island (Aguijan) in the Marianas and eight small atolls in the Carolines revealed significant numbers of starfish and extensive coral damage only on Aguijan; these starfish disappeared a year later. There was a definite overall

decline in ACANTHASTER PLANCI populations from 1969 to 1972. There were no new outbreaks except for the case of Aguijan cited above. We attribute the decrease in starfish numbers partly to control efforts. As of May, 1972, ACANTHASTER posed no serious additional threat to the reefs of the Mariana and Caroline Islands.
REFERENCES: Marsh, 1973; Marsh, et al, 1971; Marsh and Tsuda, 1973; Marsh and Bryan, 1971; Tsuda, 1971
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NBIP ACCESSION NUMBER: GU/001

<1002>

INVESTIGATOR(S): Randall, R.H.
AFFILIATION: Marine Laboratory, University of Guam
TITLE: A Study of Biological Impact Caused by Natural and Man-Induced Changes on a Tropical Reef
PURPOSE: To evaluate the biological condition of a section of coral reef at Tanguisson Point prior to the completion of the power generation facility and then to reevaluate the reef after the plant became operational.
SPONSOR(S): EPA
SPONSOR CATEGORY: federal government
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: terminated
CHANGE(S) OBSERVED: Coral kill occurred where thermal effluent was discharged onto the reef.
ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; water quality; power generation
ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; invertebrates; plants; non-vascular plants
TAXA: CORALS, 150 SPECIES
ADDED KEYWORDS: corals; thermal effluents; power plants; coal; fossil fueled power plants; habitat modification; reefs; tropical reefs
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; growth; habitat characterization; kill; numbers; size/weight; stress
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): transect/quadrat stations; fish counts
NUMBER OF SAMPLING SITES: 91
SAMPLING FREQUENCY: annual; irregular
SUPPORTING DATA COLLECTED: associated fauna; associated flora; hydrological data; water quality data
STUDY SITE(S): GUAM
GEOGRAPHIC DESCRIPTION: Tanguisson Point
Steam Electric Generating Plant
TYPE OF DATA: literature-derived
STATISTICS EMPLOYED: percentile
ABSTRACT: A biological study was conducted on a fringing coral reef adjacent to a thermoelectric power plant on Guam, before and after release of plant effluent. The before study showed corals of the reef

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front, submarine terrace, and seaward slope to be devastated by a recent infestation of the crown-of-thorns starfish. The reef margin was found to comprise a rich and diverse coral reef community, presumably spared from starfish attack by strong wave surge. The reef flat was found to be a naturally depauperate environment due to frequent exposure at low tide. Release of plant effluent resulted in an elevation of water temperature on the adjacent reef flat and reef margin. Wave action exposed even the deeper parts of the reef margin to temperatures above ambient as well as other potentially detrimental effluent parameters such as chlorine and heavy metals. Coral transect studies have shown an increase in recent coral colonization on the reef front, terrace and slope since the starfish infestation. No such recovery

is evident in benthic habitats of the reef margin, exposed to effluent. Preliminary thermal simulation experiments, performed on a series of reef corals in the laboratory, suggest an upper tolerance limit for the corals between 30 and 32 C. These temperatures are not uncommon on the reef margin. Sublethal elevation of temperature was shown to reduce growth rate in some of the coral species. Recommendations are made to release the effluent in deeper water in order to provide a greater mixing zone and to relieve present stress on the reef margin organisms.

REFERENCES: Randall, 1973a,b,c; Jones and Randall, 1973

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PUERTO RICO
Standard Federal Region 2
Fish and Wildlife Service Region 4
(SEE ALSO 236, 258)

<1003>

INVESTIGATOR(S): Block, A.M.
AFFILIATION: Terrestrial Ecology Div., Puerto Rico Nuclear Center
TITLE: Rio Espiritu Santo Drainage Basin Modeling; Chemical Studies
PURPOSE: To analyze biota for heavy metals and to establish data base for regional land use planning and development.
SPONSOR(S): ERDA
SPONSOR CATEGORY: federal government
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: None yet noted.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; tropical; aquatic; freshwater; stream; river; marine; estuarine
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; radiological; resource planning; water quality
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; reptiles; invertebrates; crustacea; shellfish; plants; vascular plants; trees; shrubs; microorganisms; fungi; algae
TAXA: ATYA SP; MACROBRACHYA SP; XIPHOCARUS SP
ADDED KEYWORDS: shrimp; heavy metals; copper; habitat modification; benthic organisms; models; islands
PRIMARY PARAMETERS INVESTIGATED: distribution; habitat characterization; natality; physiology; toxicity
NUMBER OF SAMPLING SITES: 4-6
SAMPLING FREQUENCY: seasonal
SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; soils; water quality data
STUDY SITE(S): PR
GEOGRAPHIC DESCRIPTION: Rio Espiritu Santo; Rio Sonadora; El Yunque-El Verde Tropical Rain Forest
TYPE OF DATA: raw; reduced; summarized; literature-derived
COMPUTER AND LANGUAGE: IBM 370-145; FORTRAN IV
STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; non-parametric analysis; modeling, deterministic; modeling, stochastic
ABSTRACT: Carapaces are analyzed for heavy metal content and for lighter trace elements. Algal and detritus collections are made. Propagation of pure algal strains present in the diet of filter and detritus feeders are made and examined for metal concentrating ability - particularly for copper since the respiratory system of these crustacea involves hemocyanin proteins for reversible oxygen binding. Populations in estuarine, urbanized, agricultural, forested, and tropical rain forest sections of the drainage basin are monitored.
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NBIP ACCESSION NUMBER: PR/001

<1004>

INVESTIGATOR(S): Jones, K.L.
AFFILIATION: Dept. of Biology, Southern Methodist University
TITLE: Status of Unnamed Species of ELEUTHERODACTYLUS
PURPOSE: To determine the possibility of species extinction due to human actions.
SPONSOR(S): PI
SPONSOR CATEGORY: private individuals
DATE OF INITIATION: 1973
PROJECT DURATION: one to five years
PROBABLE CONTINUATION: unknown
CHANGE(S) OBSERVED: Some habitat reduction due to construction, fires, etc. during the last 2 years.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; tropical; grassland; mountain
LEVEL(S) OF STUDY: population
MANAGEMENT FOCUS: endangered species; environmental impact
ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; plants; vascular plants; herbs; grasses
TAXA: ELEUTHERODACTYLUS SP
ADDED KEYWORDS: frogs; leptodactylids; anurans; habitat modification; construction; natural catastrophe; fires
PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; emigration; growth; habitat characterization; home range size; immigration; mortality; natality; numbers; reproduction; sex; stress; territory size
DATA COLLECTING DEVICE(S) OR PROCEDURE(S): observation; collection
NUMBER OF SAMPLING SITES: one, less than 150 square kilometers
SAMPLING FREQUENCY: 1
SUPPORTING DATA COLLECTED: associated fauna; associated flora
STUDY SITE(S): PR
GEOGRAPHIC DESCRIPTION: Sierra de Cayey Mountains
TYPE OF DATA: raw
ABSTRACT: A new species of ELEUTHERODACTYLUS was discovered in S. W. Puerto Rico near Cayey. The species is the first New World anuran known to be ovoviviparous. It is an obligate bromeliad-dwelling species with restricted range and low dispersal ability. Species will be suggested for review of status for inclusion in rare and endangered list as soon as possible after publication.
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<1005>

INVESTIGATOR(S): Raffaele, H.A.
AFFILIATION: Puerto Rico Dept. of Natural Resources
TITLE: Waterfowl Research
PURPOSE: To study the distribution, abundance, feeding habits, and nesting of four species of waterfowl.
SPONSOR(S): Puerto Rico Dept. of Natural Resources
SPONSOR CATEGORY: SG
DATE OF INITIATION: 1974

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PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Decline of ruddy duck and Bahama duck was documented, probably due to severe drought during the first half of 1974.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; lake; reservoir

LEVEL(S) OF STUDY: organism; population
MANAGEMENT FOCUS: endangered species; wildlife
ORGANISMS, MAJOR TYPES: animals; vertebrates; birds; plants; vascular plants; herbs

TAXA: OXYURA JAMAICENSIS; ANAS BAHAMENSIS; DENDROCYGNA BICOLOR; DENDROCYGNA ARBOREA

ADDED KEYWORDS: ruddy ducks; bahama ducks; white-cheeked pintail ducks; west indian tree ducks; fulvous tree ducks; ducks; weather conditions; seasonal variations; management measures; drought; aquatic plants

PRIMARY PARAMETERS INVESTIGATED: behavior;

distribution; habitat characterization; migratory patterns

NUMBER OF SAMPLING SITES: approximately 30
SAMPLING FREQUENCY: irregular

STUDY SITE(S): PR

TYPE OF DATA: raw

ABSTRACT: Collection of duck stomachs from hunters was carried out. Stations were maintained at Cartagena and Boqueron with many fewer stomachs being taken this season than last. Much time was put into the analysis of stomachs collected both this year and last year. Seeds of all the aquatic plants in our herbarium were mounted separately on slides. Surprisingly, most of the seeds thus far in our herbarium do not represent the species eaten by the ducks.

REFERENCES: Raffaele, 1975

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NBIP ACCESSION NUMBER: PR/002

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INVESTIGATOR(S): Andrews, J.T.
 AFFILIATION: Institute of Arctic and Alpine Research, University of Colorado
 TITLE: Paleoeecology and Climate, Eastern Canadian Arctic
 PURPOSE: To outline the major patterns of adaptation of marine organisms (bivalves and benthic forms) and plants to arctic climatic changes.
 SPONSOR(S): NSF
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1974
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: We are dealing with time scales of ten to ten thousand years. Our data indicates improving conditions until 1950's and then worsening.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; grassland; tundra; arctic
 LEVEL(S) OF STUDY: community; ecosystem
 MANAGEMENT FOCUS: indicator species
 ORGANISMS, MAJOR TYPES: animals; invertebrates; mollusca; plants; vascular plants; shrubs; herbs; non-vascular plants; mosses
 TAXA: MYTILUS EDULIS; CHLAMYSLANDICUS; BETULA NANA; BETULA GLANDULOSA
 ADDED KEYWORDS: weather conditions; climate; pollen; benthic organisms; islands; foraminifera; paleoecology
 PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; habitat characterization; immigration; migratory patterns; size/weight
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collections; transects; pollen traps
 NUMBER OF SAMPLING SITES: approximately 100
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils; terrain
 STUDY SITE(S): CN
 GEOGRAPHIC DESCRIPTION: Baffin Island
 TYPE OF DATA: raw; reduced; summarized; literature-derived
 COMPUTER AND LANGUAGE: CDC 6400; FORTRAN
 STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; multivariate analysis; non-parametric analysis; non-linear estimation; serial autocorrelations
 ABSTRACT: The research in the eastern Canadian Arctic is directed toward dating and understanding the dynamics of climatic change as recorded by a variety of natural systems - notably marine bivalves, benthic foraminifera, plants and their pollen, 'non-living' components of the environment such as glacier variations, sea level changes, and variations in lithology of sediments. The project is multidisciplinary and inter-institutional and involves personnel in the USA, Canada, and Denmark. We are paying particular attention to the biological changes of the last 10,000 years as well as the changes about 120,000BP that led to the last full-scale continental glaciation.
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NBIP ACCESSION NUMBER: CO/043

<1007>

INVESTIGATOR(S): Bishop, J.W.
 AFFILIATION: Ontario Ministry of Environment
 TITLE: Mercury in Ontario Fisheries
 PURPOSE: To determine levels of mercury in fish in Ontario from industrially contaminated and uncontaminated waters. To date about 300 lakes and rivers have been analyzed (30-40 species of fish).
 SPONSOR(S): Ontario
 SPONSOR CATEGORY: other country
 DATE OF INITIATION: 1970
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Mercury concentration is decreasing in some species and in some lakes.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater: stream; river; lake
 LEVEL(S) OF STUDY: organism; ecosystem; region
 MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; indicator species; recreation; resource planning; pollution control; water quality
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; mammals; invertebrates; crustacea; insecta
 TAXA: FISHES, 16 SPECIES
 ADDED KEYWORDS: heavy metals; industrial chemicals; waste water; management measures; mercury
 PRIMARY PARAMETERS INVESTIGATED: sex; size/weight; toxicity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
 SAMPLING FREQUENCY: seasonal
 SUPPORTING DATA COLLECTED: associated fauna; water quality data
 STUDY SITE(S): CN
 TYPE OF DATA: raw; summarized; literature-derived
 COMPUTER AND LANGUAGE: Hewlett Packard 9830; BASIC
 STATISTICS EMPLOYED: mean; analysis of variance; regression/correlation analysis; multivariate analysis
 ABSTRACT: A rapid and precise acid digestion preparative technique for the determination of the mercury content of biological materials is described. Sample aliquots are weighed into test tubes and treated with sulfuric-nitric acid mixture. The tubes are inserted into a specially constructed aluminum block, and sets of blocks are placed on a hot plate. The contents of the tubes are gradually heated to 260C and maintained at this temperature until the sample is digested. The efficient and uniform heat transfer and temperature control achieved by proper construction of the aluminum block results in a rapid and reproducible digestion of a large number of samples with no detectable loss of mercury. The complete oxidation of the organic material is ensured by the addition of potassium permanganate, the excess of which is reduced by hydroxylamine sulfate. The mercury content of the digestate is determined by flameless atomic absorption spectrophotometry. Relative error is approximately 7.5% at the 0.4 to 4.0 ppm range. The accuracy, determined by

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analyses of standard reference materials and participation in round robins, is about 102%. The average recovery from spiked samples was 99.6%.

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NBIP ACCESSION NUMBER: CN/010

<1008>

INVESTIGATOR(S): Brown, J.R.
AFFILIATION: Dept. of Preventive Medicine and Biostatistics, University of Toronto

TITLE: Chlorinated Hydrocarbons and Heavy Metal Residues in Biological Systems, Including Man

PURPOSE: To establish baselines from which deviations from the present quality of the environment may be determined, with particular relation to environmental health.

SPONSOR(S): CN

SPONSOR CATEGORY: other country

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Gradual decrement of chlorinated hydrocarbons pesticide levels in man and increase in levels in polychlorinated biphenyls.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; tundra; arctic; aquatic; freshwater; stream; river; lake

LEVEL(S) OF STUDY: organism; community; ecosystem; region

MANAGEMENT FOCUS: environmental impact; fisheries; wildlife; indicator species; pollution control

ORGANISMS, MAJOR TYPES: animals; vertebrates; fish; birds; mammals; invertebrates; crustacea; plants; vascular plants; herbs; microorganisms; viruses; bacteria; algae

TAXA: HOMO SAPIENS

ADDED KEYWORDS: aldrin; DDT; DDE; DDD; dieldrin; heptachlor epoxide; lindane; pesticides; PCB; mercury; cadmium; lead; nickel; benthic organisms

PRIMARY PARAMETERS INVESTIGATED: age; distribution; diversity; growth; physiology; reproduction; residues; stress; toxicity

NUMBER OF SAMPLING SITES: 20

SAMPLING FREQUENCY: annual; irregular

SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; soils; water quality data

STUDY SITE(S): CN

GEOGRAPHIC DESCRIPTION: Mackenzie River; Beaufort Sea; Lake Superior; Lake Erie; Lake Michigan; Lake Ontario; French River; Humber River; Don River; Credit River

TYPE OF DATA: raw

STATISTICS EMPLOYED: mean; median; percentile; regression/correlation analysis

ABSTRACT: Pesticide residues have been determined in a variety of flora and fauna, including man, from a number of designated areas within Canada. Special attention has been paid to annual change

in the levels of these materials and their relation to natural and human pollution.

REFERENCES: Brown and Chow, 1975

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<1009>

INVESTIGATOR(S): Grier, J.W.
AFFILIATION: Zoology Dept., North Dakota State University

TITLE: Reproduction and Population Trends in Bald Eagles in Northwestern Ontario, Canada

PURPOSE: To measure reproduction and changes in a population of bald eagles over a long period.

SPONSOR(S): Audubon Society; National Wildlife Federation; Canadian Wildlife Service

SPONSOR CATEGORY: other country; societies and other organizations

DATE OF INITIATION: 1966

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Declines in bald eagle population were studied. Populations were not changed significantly from effects of various types of human disturbances, such as climbing to nests. Residue levels of several toxic chemicals were high in added eggs. The shells of these eggs were significantly thinner than those of eggs collected before 1947.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous

LEVEL(S) OF STUDY: population

MANAGEMENT FOCUS: endangered species; environmental impact; wildlife; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates; birds

TAXA: HALIAEETUS LEUCOCEPHALUS

ADDED KEYWORDS: population effects; eagles; raptors; mining; logging; habitat modification; DDE

PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; mortality; migratory patterns; natality; numbers; reproduction

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): aerial census; banding of nestlings

NUMBER OF SAMPLING SITES: area approximately 170,000 sq km

SAMPLING FREQUENCY: annual

STUDY SITE(S): CN

GEOGRAPHIC DESCRIPTION: Ontario, Canada

TYPE OF DATA: raw; reduced; c

STATISTICS EMPLOYED: mean; contingency table analysis; non-parametric analysis; modeling, deterministic

ABSTRACT: A yearly census of bald eagles (HALIAEETUS LEUCOCEPHALUS) in northwestern Ontario revealed a significant decline ($P < 0.05$) from 1966 through 1973 in the percentage of potential breeding areas that actually produced nestlings (range of 74% to a low of 36%). The average number of young per nest with young (1.5 overall) did not vary significantly during this period. Residue levels of several toxic chemicals except mercury were high in added eggs, averaging on a dry-weight

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basis 94 ppm DDE: 5.2 ppm dieldrin, 434 ppm PCB, and 2.5 ppm mercury. The shells of these eggs were significantly thinner ($P < 0.05$) than those of eggs collected before 1947. Toxicant residue levels of eagle eggs in this region are substantially higher than in the tissues of a dead nestling eagle or in the eggs of Ospreys (*PANDION HALIAETUS*) in the same region. The high PCB values suggest that the eagles are acquiring the toxicant burden outside of the nesting region.

REFERENCES: Grier, 1969; Grier 1974

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<1010>

INVESTIGATOR(S): Harris, G.P.

AFFILIATION: Dept. of Biology, McMaster University

TITLE: Biological Changes During Artificial Mixing of Hamilton Harbor

PURPOSE: To monitor changes in chemical and biological (phytoplankton, zooplankton, and productivity) parameters during artificial mixing of Hamilton Harbor.

SPONSOR(S): Ministry of Environment

SPONSOR CATEGORY: other country

DATE OF INITIATION: 1975

PROJECT DURATION: one to five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: During mixing period, changes occur in biomass, primary productivity, assimilation numbers, and return of zooplankton to hypolimnion.

ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake

LEVEL(S) OF STUDY: organism; population; community

MANAGEMENT FOCUS: environmental impact; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals;

invertebrates; crustacea; microorganisms; bacteria; algae

ADDED KEYWORDS: zooplankton; phytoplankton; primary productivity; destratification; habitat modification; heavy metals; rotifers; cladocerans; copepods

PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; diversity; physiology; productivity; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S): standard sampling techniques

NUMBER OF SAMPLING SITES: 5

SAMPLING FREQUENCY: weekly

SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; water quality data

STUDY SITE(S): CN

GEOGRAPHIC DESCRIPTION: Hamilton County; Wentworth County; Hamilton Harbor

TYPE OF DATA: raw; reduced

STATISTICS EMPLOYED: mean; analysis of variance; analysis of covariance; regression/correlation analysis; multivariate analysis; non-parametric analysis

ABSTRACT: During the summer stratification period, the hypolimnion of Hamilton Harbor becomes anoxic. Air lines have been

installed to relieve the problem by mixing the water column. During 1975, the seasonal cycle of phytoplankton and zooplankton was monitored to obtain basic data before the major mixing experiment in 1976. It is expected that the project will continue for one or two years after 1976 to observe mixing effects. Heavy metal concentrations are suspected to have an effect on phytoplankton biomass.

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NBIP ACCESSION NUMBER: CN/002

<1011>

INVESTIGATOR(S): Hutchinson, T.C.

AFFILIATION: Dept. of Botany, University of Toronto

TITLE: Transport, Mobility, and Compartmentation of Nickel and Copper in a Stressed Watershed

PURPOSE: To determine sources, routes of movement, rates, sedimentation, biotic accumulation, excretion, compartmentation in field and simulation in laboratory, loss from eroding soils, and organo-complexing.

SPONSOR(S): Environment Canada, Inland Waters

SPONSOR CATEGORY: other country

DATE OF INITIATION: 1974

PROJECT DURATION: unknown

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: Despite elevated nickel levels in water at 40-50 ppb, no changes detectable. Terrestrial changes very marked.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; coniferous; deciduous; aquatic; freshwater; stream; river; lake

LEVEL(S) OF STUDY: community; ecosystem

MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality

ORGANISMS, MAJOR TYPES: animals; vertebrates; amphibia; fish; invertebrates; crustacea; insects; mollusca; shellfish; annelida; plants; vascular plants; shrubs; herbs; microorganisms; algae; protozoa

ADDED KEYWORDS: heavy metals; nickel; copper; food chains; clams; zooplankton; benthic organisms; smelters; retention; sediments; crayfishes; seasonal variations

PRIMARY PARAMETERS INVESTIGATED:

distribution; diversity; numbers; physiology; residues; toxicity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):

van Dorn bottle; piston corer; depth-integrated sediment sampler; Ekman dredge

SAMPLING FREQUENCY: seasonal; daily; weekly; annual

SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry; climatological data; hydrological data; soils; water quality data

STUDY SITE(S): CN

GEOGRAPHIC DESCRIPTION: Sudbury District; Wanapitei River; French River; Pickering River; Georgian Bay; Lake Huron; Lake Wanapitei

STATISTICS EMPLOYED: mean; mode; median; analysis of variance;

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regression/correlation analysis; multivariate analysis; modeling, stochastic

ABSTRACT: Three rivers join at a major lake south of Sudbury before emptying via several outlets to Georgian Bay. One river drains the metal-contaminated smelter of Coniston, the others flow from unpolluted areas. The elevated Ni and Cu levels in the polluted river are reflected in sediment concentrations, and variously in many of the benthic organisms in the sediments. The zooplankton and resident crayfish, clams, and fish populations show metal accumulations but do not show food chain biomagnification. A great deal of metal selectivity is shown by the organisms. Seasonal patterns of metal movement have been established. Mass balances, inputs-outputs, and retention times are being developed for the overall system.

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<1012>

INVESTIGATOR(S): Hutchinson, T.C.
AFFILIATION: Dept. of Botany, University of Toronto
TITLE: Study of Ecological Effects of Ancient Lignite Burning on a Canadian Arctic Tundra
PURPOSE: To determine the SO₂-acid and heavy metal stresses from a 1000 year old burn and fumigation on terrestrial and freshwater ecosystems.
SPONSOR(S): Indian and Northern Affairs
SPONSOR CATEGORY: other country
DATE OF INITIATION: 1975
PROJECT DURATION: one year or less
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: The pH of soils and tundra ponds are as low as 2.0 yet many organisms are alive in lakes and on land.
ECOSYSTEM OR BIOME TYPE(S): terrestrial; tundra; arctic; aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; power generation
ORGANISMS, MAJOR TYPES: animals; invertebrates; crustacea; insecta; plants; vascular plants; herbs; grasses; microorganisms; algae
ADDED KEYWORDS: heavy metals; acid rain; soil chemistry; sulfur dioxide; fires; air pollution; lignite; rotifers; zooplankton; chironomids; coal
PRIMARY PARAMETERS INVESTIGATED: distribution; diversity; numbers; physiology; toxicity
SAMPLING FREQUENCY: seasonal; annual
SUPPORTING DATA COLLECTED: associated fauna; associated flora; atmospheric chemistry; climatological data; soils; terrain; water quality data
STUDY SITE(S): CN
GEOGRAPHIC DESCRIPTION: Western Arctic (Canada); Beaufort Sea; Smoking Hills
TYPE OF DATA: raw
ABSTRACT: Burning of great antiquity is occurring on the Beaufort Sea coast where

lignite deposits are exposed. Sulfur dioxide fumigations occur at ground level and acidic rainfall affects the area. Heavy metals are deposited from air born particulates. The unaffected soils of lakes of the region have pH greater than 7.0 but in the Smoking Hills area the pH is as low as 2.0. Yet zooplankton, rotifera, chironomids, and algae are surviving in the ponds and grasses, sedges, and dicotyledonous plants are severely stressed soils. We are tabulating the stresses and their impacts on the communities, and determining physiological responses.

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<1013>

INVESTIGATOR(S): Munawar, M.
AFFILIATION: Great Lakes Biolimnology Lab, Fisheries and Marine Services
TITLE: Phytoplankton of the Great Lakes
PURPOSE: To monitor the distribution and species composition of the phytoplankton in relation to eutrophication on a lakewide basis.
SPONSOR(S): Great Lakes Biolimnology Lab
SPONSOR CATEGORY: other country
DATE OF INITIATION: 1969
PROJECT DURATION: over five years
PROBABLE CONTINUATION: yes
CHANGE(S) OBSERVED: Low biomass concentrations were observed during winter and fall seasons, whereas high values were recorded during the summer months. The nearshore station exhibited high biomass concentration and photosynthesis rates earlier in the year than the midlake stations.
ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
LEVEL(S) OF STUDY: organism; population; community; ecosystem
MANAGEMENT FOCUS: environmental impact; indicator species; pollution control; water quality; power generation
ORGANISMS, MAJOR TYPES: microorganisms; algae
TAXA: RHODOMONAS MINUTA; CRYPTOMONAS EROSA; APHANIZOENON FLOS-AQUAE; ANABAENA SPIROIDES; COSCINODISCUS TORHII; ACTINASTRUM HANTZSCHII; CERATIUM HIRUNDINELLA; OCHROMONAS SPP; PERIDINIUM ACICULIFERUM; GYMNOINIUM HELVETICUM; GYMNOINIUM UBERINIUM; KATABLEPHARIS OVALIS; ANKISTRODESUS PASCATUS; SCENEDESMUS BIJUGA; CHROOCOCCUS DISPERSUS; CHROOCOCCUS MINUTUS; CHRYSOCHROMULINA PARVA; MELOSIRA BINDERANA; ASTERIONELLA FORMOSA; MELOSIRA ISLANDICA; STEPHANODISCUS TENUISS
ADDED KEYWORDS: phytoplankton; dinoflagellates; green algae; cryptomonads; phytoflagellates; diatoms; primary productivity; eutrophication; population effects
PRIMARY PARAMETERS INVESTIGATED: biomass; distribution; numbers; size/weight
NUMBER OF SAMPLING SITES: 20-40 stations distributed across the lake
SAMPLING FREQUENCY: seasonal; monthly

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CANADA

<1013> CONT.

SUPPORTING DATA COLLECTED: associated microorganisms; climatological data; water quality data

STUDY SITE(S): CN

TYPE OF DATA: summarized

STATISTICS EMPLOYED: mean

ABSTRACT: Qualitative and quantitative analyses of phytoplankton were carried out at a nearshore and a mid-lake station. Samples were collected on two consecutive days by an integrating sampler during nine cruises extending from April 1972 to March 1973. Simultaneously, chlorophyll a samples were taken, and carbon-14 uptake was measured in an incubator. About one hundred taxa were identified in samples from each station and contained several phytoflagellates and 'less common' species neglected in other investigations. On a biomass basis the 'less common' species contributed significantly to the total phytoplankton biomass. The dominance of phytoflagellates for most of the year at both stations was striking. Similarly, nanoplankton dominated the phytoplankton at both stations throughout the study period. At times more than 85 percent of the total photosynthesis was due to the nanoplankton fraction. No spring maxima developed at the midlake station, instead the maxima developed a month later in July. This lag in biomass increase is attributed to deep mixing and low temperatures. Highest values of phytoplankton biomass and primary production rate was observed during summer when phytoflagellates contributed from 65 to 77 percent to the total biomass. At both stations the highest production/biomass quotients were observed in September when diatoms were extremely low but dinoflagellates, green algae, and cryptomonads, in that order, were the dominant algal groups. Nutrient depletion was apparent at both stations during phytoplankton pulses. Phytoplankton biomass was correlated better with chlorophyll a and photosynthesis rates than the cell surface area. No correlation of biomass was obtained with cell numbers, suggesting the necessity to express phytoplankton population data as biomass. Under stratified conditions maximum phytoplankton biomass, chlorophyll a, and primary production were observed in the mid-thermocline region where phytoflagellates were the dominant phytoplankton.

REFERENCES: Munawar, et al, 1974; Stadelman and Munawar, 1974; Munawar and Munawar, 1963; Munawar and Nauwerck, 1971

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<1014>

INVESTIGATOR(S): Peck, S.B.

AFFILIATION: Dept. of Biology, Carleton
University

TITLE: Distribution, Ecology, Systematics,
and Evaluation of Cave Invertebrate

Communities and Forest Scavenging Beetles
PURPOSE: To establish baseline knowledge of natural cave and forest scavenging beetle faunas.

SPONSOR(S): Canadian National Research Council

SPONSOR CATEGORY: other country

DATE OF INITIATION: 1970

PROJECT DURATION: over five years

PROBABLE CONTINUATION: yes

CHANGE(S) OBSERVED: There is a faunal
diversity reduction from habitat
alteration.

ECOSYSTEM OR BIOME TYPE(S): terrestrial;
forest; coniferous; deciduous; tropical;
mountain; aquatic; freshwater; stream;
river; lake

LEVEL(S) OF STUDY: organism; population;
community

MANAGEMENT FOCUS: endangered species;
environmental impact; indicator species

ORGANISMS, MAJOR TYPES: animals; vertebrates;
amphibia; invertebrates; crustacea; insecta

TAXA: LEIODIDAE; CATOPIDAE; SILPHIDAE;

LEPTINIDAE; STAPHYLINIDAE; SCARABAEIDAE

ADDED KEYWORDS: habitat modification; carrion

beetles; brown beetles; mammal-nest

beetles; scarab beetles; beetles;

amphipods; isopods; coleopterans; caves;
parasites

PRIMARY PARAMETERS INVESTIGATED: behavior;
biomass; food; diversity

DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
collection

NUMBER OF SAMPLING SITES: many

SAMPLING FREQUENCY: weekly; irregular

SUPPORTING DATA COLLECTED: associated fauna

STUDY SITE(S): IL; IA; TN; AL; FL; CN

TYPE OF DATA: raw; reduced; summarized;
literature-derived

STATISTICS EMPLOYED: median; percentile

ABSTRACT: The SILPHIDS are a group of fairly primitive beetle families. Most are scavengers, feeding on dung, carrion, and debris in moist and wooded habitats. The systematics, evolution, and zoogeography of these beetles from New World temperate and tropical localities is being studied. Ecological work, especially with SILPHIDAE and LEIODIDAE, may make clear the role of these beetles in the control of disease and parasites by removing infected carrion and dung from the environment. Some of these beetles are also parasites on mammals, and in ant colonies, and may be important for these reasons alone. Study of cave-inhabiting invertebrates is aimed at making known the taxa that occupy caves in the American north temperate and tropical regions as well as the distribution of these taxa, and their ecology and evolution. One goal is the comparison of the ecological and evolutionary differences and/or similarities of cave communities in the tropics versus temperate habitats.

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<1015>

INVESTIGATOR(S): Seyfried, P.L.

AFFILIATION: University of Toronto

CANADA

<1015> CONT.

TITLE: Lakeshore Capacity Study
 PURPOSE: To analyze, by means of bacterial studies, lakes of different trophic conditions, and development characteristics.
 SPONSOR(S): Ministry of Environment
 SPONSOR CATEGORY: other country
 DATE OF INITIATION: 1975
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Change in bacterial numbers due to seasonal variations.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
 LEVEL(S) OF STUDY: organism
 MANAGEMENT FOCUS: environmental impact; indicator species; recreation; pollution control; water quality
 ORGANISMS, MAJOR TYPES: microorganisms; bacteria
 TAXA: COLIFORMS; PSEUDOMONAS AERUGINOSA; STREPTOCOCCI; STAPHYLOCOCCI; SALMONELLA SP
 ADDED KEYWORDS: coliform bacteria; streptococcus; salmonella; pseudomonas; staphylococcus; seasonal variations; sediments
 PRIMARY PARAMETERS INVESTIGATED: distribution; growth; numbers
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): surface samples; sediment samples
 NUMBER OF SAMPLING SITES: 5 sites on each of 6 lakes
 SAMPLING FREQUENCY: weekly
 SUPPORTING DATA COLLECTED: associated microorganisms; water quality data
 STUDY SITE(S): CN
 GEOGRAPHIC DESCRIPTION: Muskoka Bay; Muskoka County; Haliburton County; Orillia County; Hurricane Lake; Threemile Lake; Riley Lake; Harp Lake
 TYPE OF DATA: summarized
 STATISTICS EMPLOYED: median; regression/correlation analysis
 ABSTRACT: An attempt will be made to extend the correlation between bacteria present and public health-oriented contamination of a water to the wide relationship between the bacteria present and recreational use and development of water. The purpose is to examine the characteristics of the bacterial populations found in association with the variety of recreational uses and developments of lakes and with the variety of chemical and physical environments of lakes.
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<1016>

INVESTIGATOR(S): Stokes, P.M.
 AFFILIATION: IES and Botany, University of Toronto
 TITLE: Acidification of LaCloche Mountain Lakes-Phytoplankton
 PURPOSE: To determine changes in diversity of species composition of plankton in lakes due to changes in pH.
 SPONSOR(S): University of Toronto
 SPONSOR CATEGORY: teaching institution

DATE OF INITIATION: 1974
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: unknown
 CHANGE(S) OBSERVED: Decrease in species diversity with lowering of pH and change in dominants present in typical shieldlakes, thus resembling situation in Scandinavian lakes.
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; lake
 LEVEL(S) OF STUDY: organism; population; community
 MANAGEMENT FOCUS: environmental impact; indicator species; water quality
 ORGANISMS, MAJOR TYPES: microorganisms; algae
 ADDED KEYWORDS: phytoplankton; acidification; habitat modification; species diversity
 PRIMARY PARAMETERS INVESTIGATED: biomass; diversity; growth; numbers; productivity; toxicity
 NUMBER OF SAMPLING SITES: 5
 SUPPORTING DATA COLLECTED: associated fauna; climatological data; hydrological data; water quality data
 STUDY SITE(S): CN
 GEOGRAPHIC DESCRIPTION: Ontario; Northern Ontario
 TYPE OF DATA: raw; reduced; summarized; literature-derived
 STATISTICS EMPLOYED: mean; percentile; analysis of variance
 ABSTRACT: None provided.
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<1017>

INVESTIGATOR(S): Whittle, D.M.
 AFFILIATION: Ontario Ministry of the Environment, Limnology and Toxicity Section
 TITLE: Nipigon Bay; An Assessment of the Acute Toxicity and Sublethal Effects of a Bleached Kraft Mill Effluent on Rainbow Trout (SALMO GAIARDNERI)
 PURPOSE: To define the range of acute toxicity and related sublethal effects (growth rate impairment and flavor impairment) of a bleached kraft mill effluent.
 SPONSOR(S): I.J.C., Reference Group on Upper Great Lakes Pollution
 SPONSOR CATEGORY: other country
 DATE OF INITIATION: 1973
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: no
 CHANGE(S) OBSERVED: An acutely toxic effluent caused significant flavor impairment at a concentration of 3% v/v at 48 hours and growth impairment at 6% v/v (18 days).
 ECOSYSTEM OR BIOME TYPE(S): aquatic; freshwater; river; lake
 LEVEL(S) OF STUDY: organism; community
 MANAGEMENT FOCUS: pollution control; water quality
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
 TAXA: SALMO GAIARDNERI
 ADDED KEYWORDS: rainbow trouts; trouts; bioassay; resins; resin acids; effluents; waste water; industrial chemicals; paper mills
 PRIMARY PARAMETERS INVESTIGATED: growth;

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CANADA

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mortality; toxicity
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S):
 continuous flow bioassays
 NUMBER OF SAMPLING SITES: 1
 SAMPLING FREQUENCY: continuous; seasonal
 SUPPORTING DATA COLLECTED: associated fauna;
 water quality data
 STUDY SITE(S): CN
 GEOGRAPHIC DESCRIPTION: Nipigon County; Lake
 Superior; Nipigon Bay; Red Rock
 TYPE OF DATA: summarized
 STATISTICS EMPLOYED: mean; analysis of
 variance; regression/correlation analysis
 ABSTRACT: Juvenile and yearling rainbow trout
 (SALMO GAIRDNERI) were employed to
 determine the range of acute toxicity and
 related sublethal effects of a bleached
 kraft mill effluent in northern Ontario.
 Utilizing static and continuous-flow
 bioassay procedures; the acute toxicity of

the effluent ranged from a 96 hour LC50 of
 16.4% to 49% V/V depending on production
 conditions within the mill and effluent
 treatment systems. Significant flavor
 impairment of the muscle tissue of fish
 was detected after a 48-hour exposure to a
 3% effluent concentration. Fish exposed to
 a 6% effluent concentration for an 18-day
 period demonstrated a significant
 reduction in growth.

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MEXICO

<1018>

INVESTIGATOR(S): Brattstrom, B.H.
 AFFILIATION: Dept. of Biology, California State University-Fullerton
 TITLE: Repopulation of San Beredicto Island, Mexico after Explosion of Barcena Volcano, 1952 and the Ecology of the Islas Revillagigedo, Mexico
 PURPOSE: To study volcano effects, repopulation, revegetation, island ecology, and biogeography.
 SPONSOR(S): NSF; ONR; USN
 SPONSOR CATEGORY: federal government
 DATE OF INITIATION: 1952
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Elimination of fauna and flora, extinction of several forms, and revegetation and repopulation.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; forest; tropical; aquatic; marine; coastal
 LEVEL(S) OF STUDY: organism; population; community; ecosystem; region
 MANAGEMENT FOCUS: endangered species; environmental impact
 ORGANISMS, MAJOR TYPES: animals; vertebrates; reptiles; fish; birds; invertebrates; mollusca; shellfish; annelida; plants; vascular plants; trees; shrubs; herbs
 ADDED KEYWORDS: tides; intertidal zones; benthic organisms; natural catastrophe; islands
 PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; emigration; habitat characterization; immigration; kill; mortality; migratory patterns; natality; numbers; reproduction
 NUMBER OF SAMPLING SITES: Many
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; climatological data; soils
 STUDY SITE(S): MX
 GEOGRAPHIC DESCRIPTION: Islas Revillagigedo
 TYPE OF DATA: raw; reduced; summarized
 STATISTICS EMPLOYED: mean; mode; median
 ABSTRACT: None provided.
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<1019>

INVESTIGATOR(S): Moore, W.S.
 AFFILIATION: Dept. of Biology, Wayne State University
 TITLE: The Population Biology of Unisexual-Bisexual Species Complexes
 PURPOSE: To identify factors which regulate the ecological interactions between unisexual animal species and their progenitor species and to assess the evolutionary potential of unisexual species.
 SPONSOR(S): NSF; Wayne State University
 SPONSOR CATEGORY: federal government; teaching institution
 DATE OF INITIATION: 1972
 PROJECT DURATION: one to five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: The unisexual forms of

POECILIOPSIS we have monitored are quite stable in certain environments from 1940 to present.

ECOSYSTEM OR BIOME TYPE(S): terrestrial; mountain; aquatic; freshwater; stream
 LEVEL(S) OF STUDY: organism; population
 MANAGEMENT FOCUS: fisheries; indicator species
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish

TAXA: POECILIOPSIS LUDICA; POECILIOPSIS MONACHA; POECILIOPSIS OCCIDENTALIS
 ADDED KEYWORDS: gynogenesis; hybrids; parthenogenesis; models
 PRIMARY PARAMETERS INVESTIGATED: age; behavior; distribution; diversity; emigration; growth; habitat characterization; immigration; mortality; natality; numbers; physiology; productivity; reproduction; sex; size/weight; stress; territory size
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): field experimentation; laboratory experimentation; field observations; laboratory observation

NUMBER OF SAMPLING SITES: 50
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; associated microorganisms; climatological data; hydrological data; water quality data
 STUDY SITE(S): MX
 GEOGRAPHIC DESCRIPTION: Rio de la Concepcion; Rio Sonora; Rio Yaqui; Rio Mayo; Rio Matape; Rio Fuerte; Rio Sinaloa;
 TYPE OF DATA: raw; reduced; summarized; literature-derived

STATISTICS EMPLOYED: mean; mode; median; percentile; analysis of variance; regression/correlation analysis; contingency table analysis; multivariate analysis; non-linear estimation; modeling, deterministic; modeling, stochastic

ABSTRACT: The ultimate goal of this research is to gain an understanding of sexual and asexual reproduction as adaptive strategies. The genus POECILIOPSIS is a near ideal for a comparative study because closely related sympatric species reproduce by both modes. The five-part project involves the following: (1) The occurrence of genetic value of dominance in social hierarchies among fishes, (2) the adaptive value of dominance in social hierarchies among fishes, (3) the adaptive strategy of all-femaleness and obligatory heterozygosity in animals and the fitness of hybrid animals, (4) mathematical studies of gene dynamics in unisexual-bisexual species complexes of POECILIOPSIS, and (5) the functional relationship between male density and unisexual inseminations.

REFERENCES: Moore, 1974; Moore and McKay, 1971; Moore, 1975; Moore, et al, 1970
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<1020>

INVESTIGATOR(S): Polheaus, J.T.
 AFFILIATION: University of Colorado Museum
 TITLE: A Survey of the Aquatic and

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MEXICO

<1020> CONT.

Semi-Aquatic Heteroptera of Mexico and Middle America
 PURPOSE: Continuing survey of Mexico and Middle America for the purpose of zoogeography, ecology, systematics, and evolutionary studies.
 SPONSOR(S): PI
 SPONSOR CATEGORY: private individuals
 DATE OF INITIATION: 1964
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Endemic ecologically restricted fauna have been eliminated by pollution of some study areas since 1964.
 ECOSYSTEM OR BIOME TYPE(S): terrestrial; wetland; aquatic; freshwater; stream; river; lake; reservoir; marine; coastal; estuarine
 LEVEL(S) OF STUDY: organism; community; ecosystem; region
 MANAGEMENT FOCUS: endangered species; indicator species; range
 ORGANISMS, MAJOR TYPES: animals; invertebrates; insects
 TAXA: INSECTA, 450 SPECIES; SALIDAE
 ADDED KEYWORDS: waste water; heteropterans; hemipterans; benthic organisms
 PRIMARY PARAMETERS INVESTIGATED: behavior; distribution; diversity; habitat characterization; numbers; sex; size/weight
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
 NUMBER OF SAMPLING SITES: 500 (approx.)
 SAMPLING FREQUENCY: irregular
 SUPPORTING DATA COLLECTED: associated fauna; associated flora; soils; terrain; water quality data
 STUDY SITE(S): MX; NZ
 TYPE OF DATA: raw; summarized; literature-derived
 STATISTICS EMPLOYED: mean
 ABSTRACT: None provided.
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<1021>

INVESTIGATOR(S): Thomson, D.A.
 AFFILIATION: Dept. of Ecology and Evolutionary Biology, University of Arizona
 TITLE: Community Ecology of Rocky Intertidal Fishes in the Northern Gulf of California
 PURPOSE: To monitor changes in populations of marine shore fishes and to correlate changes with physical and biotic environmental factors.
 SPONSOR CATEGORY: private individuals
 DATE OF INITIATION: 1966
 PROJECT DURATION: over five years
 PROBABLE CONTINUATION: yes
 CHANGE(S) OBSERVED: Strong seasonal changes in fish populations correlated with low sea surface temperatures but no long-term

trends observed yet.

ECOSYSTEM OR BIOME TYPE(S): aquatic; marine; coastal
 LEVEL(S) OF STUDY: population; community
 MANAGEMENT FOCUS: fisheries
 ORGANISMS, MAJOR TYPES: animals; vertebrates; fish
 TAXA: FISHES, 60 SPECIES
 ADDED KEYWORDS: seasonal variations; weather conditions; gobies; chubs; damselfishes; spotted sand basses; basses; blennies; sargos; rotenone; piscicides; species diversity; tides; intertidal zones; fishkills
 PRIMARY PARAMETERS INVESTIGATED: behavior; biomass; habitat characterization; natality; reproduction; sex; size/weight; stress
 DATA COLLECTING DEVICE(S) OR PROCEDURE(S): collection
 NUMBER OF SAMPLING SITES: 5
 SAMPLING FREQUENCY: annual
 SUPPORTING DATA COLLECTED: water quality data
 STUDY SITE(S): MX
 GEOGRAPHIC DESCRIPTION: Gulf of California; Station Beach Reef; Puerto Penasco
 TYPE OF DATA: reduced
 STATISTICS EMPLOYED: mean; percentile; regression/correlation analysis
 ABSTRACT: A 7-year census of intertidal fishes was accomplished by repeated defaunation of tide pools in the northern Gulf of California. The intertidal fish community showed long-term resilience, and hence stability, under a rigorous, unstable physical environment. Although the majority of fishes have tropical affinities (76%), the warm temperate species (24%) constitute 33% of total numbers and 69% of total biomass of the entire intertidal fish community. Short-term seasonal fluctuations in species diversity and population numbers of temperate fishes were in better synchrony with annual photoperiod and sea temperature cycles than those of tropical species. A winterkill due to abnormally low sea temperatures in January, 1971, exerted faunal selection by killing several tropical fishes. Warm temperate species tolerated these low temperatures both experimentally and during the 1971 winterkill. Low sea temperatures were judged to be more limiting to diversity than high sea temperatures. The seasonal tidal pattern in the northern Gulf of California moderates summer heating but accentuates winter cooling thus favoring winterkills.
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