BIRDS OF MARYLAND AND THE DISTRICT OF COLUMBIA

By

Robert E. Stewart and Chandler S. Robbins

Wildlife Biologists, Branch of Wildlife Research

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The Bald Eagle, national bird of the United States. (From the Fish and Wildlife Service painting by Louis Agassiz Fuertes.)

BIRDS OF MARYLAND

AND THE DISTRICT OF COLUMBIA

Birds hold an important position in our economy and culture. Their recreational value is shared by the gunner, the photographer, and an increasing number of bird students who both singly and in organized parties take frequent trips to make Christmas-season or spring counts, to record the progress of migration, or to seek rare species. If the amount of money spent annually for such items as field clothes, gasoline, food, lodging, guns, shells, boats, binoculars, telescopes, cameras, film, and bridge tolls by persons in quest of birds for one purpose or another were known, the total would doubtless surprise even the most ardent participants.

Aside from their recreational and direct economic value, birds have esthetic appeal to most of our citizens. Countless thousands of people derive daily enjoyment from the sight of birds on their feeding shelves, in their birdbaths, or on their lawns, from hearing their varied songs, or from watching distant flocks of waterfowl by day or hearing their calls by night. The majestic Bald Eagle, which nests throughout our tidewater area, so inspired our ancestors that it was selected as our national emblem. Frequent references to other birds in prose and poetry attest to the more subtle influences these creatures have upon our civilization.

The United States Fish and Wildlife Service is directed by several acts of Congress to obtain information on the protection and management of all birdlife in the United States. To carry out these directives the Service has made surveys of the birdlife of characteristic segments of the nation. For convenience of delineation, State boundaries have usually been used to indicate survey areas. It has been noticeable that during the past two decades the approach has changed from very generalized surveys or more elaborate treatments with detailed descriptions of habits, to the most recent approach with primary emphasis on numerically changing populations in response to human utilization of the land.

The importance of quantitative studies is stressed in the present work, which deals with a part of the United States where human populations are high and land use relatively intensive and diversified. This area is ideally situated for appraisal of the effects upon our birdlife of the growing demands upon our natural resources.

OBJECTIVES AND PLAN

The chief purpose of this book is to describe the birdlife of an important segment of the eastern United States in terms of its geographical, ecological, and seasonal distribution in each of the natural or biotic regions that extend into Maryland and the District of Columbia. An attempt is made to show where and when populations of each species may be expected to occur within these regions and to indicate some of the more important environmental factors. Related information on numerical status and breeding and migration periods is given in detail for most species. Banding data that furnish important clues to migration routes and breeding and wintering grounds are included.

Unlike most State bird books of the past, this volume does not include descriptions of plumages, field marks, songs, and habits. That type of information is readily available in many other books, and need not be repeated here. Instead the pages that follow are devoted to information on the time and place of occurrence of each species, its ecological requirements, and its abundance, often in terms of population densities by habitat type. With respect to population densities this volume initiates a new approach among regional bird books. In the past, abundance of a species has generally been described in vague terms, and seldom with reference to a particular type of environment. This has made it difficult if not impossible to make comparisons of one area with another or to measure changes within a given area over a period of years. To the casual bird watcher the population figures will indicate where he can expect to find a certain species of bird. To the more serious student they will indicate preferred habitats in which he may carry out further study. To the farmer they may suggest ways of making the farmyard, field borders, or woodlots more attractive to certain species of birds. For those entrusted with the protection of our Nation's wildlife resources, the present population figures can be used in future comparisons to measure decreases or increases in abundance of any of our nesting species as a result of changing farming, forestry, or other land-use practices.

The information in this book is based almost entirely on data

obtained within the boundaries of Maryland and the District of Columbia. However, it is organized by major biotic regions that extend into and cover large areas in many eastern States. Thus, the book actually serves as a cross-sectional study of the more important biotic regions in the mideastern part of the country. These regions cover the central and southern Appalachian Mountains, the Piedmont Plateau, and the northern and central parts of the Atlantic Coastal Plain. Much of the information applies in a general way wherever the appropriate regions are found.

During the course of this study it was found that each species is to a large extent independent of all other associated birds so far as its habitat requirements and distributional patterns are concerned. The habitat niche occupied by each species within a given biotic community was invariably found to be somewhat different from the habitat niche occupied by any other species. Definite ecologic associations of two or more species occurred only in areas where the required habitat niches of all species concerned were present. Such associations are usually quite local in scope, since all habitats vary from one area to another, and the presence or absence of a single critical factor in the environment can cause a change in species composition. Because of this variation in species composition within most biotic communities it was decided to emphasize the "species approach" rather than the "community approach" in reporting the results of our investigations. A general discussion of habitat conditions and characteristic bird populations may be found in the descriptions of the major biotic regions of the area, but the bulk of the information is summarized under the various species headings in the species account.

This report is based to a large extent on systematic field work by the authors. Intensive field work was begun on the Patuxent Research Refuge near Laurel in 1941, and during the period 1945 through 1955 this was expanded to include all of the State of Maryland. A thorough coverage of all counties was attempted during the height of one or more breeding seasons in order to record the geographical distribution, habitat, and relative abundance of each nesting species. Similar studies were carried out in the winter, and intensive observations were conducted during the migration seasons at numerous strategic localities throughout the State. An effort was made to determine breeding-population densities in at least one or two typical habitats for nearly all species of birds that nest regularly within the boundaries of Maryland and the District of Columbia. More than 1,500 records of eggs and nestlings of noncolonial species were obtained in addi-

tion to 2 or 3 thousand nests of colonial species. We banded approximately 18,000 birds during the period and collected specimens of nearly all species that have been recorded.

The field work by the authors was supplemented by gathering together the sight observations and specimen records of many professional and amateur ornithologists. The ornithological literature, including the bird-distribution files of the Fish and Wildlife Service, has been critically examined for all Maryland and District of Columbia records. These files contain reports from cooperators since the year 1883, as well as clippings or abstracts from the more important ornithological literature during the same period.

Frequent reference is made to recoveries of banded birds. Upwards of 100,000 birds have been banded in Maryland and the District of Columbia since the inception of the banding program. Several thousand recovery reports are on file at the Bird Banding Office at Patuxent Research Refuge. These have all been examined, as have the reports of birds banded in other States and Canadian Provinces and recovered in Maryland and the District of Columbia. Through the use of serially numbered aluminum bird bands we are learning where the individual birds that nest in Maryland spend the winter, where those that winter here raise their young during the summer months, and the routes these birds take during migration. This information is especially important in the case of our migrant game birds, and has practical applications for species such as the Redwinged Blackbird and Common Grackle, which damage ripening grain crops in late summer but are beneficial to the farmer at other times. Be it for purposes of protection, for selective control, or for improvement of hunting, banding recoveries are constantly supplying more information on the distribution, migration, and abundance of a greater variety of birds.

ACKNOWLEDGMENTS

The late Frank Coates Kirkwood heads the list of persons to whom special thanks are due; his long series of detailed notes from 1881 through 1930 are the foundation for subsequent field investigations throughout Maryland. The present volume was first conceived by the late Robert C. McClanahan, who met his untimely death a few months after he had started serious work on the project.

To each person mentioned in the historical sketch—in fact, to each whose name appears anywhere in the species account—our

sincere thanks are tendered. Staff members of the Patuxent Research Refuge, nearly all field observers of the various affiliated clubs of the Maryland Ornithological Society, and most active members of the Audubon Society of the District of Columbia have contributed in one way or another to this manuscript. Dr. Irston R. Barnes, Dr. Edwin G. Davis, Clara Schoenbauer, and Donald M. Thatcher, in particular, have assisted by making the Audubon Society's field records available. We are especially indebted to W. Bryant Tyrrell for help in assembling valuable data recorded by several of the earlier Maryland ornithologists.

Our gratitude is extended to those active field observers who have critically read the entire species account and supplied additional notes to clarify the distribution, migration, abundance, and nesting summaries: Dr. Maurice G. Brooks, Mr. and Mrs. A. J. Fletcher, Richard L. Kleen, C. Haven Kolb, Jr., Dr. John W. Richards, Dr. Ralph S. Stauffer, John W. Terborgh, Dr. Alexander Wetmore, and Edwin Willis. We express our deep appreciation to officials of the Museum of Comparative Zoology, the United States National Museum, and the Natural History Society of Maryland for the use of their collections. Thanks are extended to Dr. Ira N. Gabrielson for the use of his personal collection of Maryland birds.

There are so many contemporary observers active throughout Maryland and the District of Columbia that it would not be practical to list them here. Nearly all who have contributed records to this book will find their names used as authority for some of the observations. It is difficult indeed to single out a few for special mention, but the following names stand out for their work on migration or on nesting activities: John H. Buckalew, James B. Cope, Edward J. Court, Mrs. W. L. Henderson, Richard L. Kleen, M. Brooke Meanley, Dr. John W. Richards, Allen R. Stickley, Jr., Mrs. Gail Tappan, John W. Terborgh, and Edwin Willis. Others who have made important contributions to this phase of the work are Dr. John W. Aldrich, Robert J. Beaton, Robert M. Bowen, John W. Brainerd, Dr. Maurice G. Brooks, Mary Catherine Crone, the late Frank C. Cross, Philip A. DuMont, Allen J. Duvall, John H. Fales, C. Douglas Hackman, Marvin W. Hewitt, Duvall A. Jones, Mrs. Alice Kaestner, the late Renwick R. Kerr, J. Ellsworth Knudson, Samuel Mason, R. Bruce Overington, K. Friel Sanders, H. Elizabeth Slater, Paul F. Springer, Dr. and Mrs. R. S. Stauffer, John W. Taylor, Jr., and Dr. Alexander Wetmore. Most of the persons mentioned in the following paragraph have also supplied detailed notes on migration.

In addition to our own banding-recovery records we have summarized recoveries from all other cooperators in Maryland and the District of Columbia. Those who made the greatest contribution to banding were the following: Cooperators who have banded over 5,000 birds in Maryland and/or the District of Columbia are Seth H. Low (11,000 banded, mostly at Unity), Rev. Edward Stoehr (9,000, some of them at Capuchin College in Washington, the others at St. Conrad's Friary on the Severn River in Anne Arundel County), William M. Davidson (9,000 birds, mostly at Silver Spring and Takoma Park), the Maryland Department of Game and Inland Fisheries (6,000 wild birds, almost all of them waterfowl), and Leonard M. Llewellyn (5,000, mostly at Patuxent Refuge and in Allegany County). The majority of the recoveries have resulted from the work of these persons. We wish also to acknowledge the contribution of Blackwater National Wildlife Refuge, and of all other banders in the Maryland and District of Columbia area. The following banders, in particular, have contributed materially to the recovery data summarized under the various species; each of these cooperators has banded over 1,000 birds: Hervey Brackbill, John H. Buckalew, A. E. Clattenburg, Mr. and Mrs. Richard D. Cole, James B. Cope, Compton Crook, Orville W. Crowder, Dr. David E. Davis, Mr. and Mrs. A. J. Fletcher, Irving E. Hampe, Kendrick Y. Hodgdon, Dr. E. R. Kalmbach, Rev. Fabian Kekich, Dr. Frederick C. Lincoln, John R. Longwell, Stephen W. Simon, Frank R. Smith, and Capt. J. E. M. Wood. More than 40 other cooperators have operated bird-banding stations in this area.

HISTORICAL SKETCH

Early references to the birdlife of Maryland are few and vague. During colonial times the settlers frequently mentioned in their writings the waterfowl, turkeys, grouse, and other game species that were conspicuous inhabitants of this area. But it seems that Audubon, Alexander Wilson, and the earlier ornithologists and collectors chose to concentrate their efforts in other States, and left little in writing about the birds they found while travelling through the Free State.

The first list of birds of this area of which we have knowledge was published in Paris in 1816 by David Baillie Warden in "A Chorographical and Statistical Description of the District of Columbia." Translated into current nomenclature, this list was as follows:

Canada Goose	Snowy Owl	Eastern Bluebird
Wood Duck	Whip-poor-will	Loggerhead Shrike
Redhead	Common Nighthawk	Myrtle Warbler
Canvasback	Ruby-throated	Yellowthroat
Sharp-shinned Hawk	Hummingbird	Eastern Meadowlark
Bobwhite	Yellow-shafted Flicker	Redwinged Blackbird
Virginia Rail	Horned Lark	Orchard Oriole
Semipalmated	Barn Swallow	Baltimore Oriole
Sandpiper	Blue Jay	Indigo Bunting
Passenger Pigeon	Mockingbird	American Goldfinch
Great Horned Owl	Catbird	Fox Sparrow
	Robin	

In addition to these 32 species, Mr. Warden mentioned that the Turkey had disappeared by that time. He made mention of the Common Grackle as a natural enemy of the Mockingbird, but neglected to include the Common Grackle in his list.

Not until 1862 did another list of the birds of the District of Columbia appear. Prepared by Elliott Coues and Daniel Webster Prentiss, this list of 226 species was the first comprehensive publication on the avifauna of the District of Columbia. Several short papers published from 1876 to 1882 added a few new species to the District list. In 1883 Drs. Coues and Prentiss' "Avifauna Columbiana," an expansion of their original paper, was published as Bulletin 26 of the United States National Museum. This served as the standard reference for Maryland and the District of Columbia until Frank Coates Kirkwood completed his "List of the Birds of Maryland" in 1895.

Except in the immediate vicinity of Washington, no systematic recording of bird distribution and migration in Maryland is known to have been done before 1881. On January 1 of that year, Frank Coates Kirkwood began his lifelong study of the distribution and migration of Maryland birds. Interest in collecting and studying birds spread rapidly during the 1880's, stimulated in part by the founding of the American Ornithologists' Union and the inception of the cooperative bird migration observer program by Wells W. Cooke of the Division of Entomology of the United States Department of Agriculture (forerunner of the Biological Survey and the Fish and Wildlife Service). Bird students (that is, bird collectors and egg collectors) also became acquainted with others of like interest through publications such as *The Ornithologist and Oölogist* (1876-93), and *The Oölogist* (1884-1941).

Kirkwood drew about him a circle of close friends who were active collectors and field observers in the Baltimore area. On

the first page of his "List of the Birds of Maryland" he acknowledges the ornithological contributions of the following Baltimore friends: William H. Fisher, Arthur Resler, W. N. Wholey, A. T. Hoen, George H. Gray, Percy Thayer Blogg, and J. Hall Pleasants. Mr. Blogg, who was active in the Natural History Society of Maryland until his death in 1946, was the last survivor of this friendship of 50 years before. So far as is known, none of these men, with the exception of Kirkwood, has received the honor of a detailed obituary in an ornithological periodical; so to the present generation they remain only familiar names associated with many important observations of the nineteenth century. J. M. Sommer, a close associate of Kirkwood after the beginning of the current century, obtained many observations and nest records of interest, chiefly from the Baltimore area and from western Maryland.

In other parts of the State, Kirkwood had faithful correspondents in the early days in J. E. Tylor of Easton, H. W. Stabler, Jr., of Sandy Spring, Edgar Albert Small of Hagerstown, and Robert Shriver of Cumberland. A note in *The Auk* tells us that Edgar Small, who died in 1884 in his twentieth year, "was widely known as a young ornithologist of much promise." From June 5 to June 14, 1895, just before the publication of his book, Kirkwood made his first trip to western Maryland during the breeding season. He worked the area in the vicinity of Vale Summit, Allegany County. Since he had had neither correspondents nor personal experience in the higher mountains of Garrett County, his book has no reference to the nesting of the northern species that are restricted to that end of the State. It remained for Edward A. Preble of the Biological Survey to make the first ornithological expedition to Garrett County in May, June, and July, 1899. Preble made a fine collection of specimens, and the Maryland Geological Survey published his findings the following year.

From 1899 to 1903, Rev. Charles William Gustave Eifrig (1871-1949) was pastor of the Lutheran church in Cumberland. During these four short years he accumulated the first detailed information on the migration of birds through Allegany and Garrett Counties and contributed significantly to the knowledge of the nesting and wintering birds of the area. He obtained specimens of 165 species, and this collection is now the property of Saint Mary of the Lake Seminary at Mundelein, Ill. His work during this period and his later visits to western Maryland are nicely summarized in his publications, listed in Literature Cited.

Shortly before his death, Dr. Eifrig referred to his sojourn in Maryland as the happiest period of his life.

While ornithology was getting its start in Maryland as a whole, the District of Columbia and its suburbs served as the collecting and observing grounds for several of the founding fathers of the American Ornithologists' Union: Spencer Fullerton Baird (1823-87), Walter Bradford Barrows (1855-1923), Charles Emil Bendire (1836-97), Dr. Elliott Coues (1842-99), Dr. Albert Kenrick Fisher (1856-1948), Dr. Clinton Hart Merriam (1855-1942), Dr. Daniel Webster Prentiss (1843-99), Robert Ridgway (1850-1929), and Dr. Robert Wilson Shufeldt (1850-1934). Many other Washingtonians joined the ranks before the turn of the century; among the most active of these were Dr. Charles Wallace Richmond (1868-1932), Henry Wetherbee Henshaw (1850-1930), Pierre Louis Jouy (1856-94), Dr. Sylvester Dwight Judd (1871-1905), Dr. Edwin Marble Hasbrouck (1866-1956), William Palmer (1856-1921), Vernon Orlando Bailey (1864-1944), Dr. Paul Bartsch (1871-), Edward J. Court (1877-), Arthur Holmes Howell (1872-1940), Henry Worthington Olds (also Oldys, 1859-1925), Dr. Harry Church Oberholser (1870-), Wilfred Hudson Osgood (1875-1947), Dr. Theodore Sherman Palmer (1868-1955), Jesse Dade Figgins (1867-1944), and Joseph Harvey Riley (1873-1941).

Many of the distinguished ornithologists listed in the preceding paragraph were still active in the field through the first quarter of the 20th century, during which time they were joined by Mr. and Mrs. L. D. Miner, Dr. Frederick C. Lincoln, Dr. Alexander Wetmore, W. L. McAtee, Dr. Ira N. Gabrielson, Dr. Clarence Cottam, William Marshall, and many other field workers in the Washington area. Activity seemed to slacken a bit during the 1920's and 1930's, but during this period Robert Overing, William Howard Ball, and many of the Biological Survey staff continued to make observations. Two publications by May Thacher Cooke (1921 and 1929) brought up to date the earlier works of her father, Wells W. Cooke, and kept field workers of the Washington region abreast of current observations.

In the 1920's, Ralph W. Jackson of Cambridge was the most ardent field ornithologist on the Eastern Shore. The majority of Dorchester County records before the 1930's are a result of his work. From the late thirties on, the staff members of the Blackwater National Wildlife Refuge (including David V. Black, Leonard M. Llewellyn, Cornelius W. Wallace, and W. Steele Webster) have furnished much valuable information. Frazer Poole

contributed considerable information on the birds of Caroline County, as well as several nesting records from Worcester County.

The Ocean City area has never had a resident naturalist who kept notes on the birds of that area. Kirkwood was about the only person to supply detailed records from the Maryland coast before the 1930's. For the 15-year period from 1928 to 1942 there were only occasional trips to this area by various observers, including Irving E. Hampe, C. Haven Kolb, Jr., Gorman M. Bond, W. Bryant Tyrrell, G. A. Ammann, and Robert C. McClanahan. These, with the addition of M. Brooke Meanley, were also among the most active reporters in the Baltimore area and the Maryland suburbs of Washington. Mr. Meanley, a protege of Kirkwood, carried on in his footsteps during the 1930's and 1940's, obtaining valuable information on breeding birds in Baltimore County and elsewhere.

During the first half of the 20th century several natural-history organizations have stimulated conservation education and have brought amateur and professional ornithologists together at meetings and on field trips. The Biological Society of Washington, founded in 1880, has published lists of birds of the District of Columbia area (Cooke, 1908, 1913, 1921, and 1929; Fisher, 1935), as well as McAtee's "Sketch of the Natural History of the District of Columbia" (1918). The Audubon Society of the District of Columbia, founded in 1897, has had an especially active program from 1946 on, when it began publishing *The Wood Thrush* (now *The Atlantic Naturalist*). Two separate organizations under the name of Maryland Audubon Society were formed in the early part of the 20th century, and at one time one of them had 80 members; one of these clubs persisted until about 1937.

The Natural History Society of Maryland, founded in Baltimore in 1929, has had an active program in ornithology, maintains a study skin collection and an ornithological library, and has published two booklets on birds: "Birds of Baltimore and Vicinity," by Irving E. Hampe and "A Preliminary List of Birds of Maryland and the District of Columbia," by Irving E. Hampe and Haven Kolb. The latter has been the only available list of Maryland birds since Kirkwood's book went out of print. The Natural History Society also publishes the quarterly periodical *Maryland Naturalist* (formerly, *Bulletin of the Natural History Society of Maryland*, and *Maryland—A Journal of Natural History*). The Maryland Ornithological Society, founded in 1945, now has branch clubs in Baltimore and in Allegany, Frederick, Montgomery, Anne Arundel, Harford, Caroline, and Talbot Counties. In addition to

the local meetings and field trips the society has an annual statewide meeting and several statewide field trips, and publishes Maryland Birdlife quarterly.

BIRDLIFE AND LAND USE

Birdlife is never static. Changes are constantly taking place, not only in the total number of individuals of a species, but in their distribution as well. Being winged creatures, capable of easy movement from place to place, and having definite environmental requirements, birds are very sensitive to habitat changes. It is hard to visualize all of the changes that have taken place since Audubon's time, scarcely a hundred years ago. Clearing, cutting, and burning of forests, cultivating of open land, elimination of hedgerows, draining and filling of marshes, pollution of streams and estuaries, flooding of stream valleys to form reservoirs, and introduction of foreign birds—all of these practices have caused drastic changes in the distribution and abundance of many species. Three species that have been recorded in Maryland are now extinct, and several others have been extirpated from much of their original range. Equally important, though perhaps less noticeable, have been the many pronounced local changes in abundance of more common species.

The importance of the habitat niche as the principal controlling factor in the distribution and abundance of birds cannot be emphasized too strongly. The occurrence of a particular species in any area is governed largely by certain critical environmental elements that comprise its habitat niche. These habitat requirements may be quite obvious to the observer, or they may be more subtle in character. The effects of such controls are especially pronounced during the breeding season, when the populations of each species are restricted within more limited ecological boundaries. Because of the differential in habitat requirements among birds at all seasons, any major environmental change is reflected in independent reactions of each species in terms of its distribution and abundance.

Land-use practices frequently involve major habitat changes that have a marked effect on the species composition and numbers of birds. Ordinarily, certain species benefit from these changes while others are unfavorably affected, depending in each case upon the creation or destruction of the required habitat niche. The initial clearing of hundreds of thousands of acres of Maryland forests in order to raise field crops undoubtedly eliminated

many hundreds of thousands of woodland birds that were deprived of their needed environment. At the same time, field and edge-inhabiting species rapidly expanded into the new territory that was opened up for them. Widespread lumbering and forest fires have greatly increased the areas of brushland habitats that represent transitory secondary stages in the natural forest successions. As a consequence, thicket-inhabiting birds are now much more numerous and more widely distributed than formerly, while populations of typical forest birds have been correspondingly reduced.

As our human populations continue to increase at a rapid rate, the demands on the soil, water, forest, and recreational resources of Maryland may be expected to increase proportionately. Within our lifetimes we may see many wildlife habitats so altered in character that the species composition of breeding, migrating, and wintering birds will differ radically from that found at present. Certain trends are already evident. During the past 5 years we have seen the wild natural character of Assateague Island transfigured into a bulldozed wasteland of street signs and lot markers. In less than one generation from now there may be no more natural barrier beach in the State. As these areas are "developed," many wintering and migrant coastal birds will be unfavorably affected and several of our most interesting and picturesque breeding birds will probably disappear, including such species as the American Oystercatcher, the Piping Plover, and the Wilson's Plover. Eventually, birds of this type would be largely supplanted by common, widespread species such as the Robin, the Chipping Sparrow, and the Starling, characteristic of suburban or residential areas.

Foresters are developing methods of timber-stand improvement that favor the growth of the most valuable crop trees by eliminating the less desirable species of trees. The widespread use of arsenic tabs to kill all hardwoods in the Eastern Shore pulp plantations, would eradicate the Red-eyed Vireo and many other deciduous forest birds from vast tracts of land where they are now common, while populations of certain species, particularly the Pine Warbler, would be increased by such measures. In the mountains the common forestry practice of girdling so-called weed trees such as black gum and certain other fruit-producing species greatly reduces the available food supply for Turkey, Ruffed Grouse, thrushes, and others. Elimination of understory shrubs and saplings from a woodlot removes nesting cover for such species as the Wood Thrush, Hooded Warbler, and Acadian Flycatcher, and the removal of "wolf" trees, dead snags, and

branches destroys the nesting cavities so necessary to owls, woodpeckers, chickadees, titmice, and Great Crested Flycatchers.

The American public is constantly demanding greater perfection in fruit and other agricultural crops. This forces the farmer and orchardist to exercise extra precautions to reduce damage from insects, to eliminate weeds from the fields, and to keep fruit trees well pruned. The rank grasses and weeds that provided cover for large numbers of Field Sparrows, Indigo Buntings, and Yellowthroats in grandfather's orchard have been largely replaced by specific cover crops or mowed grass in today's orchard, with a resulting decrease in avian inhabitants. The use of sprays, applied by high-pressure sprayers, has further lowered the bird population through destruction of insect food and dislodging of nests. Natural hedgerows have been replaced to a large extent by single-species hedges or clean fences, with a corresponding drop in the variety and number of birds. The recent planting of multiflora-rose hedges in some areas has provided food and cover for a limited number of species, notably the Mockingbird and Song Sparrow, and has established pathways whereby birds that are not prone to venture far from cover can travel from one woodlot to another or can forage farther out into large fields than they otherwise would. Growing use of mechanical corn-pickers has greatly increased the available food supply for farm birds during the colder months because of substantial amounts of waste grain left behind. Many species of birds, including Mourning Doves and various blackbirds, are responding in increasing numbers to this abundant repast. Locally, especially near tidewater on the Eastern Shore, Canada Geese, Mallards, Black Ducks, and recently Pintails, have learned to take advantage of this new food resource, and frequently great flocks can be seen converging on some of the larger fields.

The impact of man's activities on Chesapeake Bay and other tidewaters of Maryland is a continuous threat to the welfare of large numbers of waterfowl and numerous other water birds that utilize these areas. Aside from a steadily growing hunting pressure, the decline in quality of large areas of waterfowl habitat has been noticeable during recent years. In the fresher parts of Chesapeake Bay and its estuaries, the feeding activities of the introduced European carp have greatly increased the turbidity of the water, thereby reducing the sunlight penetration and resulting in lowered production of aquatic food plants. The Patapsco, Back, and Middle Rivers have been polluted with industrial wastes so that their value to waterfowl is now negligible. It is suspected

that the recent use of dredges for taking soft-shell clams may destroy large beds of aquatic plants, particularly on the Eastern Shore. Many salt and brackish bay marshes have been severely impaired by ditching for mosquito control, while large areas of fresh estuarine marsh on the Potomac and Patapsco Rivers have been completely eradicated to make way for building sites, airfields, and parks.

In certain resort areas such as Eastern Bay, there has been growing public pressure to eliminate the "seaweed" because of its interference with boating and swimming. Unfortunately, the chief reason that Eastern Bay remains one of the outstanding waterfowl areas in Maryland is because the so-called seaweed is composed almost entirely of excellent aquatic food plants, including such species as sago pondweed, red-head pondweed, ditch grass, and eel grass. It is becoming increasingly evident that if we are going to maintain a reasonable population of waterfowl in our area, many of the land-use practices causing disturbance or destruction of waterfowl habitat will have to be stopped or modified soon. The regulation of hunting pressure is probably only of secondary importance in the maintenance of waterfowl populations, while the preservation and improvement of waterfowl habitat is the approach that reaches the core of the problem.

The widespread use of insecticides is becoming more of a threat to wildlife each year. Agricultural experts, faced with the problem of obtaining the greatest possible yield per acre, are not only refining techniques of soil improvement, but are also giving a great deal of attention to insect control. Foresters, concerned with our dwindling timber resources, are devoting more time to the control of injurious forest insects. Residents in the tidewater areas have become especially agitated during recent years over the scourge of mosquitoes and other biting insects that are so prevalent in these areas. New and more powerful insecticides are appearing on the market, and many of these are being applied in ever-heavier concentrations over larger areas of woodland, marsh, and field, and on orchards, roadsides, and garden crops. It must be admitted that insecticides have their place in the economy of our State and Nation and that they are destined to partially replace natural biological controls in many areas. It is a fact, however, that interference with the balance of nature can have disastrous and unforeseen results. When man, in his attempts to control harmful insects, unwittingly eliminates beneficial insects that have helped keep the harmful ones in check, the harmful species often increase to greater abundance than before and cause greater

economic loss. Nature has its own ways of combating man's interference: many insects formerly vulnerable to DDT have developed a resistance to this chemical, necessitating substitution of other poisons. This suggests that ultimately our insecticides may be of much more deadly types than those currently in use, with an ever greater potential danger to birds and other wildlife.

Much of the information in this book, including population densities by habitat units, should permit comparison with data from similar studies that may be conducted in the future. The comparison of population data should be especially significant, since this would afford a definite measure of the responses of birds to changing environments. It is to be hoped that this type of information, aside from any scientific value it may have, will prove useful in interpreting past changes and predicting future changes in the distribution and numerical status of bird populations. Through a better understanding of these natural phenomena, more effective management programs may be instituted that will serve to protect endangered or diminishing species.

GEOGRAPHICAL DISTRIBUTION OF BIRDS

Stretching from the Allegheny Mountains to the Atlantic Ocean, the area within Maryland and the District of Columbia contains a great variety of breeding birds. Owing to its peculiar shape and position in relation to the ranges of birds with southern and northern affinities, unusual and interesting combinations of northern and southern breeding species are included. The westernmost part of Maryland, for example, although not rising more than 3,360 feet above sea level, has such breeding birds as the Saw-whet Owl, Hermit Thrush, Nashville Warbler, Northern Waterthrush, Mourning Warbler, and Purple Finch. In southeastern Maryland the breeding birds include such southern species as the Louisiana Heron, Royal Tern, Chuck-will's-widow, Red-cockaded Woodpecker, Brown-headed Nuthatch, and Boat-tailed Grackle. Few other States can exceed Maryland's record of 28 species of regularly nesting warblers.

The Chesapeake Bay region is probably the outstanding area in Maryland from an ornithologist's point of view. With its adjoining estuaries and tidal marshes, the bay is a focal point for vast numbers of migrating waterfowl that furnish one of the most spectacular ornithological sights in North America. Hundreds of thousands of ducks and thousands of swans, geese, and coots are attracted by the extensive beds of wild celery, sago pondweed, red-head pondweed, ditch grass, and eel grass, and the lush stands of

wild rice and three-square. Most sections of the bay also teem with animal food in the form of fish and mollusks, crustaceans, and other invertebrates. Numerous birds besides waterfowl—loons, grebes, cormorants, herons, rails, sandpipers, gulls, and terns—take advantage of this and concentrate here in large numbers.

Maryland is traversed by a maze of migration routes. The largest flights of Whistling Swan, Canvasback, Lesser Scaup, Ruddy Duck, American Widgeon, and many other ducks occur along the Susquehanna River and Chesapeake Bay. Brant and Snow Geese follow the coast for the most part along with scoters, Greater Scaup, Red-breasted Merganser, Red-throated Loon, Double-crested Cormorant, Gannet, and others. The Common Loon, Horned Grebe, Canada Goose, and Black Duck appear regularly on both routes. Shorebirds are most plentiful along the mud flats of the coastal bays; but the Sanderling, Willet, and Knot are most frequently seen flying along the outer beach. The Western Sandpiper is most common along Chesapeake Bay. Large numbers of Soras and Bobolinks stop over in the marshes along the tidal rivers on their way south and are especially abundant in the wild-rice marsh along the Patuxent River.

The Potomac River westward from Washington, D. C., is used as a flyway by Ring-billed Gulls and by a variety of ducks. Concentrated fall hawk flights may be seen along all of the mountain ridges, at Hooper and Barren Islands in Chesapeake Bay, and along the outer coast. Falcons, Ospreys, and accipiters predominate on coastal routes, buteos inland. Tremendous flocks of Tree Swallows move down the Delmarva Peninsula (the area east of Chesapeake Bay) in late September and early October; Cliff Swallows congregate in the Allegheny Mountains. The Purple Martin roost in downtown Washington is a spectacular sight in late July and early August, when more than 20,000 birds may be observed. All parts of Maryland have excellent flights of passerine birds, though the species composition varies greatly from the western end (with Mississippi drainage) to the coast. Species that migrate down the Mississippi Valley and are absent in the southeastern States are found in abundance in the Allegheny Mountains of western Maryland but become progressively rare eastward; some of them seldom occur east of Chesapeake Bay. Concentration points for migrating passerines are in the thickets on the barrier beaches (especially during periods of strong westerly winds), the Pocomoke and Potomac River valleys, the wooded valleys of other streams, and the mountaintops.

Winters are usually mild except in the Allegheny Mountains in the extreme western part of Maryland, where conditions approximate those of central New York or New England. In the coastal areas, snow seldom stays on the ground more than 2 or 3 days at a time. Most interesting at this season are the concentrations of waterfowl and other water birds throughout tidewater Maryland. A fine variety of land birds is also present all winter, except in the Allegheny Mountains. In most areas the bird student may observe 50 or more species in a day, and as many as 100 along the coast. The more common and widespread wintering species include the Downy Woodpecker, Common Crow, Chickadee (Carolina or Black-capped), Golden-crowned Kinglet, Slate-colored Junco, and Tree Sparrow.

In the eastern and central sections, permanent residents such as the Turkey Vulture, Tufted Titmouse, Carolina Wren, and Cardinal are common. Several species that occur in winter in southeastern Maryland are near the northern limits of their regular wintering range. These include the Eastern Phoebe, Brown-headed Nuthatch, Short-billed Marsh Wren, Catbird, Brown Thrasher, Water Pipit, Palm Warbler, Boat-tailed Grackle, Vesper Sparrow, and Chipping Sparrow. During recent years, the White-crowned Sparrow has been rapidly increasing and extending its wintering range through central Maryland and sparingly down the Delmarva Peninsula. Northern visitors, such as the Rough-legged Hawk, Purple Sandpiper (Ocean City), Snow Bunting, and quite recently the Evening Grosbeak, appear regularly in small numbers. Hawks are particularly conspicuous in the area east of Chesapeake Bay, where the birdwatcher may observe 50 individuals of 8 or more species in a day's trip. Redwinged Blackbirds, Eastern Meadowlarks, Common Grackles, and Brown-headed Cowbirds winter abundantly in this same area, and more sparingly elsewhere.

Five principal physiographic provinces are represented in the area within Maryland and the District of Columbia: the Appalachian Plateaus, the Ridge and Valley province, the Blue Ridge province, the Piedmont province, and the Coastal Plain (Fenneman, 1938). The portion of the Appalachian Plateaus in Maryland is known as the Allegheny Mountains and occurs in the westernmost part of the State, extending westward from the Allegheny Front (Dans Mountain). This area is a high, undulating plateau, averaging about 2,500 feet above sea level and crossed diagonally, northeast to southwest, by several ridges that rise some 500 feet above it. The highest point in the State (3,360 feet) is located

here, on Backbone Mountain. Extending eastward from the Allegheny Front to Catocin Mountain, through the Ridge and Valley and Blue Ridge provinces, there are numerous parallel ridges that range up to 2,000 feet elevation. Except for the wide and fertile Hagerstown Valley, most of the valleys in this area are narrow, and little used for farming. The Piedmont province extends eastward from the eastern base of Catocin Mountain to the fall line of the rivers, which passes through Washington, D. C., Baltimore, and Elkton. The greater part of this area is gently rolling with elevations ranging from 300 to 800 feet, and consists mainly of agricultural lands with scattered woodlots. The Coastal Plain, comprising all of the area below the fall line, is bisected by Chesapeake Bay. Most of the Coastal Plain west of the bay has a rolling topography with elevations ranging from 100 to 300 feet, while that portion found east of the bay is flat and low, with elevations under 100 feet. The river flood plains on the Coastal Plain are much wider and more swampy than are those in the other provinces.

There are several hundred miles of tidewater frontage, owing to the ragged shoreline of Chesapeake Bay and its numerous arms and inlets. The ocean coastline, however, is only 31 miles. The salinity of the tidewater in Maryland varies greatly; the waters of upper Chesapeake Bay and the upper sections of many of the estuaries are nearly fresh, while the waters of the lower Chesapeake and coastal bays are almost as salty as the ocean. This variation accounts for the great variety of aquatic plants and types of marshes found in the State.

The boundaries of the principal biotic or natural areas in Maryland and the District of Columbia appear to coincide quite closely with the units proposed by Dr. E. Lucy Braun (1950) for classifying the regions of the Eastern Deciduous Forest of North America. According to this system a forest region is characterized by the prevalence of a specific climax type, or by a mosaic of types. However, each forest region also contains other climax types that are more restricted in area, including some that are prevalent in other regions. Many other habitats, both forest and nonforest, are present in these regions; some of these habitats actually occupy much greater areas than the climax types. These include stages in natural succession from open country to forest and manmade habitats such as towns, cities, and agricultural areas.

According to Braun's classification, the area embraced by Maryland and the District of Columbia lies within three major forest regions that are designated the Oak-Pine Forest Region, the Oak-

FIGURE 1.—Biotic areas of Maryland and the District of Columbia.

Chestnut Forest Region, and the Mixed Mesophytic Forest Region. Our data on distribution and ecology of birds are closely correlated with the distribution of these forest regions, so we have decided to follow Braun's classification except for slight changes in the regional boundaries (see fig. 1). The most noticeable shift was made on the boundary separating the Oak-Pine and Oak-Chestnut Forest Regions. For our purpose it seemed best to include the "necks" of Baltimore and Harford Counties in the Oak-Pine Forest Region rather than in the Oak-Chestnut Forest Region.

Each of the three forest regions, here considered as major biotic regions, may be subdivided into sections that represent areas showing floral and faunal differences of a secondary nature. In Maryland and the District of Columbia we have found it expedient to recognize six sections—the Eastern Shore, Western Shore, and Upper Chesapeake sections of the Oak-Pine Forest Region; the Piedmont and the Ridge and Valley sections of the Oak-Chestnut Forest Region; and the Allegheny Mountain section of the Mixed Mesophytic Forest Region. While attempting to follow Braun's classification of these subdivisions as far as we could, we found it necessary to modify her concept of the sectional boundaries with the following results: The Allegheny Mountain section is the same as described; the Ridge and Valley section includes Braun's Northern Blue Ridge section as well as her Ridge and Valley section; the Piedmont section is the same as described except for a slight westward shift of the eastern boundary; the Upper Chesapeake, Western Shore, and Eastern Shore sections are new subdivisions of the Oak-Pine Forest Region that have not been previously described.

BIRDS OF THE OAK-PINE FOREST REGION

The Coastal Plain of Maryland and the District of Columbia, except for Elk Neck in Cecil County, occurs within the Oak-Pine Forest Region. This region is intermediate in many respects between the Southeastern Evergreen Forest Region of the Southern States and the more central Oak-Chestnut Forest Region. Under the old life-zone concept it would probably be considered a transitional belt between the Lower Austral (Australoriparian) and Upper Austral (Carolinian) Life Zones. Over the greater part of this region in Maryland the upland forests are composed of a combination of pine stands and oak-hickory forests or a mixture of the two. An exception to this is found in the areas adjoining the upper Chesapeake Bay (designated as the Upper

Chesapeake section), where the upland forests are almost entirely deciduous, although still of a type characteristic of the Oak-Pine Forest Region. Interesting associations of southern and east-central plants occur in the region. Locally, extensive stands of loblolly pine and even bald-cypress swamps are present, reminding one of more southern latitudes. Other species of pines, as well as most of the deciduous trees, are those which are also characteristic of the Oak-Chestnut Forest Region or are widely distributed throughout the Atlantic Coastal Plain.

The associations of plants and animals in the tidewater habitats of the Oak-Pine Forest Region are quite different from other communities found in Maryland and the District of Columbia. There are numerous types of tidal marshes along the bays and estuaries, and almost every one has a distinct assortment of breeding birds. Fresh and brackish marsh types include American three-square, Olney three-square, river bulrush, cattail, wild rice, reed, salt reed-grass, and switchgrass. Salt-marsh types are salt-water cordgrass, salt-meadow grass, spike-grass, needlerush, saltmarsh bulrush, black grass, and glasswort. Many tidewater birds may be considered edge species, since they feed in the open water or in marsh areas but nest in adjacent patches of brush or trees. Still other species nest on small islands, on beaches, or in banks along the shore.

The breeding birds of the region include several species of definite southern affinities, while associated with them are many more that are widely distributed throughout the greater part of the Eastern Deciduous Forest area. Interestingly enough, a few breeding species that are generally considered characteristic of the more northern portions of the Eastern Deciduous Forest area are also present. The species of birds that have been known to breed in the Oak-Pine Forest Region in recent years are as follows:

PRIMARY SPECIES

Green Heron	Least Tern (local)	Pileated Woodpecker
Least Bittern	Black Skimmer (local)	(local)
Black Duck	Mourning Dove	Red-bellied
Wood Duck	Yellow-billed Cuckoo	Woodpecker
Turkey Vulture	Great Horned Owl	Downy Woodpecker
Black Vulture (local)	(local)	Eastern Kingbird
Red-shouldered Hawk	Barred Owl	Great Crested
Osprey	Chuck-will's-widow	Flycatcher
Bobwhite	(local)	Acadian Flycatcher
Virginia Rail	Whip-poor-will	Eastern Wood Pewee
Common Tern (local)	Chimney Swift	Barn Swallow

PRIMARY SPECIES—Continued

Purple Martin (local)	Starling	American Redstart (local)
Common Crow	White-eyed Vireo	House Sparrow (local)
Carolina Chickadee	Red-eyed Vireo	Eastern Meadowlark
Tufted Titmouse	Prothonotary Warbler (local)	Redwinged Blackbird
Brown-headed Nuthatch (local)	Parula Warbler	Common Grackle (local)
House Wren	Yellow-throated Warbler (local)	Scarlet Tanager
Carolina Wren	Pine Warbler (local)	Cardinal
Long-billed Marsh Wren	Prairie Warbler	Indigo Bunting
Short-billed Marsh Wren (local)	Ovenbird (local)	Rufous-sided Towhee
Mockingbird	Louisiana Waterthrush (local)	Grasshopper Sparrow
Catbird	Kentucky Warbler	Sharp-tailed Sparrow (local)
Robin	Yellowthroat	Seaside Sparrow (local)
Wood Thrush	Yellow-breasted Chat	Chipping Sparrow
Blue-gray Gnatcatcher (local)	Hooded Warbler (local)	Field Sparrow
		Song Sparrow

SECONDARY SPECIES

Great Blue Heron	American Woodcock	Brown Thrasher
Little Blue Heron (local)	Spotted Sandpiper (local)	Eastern Bluebird
Common Egret (local)	Willet (local)	Loggerhead Shrike (local)
Snowy Egret (local)	Gull-billed Tern (local)	Yellow-throated Vireo
Black-crowned Night Heron	Forster's Tern (local)	Warbling Vireo (local)
American Bittern (local)	Barn Owl	Black-and-white Warbler
Mallard (local)	Screech Owl (local)	Swainson's Warbler (local)
Blue-winged Teal (local)	Common Nighthawk (local)	Worm-eating Warbler (local)
Cooper's Hawk	Ruby-throated Hummingbird	Yellow Warbler
Red-tailed Hawk	Belted Kingfisher	Orchard Oriole
Broad-winged Hawk	Yellow-shafted Flicker	Boat-tailed Grackle (local)
Bald Eagle	Hairy Woodpecker	Brown-headed Cowbird
Marsh Hawk (local)	Eastern Phoebe	Summer Tanager (local)
Sparrow Hawk	Horned Lark	Blue Grosbeak (local)
King Rail	Tree Swallow (local)	American Goldfinch
Clapper Rail (local)	Bank Swallow (local)	Henslow's Sparrow
Common Gallinule (local)	Rough-winged Swallow	Vesper Sparrow
Piping Plover (local)	Blue Jay	
Killdeer	Fish Crow	
	White-breasted Nuthatch (local)	

MINOR SPECIES

Pied-billed Grebe	Yellow-crowned Night Heron (local)	Gadwall (local)
Louisiana Heron (local)	Glossy Ibis (local)	Sora (local)
		Black Rail (local)

MINOR SPECIES—Continued

American Oyster-catcher (local)	Red-headed Woodpecker (local)	Baltimore Oriole (local)
Wilson's Plover (local)	Red-cockaded Woodpecker (local)	Savannah Sparrow (local)
Herring Gull (local)	Least Flycatcher (local)	Bachman's Sparrow (local)
Laughing Gull (local)	Cedar Waxwing	Swamp Sparrow (local)
Roseate Tern (local)		
Royal Tern (local)		
Black-billed Cuckoo		

EASTERN SHORE SECTION

This part of the Oak-Pine Forest Region (see fig. 1) is in the Coastal Plain of southeastern Maryland, east of Chesapeake Bay. Weather stations in this section (Weeks, 1941) yield the following data (based on mean weather records over a period of from 11 to 67 years) :

Annual temperature—55.4° F. (at Easton) to 57.9° F. (at Crisfield)
 January temperature—35.2° F. (at Easton) to 38.6° F. (at Crisfield)
 July temperature—76.0° F. (at Snow Hill) to 77.8° F. (at Pocomoke City)
 Growing season—178 days (at Princess Anne) to 210 days (at Crisfield)
 Annual precipitation—39.35 inches (at Snow Hill) to 43.37 inches (at Cambridge)
 Annual snowfall—10.2 inches (at Crisfield) to 21.1 inches (at Rock Hall)

The upland forests are composed chiefly of loblolly-pine stands and oak-hickory forests or a mixture of the two. Along the margins of the tidal marshes, loblolly pine characteristically occurs in somewhat open stands without deciduous associates. Much of the Eastern Shore section is poorly drained with the result that upland swamps are numerous and extensive lowland swamps occur along many of the streams. Sweetgum, black gum, red maple, and pin oak are typical trees in most of these swamps, and locally American holly is common. The large swamp along the Pocomoke River and its tributaries is especially interesting since it includes many southern plants including bald cypress, red bay, horse-sugar, water oak, cross vine, and laurel-leaved greenbrier. In the coastal area of Worcester County many other interesting habitats are found, such as the littoral zone of the ocean, the coastal bays or lagoons, the barrier beaches, and the salt marshes. Along the Chesapeake Bay shore there are numerous brackish estuaries that abound in aquatic plant food, while adjoining many of them are extensive brackish marshes. Oysters, crabs, and fish are plentiful in the tidewater areas of the Eastern Shore section, and support a fairly large fishing industry. The agricultural areas of this section are largely devoted to truck

farming and chicken raising and to apple and peach orchards (Hamilton and Johnson, 1940).

Many of the southern birds that breed within the Oak-Pine Forest Region are more common and widespread in the Eastern Shore section than elsewhere, and this is true also of those species that are associated with salt-water habitats. These include various southern herons, Clapper Rail, American Oystercatcher, Wilson's Plover, Royal, Gull-billed, and Forster's Terns, Black Skimmer, Chuck-will's-widow, Red-cockaded Woodpecker, Brown-headed Nuthatch, Swainson's Warbler, Boat-tailed Grackle, and Sharp-tailed and Seaside Sparrows. Paradoxically, several breeding species generally associated with cooler climates occur regularly in certain tidewater habitats of the Eastern Shore section, but are absent or rare in other sections of the Oak-Pine Forest Region. These include the American Bittern, Gadwall, Blue-winged Teal, Marsh Hawk, Herring Gull, Tree Swallow, Short-billed Marsh Wren, and Swamp Sparrow.

During the migration and wintering periods, most of the marsh ducks (Anatinae) and shorebirds (Charadriidae and Scolopacidae), as well as various other species associated with salt-water habitats, are much more abundant in the Eastern Shore section than elsewhere. The greatest variety and numbers of marsh ducks are to be found in the brackish marshes of Dorchester County, while the majority of the shorebirds are most numerous in the coastal area of Worcester County. Spectacular concentrations of diving ducks and other open-water species are to be seen on the numerous brackish estuaries and inlets along the Chesapeake Bay shore and are especially abundant on Eastern Bay and the Chester River. In fall, many land birds, including several species of hawks and quite a few passerine species, tend to follow the coast while migrating and therefore are numerous in this section. In spring, several passerine species, particularly some of the warblers, tend to follow inland migration routes and therefore are rare or absent in the Eastern Shore section.

In winter, several half-hardy species that are characteristic wintering birds in the Southern States regularly range as far north as the Eastern Shore section but are not ordinarily found in the other sections. These include the Tree Swallow, House Wren, Palm Warbler, Vesper Sparrow, and Chipping Sparrow. Among other wintering birds of interest could be listed the Purple Sandpipers at the Ocean City Inlet and Ipswich Sparrows and Snow Buntings on the barrier beaches. Turkey Vultures and Myrtle Warblers winter in unusually large numbers throughout much of

the Eastern Shore section, and waterfowl are plentiful wherever appropriate aquatic habitats occur.

WESTERN SHORE SECTION

This section is found on the Coastal Plain west of Chesapeake Bay and south of the Patapsco River (see map, fig. 1). Weather stations within this section (Weeks, 1941) yield the following average data:

Annual temperature—54.5° F. (near Glenn Dale) to 57.1° F. (at Solomons)

January temperature—34.3° F. (near Glenn Dale) to 36.7° F. (at La Plata)

July temperature—75.8° F. (near Glenn Dale) to 78.2° F. (at Solomons)

Annual growing season—172 days (near Glenn Dale) to 213 days (at Solomons)

Annual precipitation—35.62 inches (at Solomons) to 44.33 inches (at Annapolis)

Annual snowfall—15.8 inches (at Solomons) to 21.5 inches (at Annapolis)

Over the greater part of the Western Shore section, the upland forests are composed of scrub-pine stands and oak-hickory forests or a mixture of the two. On the lower Coastal Plain terraces near tidewater, and especially in the southern part of the section, loblolly pine is common, often taking the place of the scrub pine. On sandy soils in the northern part of the section in the Fall-line Clay Hills district (Harper, 1918), pitch pine is frequently predominant. Rich, moist upland forests, composed chiefly of white oak and tulip-poplar, occur locally and are especially prominent in east-central Prince Georges County on the fertile soils of the Greensand district (Harper, 1918). Small seepage areas are frequent throughout the section and usually support an upland swamp forest type that contains a well-developed understory composed chiefly of ericaceous shrubs. The flood-plain forests are particularly luxuriant in the Western Shore section and support a great variety of plants and animals. The best example of this type occurs along the Patuxent River and its tributaries; bald cypress occurs commonly in the swamp along Battle Creek. Quite a few brackish estuaries are present that contain abundant aquatic plant food, and many of these are fringed by various tidal-marsh associations. The most extensive and interesting marsh area occurs near the head of the Patuxent estuary southeast of Upper Marlboro. Most of the agricultural areas in the Western Shore section are largely devoted to tobacco farming; locally truck farming is also important (Hamilton and Johnson, 1940).

In the Western Shore section, breeding birds that show the most definite southern affinities, such as the Chuck-will's-widow and Brown-headed Nuthatch, are restricted to the southernmost por-

tions in the areas where loblolly pine is prevalent. Other southern birds, such as the Black Vulture, Yellow-throated Warbler, Summer Tanager, and Blue Grosbeak, occur regularly throughout most of the section. Two species, the Warbling Vireo and Baltimore Oriole, which nest regularly in the other biotic sections of the State, are very rare or absent in the Western Shore section. The White-breasted Nuthatch and Loggerhead Shrike have a peculiar breeding distribution within this section in that they appear to be almost entirely restricted to habitats in the fertile Greensand district, mostly in east-central Prince Georges County. Nearly all of the other breeding species are those that are widespread and regular throughout the Oak-Pine and Oak-Chestnut Forest Regions.

During the migration periods, thousands of ducks, coots, and other water birds put in their appearance on many of the brackish estuaries and are especially numerous on the Potomac, Wicomico, Patuxent, South, and Magothy Rivers. Other outstanding concentration areas include the wild-rice marshes, particularly those along the Patuxent River, where hordes of Soras, Bobolinks, Red-winged Blackbirds and many other species may be found. The characteristic wintering birds of the Western Shore section are composed almost entirely of the species that are widely distributed at this season throughout the Oak-Pine and Oak-Chestnut Forest Regions.

UPPER CHESAPEAKE SECTION

The Upper Chesapeake section is found on the northern portions of the Coastal Plain on both sides of Chesapeake Bay (see fig. 1). East of the bay it extends south to the area where loblolly-pine stands represent an important forest type, while west of the bay it extends southward to the Patapsco River. Weather stations within this section (Weeks, 1941) yield the following average data:

Annual temperature—53.9° F. (at Aberdeen) to 55.7° F. (at Baltimore)

January temperature—33.1° F. (at Aberdeen) to 35.1° F. (at Ridgely)

July temperature—75.7° F. (at Aberdeen) to 77.7° F. (at Baltimore)

Annual growing season—179 days (at Elkton) to 200 days (at Coleman)

Annual precipitation—40.16 inches (at Aberdeen) to 44.27 inches (at Van Bibber)

Annual snowfall—18.3 inches (at Aberdeen) to 21.8 inches (at Millington)

Although here placed in the Oak-Pine Forest Region, this section actually represents in many respects a transitional area between the Oak-Pine and Oak-Chestnut Forest Regions. The upland forests of the Upper Chesapeake section are almost entirely

deciduous and are mostly of the oak-hickory type. The principal species include white oak, black oak, Spanish oak, willow oak, mockernut, pignut, and sweetgum. Locally, chestnut oak is common in these forests, and formerly chestnut was present. Scattered upland swamps are present in the Upper Chesapeake section; in these the most common trees are usually pin oak, red maple, black gum, and sweetgum. Narrow strips of well-drained flood-plain forests occur along some of the streams, and here tulip-poplar, American elm, white ash, hornbeam, and sweetgum are often the prevailing species.

Many brackish and nearly fresh estuaries are found in this section; these contain an abundant aquatic-plant growth. The famous Susquehanna Flats with its extensive beds of wild celery is the largest of these. Tidal marshes are frequent, especially in that portion west of Chesapeake Bay; the more important types are Olney three-square, American three-square, river bulrush, cattail, and wild rice.

A large part of the Upper Chesapeake section has been cleared for farming, particularly the portion lying east of Chesapeake Bay. Most of these agricultural areas are devoted to dairy farming or to the raising of cash grain crops; locally truck farming is also important (Hamilton and Johnson, 1940).

The breeding birds of the Upper Chesapeake section differ from those of the Eastern Shore and Western Shore sections principally in the fact that most of the species that are associated with pine or salt-water habitats, as well as most of those that would indicate southern affinities, are rare or absent. Only two southern species are of regular occurrence—the Blue Grosbeak is fairly common locally while the Black Vulture occurs sparingly. Five warblers, the Black-and-white Warbler, Prairie Warbler, Ovenbird, Hooded Warbler, and American Redstart, are unaccountably scarce as breeding species throughout the greater part of this section. On the other hand, the Kentucky Warbler is unusually abundant.

The Upper Chesapeake section is outstanding as a concentration area for migrating waterfowl. Thousands of Whistling Swans and Canada Geese and hundreds of thousands of ducks are to be found on the shallow estuarine waters of the Susquehanna Flats, the Sassafras River, the Gunpowder River area, and elsewhere. Various species of diving ducks and particularly the Canvasback are sometimes seen in almost unbelievable numbers. In winter, another outstanding feature of the Upper Chesapeake section is the enormous number of Redwinged Blackbirds, Common Grackles,

and Brown-headed Cowbirds that move over the area in great flocks.

BIRDS OF THE OAK-CHESTNUT FOREST REGION

The area in Maryland and the District of Columbia that embraces the Piedmont, Blue Ridge, and Ridge and Valley physiographic provinces (Fenneman, 1938), extending from the fall line to the Allegheny Front, lies within the Oak-Chestnut Forest Region. A small hilly portion of the Coastal Plain, known as Elk Neck in Cecil County, is also included on the basis of the known relations of its plant and animal life. Various species of oaks, particularly white, scarlet, black, and chestnut oaks, are especially abundant in the upland forests of the Oak-Chestnut Forest Region, and locally tulip-poplar is predominant. Chestnut was formerly an important constituent of most of these forests, but now has largely disappeared, at least as a forest tree, owing to the chestnut blight. Mixed mesophytic forest communities are to be found in some of the cooler ravines and on steep north slopes; these include such species as hemlock, white pine, sugar maple, basswood, sweet birch, beech, northern red oak, white oak, and tulip-poplar.

The majority of the breeding birds in the region are those which are characteristic and widespread throughout the central portions of the Eastern Deciduous Forest area and, using life-zone terminology, could be considered as typically Carolinian. Locally, on the higher ridges or in the cooler ravines, a few species characteristic of more northern climates also occur. The species of birds that have been known to breed in the Oak-Chestnut Forest Region in the past few years are as follows:

PRIMARY SPECIES

Turkey Vulture	Red-eyed Vireo	Scarlet Tanager
Mourning Dove	Black-and-white	Cardinal
Chimney Swift	Warbler (local)	Indigo Bunting
Downy Woodpecker	Ovenbird	American Goldfinch
Eastern Kingbird	Hooded Warbler	Rufous-sided Towhee
Eastern Wood Pewee	(local)	Grasshopper Sparrow
Barn Swallow	American Redstart	Vesper Sparrow
Common Crow	(local)	Chipping Sparrow
House Wren	House Sparrow	Field Sparrow
Robin	Eastern Meadowlark	Song Sparrow
Wood Thrush	Redwinged Blackbird	
Starling	Common Grackle	

SECONDARY SPECIES

Green Heron	Pileated Woodpecker	Cedar Waxwing
Wood Duck	(local)	(local)
Black Vulture (local)	Red-bellied	White-eyed Vireo
Cooper's Hawk	Woodpecker	(local)
Red-tailed Hawk	Hairy Woodpecker	Yellow-throated Vireo
Red-shouldered Hawk	Great Crested	Warbling Vireo (local)
Broad-winged Hawk	Flycatcher	Worm-eating Warbler
Sparrow Hawk	Eastern Phoebe	Golden-winged
Ruffed Grouse (local)	Acadian Flycatcher	Warbler (local)
Bobwhite	Least Flycatcher	Blue-winged Warbler
Turkey (local)	(local)	(local)
Killdeer	Horned Lark	Parula Warbler
American Woodcock	Rough-winged Swallow	Yellow Warbler
(local)	Cliff Swallow (local)	Black-throated Green
Upland Plover (local)	Purple Martin	Warbler (local)
Spotted Sandpiper	Blue Jay	Cerulean Warbler
(local)	Carolina Chickadee	(local)
Yellow-billed Cuckoo	(local)	Chestnut-sided
Barn Owl (local)	Black-capped	Warbler (local)
Screech Owl	Chickadee (local)	Prairie Warbler
Great Horned Owl	Tufted Titmouse	(local)
Barred Owl	White-breasted	Louisiana Water-
Whip-poor-will	Nuthatch	thrush
Common Nighthawk	Bewick's Wren (local)	Kentucky Warbler
(local)	Carolina Wren	(local)
Ruby-throated	Mockingbird (local)	Yellowthroat
Hummingbird	Catbird	Yellow-breasted Chat
Belted Kingfisher	Brown Thrasher	Orchard Oriole
Yellow-shafted Flicker	Eastern Bluebird	Baltimore Oriole
	Blue-gray Gnatcatcher	Brown-headed Cowbird

MINOR SPECIES

Mallard	Bank Swallow (local)	Bobolink (local)
Black Duck (local)	Fish Crow (local)	Summer Tanager
Sharp-shinned Hawk	Short-billed Marsh	(local)
Bald Eagle (local)	Wren (local)	Blue Grosbeak (local)
Peregrine Falcon	Veery (local)	Dickcissel (local)
(local)	Loggerhead Shrike	Savannah Sparrow
King Rail (local)	(local)	(local)
Virginia Rail (local)	Prothonotary Warbler	Henslow's Sparrow
Black-billed Cuckoo	(local)	(local)
Red-headed	Blackburnian Warbler	Bachman's Sparrow
Woodpecker (local)	(local)	(local)
Traill's Flycatcher	Pine Warbler (local)	
(local)		

PIEDMONT SECTION

The Piedmont physiographic province (Fenneman, 1938) as well as a small part of the Coastal Plain known as Elk Neck in Cecil County is classified as the Piedmont section of the Oak-

Chestnut Forest Region (see fig. 1). Weather stations within this section (Weeks, 1941) yield the following average data:

Annual temperature—52.6° F. (at Fallston) to 54.3° F. (at Frederick)

January temperature—31.3° F. (at Emmitsburg) to 34.8° F. (at Pretty Boy Dam)

July temperature—74.2° F. (at Fallston) to 76.7° F. (at Frederick)

Annual growing season—173 days (at Boyds) to 188 days (at Emmitsburg)

Annual precipitation—38.66 inches (at Great Falls) to 44.84 inches (at Maryland Line)

Annual snowfall—22.4 inches (at Woodstock) to 32.5 inches (at Emmitsburg)

The gently rolling topography and the well-drained fertile soils of this section are conducive to the establishment of widespread upland, rich, moist forest types. In most of these forests, white oak, black oak, tulip-poplar, and smooth-barked hickories are the predominant species, with flowering dogwood as an ever-present understory tree. Locally, and especially on some of the drier or more sterile sites, chestnut oak or scarlet oak is predominant, while occasionally associated with them may be found stands of scrub pine or pitch pine that represent stages of the secondary succession. Beech is frequently a common tree on ravine slopes, and mixed mesophytic forest communities occur in some of the larger valleys with steep north slopes. These communities are composed of a mixture of central and northern hardwoods and frequently contain hemlock as well. Narrow strips of rich, well-developed flood-plain forest communities are to be found along the larger streams and are characteristically composed of a great variety of bottomland species. Good-sized reservoirs have been created along some of the streams by the construction of dams.

A very large proportion of the Piedmont section has been cleared for agricultural purposes. Most of these areas are devoted chiefly to dairy farming, while locally truck farming and the raising of livestock and cash grain crops are important (Hamilton and Johnson, 1940).

A marked uniformity in environment, resulting in a rather restricted number of habitats, is to be noted throughout the Piedmont section. Because of this, the variety of birds to be found in the area is not ordinarily impressive. The vast majority of the birds are those that may be classified as field or field-margin species or those that are characteristic of upland well-drained forests. Most of the water, marsh, and bottomland habitats are quite restricted in area, so that the number of species to be found

in them is somewhat limited. Nearly all of the characteristic birds of the Piedmont section are of species that are widespread and common throughout the central portions of the Eastern Deciduous Forest area. A slight southern influence is to be noted along the Potomac River Valley, which apparently is serving as an invasion route for breeding species such as the Black Vulture, Summer Tanager, and Blue Grosbeak. Locally a trace of a more northern element in the avifauna may be discerned, especially in the more elevated portions of the section, where breeding species such as the Traill's Flycatcher, Chestnut-sided Warbler, and Savannah Sparrow may be found in small numbers. Other local breeding populations of special interest in the Piedmont section include the Upland Plovers in the Frederick and Worthington Valleys, the Veeries of Rock Creek Park in the District of Columbia, the Blue-winged Warblers in the Susquehanna River Valley, the Cerulean Warblers in the flood-plain forests along the Susquehanna, Patapsco, and Potomac Rivers, and the Dickcissels in southern Frederick and western Montgomery Counties.

During the migration periods many of the field and edge species are more numerous in this section than elsewhere. Of these, the Water Pipit and White-crowned Sparrow are especially noteworthy since in spring they both occur in unusually large numbers in the Frederick Valley. Fair-sized migrating flocks of waterfowl and other water birds are sometimes seen on the reservoirs and larger streams, and frequently some of these remain into the winter. Wintering birds in general are less numerous than they are in the Oak-Pine Forest Region, with the noted exception of the Common Crow, which is to be found in exceptionally large flocks, particularly in Carroll County.

RIDGE AND VALLEY SECTION

Both the Blue Ridge and the Ridge and Valley physiographic provinces (Fenneman, 1938) are included in the Ridge and Valley section of the Oak-Chestnut Forest Region (see fig. 1). Weather stations within this section (Weeks, 1941) yield the following average data:

Annual temperature—52.2° F. (at Clear Spring) to 54.0° F. (at Keedysville)
January temperature—31.2° F. (at Chewsville) to 34.0° F. (at Picardy)
July temperature—73.7° F. (at Western Port) to 75.9° F. (at Keedysville)
Annual growing season—155 days (at Hancock) to 188 days (at State Sanatorium)
Annual precipitation—35.10 inches (at Western Port) to 43.52 inches (at State Sanatorium)
Annual snowfall—22.7 inches (at Picardy) to 34.6 inches (at Clear Spring)

Forest types in which chestnut oak is common are prevalent throughout most of the Ridge and Valley section. On rocky ridgetops and upper slopes this species is often found in nearly pure stands. On some of the drier sites, and especially on slopes with southern or western exposures, scarlet oak is predominant, while interspersed with it may be found occasional secondary stands of scrub pine, pitch pine, or Table Mountain pine. Locally, fairly large areas of scrubby bear oak thickets occur on some of the more level expanses of the mountain tops. Most of the ravines as well as steep north slopes are occupied by mixed mesophytic forest communities. The characteristic trees in these communities are hemlock, white pine, and numerous deciduous species including beech, sweet birch, basswood, sugar maple, tulip-poplar, white oak, and northern red oak. On the valley floors another type of mesophytic forest is found in which white oak, black oak, and tulip-poplar are ordinarily dominant, with flowering dogwood as a common understory tree; locally, secondary stands of white pine are found interspersed with these species. In the limestone areas of the Hagerstown Valley, occasional groves of red cedar are present. The only prominent flood-plain forest type occurs as a rather narrow stretch along the Potomac River.

With the exception of the Hagerstown Valley, which is very intensively farmed, a relatively small proportion of the Ridge and Valley section has been cleared for agricultural purposes. In the Hagerstown Valley most of the agricultural areas have been developed for dairy farming or for the raising of cash grain crops, while the scattered smaller farms elsewhere in the section are devoted chiefly to apple orchards or are general, self-sufficing farms (Hamilton and Johnson, 1940).

While most of the breeding birds in the Ridge and Valley section are characteristic species of the central portions of the Eastern Deciduous Forest area, there is also a noticeable tinge of more northern species. Species that show more northern affinities are most numerous in the cooler ravines or on the higher ridges, and include the Ruffed Grouse, Least Flycatcher, Black-capped Chickadee, Golden-winged Warbler, Black-throated Green Warbler, Blackburnian Warbler, and Chestnut-sided Warbler. The Cliff Swallow, Bewick's Wren, and Cerulean Warbler are regularly distributed throughout the greater part of this section, the latter species occurring in upland forests of the mountains as well as in the flood-plain forests. Other noteworthy breeding birds include Turkeys in Allegany County, Blue-winged Warblers in

the Blue Ridge Mountains of Frederick County, and Bachman's Sparrows on Green Ridge Mountain.

During the migration periods, warblers, vireos, and other insectivorous birds as well as several species of hawks tend to concentrate along the ridgetops. Wintering birds in the Ridge and Valley section are usually rather sparse except along the Potomac River, where fairly good numbers may be found.

BIRDS OF THE MIXED MESOPHYTIC FOREST REGION

The part of the Appalachian Plateaus (Fenneman, 1938) that extends into western Maryland (Garrett County and western Allegany County) lies within the Mixed Mesophytic Forest Region. This region is generally characterized by the fact that mixed mesophytic forest communities are prevalent throughout. The portion in Maryland, being restricted to the Allegheny Mountains, is comparatively high in elevation, so that most of the forest communities are actually intermediate between the typical mixed mesophytic forest types and the more northern hemlock-northern hardwood types. Because of this, the area is considered a well-marked subdivision of the Mixed Mesophytic Forest Region and is designated the Allegheny Mountain section.

ALLEGHENY MOUNTAIN SECTION

Weather stations within this section (Weeks, 1941) yield the following average data:

Annual temperature—47.2° F. (Sines, Deep Creek) to 51.0° F. (Frostburg)
January temperature—27.7° F. (Grantsville) to 30.7° F. (Friendsville)
July temperature—67.3° F. (Oakland) to 71.8° F. (Frostburg)
Annual growing season—124 days (Oakland) to 159 days (Frostburg)
Annual precipitation—41.56 inches (Frostburg) to 46.19 inches (Oakland)
Annual snowfall—47.7 inches (Frostburg) to 70.2 inches (Grantsville)

The communities of plants and animals in the Allegheny Mountain section (see fig. 1) are much more northern in character than are those in the various sections of the Oak-Chestnut and Oak-Pine Forest Regions. Hemlock and occasional white pine occur regularly in many of the forests on the slopes and in the valleys, although deciduous trees are generally predominant. These include such species as sweet birch, sugar maple, red maple, black cherry, basswood, beech, shagbark hickory, white oak, and northern red oak. On the higher ridges, northern red oak and red maple are usually predominant, with chestnut oak, black oak, yellow birch, and other northern hardwoods as frequent associates. Occasionally interspersed with them are scattered red

spruce. In the valleys at elevations above 2,400 feet there are quite a few relict bogs; these consist of sedge meadows and bog heaths interspersed with patches of taller shrubs, predominantly alder and great laurel, and trees, usually red spruce, hemlock, yellow birch, and red maple. In sandy situations on some of the lower ridges, open stands of pitch pine are present.

The agricultural areas of the Allegheny Mountain section occur in exceptionally picturesque surroundings and are located on the more rounded ridgetops as well as in the valleys. Most of the farms are of the general, self-sufficing type (Hamilton and Johnson, 1940). Locally, many farmers supplement their farm income with profits derived from the production of maple syrup. The creation of several artificial lakes has greatly improved the recreational facilities of the area, and as a consequence large numbers of tourists are attracted during the warmer months.

Most of the breeding birds in the Allegheny Mountain section are those that are typical of the more northern portion of the Eastern Deciduous Forest, an area that is sometimes referred to as the Transition or Alleghenian Life Zone. Associated with them in much smaller numbers are such species as the Tufted Titmouse, Yellow-breasted Chat, Hooded Warbler, and Cardinal, which are more characteristic of the central portions of the Eastern Deciduous Forest. The scattered boreal bogs in Garrett County are especially interesting since they harbor large numbers of the more typical northern species. Two of the best-preserved bogs, Wolf Swamp (about 4 miles southeast of Grantsville) and Cranesville Swamp (just east of Cranesville, W. Va.) also contain small breeding populations of the Saw-whet Owl, Golden-crowned Kinglet, and Nashville Warbler. Backbone Mountain is worthy of note as being the only area in Maryland where breeding populations of the elusive Mourning Warbler may be found.

The species of birds that have been known to breed in the Allegheny Mountain section of Maryland in the past 10 years are as follows:

PRIMARY SPECIES		
Ruffed Grouse	House Wren	Starling
Yellow-shafted Flicker	Catbird	Red-eyed Vireo
Barn Swallow	Brown Thrasher	Magnolia Warbler
Cliff Swallow (local)	Robin	(local)
Common Crow	Wood Thrush	Black-throated Blue
Black-capped	Veery	Warbler
Chickadee	Cedar Waxwing	

PRIMARY SPECIES—Continued

Black-throated Green Warbler	Northern Water-thrush (local)	Savannah Sparrow (local)
Blackburnian Warbler	Canada Warbler (local)	Chipping Sparrow
Chestnut-sided Warbler	Rufous-sided Towhee	Swamp Sparrow (local)
Ovenbird		Song Sparrow

SECONDARY SPECIES

Green Heron	Red-headed	Yellowthroat
Wood Duck	Woodpecker (local)	Hooded Warbler (local)
Turkey Vulture	Yellow-bellied	American Redstart
Sharp-shinned Hawk	Sapsucker (local)	House Sparrow
Red-tailed Hawk	Hairy Woodpecker	Bobolink (local)
Broad-winged Hawk	Downy Woodpecker	Eastern Meadowlark
Marsh Hawk (local)	Eastern Kingbird	Redwinged Blackbird
Sparrow Hawk	Great Crested	Baltimore Oriole
Bobwhite (local)	Flycatcher	Common Grackle
Virginia Rail (local)	Eastern Phoebe	Brown-headed Cowbird
Killdeer	Least Flycatcher	Scarlet Tanager
American Woodcock	Eastern Wood Pewee	Rose-breasted
Spotted Sandpiper (local)	Horned Lark	Grosbeak
Mourning Dove	Purple Martin (local)	Indigo Bunting
Yellow-billed Cuckoo	Blue Jay	Purple Finch (local)
Black-billed Cuckoo	White-breasted	American Goldfinch
Great Horned Owl	Nuthatch	Grasshopper Sparrow
Barred Owl	Eastern Bluebird	Henslow's Sparrow (local)
Whip-poor-will	Solitary Vireo	Vesper Sparrow
Chimney Swift	Black-and-white	Slate-colored Junco (local)
Ruby-throated	Warbler	Field Sparrow
Hummingbird	Golden-winged Warbler	
Belted Kingfisher	Yellow Warbler	
Pileated Woodpecker	Mourning Warbler (local)	

MINOR SPECIES

Mallard	Tree Swallow (local)	Warbling Vireo
Hooded Merganser	Rough-winged Swallow	Nashville Warbler (local)
Cooper's Hawk	Common Raven (local)	Parula Warbler
Red-shouldered Hawk	Tufted Titmouse (local)	Cerulean Warbler (local)
Turkey	Bewick's Wren (local)	Louisiana Water-thrush (local)
Upland Plover (local)	Carolina Wren (local)	Kentucky Warbler (local)
Screech Owl	Short-billed Marsh Wren (local)	Yellow-breasted Chat
Saw-whet Owl (local)	Hermit Thrush (local)	Cardinal (local)
Common Nighthawk	Golden-crowned	
Red-bellied	Kinglet (local)	
Woodpecker (local)	Yellow-throated Vireo	
Acadian Flycatcher (local)		

In spring and fall the Garrett County lakes, especially Deep Creek Lake and Mountain Lake, serve as resting and feeding places for migrating waterfowl. Maurice Brooks (1936a),

Elizabeth Slater, and Friel Sanders have observed 25 species of waterfowl in these two lakes. The best concentrations occur when birds arriving from the northwest in fall run into widespread precipitation along or just east of the Allegheny Plateau. Deep Creek Lake and Mountain Lake also attract a wide variety of shorebirds, primarily in fall when water levels are low and extensive flats are exposed; no less than 17 species of plovers and sandpipers have been identified in the Allegheny Mountain section.

The ridgetops are favored pathways for migrating hawks, particularly in fall. Major flights occur regularly along Backbone Mountain (including Big Savage Mountain) and Dans Mountain (including Wills and Haystack Mountains), and may be witnessed on almost any cool day with northwest winds in September or October. Occasionally, good flights may be witnessed regardless of wind direction, though the birds usually fly so high on a southwest wind as to be very difficult to see.

Nowhere in Maryland is the diurnal migration of warblers more impressive than along the ridgetops early on a fall morning. Flying at treetop height, singly or in small groups, and occasionally stopping to rest or feed for a few minutes, warblers, vireos, nuthatches, woodpeckers, and many other birds are conspicuous on migration from dawn until 9 a.m. or later. These flights are most pronounced on cool mornings with northwesterly winds.

In both spring and fall, transient species that nest in the northeastern States and Provinces and migrate primarily through the lower Mississippi Valley move in relatively large numbers through the Allegheny Mountain section. The Least, Traill's, Yellow-bellied, and Olive-sided Flycatchers, Cliff Swallow, Philadelphia Vireo, Nashville, Tennessee, Magnolia, Bay-breasted, Blackburnian, Mourning, and Wilson's Warblers, and the Rose-breasted Grosbeak occur regularly during migration in this section, and in much larger numbers than in the central and eastern parts of the State.

In the dead of winter, birds in general are conspicuous by their absence. One may tramp through the woods and fields for an hour or more without seeing or hearing a single bird. Then again, spots may be found where small flocks can be seen regularly throughout the cold months. Feeding stations are effective in inducing such species as Rufous-sided Towhees and White-throated Sparrows to remain in this part of the State where they do not otherwise winter. The main ornithological attraction

of the Allegheny Mountain section in winter is furnished by northern finches, such as crossbills and Pine Grosbeaks, which though irregular in their appearance, can be found much more readily here than in the other parts of Maryland.

SPECIES ACCOUNT

A total of 333 species is included in the regular list of birds for Maryland and the District of Columbia. Nineteen additional species that have been recorded are considered to be of hypothetical status only. One species not yet recorded, the Buff-breasted Sandpiper (*Tryngites subruficollis*) undoubtedly does occur as a regular, rare transient near the coast. Specimens have been collected for all species on the regular list with the exception of the following: Greater Shearwater, Cattle Egret, Common Teal, Harlequin Duck, American Oystercatcher, American Avocet, Glaucous Gull, Iceland Gull, Red-cockaded Woodpecker, Brewer's Blackbird, and Lapland Longspur. The regular list includes three introduced species, the Ring-necked Pheasant, Starling, and House Sparrow, and four extinct or extirpated species, the Greater Prairie Chicken (Heath Hen), Eskimo Curlew, Passenger Pigeon, and Carolina Parakeet. Sufficient evidence has been found to indicate that at least 192 species have occurred in Maryland as breeding birds, although apparently 9 of these do not breed in Maryland at the present time.

The information presented under the species headings is based on data from all readily available sources, chiefly for the period beginning about 1860 and ending on December 31, 1955. In addition, data from a few earlier articles are included, and scattered records of particular interest through October 1956 are also listed. Reference to subspecies is purposely omitted in nearly all cases, since most of the information is derived from field observations rather than study of collected specimens. A species is considered to be on the regular accepted list for Maryland and the District of Columbia if any one of three prerequisites is satisfied: (1) A specimen preserved; (2) a satisfactory photograph taken; or (3) three or more reliable sight observations made. If a recorded species does not meet at least one of these standards, it is considered to be of hypothetical status only, and is so indicated by placing the common name of the species in brackets.

Throughout the species account, the authors are responsible for all general statements and for any specific records (except banding records) unless authority is otherwise indicated. Several hundred thousand records from various sources were carefully

screened, and only those believed reliable beyond reasonable doubt are included. Every Maryland and District of Columbia card in the bird-distribution files of the United States Fish and Wildlife Service has been examined. In addition, all national and all Maryland and District of Columbia ornithological periodicals have been covered—as well as publications from other localities that we believed might contain information on Maryland birds. The specimen-card file of the United States Fish and Wildlife Service was checked, as were a large percentage of the Maryland and District of Columbia specimens in the Fish and Wildlife Service and United States National Museum collections.

Unusual occurrence, nesting, or migration records listed in the text are often located by county or the District of Columbia. Records referable to Baltimore County include those made in Baltimore City; it was found to be impractical to separate the records from these two areas, particularly in the case of many of the earlier observations which were often characterized by vague or generalized locality data. Not more than two authorities are listed for any one record, regardless of how many persons were involved. The abbreviation "USNM" indicates that a specimen or clutch of eggs is in the collection of the United States National Museum (including the United States Fish and Wildlife Service collection) in Washington, D. C. Many of the localities referred to in the text are shown on the map of geographical locations (fig. 2).

The relative abundance of each species is usually indicated for breeding, transient, and wintering periods in each biotic section in which it occurs. In a few cases, where wandering nonbreeding birds are found during the breeding season, the relative abundance of a species as a vagrant is also shown. Terms used to indicate relative abundance are defined as follows:

Abundant: Means that a species, considering its habits and conspicuousness, was found in very large numbers.

Common: Means that a species, considering its habits and conspicuousness, was found in large numbers.

Fairly Common: Means that a species, considering its habits and conspicuousness, was found in moderate or fair numbers.

Uncommon: Means that a species, considering its habits and conspicuousness, was found in rather small numbers.

Rare: Means that a species, within its normal range, was recorded in very small numbers.

Casual: Means that a species, slightly beyond its usual range for the season indicated, was recorded very few times.

Accidental: Means that a species, well beyond its usual range, was recorded only once or twice.

These general terms are supplemented in many cases by breeding-population densities and maximum 1-day counts at other seasons.

General and specific calendar dates are used to indicate the nesting seasons for species that breed in Maryland and the District of Columbia. In describing the nesting seasons, the prefixes "early," "mid," and "late," applied to a month, are often used. "Early" refers to the period from the 1st through the 10th day of the month; "mid" is used to designate the period from the 11th through the 20th; and "late" indicates the period from the 21st through the last day of the month. The nesting peak represents the approximate period when three-fourths or more of the individuals of a given species are engaged in nesting activities. Egg dates refer to the extreme dates on which nests with viable eggs (not necessarily full clutches) were found. Nestling dates indicate the extreme dates on which nests containing young birds were recorded. Corresponding dates for downy young are used instead of nestling dates in the case of precocial species. The total number of nest records from which the egg-date and nestling-date extremes are derived is indicated for each species. A single nesting record may be included in both the egg count and the nestling count if observed in both stages. Only nest records reported from Maryland or the District of Columbia are included.

In the descriptions of spring and fall migration, the "normal periods" represent the dates when a species is ordinarily migrating, while extreme dates may be considered to be unusual records. In order to make allowance for yearly variation in migration dates, a limited amount of leeway is usually indicated for the beginning and ending of normal migration periods. For example, a normal period listed as "April 15-25 to May 10-20" means that the migration usually begins some time between April 15 and April 25, and usually ends some time between May 10 and May 20. Migration peaks represent the approximate periods when the greatest numbers of individuals are migrating.

For widespread breeding or transient species that occur in good numbers in several biotic sections, the nesting peak and normal migration periods as given in the text are applicable only to the more centrally located areas, including the Upper Chesapeake, Piedmont, and Ridge and Valley sections and the northern part of the Western Shore section (Prince Georges and Anne Arundel Counties). As a general rule the nesting peaks and normal spring

migration periods as given here may be expected to be as much as 1 week earlier than corresponding dates in the Allegheny Mountain section, and as much as 1 week later than corresponding dates in southeastern Maryland (Eastern Shore section and southern part of Western Shore section). On the other hand, the normal fall migration periods as given in the text for wide-ranging species may be as much as 1 week later than corresponding dates in the Allegheny Mountain section and as much as 1 week earlier than corresponding dates in southeastern Maryland. The difference may vary up to 3 weeks or more for such species as the Black-and-white Warbler and may not vary to any appreciable extent for others such as the Rose-breasted Grosbeak and Cliff Swallow.

The appropriate habitats of most species are briefly described. It should be remembered that whenever an appraisal of the relative abundance of a species within a given biotic section is made, consideration is always given to the required habitat of that species. The common names of plants used in the descriptions of habitats are taken from the eighth edition of Gray's Manual of Botany (Fernald, 1950). The scientific as well as the common names of all plants referred to are listed in Appendix A.

For nesting species, breeding-population densities by habitat are frequently listed. These figures are derived from intensive population studies of breeding territorial males or pairs, using the spot-mapping method (see Audubon Field Notes 4 (2) : 185, 1950). An effort has been made to include all known breeding-population studies of uniform habitats that have been conducted in Maryland and the District of Columbia. The unpublished studies from Prince Georges County were made on, or within 3 miles of, the Patuxent Research Refuge. Population densities based on only 1 pair of birds in a study area (or a fractional part of the territory of a pair, or fractional parts of the territories of 2 or more pairs if their combined total amounts to less than 1.0 territory) have not been included. In the cases of wide-ranging or rare species, it has been necessary to set up study areas of several hundred acres in order to obtain significant density figures. Altogether, breeding-population densities have been obtained for 103 species. In addition, counts or careful estimates of 12 colonial species are listed. It is hoped that these population figures will prove helpful in appraising changes in abundance in years to come.

Maximum nonbreeding counts are also listed for many species. These represent the highest number of individuals recorded in 1 day by 1 party of observers (except in the case of Christmas counts, which include the total number recorded in 1 day by all

parties taking a given count). These counts were all taken either on land or by boat. No attempt was made to include all high counts of a species; instead, selection was made of the highest representative counts for each general area in which the species occurs. It should be pointed out that in most cases these high counts were obtained incidental to other observations. A party or observer that set out at the proper season under favorable weather conditions with the express intent of beating the high count for a given species should have little trouble in exceeding many of the counts listed here. The counts are intended as an indication of relative abundance rather than a series of extraordinary figures. The inclusion of more than one count for most species helps to make the few really exceptional counts stand out from the others.

Most of the Christmas counts have been published in Audubon Field Notes. The present Washington, D. C., Christmas count is the only one of any importance that overlaps into an adjacent State. In several other areas, a circle 15 miles in diameter would have included parts of Pennsylvania, West Virginia, or Virginia, but observers have made a point of restricting their observations to the Maryland portions of the circle. In the case of the recent Washington, D. C., figures, the breakdown by areas has always been published, so it has been possible to eliminate all counts that were made in Virginia and to include only those birds known to have been seen or heard within Maryland or the District of Columbia.

The presentation of banding data for many species is restricted to an analysis, mapping, or listing of recoveries that were made at a distance of 10 miles or more from the points of banding. Only out-of-State records are plotted on the maps, including the recovery localities of birds banded in Maryland and the banding stations of birds recovered in Maryland. Four types of symbols on the maps represent: records of birds banded during the summer; records of birds banded during the fall, winter, and spring; records of birds recovered during the summer; and records of birds recovered during the fall, winter, and spring. Only one symbol of each type is plotted within a State or Province, regardless of the number of records involved. When a symbol represents 2 or more records it is plotted in a central location as indicated by the distribution of the records.

Family GAVIIDAE

COMMON LOON *Gavia immer* (Brünnich)

STATUS.—*Transient*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Allegheny Mountain section; uncommon in the interior of all other sections. *Wintering*: Fairly common in the tidewater areas of the southern portions of the Eastern Shore and Western Shore sections; uncommon in the tidewater areas of the northern portions of the Eastern Shore and Western Shore sections and in the Upper Chesapeake section; casual in the interior (recorded on Dec. 15, 1935, Dec. 16, 1936, Jan. 8, 1937, and Jan. 31, 1937, at Deep Creek Lake in Garrett County—M. G. Brooks). *Summer vagrant*: Casual in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections (recorded between June 11 and June 28 in Worcester, Charles, Anne Arundel, Baltimore, and Kent Counties).

HABITAT.—*Transient*: Tidewaters of the ocean, bays, and estuaries; also inland fresh waters of ponds, lakes, reservoirs, and rivers. *Wintering*: Chiefly salt water of the coastal bays and lower Chesapeake Bay; occurs sparingly on the ocean and on brackish bays and estuaries.

SPRING MIGRATION.—*Normal period*: April 5–15 to May 25–30; peak, April 20 to May 5. *Extreme arrival dates*: April 4, 1941, in Prince Georges County; April 8, 1950, in Garrett County (M. G. Brooks). *Extreme departure dates*: June 2, 1907, in Montgomery County (A. K. Fisher); June 1, 1938, in Baltimore County (H. Brackbill).

FALL MIGRATION.—*Normal period*: September 10–15 to November 20–30; peak, October 10 to November 15. *Extreme arrival dates*: September 8, 1940, in Baltimore County (H. Brackbill); September 8, 1950, in Queen Annes County (Mr. and Mrs. W. L. Henderson). *Extreme departure date*: December 28, 1948, in Baltimore County (H. Kolb).

MAXIMUM COUNTS.—*Spring*: 90 at Point Lookout, St. Marys County, on April 12, 1952 (L. Griffin, J. W. Terborgh, et al.); 47 at Patuxent Refuge on April 25, 1944; 45 at Emmitsburg, Frederick County, on April 30, 1955 (J. W. Richards); 35 on lower Patuxent River on April 13, 1954; 30 in the Conowingo area, Harford and Cecil Counties, on April 23, 1950 (H. F. Kuch); 20 in the South Marsh Island area, Somerset County, on April 28, 1946. *Fall*: 200 in the Ocean City area, Worcester County, on November 2, 1945; 50 on the Chester River and Eastern Bay on

October 31 and again on November 1, 1953 (Mr. and Mrs. W. L. Henderson); 40 on Fishing Bay, Dorchester County, on October 25, 1954; 36 on Mountain Lake, Garrett County, on October 24, 1936 (M. G. Brooks). *Winter* (Christmas counts): 29 in the Ocean City area on December 27, 1950; 18 in southeastern Worcester County on December 22, 1947; 18 in the Solomons Island area, Calvert County, on December 21, 1946.

RED-THROATED LOON *Gavia stellata* (Pontoppidan)

STATUS.—*Transient*: Common in the coastal area of Worcester County; fairly common in the tidewater areas elsewhere in the Eastern Shore and Western Shore sections; uncommon in the tidewater areas of the Upper Chesapeake section; casual in the interior of all sections—recorded in Garrett (Brooks, 1936a), Allegany (Eifrig, 1904), and Montgomery (3 records—A. K. Fisher, R. F. Deed, J. W. Terborgh) Counties. *Wintering*: Common in the coastal area of Worcester County; fairly common elsewhere in the tidewater areas of the Eastern Shore and Western Shore sections; rare in the tidewater areas of the Upper Chesapeake section. *Summer vagrant*: Rare in the coastal area of Worcester County.

HABITAT.—Usually in salt-water areas, including the ocean, coastal bays, and lower Chesapeake Bay; during migration also occurs sparingly on brackish tidewaters and rarely on fresh water.

SPRING MIGRATION.—*Normal period*: March 5–15 to May 15–20; peak, March 20 to April 15. *Extreme arrival dates*: March 2, 1885, in Kent County (H. Brown); March 21, 1937, in Garrett County (M. G. Brooks). *Extreme departure dates*: May 23, 1948, May 21, 1949, and May 21, 1953 (J. M. Cadbury, D. A. Cutler), all in the Ocean City area.

FALL MIGRATION.—*Normal period*: October 25–30 to December 15–20; peak, November 5 to December 10. *Extreme arrival date*: September 24, 1954, in Anne Arundel and Kent Counties (Mrs. W. L. Henderson, Mrs. G. Tappan). *Extreme departure date*: December 19, 1900, in Allegany County (Eifrig, 1904).

MAXIMUM COUNTS.—*Spring*: 50 on March 24, 1947, and 29 on April 6, 1946, in the Ocean City area. *Fall*: 84 in the Ocean City area on November 24, 1946. *Winter* (Christmas counts): 292 in the Ocean City area on December 27, 1953; 35 in the Wicomico River area, Charles and St. Marys Counties, on December 31, 1950; 33 in the Solomons Island area, Calvert County, on December 21, 1946.

Family PODICIPEDIDAE

RED-NECKED GREBE *Podiceps grisegena* (Boddaert)

STATUS.—*Transient*: Rare (uncommon in spring of 1948) in tidewater and inland fresh water areas of all sections. *Wintering*: Rare in the tidewater areas of the Eastern Shore and Western Shore sections.

HABITAT.—Open salt, brackish, and fresh waters, including the ocean, bays, estuaries, lakes, reservoirs, and rivers.

SPRING MIGRATION.—*Normal period*: March 1–10 to April 1–10; peak, March 10 to March 25. *Extreme arrival date*: February 25, 1894, in Baltimore County (F. C. Kirkwood). *Extreme departure date*: May 11, 1929, in Prince Georges County (H. C. Oberholser).

FALL MIGRATION.—*Normal period*: About November 5 to December 5. *Extreme departure dates*: December 26, 1951, in Montgomery County (S. H. Low); December 3, 1938, in Garrett County (M. G. Brooks).

MAXIMUM COUNTS.—*Spring*: 6 in the District of Columbia during March 16–21, 1948 (F. R. Bell, I. R. Barnes); 5 at Ocean City on March 14, 1948 (J. E. Willoughby); 5 at Seneca, Montgomery County, on March 19–21, 1948 (T. W. Donnelly, I. R. Barnes); 3 at Cobb Island, Charles County, on March 20, 1948; 3 at Triadelphia Reservoir, Montgomery County, on March 20 and April 1, 1948 (W. M. Davidson, S. H. Low). *Fall*: 2 at Deep Creek Lake, Garrett County, on November 11, 1937 (M. G. Brooks). *Winter*: 8 at Ocean City on December 27, 1955 (Christmas count); 5 at Sycamore Island, Montgomery County, on January 3, 1953 (E. J. Stivers).

HORNED GREBE *Podiceps auritus* (Linnaeus)

STATUS.—*Transient*: Abundant in the tidewater areas of Eastern Bay and the Choptank River; common elsewhere in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the interior of all sections. *Wintering*: Common in the tidewater areas of the Eastern Shore and Western Shore sections; uncommon in the tidewater areas of the Upper Chesapeake section; casual elsewhere—recorded at Lake Ashburton, Baltimore, in 1938, 1940, and 1942 (H. Brackbill), at New Market, Carroll County, in 1881 (H. H. Hopkins), on Triadelphia Reservoir on December 24, 1955, and on Deep Creek Lake in Garrett County on January 3, 1954 (M. G. Brooks). *Summer vagrant*: Casual in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections—recorded

in Worcester, Somerset, Anne Arundel (A. E. Conway), Harford (T. A. Imhof), and Cecil (M. B. Meanley) Counties.

HABITAT.—Salt, brackish, and fresh waters, including the ocean, bays, estuaries, lakes, ponds, and reservoirs. In winter, most numerous on the ocean, coastal bays, and central and lower Chesapeake Bay.

SPRING MIGRATION.—*Normal period:* March 5–15 to May 10–15; peak, March 25 to April 25. *Extreme arrival date:* March 4, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan). *Extreme departure dates:* June 2, 1950, in Anne Arundel County (Mrs. W. L. Henderson); May 28, 1927, in the District of Columbia (W. H. Ball); May 23, 1952, in Prince Georges County.

FALL MIGRATION.—*Normal period:* October 10–20 to December 1–10; peak, October 25 to November 20. *Extreme arrival date:* September 21, 1954, in Anne Arundel County (Mrs. W. L. Henderson, et al.). *Extreme departure dates:* December 29, 1949 (H. Kolb), and December 14, 1940 (H. Brackbill), in Baltimore County; December 3, 1935, in Garrett County (M. G. Brooks).

MAXIMUM COUNTS.—*Spring:* 1,000 at Point Lookout, St. Marys County, on April 13, 1955 (P. G. DuMont, E. Hall); 210 at Parson Island, Queen Annes County, on April 1, 1948; 123 in the South River area, Anne Arundel County, on April 9, 1954; 122 on lower Patuxent River on April 13, 1954; 17 at Lake Ashburton, Baltimore County, on April 12, 1940 (H. Brackbill). *Fall:* 830 in Charles and St. Marys Counties on November 26, 1955 (P. G. DuMont, E. Hall); 113 on the Patuxent River on November 22, 1955; 50 in the District of Columbia on October 30, 1930 (W. L. McAtee); 30 at Mountain Lake, Garrett County, on November 2, 1951 (H. E. Slater). *Winter:* 1,737 at St. Michaels, Talbot County, on December 29, 1953 (Christmas count); 371 at Ocean City on December 27, 1954 (Christmas count); 250 at Point Lookout, St. Marys County, on January 31, 1954 (J. W. Terborgh); 229 in the Annapolis area on January 2, 1955 (Christmas count).

PIED-BILLED GREBE *Podilymbus podiceps* (Linnaeus)

STATUS.—*Breeding:* Uncommon in the tidewater areas of the Eastern Shore and Western Shore sections; rare in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. Eggs or small young have been recorded in Anne Arundel and St. Marys Counties (Court, 1936), in Baltimore County (C. M. Buchanan), and in Prince Georges and Worcester Counties. *Transient:* Common in tidewater and inland-water areas of all sections. *Wintering:* Uncommon in the tidewater

areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare or casual on inland areas of all sections (no definite winter records for the Ridge and Valley section). *Summer vagrant*: Rare in all sections.

HABITAT.—Usually on ponds or streams that are fringed with emergent marsh vegetation; occasional in open bays and estuaries.

NESTING SEASON.—Nests with eggs were found in Anne Arundel County on June 3, 1932 (Court, 1936), and in Prince Georges County on June 4, 1954. Downy young were observed in Worcester County on July 9, 1948, and August 11, 1955; in Baltimore County (C. M. Buchanan) on June 15, 1951; and in Prince Georges County on July 10, 1956 (C. G. Webster).

SPRING MIGRATION.—Normal period: February 25–March 5 to May 1–10; peak, March 20 to April 20. *Extreme arrival dates*: February 14, 1949, in Prince Georges County; February 22, 1922, in the District of Columbia (Mrs. C. A. Aspinwall). *Extreme departure dates*: May 25, 1950, in Baltimore County (P. Heaps); May 15, 1920, in Montgomery County (Mrs. C. A. Aspinwall).

FALL MIGRATION.—Normal period: August 10–20 to December 1–10; peak, September 10 to November 10. *Extreme arrival dates*: July 15, 1899 (E. A. Preble), and July 21, 1929 (W. H. Ball), in District of Columbia; July 21, 1944, in Prince Georges County. *Extreme departure dates*: December 17, 1953, in Prince Georges County; December 15, 1935, in Garrett County (M. G. Brooks).

MAXIMUM COUNTS.—*Spring*: 82 in the Port Tobacco area, Charles County, on March 7, 1954 (A. R. Stickley, Jr.); 29 at Beltsville, Prince Georges County, on March 28, 1954 (L. W. Oring, S. Karlin); 20+ in the District of Columbia on April 5, 1922 (M. J. Pellew). *Summer vagrant*: 8 in the District of Columbia during early June 1922 (L. P. Callaghan). *Fall*: 80 in the Newport Bay area, Worcester County, on November 1, 1951; 57 on Bush River, Harford County, on October 3, 1948; 34 in the District of Columbia on October 9, 1929 (W. H. Ball); 33 in the Elliott Island area, Dorchester County, on October 2, 1948; 30 on Northeast River, Cecil County, on September 30, 1952 (Mrs. W. L. Henderson); 26 on Mountain Lake, Garrett County, on November 3, 1951 (H. E. Slater). *Winter*: 79 in the Annapolis area on January 2, 1955 (Christmas count); 46 at Port Tobacco, Charles County, on January 27, 1953 (A. R. Stickley, Jr.); 43 in Ocean City area on December 21, 1952 (Christmas count); 33 in Wicomico River area, Charles and St. Marys Counties, on December 28, 1952 (Christmas count); 26 in the Susquehanna Flats area,

Harford and Cecil Counties, on January 2, 1950 (Christmas count).

BANDING.—One banded in Prince Georges County on September 8, 1943, was found dead in central Minnesota (Kandiyohi County) on November 21, 1944.

Family PROCELLARIIDAE

CORY'S SHEARWATER *Puffinus diomedea* (Scopoli)

STATUS.—Fairly common summer visitor along the coast. This species was recorded between 2 and 10 miles offshore from Ocean City as follows: 29 observed on August 8, 1947; 3 on August 21, 1948 (S. H. Low, P. F. Springer); 65 on August 24, 1946; 2 on September 9, 1950. On June 22, 1956, approximately 80 were observed between 15 and 25 miles offshore from Assateague Island.

GREATER SHEARWATER *Puffinus gravis* (O'Reilly)

STATUS.—Casual visitor along the coast. Seven were observed a short distance offshore from Assateague Island on May 17, 1947. Five or 6 were repeatedly seen a short distance offshore from Ocean City during the period May 9–13, 1949 (E. G. Davis, R. J. Beaton, E. G. Baldwin), and 2 were seen in this same area on May 14, 1955.

[AUDUBON'S SHEARWATER] *Puffinus lherminieri* Lesson

STATUS.—Hypothetical. After the great storm of August 1842, a shearwater, doubtfully referred to as this species, was captured in the District of Columbia (Coues and Prentiss, 1861). Coues (1864) later referred to this record and stated that it "has since been definitely ascertained to be this species." The specimen cannot now be found.

LEACH'S PETREL *Oceanodroma leucorhoa* (Vieillot)

STATUS.—Rare visitor along the coast and in tidewater areas elsewhere in the Eastern Shore and Western Shore sections. On June 11, 1894 (not 1895 as in Kirkwood, 1895), 2 were seen 3 miles out from Ocean City; and 2 others were noted 8 miles out on August 9, 1901 (F. C. Kirkwood). Specimens (USNM) have been taken in the District of Columbia as follows: 2 in August 1842; 2 about 1859; 1 on June 7, 1891 (W. Bayley); 1 on August 29 and 1 on August 30, 1893 (W. Palmer); 1 (out of 5 seen) on October 4, 1930 (Ball, 1931a); and 1 on August 24, 1933 (Lincoln, 1934). Another specimen was obtained at Royal Oak, Talbot County, on October 17, 1954 (R. L. Kleen). On August 25,

1933, 25 were seen on the Potomac River between Haines Point in the District of Columbia and Mount Vernon, Virginia (H. G. Deignan).

HARCOURT'S PETREL *Oceanodroma castro* (Harcourt)

STATUS.—Accidental visitor. Two were collected (USNM) in the District of Columbia, 1 on August 28 and 1 on August 29, 1893, after a hurricane had passed up the Atlantic coast (Palmer, 1897b).

WILSON'S PETREL *Oceanites oceanicus* (Kuhl)

STATUS.—*Summer visitor*: Common offshore along the coast; rare in the coastal bays and other tidewater areas of the Eastern Shore and Western Shore sections. Records on inland bays and estuaries are as follows: One taken near Washington, D. C., in August 1842 (McAtee, 1918); 1 collected in 1859 (USNM—catalogued on July 20, 1859) on the Potomac River (Wetmore, 1925); 1 collected (USNM) at Marshall Hall, Prince Georges County, on June 27, 1914 (Swales, 1920); 1 seen near Chesapeake Beach, Calvert County, on July 31, 1915 (A. K. Fisher) and 1 collected there (USNM) on June 21, 1924 (Wetmore, 1925); 1 collected at Kenwood Beach in Calvert County on July 24, 1935 (Kolb and Bond, 1943); 9 seen (1 collected—USNM) on Chincoteague Bay, Worcester County, on July 3, 1945 (Stewart and Robbins, 1947b).

HABITAT.—Preferably the pelagic zone of the ocean, 2 or more miles offshore.

EXTREME DATES OF OCCURRENCE.—June 21, 1924, in Calvert County (Wetmore, 1925) and September 9, 1950, off Ocean City.

MAXIMUM COUNTS.—162 on August 8, 1947, off Ocean City; 50 on August 21, 1948, off Ocean City (P. F. Springer); 30 on September 9, 1950, off Ocean City. On June 22, 1956, approximately 750 were observed between 15 and 25 miles offshore from Assateague Island, Maryland.

Family PELECANIDAE

WHITE PELICAN *Pelecanus erythrorhynchos* Gmelin

STATUS.—Accidental visitor. A male was shot in Garrett County near Oakland on April 31, 1887, by a 14-year-old boy; the head was mounted—Anon., Forest and Stream 28 (16) : 345, May 12, 1887. One was recorded as having been shot near the mouth of the Chester River and another in Upper Chesapeake Bay—dates not given (Burns, 1932). One bird, recorded by Cooke (1929) as having been collected in the District of Columbia in 1863 by C. Drexler, was actually taken by Drexler near Alexan-

dria, Virginia, in April 1864; this specimen was correctly catalogued (USNM) under the number 33701, but was later mistakenly reentered under number 41793 as having been collected in the District of Columbia in 1863.

BROWN PELICAN *Pelecanus occidentalis* Linnaeus

STATUS.—Casual visitor in the tidewater areas of the Eastern Shore and Western Shore sections. A specimen in the old collection of the Maryland Academy of Sciences was reported to have been taken on the lower Potomac River (Kirkwood, 1895). A mounted bird that had been shot on Chincoteague Bay on April 9, 1906, was examined in Worcester County (F. C. Kirkwood). Another mounted specimen owned by Mr. Ethan A. Carey of Berlin, Maryland, was reported to have been shot about 1922 near the Isle of Wight Coast Guard Station, north of Ocean City; and Mr. Carey claimed that he had seen single birds on 2 occasions since that time (Stewart and Robbins, 1947a). A flock of 4 was seen on Assateague Island, 6 miles south of Ocean City, on May 22, 1935 (Cottam and Uhler, 1935). One was seen at Solomons Island in Calvert County during the period September 28 to November 1, 1935, by Dr. R. V. Truitt (Hampe and Kolb, 1947) and another was seen there by the same observer on October 10, 1936. One was seen on the Potomac River in Prince Georges County, 5 miles south of Alexandria, Virginia, on June 13, 1953 (C. Cottam), and 1 at St. Michaels, Talbot County, on September 2, 1956 (R. L. Kleen, et al.).

Family SULIDAE

GANNET *Morus bassanus* (Linnaeus)

STATUS.—*Transient*: Fairly common in the coastal area of Worcester County; uncommon in the lower part of Chesapeake Bay (St. Marys, Calvert, Somerset, and Dorchester Counties); rare in the upper part of Chesapeake Bay—records for Anne Arundel (C. Symington), Kent (A. P. Sharp), and Queen Annes (A. J. Duvall) Counties. *Wintering*: Uncommon in the coastal area of Worcester County and in the lower part of Chesapeake Bay.

HABITAT.—Littoral and pelagic zones of the ocean and the deeper salt water portions of Chesapeake Bay.

PERIOD OF OCCURRENCE.—*Extreme dates*: September 16, 1901, at Ocean City (E. F. Armstrong) and May 20, 1950, near Ocean City. *Approximate periods of greatest abundance*: October 25 to December 5, and March 25 to May 5.

MAXIMUM COUNTS.—*Spring*: 80 during the period May 1-3, 1953, off Assateague Island (R. Strosnider); 35 off Point Lookout in St. Marys County on April 3, 1954 (J. W. Terborgh, et al.). *Fall*: 100+ on December 5, 1915, on Chesapeake Bay below the Patuxent River (C. R. Shoemaker); 75 on November 4, 1951, at Ocean City (W. B. and D. C. Grautoff). *Winter*: 9 on February 20, 1949, at Ocean City; 5 at Solomons Island, Calvert County, on December 21, 1946.

Family PHALACROCORACIDAE

[GREAT CORMORANT] *Phalacrocorax carbo* (Linnaeus)

STATUS.—Hypothetical. Sight records of single birds believed to be this species were reported from the Ocean City inlet on the following dates: December 13 and December 27, 1950 (Buckalew, 1951a); December 31, 1952 (S. Fisher, L. W. Oring, J. K. Wright); February 26, 1950. A specimen collected on June 5, 1859, in the District of Columbia (USNM) was said to have been of this species, but in view of the lateness of the date and the fact that the specimen cannot now be found, the record must remain hypothetical.

DOUBLE-CRESTED CORMORANT *Phalacrocorax auritus* (Lesson)

STATUS.—*Transient*: Common in the coastal area of Worcester County; fairly common in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; uncommon in the Allegheny Mountain section and in the tidewater areas of the Upper Chesapeake section; rare elsewhere in the interior of all sections. *Wintering and summer vagrant*: Uncommon in the tidewater areas of the Eastern Shore and Western Shore sections. One adult in breeding plumage was observed in the Pocomoke River swamp on June 16, 1946.

HABITAT.—Mostly on open salt water, including the ocean, bays, and larger estuaries; occasional on brackish and fresh water.

SPRING MIGRATION.—*Normal period*: February 25–March 5 to May 20–30; peak, March 25 to May 15. *Extreme arrival date*: February 8, 1953, in Charles County (M. C. Crone, A. R. Stickley, Jr.). *Extreme departure dates*: June 13, 1955, in Prince Georges County (F. M. Uhler); June 5, 1948, in Calvert County; June 3, 1953, in Queen Annes County (Mrs. G. Tappan, Mrs. W. L. Henderson); June 2, 1927, in the District of Columbia (W. W. Rubey).

FALL MIGRATION.—*Normal period*: August 5–15 to November 15–25; peak, September 10 to November 1. *Extreme arrival dates*: August 4, 1945, in Worcester County; August 4, 1946, in

Calvert County (F. M. Uhler); August 4, 1952, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 4,600 in the Ocean City area on May 11, 1952 (D. A. Cutler); 4,000 at Gibson Island, Anne Arundel County, on May 5, 1956 (Mrs. W. L. Henderson); 450 at Point Lookout, St. Marys County, on April 6, 1953; 388 on Chesapeake Bay, Calvert County, on April 20, 1954; 300 in the South Marsh Island area, Somerset County, on April 28, 1946. *Fall*: 1,200 in the Ocean City area on October 25, 1949; 42 in the mouth of the Chester River, Queen Annes County, on September 13, 1952 (Mr. and Mrs. W. L. Henderson). *Winter*: 29 at Cobb Island, Charles County, on January 8, 1953 (A. R. Stickley, Jr., M. C. Crone); 16 in the Ocean City area on December 27, 1955 (Christmas count).

BANDING.—Twelve birds, recovered in tidewater Maryland during spring (April 21–May 11) and fall (September 26–November 18), had been banded on the breeding grounds as young birds during the period June 26–August 4 in the following areas: 3 in central Ontario (southern Algoma District); 7 on the coast of Maine (Lincoln County); and 2 in southeastern Quebec (Kamouraska County).

Family ANHINGIDAE

ANHINGA *Anhinga anhinga* (Linnaeus)

STATUS.—Accidental visitor. A specimen in the old collection of the Maryland Academy of Sciences was reported to have come from the Pocomoke River (Kirkwood, 1895). Another specimen, formerly in the old Peale collection, was reported to have been shot prior to 1805 at Elkridge Landing on the Patapsco River (Burns, 1932).

Family ARDEIDAE

GREAT BLUE HERON *Ardea herodias* Linnaeus

STATUS.—*Breeding*: Fairly common locally in the Eastern Shore and Western Shore sections (nesting colonies have been located in Worcester, Wicomico, Talbot, Queen Annes, St. Marys, Calvert, Charles, Prince Georges, and Anne Arundel Counties); uncommon and local in the Upper Chesapeake section (one large colony located in Cecil County). See figure 3. *Transient*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the interior of all sections. *Wintering*: Uncommon in the tidewater areas; rare

FIGURE 3.—Breeding colonies of Great Blue Heron and Black-crowned Night Heron.

in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: Fairly common in all sections.

HABITAT.—*Breeding*: Heavily wooded flood-plain or swamp forests along streams; also in dense patches of scrubby, coniferous and deciduous trees that are located adjacent to salt marshes. *Transient and wintering*: Various water margin types along ponds, lakes, streams, bays, and estuaries.

NESTING SEASON.—Mid-March to mid-July. *Extreme nesting dates* (21 records): March 20, 1949, in Anne Arundel County (Mrs. W. L. Hunt) and July 20, 1941, in Charles County (F. M. Uhler). Nestlings were banded in Cecil County as early as May 21, 1939 (F. C. Schmid).

APPROXIMATE MIGRATION PERIODS.—*Spring*: February 25 to May 15; peak, March 15 to April 25. *Fall*: July 15 to December 15; peak, August 1 to November 1.

MAXIMUM BREEDING POPULATIONS.—300 nests in the colony near Earleville, Cecil County in 1943 (R. O. Bender); 100 occupied nests in a colony in the Pocomoke Swamp in Wicomico County in 1948.

MAXIMUM COUNTS.—*Spring*: 60 at Allens Fresh, Charles County, on March 29, 1953 (J. W. Terborgh). *Fall*: 82 along the

Potomac River in Prince Georges and Charles Counties on September 19, 1927 (H. H. T. Jackson). *Winter* (Christmas counts): 69 in the Ocean City area on December 27, 1954; 60 near Port Tobacco, Charles County, on December 27, 1941; 54 in the Annapolis area on January 2, 1955.

BANDING.—Out of 245 nestlings banded in Cecil County in late May and early June of 1938, 1939, 1940, and 1941 by F. C. Schmid and J. A. Gillespie, 18 were subsequently recovered away from the nesting colony. Fifteen of these were killed during the first fall and winter and show the same pattern of northward wandering as is typical of other species of herons. As early as July 9 a young bird was found dead on the coast of Long Island. Between mid-July and mid-October another was taken in southern New York, 1 in Connecticut, 3 in New Jersey, and 1 along the Big Gunpowder River in Carroll County, Maryland. It is interesting that birds recovered during their first winter are scattered from Maryland (Carroll and Harford Counties) and New Jersey (2 records) to northern Florida and northern Cuba (Matanzas). Adult birds as well as young ones take long migratory flights as shown by recoveries of 1½ to 6-year-old birds in central Florida and the Bahamas (Man-of-War Cay), respectively.

GREEN HERON *Butorides virescens* (Linnaeus)

STATUS.—*Breeding and transient:* Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections (during the breeding season, scattered pairs and occasional colonies comprising from 6 to 20 pairs occur); fairly common in the interior of all sections. *Wintering:* Casual in the Eastern Shore, Western Shore, and Upper Chesapeake sections—recorded in Worcester (1953–54), St. Marys (1940–41), Anne Arundel (1952–53, 1954–55), and Baltimore (1952–53, 1953–54) Counties.

HABITAT.—*Breeding:* In tidewater areas that contain a combination of wooded or brush habitats and tidal marshes; also in the interior along wooded stream bottoms and along the wooded margins of lakes and ponds. *Transient:* Various water-margin or shallow-water habitats.

NESTING SEASON.—Mid-April to early August (peak, mid-May to late June). *Extreme egg dates* (82 nests): April 21, 1948, in Worcester County and July 8, 1891 (H. B. Stabler) in Montgomery County. *Extreme nestling dates* (13 nests): May 30, 1891, in Kent County (Fisher, 1892) and August 3, 1954, in Dorchester County.

PERIOD OF REGULAR OCCURRENCE.—*Normal period*: April 1–10 to November 1–10. *Period of greatest abundance*: April 25 to September 10. *Extreme dates of spring arrival*: March 16, 1946, in Harford County (S. Mason, Jr.) ; March 23, 1947, in Dorchester County; March 28, 1948, in the District of Columbia; March 30, 1946, in St. Marys County. *Extreme fall departure date*: November 20, 1948, in Dorchester County (M. B. Meanley).

MAXIMUM COUNTS.—27 in the Ocean City area on May 11, 1952; 21 in the District of Columbia on May 11, 1917 (H. C. Oberholser) ; 18 at Port Tobacco, Charles County, on May 6, 1938 (C. Cottam, A. L. Nelson).

LITTLE BLUE HERON *Florida caerulea* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the coastal area of Worcester County (3 colonies located) ; rare and local elsewhere in the Eastern Shore and Western Shore sections—nesting in Dorchester County (P. J. Van Huizen) and in St. Marys County (E. J. Court) ; probably nesting along the Pocomoke River, and in the vicinity of Port Tobacco, Charles County, since repeated observations of adult birds have been made in these two areas during April, May, and June in recent years. Adults have also been recorded during the breeding season at Cobb Island and Zekiah Swamp in Charles County and at the Marshall Dierssen Refuge (J. W. Terborgh, et al.) in Montgomery County. *Postbreeding transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section. *Wintering*: Rare in the tidewater areas of the Eastern Shore and Western Shore sections.

HABITAT.—*Breeding*: Usually in dense patches of scrubby or young trees adjacent to tidal marshes. *Transient*: Nearly all types of water-margin or shallow-water habitats.

NESTING SEASON.—Mid-April to mid-July. *Extreme nesting dates* (5 records) : June 6, 1953, and July 15, 1946.

SPRING MIGRATION.—*Extreme arrival dates*: March 26, 1950, in Worcester County (Mr. and Mrs. J. Enoch Johnson) ; March 29, 1948, in Calvert County (F. M. Uhler) ; April 1, 1948, in Wicomico County. *Spring vagrant*: One on June 1, 1950, at Patuxent Refuge in Prince Georges County (K. Laub) ; and another in Howard County on May 5, 1956.

POSTBREEDING MOVEMENT.—*Normal period*: July 1–10 to October 5–15; peak, July 25 to September 10. *Extreme arrival dates*: June 20, 1929, in the District of Columbia (W. H. Ball) ; June 24,

1949, in Prince Georges County. *Extreme departure dates*: November 23, 1946, in Dorchester County; November 5, 1951, in Queen Annes County (Mrs. W. L. Henderson).

MAXIMUM BREEDING POPULATIONS.—125 pairs in the colony on Mills Island, Worcester County, on July 6, 1946.

MAXIMUM COUNTS.—*Postbreeding*: 650 along the Potomac River in Prince Georges County and the District of Columbia on August 28, 1930 (H. C. Oberholser); 90 in the District of Columbia on August 8, 1928 (W. H. Ball); 75 on Assateague Island, Worcester County, on August 14, 1948; 60 on the Gunpowder River marshes on August 5, 1902 (W. B. Evans); 52 in Dorchester County on August 31, 1946. *Wintering*: 2 in the District of Columbia on December 18, 1948 (F. C. Cross); 1 in the Ocean City area on February 20, 1949.

CATTLE EGRET *Bubulcus ibis* Linnaeus

STATUS.—Casual visitor. One was recorded on April 25, 1953, at Berlin, Worcester County. Another was seen near Bucktown, Dorchester County, on May 1 and 8, 1955 (E. Rogers, K. Stecher).

COMMON EGRET *Casmerodius albus* (Linnaeus)

STATUS.—*Breeding*: Fairly common locally in the coastal area of Worcester County and in the Pocomoke River swamp; rare and local elsewhere in the Eastern Shore and Western Shore sections—found nesting near Marbury in Charles County in 1931 (Court, 1936) and on Bodkin Island in Queen Annes County in 1954 (V. D. Stotts). *Postbreeding transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Rare in the tidewater areas of the Eastern Shore and Western Shore sections; casual in the Upper Chesapeake section—1 remained during the winter of 1952–53 near Chase in Baltimore County (O. W. Crowder). *Spring vagrant*: Casual in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections.

HABITAT.—*Breeding*: Near streams in heavily wooded swamp forests; also in dense patches of scrubby coniferous and deciduous trees adjacent to salt marshes. *Transient*: Water-margin habitats along ponds, lakes, and streams, and in marshes.

NESTING SEASON.—Early April to early July. *Extreme nesting dates* (9 records): April 1, 1950, in Wicomico County and July 6, 1946, in Worcester County.

POSTBREEDING MOVEMENT.—*Normal period*: June 10–20 to November 5–15; peak, July 15 to September 10. *Extreme arrival*

dates: May 27, 1926, in the District of Columbia (Mrs. T. M. Knappen); May 30, 1891, in the District of Columbia (W. Palmer); June 1, 1950, in Prince Georges County. *Extreme departure date:* November 19, 1948, in Dorchester County.

MAXIMUM COUNTS.—*Transient:* 1,000+ at Fort Foote, Prince Georges County, on August 26, 1951 (J. M. Abbott); 120 in the Elliott Island area, Dorchester County, on October 2, 1948; 100+ in the District of Columbia on September 9, 1930 (W. L. McAtee); 87 in the Chincoteague Bay area on August 7, 1948; 85 near Nottingham along the Patuxent River on August 21, 1947; 75 near Baltimore on August 26, 1945 (H. Brackbill); 71 at Sandy Point, Anne Arundel County, on July 17, 1948 (J. E. Willoughby). *Winter:* 8 in Dorchester County on December 22, 1952 (Christmas count).

SNOWY EGRET *Leucophoyx thula* (Molina)

STATUS.—*Breeding:* Fairly common in the coastal area of Worcester County and on Smith Island in Somerset County; possibly breeds elsewhere near tidewater in Somerset, Wicomico, and southern Dorchester Counties, since numerous observations of adults have been recorded in this area during the breeding season in recent years. *Postbreeding transient:* Fairly common in the tidewater areas of the Eastern Shore and Western Shore sections; uncommon in the tidewater areas of the Upper Chesapeake section; rare in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Spring vagrant:* Casual in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—*Breeding:* Dense patches of scrubby or second-growth coniferous and deciduous trees adjacent to extensive areas of salt marsh. *Transient:* Usually in tidewater areas along ponds and streams, and in marshes.

NESTING SEASON.—Late April to mid-July. *Extreme nesting dates* (5 records): May 1, 1946, and July 15, 1946, in Worcester County.

SPRING MIGRATION.—*Extreme arrival dates:* March 31, 1948, in Dorchester County; April 2, 1955 (A. S. Kaestner), in Anne Arundel County. *Spring vagrant records:* 1 at Middle River, Baltimore County, on May 2, 1950 (E. Willis); 1 at Patuxent Refuge, Prince Georges County, on May 16, 1945.

POSTBREEDING MOVEMENT.—*Normal period:* July 10–20 to October 25–November 5; peak, August 1 to October 5. *Extreme arrival date:* July 8, 1947, in Prince Georges County. *Extreme*

departure date: November 6, 1948, at the mouth of the Patapsco River (E. La Fleur).

MAXIMUM BREEDING POPULATIONS.—50 pairs at the Mills Island colony in Worcester County on July 6, 1946, and 100 pairs on June 25, 1956.

MAXIMUM COUNTS.—*Postbreeding*: 175 at Mills Island, Worcester County, on July 15, 1946; 104 at West Ocean City on September 7, 1955 (Mr. and Mrs. I. C. Hoover); 101 on Assateague Island, Worcester County, on September 5, 1948; 25 in the Elliott Island marsh, Dorchester County, on October 2, 1948; 20 at Sandy Point, Anne Arundel County, on September 1, 1947 (J. W. Taylor, Jr.); 20 at Fairhaven, Anne Arundel County, on August 25, 1948 (D. M. Thatcher).

BANDING.—One banded as a nestling on July 13, 1947, in Worcester County was trapped and released on August 16, 1947, on Chincoteague National Wildlife Refuge on the coast of Virginia (11 miles from the point of banding).

LOUISIANA HERON *Hydranassa tricolor* (Müller)

STATUS.—*Breeding*: Uncommon and local in the Chincoteague Bay area of Worcester County—from 3 to 5 pairs in a mixed heron colony on Mills Island in 1946 and 1947, at least 8 pairs in 1953, and about 25 pairs in 1956. *Postbreeding transient*: Uncommon in the coastal area of Worcester County; rare in the tidewater areas elsewhere in the Eastern Shore and Western Shore sections. *Spring vagrant*: Casual in the Western Shore section—4 observed at Point Lookout, St. Marys County, on April 12, 1952 (J. W. Terborgh).

HABITAT.—*Breeding*: Patches of scrubby or second-growth trees adjacent to salt marshes. *Transient*: Marginal habitats in salt marshes.

NESTING SEASON.—Late April to mid-July. *Extreme nesting dates* (4 records): June 6, 1953, and July 13, 1947.

POSTBREEDING MOVEMENT.—*Normal period*: July 20–25 to September 10–20; peak, July 25 to September 1. *Extreme arrival date*: July 17, 1927, in the District of Columbia (W. H. Ball). *Extreme departure date*: September 27, 1949, at Ocean City.

MAXIMUM COUNTS.—*Postbreeding*: 10 at Sandy Point, Anne Arundel County, on July 31, 1948 (E. Arnold); 5 at Blackwater Refuge, Dorchester County, on August 23, 1956 (P. F. Springer); 3 at Ocean City on July 24, 1949.

BLACK-CROWNED NIGHT HERON *Nycticorax nycticorax* (Linnaeus)

STATUS.—*Breeding*: Fairly common locally in the Eastern Shore and Western Shore sections—colonies have been located in Worcester, Somerset, Dorchester, Baltimore (F. C. Kirkwood), Charles (E. J. Court), Prince Georges (E. J. Court), and Anne Arundel (Le Compte, 1937) Counties and the District of Columbia; uncommon and local in the Piedmont section—colonies located along the Susquehanna River (O. W. Crowder) and in the District of Columbia (numerous observers). See figure 3. *Transient*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the interior of all sections. *Wintering*: Uncommon within the Eastern Shore section in the tidal marshes along Chesapeake Bay; rare elsewhere in the Eastern Shore section and in the Western Shore, Upper Chesapeake, and Piedmont sections; casual in the Ridge and Valley section—1 collected near Hagerstown on January 31, 1923 (R. Trovinger).

HABITAT.—*Breeding*: Usually in dense stands of young or scrubby trees (occasionally in stands of mature trees) near tide-water or near inland ponds and streams. *Transient*: Various types of water-margin or shallow-water habitats.

NESTING SEASON.—Early February to early August (nesting peak, late March to mid-June). *Extreme egg dates* (6 records): February 3, 1950, in the District of Columbia (Davis, 1945) and May 19, 1899, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (6 records): February 22, 1909, in the District of Columbia (A. K. Fisher) and July 15, 1946, in Worcester County.

MIGRATION DATES.—*Extreme spring arrival dates*: March 25, 1945, in Prince Georges County; March 27, 1952, in Carroll County. *Extreme fall departure date*: October 17, 1894, in Baltimore County (A. Resler).

BREEDING POPULATIONS.—One hundred pairs at Linthicum Heights, Anne Arundel County, on May 17, 1936 (M. B. Meanley); 50 pairs at Mills Island, Worcester County, on July 6, 1946, and 75 pairs there on June 25, 1956.

MAXIMUM COUNTS.—*Spring*: 80 from the District of Columbia to Great Falls on May 12, 1913 (Mr. and Mrs. V. Bailey); 80 in the Elliott Island marsh, Dorchester County, on April 30, 1949; 75 in the Ocean City area on May 11, 1952 (D. A. Cutler). *Fall*: 64 in the Elliott Island marsh on September 26, 1949. *Winter*: 9 in the Elliott Island marsh on December 28, 1955 (Christmas count).

BANDING.—Five birds recovered in the Eastern Shore section

had been banded as nestlings in coastal localities from Cape Cod, Massachusetts, to Delaware. A Cape Cod bird was found wintering at Salisbury, while the others were all taken during the fall migration period. One of these was recovered as an adult on August 12, 1928, on the ocean $\frac{1}{2}$ mile off Ocean City.

YELLOW-CROWNED NIGHT HERON *Nyctanassa violacea* (Linnaeus)

STATUS.—*Breeding*: Rare and local in the Eastern Shore, Western Shore, and Piedmont sections—a small colony, comprising 7 nests in 1939, 5 nests in 1940, 2 nests in 1946 (Lawrence, 1946), and 3 nests in 1953 (L. Kilham), is located in Montgomery County near the junction of Seneca Creek and the Potomac River; in 1946 and 1947, at least one pair was present in the large mixed heron colony on Mills Island in Chincoteague Bay; an occupied nest was found in the District of Columbia in 1950 and 1951 (Criswell, 1951), and in 1952 (J. Criswell). It is probable that during recent years a small colony has existed in the vicinity of West Ocean City in Worcester County, since from 2 to 5 adults have been observed in this area repeatedly during the breeding season. Scattered observations of adults have been made during the breeding season on Assateague Island, along the Pocomoke River, near Chance in Somerset County, near St. Marys City in St. Marys County, along the Patuxent River in Prince Georges County, in Zekiah Swamp in Charles County (F. C. Cross), and near Emmitsburg (J. W. Richards) in Frederick County. *Post-breeding transient*: Uncommon in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the interior of all sections.

HABITAT.—*Breeding*: Flood-plain or swamp forests near streams; also in dense stands of young or scrubby trees adjacent to salt marshes. *Transient*: Various water-margin or shallow-water types.

NESTING SEASON.—Mid-April to mid-July (probably). In 1953, a newly completed nest was found in Montgomery County on April 18, and on April 25 an adult was observed on the nest (L. Kilham). An occupied nest in the District of Columbia was studied during the period May 6 to June 30, 1950 (Criswell, 1951). In 1939 a Montgomery County nest contained eggs on May 15 (W. H. Lawrence) and young on June 10 (E. Stoehr); in 1953, another nest at this location contained eggs on May 20, and young on June 6 (J. W. Terborgh).

PERIOD OF OCCURRENCE.—*Probable normal period*: April 10–20 to October 10–20; period of greatest abundance, April 25 to Sep-

tember 10. *Extreme occurrence dates*: April 18, 1953, in Montgomery County (L. Kilham) and October 18, 1947, in Baltimore County (R. M. Bowen).

MAXIMUM COUNTS (nonbreeding).—7 in the Ocean City area on August 22, 1948 (S. H. Low, P. F. Springer); 4 in the Ocean City area on September 4, 1948.

LEAST BITTERN *Ixobrychus exilis* (Gmelin)

STATUS.—*Breeding*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; during the breeding season, occasional birds have been observed in the interior in all sections—however, definite evidence of breeding is lacking from these inland areas except that 2 nests were found on Patuxent Refuge, Prince Georges County, in 1955 (F. M. Uhler). See figure 4. *Transient*: Common in the tidewater areas

FIGURE 4.—Breeding ranges of Least Bittern, Black Duck, Osprey, and Long-billed Marsh Wren.

of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the interior in all sections. *Wintering*: Casual in the tidewater areas—1 in the District of Columbia on January 8, 1880 (P. L. Jouy); 1 on Carroll Island in Baltimore County on January 5, 1952 (T. A. Imhof).

HABITAT.—*Breeding*: Especially common in narrow-leaved cat-

tail marshes; fairly common in other coarse marsh types, including reed and salt reed-grass; also of regular occurrence in weak-stemmed brackish marsh types, such as Olney three-square, when scattered shrubs are present; occurs sparingly in the salt marshes in needlerush and in salt-meadow grass when scattered shrubs of marsh elder or sea myrtle are present. *Transient*: Occurs in nearly all marsh habitats.

NESTING SEASON.—Late April to early August. *Extreme egg dates* (23 nests): May 10, 1916, in Dorchester County (Jackson, 1941) and July 12, 1950, in Baltimore County (E. Willis). *Extreme nestling dates* (7 nests): June 8, 1954, in Baltimore County (E. Willis) and July 14, 1950, in Baltimore County (E. Willis). The nestlings observed on June 8, 1954, voluntarily left the nest upon the approach of the observer.

PERIOD OF REGULAR OCCURRENCE.—*Normal period*: April 20–30 to September 10–20; peak, May 5 to September 1. *Extreme arrival dates*: April 12, 1929, in the District of Columbia (W. H. Ball); April 18, 1936, at Mountain Lake, Garrett County (Brooks, 1936a). *Extreme departure dates*: November 7, 1954, in Montgomery County (R. R. Kerr); October 11, 1954, in Prince Georges County; September 25, 1954, in Montgomery County (S. H. Low).

AMERICAN BITTERN *Botaurus lentiginosus* (Rackett)

STATUS.—*Breeding*: Fairly common in the tidewater areas of Somerset, Wicomico, and Dorchester Counties; uncommon elsewhere in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Allegheny Mountain section (Eifrig, 1904, and Brooks, 1944). See figure 5. *Transient*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the interior of all sections. *Wintering*: Uncommon in the tidewater areas of the Eastern Shore and Western Shore sections; rare in the tidewater areas of the Upper Chesapeake section. *Summer vagrant*: Casual in the interior of all sections.

HABITAT.—*Breeding*: Various marsh or marsh-meadow types, chiefly tidal and including narrow-leaved cattail, Olney three-square, needlerush, and switchgrass. *Transient*: Various marsh and marsh-meadow types. *Wintering*: Brackish and salt marsh and marsh-meadow types.

NESTING SEASON.—Three nests were found in or very near the District of Columbia on June 3, 1917, 1 containing 3 young ready to fly, another 3 young, 10 days old, and the third 4 hard-set eggs (Court, 1921); another nest containing 3 young and 1 egg was

FIGURE 5.—Breeding range of American Bittern.

found near Dames Quarter in Somerset County on June 18, 1948; large nestlings were found on the Blackwater National Wildlife Refuge, Dorchester County, in early July 1953 (J. H. Steenis, W. R. Nicholson). Young birds out of the nest were recorded in Baltimore County on July 18, 1936 (M. B. Meanley), in Anne Arundel County on August 28, 1937 (E. A. McGinity), and in western Maryland (Allegany or Garrett County) on June 30, 1902 (Eifrig, 1904).

SPRING MIGRATION.—*Normal period:* March 10–20 to May 5–15; peak, March 25 to April 25. *Extreme departure date:* May 21, 1949, in the District of Columbia (E. Arnold).

FALL MIGRATION.—*Normal period:* September 1–10 to November 1–10; peak, September 20 to October 20. *Extreme dates of arrival:* August 19, 1953, in Prince Georges County; August 23, 1917 (R. W. Moore) in the District of Columbia. *Extreme dates of departure:* December 7, 1952, at Pennyfield in Montgomery County (R. M. Cole); November 29, 1949, in Dorchester County; November 16, 1937, in Garrett County (M. G. Brooks).

MAXIMUM COUNTS.—*Spring:* 5 at Chesapeake Beach, Calvert County, on March 27, 1948; 5 at Port Tobacco, Charles County, on May 6, 1933 (C. Cottam, A. L. Nelson). *Fall:* 3 in the Elliott Island marsh, Dorchester County, on November 17, 1948, and November

29, 1949. *Winter* (Christmas counts): 7 in the Blackwater Refuge area in Dorchester County on December 28, 1953; 6 in the Ocean City area on December 27, 1953.

Family CICONIIDAE

WOOD IBIS *Mycteria americana* Linnaeus

STATUS.—*Casual visitor*. One was collected (USNM) in Prince Georges County on July 28, 1851 (W. R. Young). One was reported to have been shot near Cumberland in Allegany County, about 1865 (Kirkwood, 1895). Two, an adult and an immature, were collected (USNM) "a short distance from the Washington Monument and on the Maryland side of the Potomac" on July 2, 1892 (Hasbrouck, 1893). One was reported seen in Baltimore County in Dulaney Valley on October 15, 1893 (Kirkwood, 1895). Three were shot in Prince Georges County in 1896 including an adult and an immature at Silver Hill on July 20, and an immature taken near Laurel on July 27 (Palmer, 1897a).

No other observations of this species were recorded until 1955 when 18 or 20 birds arrived at Gibson Island, Anne Arundel County, on June 24; many of these remained until July 23 (first seen by Capt. G. Fisher, and subsequently by numerous observers); 3 were also observed in Anne Arundel County along the Patuxent River near Nottingham on July 12, 1955; a single was seen at the Patuxent Refuge, Prince Georges County, on July 24 and 30, 1955; 2 were observed at Tilghman Island, Talbot County, on August 10, 1955 (J. Cummings); and 1 was recorded at Towson, Baltimore County, in mid-July (Mrs. W. Royal). On June 17, 1956, another was seen at Gibson Island (Dr. and Mrs. M. Stout).

Family THRESKIORNITHIDAE

GLOSSY IBIS *Plegadis falcinellus* (Linnaeus)

STATUS.—*Breeding*: Rare and local in the coastal area of Worcester County—2 pairs of adults and 2 young, three-fourths grown, recorded on Mills Island on June 25, 1956. *Transient*: Rare and irregular in the Eastern Shore and Western Shore sections—a specimen was procured near Baltimore and 2 others in the District of Columbia in about 1817, and the species was described as occurring on the Eastern Shore of Maryland at very irregular intervals in spring (Baird, et al., 1884); 1 was shot in the District of Columbia in September, 1900 (Daniel, 1901a); 1 was closely observed on Assateague Island, Worcester County, on June 11, 1950 (J. H. Buckalew, E. O. Mellinger); in Charles County, 1 was recorded at Port Tobacco on May 2, 1953 (M. C.

Crone, K. Keeley), and another was seen on Cobb Island on September 2, 1953 (Taylor, 1953); 2 were seen at Ocean City on September 4, 1955 (R. L. Kleen), and a single was recorded there on April 7, 1956 (P. A. Buckley).

Family ANATIDAE

[MUTE SWAN] *Cygnus olor* (Gmelin)

STATUS.—Hypothetical. This introduced species has been recorded twice in the tidewater areas of Maryland—3 were reported near Ocean City on February 12, 1954 (Mr. and Mrs. I. C. Hoover), and 3 immature birds were recorded at Gibson Island, Anne Arundel County, on January 22, 1955 (J. M. Abbott); 1 of the latter birds remained until January 28 (Mrs. W. L. Henderson, Mrs. G. Tappan).

WHISTLING SWAN *Olor columbianus* (Ord)

STATUS.—*Transient*: Locally common on Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas include the Susquehanna Flats, Eastern Bay, and the Potomac, Patuxent, Magothy, Middle, Gunpowder, Bush, Sassafras, Chester, and Choptank Rivers); uncommon in the coastal area of Worcester County and in the interior of all sections. *Wintering*: Locally common on Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas, same as during migration). *Summer vagrant*: Casual visitor—11 on Gunpowder River marsh on June 2, 1918 (W. A. Warns); 2 near Neavitt, Talbot County, through the summer of 1952 (R. L. Kleen); 12 on the Chester River during June and July 1955 (V. D. Stotts).

HABITAT.—Chiefly shallow, brackish estuarine waters that contain an abundance of aquatic plants such as wild celery, sago pondweed, and red-head pondweed. During migration, also occurs occasionally on inland ponds and lakes.

SPRING MIGRATION.—*Normal period*: March 1–10 to April 20–30; peak, March 10 to April 5. *Extreme arrival date*: February 14, 1947, in Prince Georges County. *Extreme departure dates*: May 27, 1955, in Washington County (S. C. Stauffer); May 25, 1951, in Queen Annes County (M. W. Hewitt); May 22, 1953, in Anne Arundel County; May 18, 1952, in Baltimore County (F. C. Cross).

FALL MIGRATION.—*Normal period*: October 15–25 to November 20–30; peak, October 25 to November 15. *Extreme arrival dates*:

September 26, 1893, in Washington County (J. Leopold); 40 on the Patuxent River near Nottingham on October 1, 1938 (D. R. Gascoyne). *Extreme departure dates*: December 16, 1902, in Garrett County (G. Eifrig); December 4, 1901, in Prince Georges County (B. Greenwood).

MAXIMUM COUNTS.—*Spring*: 15,000 on Susquehanna Flats on March 15, 1931 (C. Marburger); 3,000 in Gunpowder River area on March 15, 1951 (T. A. Imhof); 1,900 on Eastern Bay on March 25, 1950; 945 on the Bush River on March 18, 1951 (T. A. Imhof); 800 at Sandy Point, Anne Arundel County, on March 20, 1952 (S. H. Low); 400 on the Patuxent River on March 25, 1948. *Fall*: 5,000 on the Chester River on November 29, 1945 (E. R. Quortrup); 3,000 on Eastern Bay on November 18, 1950 (Mr. and Mrs. W. L. Henderson); 600 in the Carroll Island area, Baltimore County, on November 19, 1950; 177 near Unity, Montgomery County, on November 12, 1950 (S. H. Low); 50 at Mountain Lake, Garrett County, on November 2, 1951 (H. E. Slater). *Winter*: 10,654 in the St. Michaels area, Talbot County, on December 29, 1953 (Christmas count); 4,940 on the Susquehanna Flats on January 2, 1950 (Christmas count); 2,000 on the Sassafras River on December 4, 1949 (E. Arnold); 1,505 in the Gibson Island area, Anne Arundel County, on January 3, 1954 (Christmas count); 1,500 in the Gunpowder River area on January 20, 1952 (T. A. Imhof).

CANADA GOOSE *Branta canadensis* (Linnaeus)

STATUS.—*Transient*: Abundant in the tidewater areas of the Eastern Shore and Upper Chesapeake sections (concentration areas include the Susquehanna Flats, Bohemia River, Sassafras River, Chester River, Eastern Bay, Choptank River, Honga River, Dorchester County marshes, Fishing Bay, Nanticoke River, Tangier Sound, Pocomoke Sound, Chincoteague Bay, and Sinepuxent Bay); fairly common in the tidewater areas of the Western Shore section and in the interior (mostly flying overhead) of all sections. *Wintering*: Common in the tidewater areas of the Eastern Shore and Upper Chesapeake sections (concentration areas, same as during migration); fairly common in the interior of the Eastern Shore and Upper Chesapeake sections; uncommon in the Western Shore and Piedmont sections.

HABITAT.—Shallow water with aquatic vegetation in tidal bays, estuaries, and ponds, and inland ponds and lakes; also occurs regularly on tidal marshes, and in many areas feeds extensively in wheat, rye, and corn fields near tidewater.

SPRING MIGRATION.—*Normal period:* February 15–25 to April 15–25; *peak,* March 10 to April 10. *Extreme arrival dates:* February 9, 1950, in Prince Georges County (T. B. Israel); February 10, 1920, in Dorchester County (R. W. Jackson); February 14, 1920, in the District of Columbia (F. Harper). *Extreme departure dates:* May 23, 1903 (F. C. Kirkwood), and May 21, 1940 (H. Brackbill), in Baltimore County.

FIGURE 6.—Canada Goose banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

FALL MIGRATION.—*Normal period:* September 25–October 5 to November 20–30; peak, October 15 to November 5. *Extreme arrival dates:* September 8, 1955, in Talbot County (R. L. Kleen); September 12, 1954, in Montgomery County (S. H. Low); September 13, 1955, in Caroline County (M. W. Hewitt); September 14, 1954, in Baltimore County (S. W. Simon); September 18, 1953, in Prince Georges County (F. M. Uhler).

MAXIMUM COUNTS.—*Spring:* 7,000 on the Susquehanna Flats, Cecil County, on March 31, 1955; 7,000 in the Sassafras River area on April 1, 1955; 5,000 in the Newport Bay area in Worcester County on April 1, 1950; "thousands" in Prince Georges County on March 24, 1929 (W. R. Maxon); 2,400 on Eastern Bay on March 25, 1950 (J. E. Johnson); 1,250 on Savannah Lake, Dorchester County, on March 3, 1955; 1,000 in the Gibson Island area, Anne Arundel County, on March 25, 1953 (Mrs. G. Tappan, Mrs. W. L. Henderson); 800 near Emmitsburg, Frederick County, on March 20, 1955 (J. W. Richards). *Fall:* 15,000 on Blackwater National Wildlife Refuge, Dorchester County, on November 16, 1947 (I. R. Barnes); 10,000 on Hooper Island, Dorchester County, on November 24, 1951 (I. C. Hoover); 2,000 in the Newport Bay area, Worcester County, on November 11, 1951. *Winter:* 25,000 in the Turner Creek area, Kent County, during January and February, 1955 (R. T. Smith); 19,346 in the St. Michaels area, Talbot County, on December 29, 1953 (Christmas count); 17,440 on Chester River on December 6, 1955; 15,000 in Dorchester County on December 22, 1952 (Christmas count); 9,300 on the Susquehanna Flats on January 1, 1951 (Christmas count); 6,700 at Ocean City on December 27, 1953 (Christmas count).

BANDING.—See figure 6.

BRANT *Branta bernicla* (Linnaeus)

STATUS.—*Transient and wintering:* Common in the coastal area of Worcester County; also occurs regularly in the tidewater areas along the Chesapeake Bay side of the Eastern Shore section, being fairly common in Somerset and Dorchester Counties and uncommon in Talbot and Queen Annes Counties (north to Eastern Bay); rare in tidewater areas of the Western Shore and Upper Chesapeake sections. *Summer vagrant:* Casual visitor—1 flying bird at South Point, Worcester County, on July 6, 1951 (J. H. Buckalew), and 1 at Kent Island, Queen Annes County, on June 28, 1954 (P. F. Springer).

HABITAT.—Shallow salt water in bays or sounds in which sea-lettuce (*Enteromorpha* spp.) or eel grass abound—most numerous along the barrier beach side of the coastal bays.

SPRING MIGRATION.—*Normal period:* February 10–20 to April 20–30; peak, February 20 to April 10. *Extreme arrival date:* February 6, 1954 (large flight), in Worcester County. *Extreme departure dates:* May 20, 1950 (R. J. Beaton), and May 15, 1954 (D. C. Aud. Soc.), in Worcester County; May 8, 1955, in Queen Annes County (S. W. Simon).

FALL MIGRATION.—*Normal period:* October 10–20 to December 10–20; peak, October 25 to December 10.

MAXIMUM COUNTS.—10,000 off South Point near the south end of Sinepuxent Bay on December 27, 1948 (E. Arnold, S. H. Low); 2,500 in the Ocean City area on February 25, 1951; 2,130 in the St. Michaels area, Talbot County, on December 29, 1953 (Christmas count); 72 in the District of Columbia on February 20, 1930 (Mr. and Mrs. W. J. Whiting).

[BARNACLE GOOSE] *Branta leucopsis* (Bechstein)

STATUS.—Hypothetical. One reported killed near Langford, Kent County, on November 12, 1947 (T. A. Geiser).

WHITE-FRONTED GOOSE *Anser albifrons* (Scopoli)

STATUS.—Casual visitor. A specimen (USNM) bought in the Washington market in March 1856 was reported to have been shot on the Potomac River (Baird, 1858). A specimen, formerly in the collection of the Maryland Academy of Sciences but apparently no longer extant, was shot on the Gunpowder River on November 12, 1892 (Fisher, 1894). One was captured alive with a flock of Canada Geese near Cambridge in Dorchester County on December 15, 1937 (D. V. Black). Another was observed at Oxford, Talbot County, in mid-October 1956 (S. Hersloff).

SNOW GOOSE *Chen hyperborea* (Pallas)

STATUS.—*Transient and wintering:* Fairly common in the coastal area of Worcester County (somewhat irregular in winter); rare elsewhere in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual visitor in the interior—recorded in Garrett, Frederick, Montgomery, and Prince Georges Counties.

HABITAT.—Usually in marshes of salt-water cordgrass or on the bays adjacent to them.

PERIOD OF OCCURRENCE.—*Normal period:* October 15–25 to March 20–30; peak, November 20 to March 5. *Extreme dates of arrival:* Early October, 1890, in Baltimore County (W. H. Fisher); October 13, 1950, in Dorchester County (C. W. Wallace, W. S. Webster). *Extreme dates of departure:* April 21, 1954,

in Worcester County (P. G. DuMont); April 19, 1935, in Montgomery County (Bagg, 1935).

MAXIMUM COUNTS.—*Spring*: 206 in the Ocean City area on March 4, 1950 (R. J. Beaton); 50 at Emmitsburg, Frederick County, on March 9, 1955 (Mrs. J. W. Richards). *Fall*: 700 in the Ocean City area on November 28, 1950 (J. H. Buckalew); 125 at Neavitt, Talbot County, on December 3, 1955 (J. Reese). *Winter*: 8,000 in the Ocean City area on February 11, 1907 (F. C. Kirkwood); 1,997 and 1,986 in the Ocean City area on December 27, 1954, and December 27, 1950, respectively (Christmas counts); 25 on Blackwater National Wildlife Refuge in Dorchester County on December 23, 1951 (Christmas count).

BLUE GOOSE *Chen caerulescens* (Linnaeus)

STATUS.—*Transient and wintering*: Rare in the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Piedmont section—1 at Marshall Dierssen Refuge in Montgomery County, May 6–8, 1949, and 1 near Buckeystown in Frederick County during the period April 23–30, 1950. Prior to 1930 this species apparently occurred as a casual visitor only.

HABITAT.—Usually on ponds in tidal marshes; rarely on ponds in the interior.

PERIOD OF OCCURRENCE.—*Extreme dates of arrival*: October 18, 1950, in Dorchester County (C. W. Wallace, W. S. Webster); October 18, 1952, in Prince Georges County; October 24, 1949, in Queen Annes County. *Extreme dates of departure*: May 15, 1951, in Harford County (T. A. Imhof); May 8, 1949, in Montgomery County (R. Wright).

MAXIMUM COUNTS.—55 (1 flock) over Berwyn, Prince Georges County, on October 18, 1952; 14 (1 flock) on Gunpowder Neck, Harford County, on May 15, 1951 (T. A. Imhof); 11 on Blackwater Refuge on December 28, 1954 (Christmas count); 10 near Chestertown, Kent County, on November 24, 1950 (J. H. Buckalew); 4 on Mills Island in Worcester County on February 9, 1938 (G. A. Ammann).

MALLARD *Anas platyrhynchos* Linnaeus

STATUS.—*Breeding*: The true status of "wild" Mallards during the breeding season is difficult to determine because of the fact that considerable numbers of semiwild birds have been released in the State from time to time. Scattered pairs of nesting birds that give every appearance of being feral have been noted in tidewater areas and on inland ponds, lakes, and streams in all sections. Whether any of these are derived from the introduced

stock is problematical. It may be significant that Kirkwood (1895) in his book on Maryland birds does not refer to any breeding records for the species. During the past 12 years (1942-1953), downy young or nests with eggs have been recorded in the following areas: Worcester, Dorchester, Kent, Calvert, Prince Georges, Baltimore, Montgomery, and Garrett Counties and the District of Columbia. *Transient*: Fairly common on tidewater and inland areas in all sections (concentrations occur along the Potomac River in Montgomery County, on Triadelphia Reservoir, on Blackwater National Wildlife Refuge, and on the Chester River). *Wintering*: Fairly common on tidewater and inland areas of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; uncommon in the Ridge and Valley and Allegheny Mountain sections.

HABITAT.—*Breeding*: Usually ponds or streams that are fringed with marsh vegetation. *Transient and wintering*: All types of fresh-water and tidal ponds, lakes, and streams; also feeds extensively in corn fields that are located nearby.

NESTING SEASON.—Mid-March to late July. *Extreme egg dates* (5 nests): March 20, 1949, in Montgomery County (N. Shelton) and May 14, 1950, in Baltimore County (E. Willis). *Extreme downy young dates* (13 broods): May 7, 1949, in the District of Columbia (W. W. Rubey) and July 20, 1952, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period*: February 5-15 to May 1-10; peak, February 20 to March 20. *Extreme arrival dates*: January 18, 1947, in Prince Georges County; January 22, 1939, in Baltimore County (H. Kolb); January 28, 1949, in Anne Arundel County (Mrs. F. H. Vinup). *Extreme departure dates*: May 16, 1931, in Charles County (C. Cottam); May 14, 1949, in Worcester County (E. G. Davis); May 14, 1922, in the District of Columbia (J. Kittredge, Jr.).

FALL MIGRATION.—*Normal period*: September 10-20 to December 15-25; peak, October 25 to December 5. *Extreme arrival dates*: August 20, 1927, in the District of Columbia (A. Wetmore); August 28, 1896, in Prince Georges County (B. Greenwood). *Extreme departure dates*: December 31, 1940, in Prince Georges County; December 28, 1948, in Baltimore County (H. Kolb).

MAXIMUM COUNTS.—*Spring*: 1,690 on the Potomac River below Washington, D. C., on March 10, 1928 (H. H. T. Jackson). *Fall*: 11,500 on the Chester River on December 6, 1955; 7,000 along the Potomac River in Prince Georges and Charles Counties on Novem-

ber 30, 1925 (F. C. Lincoln) ; 1,245 in the Patuxent River marsh on October 27, 1955; 600 at Blackwater National Wildlife Refuge, Dorchester County, on November 16, 1947 (I. R. Barnes). *Winter*: 5,885 on the Potomac River in the District of Columbia area on January 7, 1928 (A. Wetmore, H. H. T. Jackson) ; 5,250 in southern Dorchester County on December 28, 1955 (Christmas count) ; 2,500 at Triadelphia Reservoir on January 1, 1954, and December 24, 1955 (Christmas counts) ; 1,240 on the Susquehanna Flats on January 2, 1950 (Christmas count) ; 1,110 in the Ocean City area on December 27, 1953 (Christmas count).

BANDING.—See figure 7.

FIGURE 7.—Mallard banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

BLACK DUCK *Anas rubripes* Brewster

STATUS.—*Breeding*: Common in the tidewater areas of the Eastern Shore section (greatest numbers in the marshes of Dorchester County and in the Chester River-Eastern Bay area); uncommon in the tidewater areas of the Western Shore and Upper Chesapeake sections; rare in the interior of all sections; definite inland-breeding records for Baltimore (H. Kolb), Prince Georges, and Allegany (K. A. Wilson) Counties. See figure 4. *Transient*: Abundant in the tidewater areas of Dorchester County and in the Chester River-Eastern Bay area; common in tidewater areas elsewhere in the Eastern Shore section; fairly common in tidewater areas of the Western Shore and Upper Chesapeake sections and in the interior of all sections. *Wintering*: Common in tidewater areas of the Eastern Shore section; fairly common in tidewater areas of the Western Shore and Upper Chesapeake sections; uncommon in the interior of all sections. Outstanding wintering and transient concentration areas include the Chester River, Eastern Bay, the Blackwater National Wildlife Refuge, and the large marsh extending from Savannah Lake to Elliott Island in southern Dorchester County.

HABITAT.—*Breeding*: Various types of tidal marshes and marsh meadows, including Olney three-square, switch grass, salt reedgrass, salt-water cordgrass, salt-meadow grass, and needlerush; also along margins of islands situated in bays or estuaries; and on inland ponds and streams that are fringed with marsh vegetation. *Transient and wintering*: Nearly all types of marshes, ponds, and streams; occasionally fairly large numbers are also found on the open bays and estuaries.

NESTING SEASON.—Mid-March to early September; peak, early April to late June. *Extreme egg dates* (217 nests): March 28, 1953, in Queen Annes County (V. D. Stotts) and August 24, 1914, in Dorchester County (Jackson, 1941). *Extreme downy young dates* (54 broods): April 8, 1949, in Dorchester County (W. S. Webster) and August 12, 1954, in Dorchester County.

SPRING MIGRATION.—*Normal period*: February 15–25 to April 15–25; peak, February 25 to March 25. *Extreme arrival date*: January 28, 1951, in Harford County (T. A. Imhof). *Extreme departure dates*: May 21, 1922, in the District of Columbia (J. Kittredge, Jr.); May 7, 1936, in Garrett County (M. G. Brooks); May 6, 1893, in Baltimore County (G. H. Gray).

FALL MIGRATION.—*Normal period*: September 10–20 to December 1–10; peak, October 20 to November 25. *Extreme arrival dates*: August 20, 1927, in the District of Columbia (A. Wet-

more); August 24, 1949, in Prince Georges County. *Extreme departure date*: December 17, 1939, in Prince Georges County.

BREEDING POPULATION DENSITY (pairs per 100 acres).—

5.8 (53 in 1000 acres) in brackish bay marsh (a mosaic of tidal ponds and creeks and various plant associations including needlerush, salt-water cordgrass, salt-meadow grass, salt reed-grass, spike-grass, Olney three-square, and ditch grass) in Dorchester County in 1956.

MAXIMUM COUNTS.—*Spring*: 18,560 on the Potomac River below Washington, D. C., on March 10, 1928 (H. H. T. Jackson). *Fall*: 23,000 along the Potomac River in Prince Georges and

FIGURE 8.—Black Duck banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

Charles Counties on November 10, 1928 (H. C. Oberholser); 10,000 on the marsh between Savannah Lake and Elliott Island in Dorchester County on November 12, 1948; 6,941 on the Potomac River below Washington, D. C., on October 28, 1930 (H. C. Oberholser); 4,000 on Middle River in Baltimore County on November 12, 1927 (G. A. Edwards); 1,400 on Gunpowder Neck in Harford County on October 22, 1950 (T. A. Imhof). *Winter*: 40,243 on the Potomac River, below Washington, D. C., on February 11, 1928 (H. H. T. Jackson); 10,125 in southern Dorchester County on December 28, 1955 (Christmas count); 7,102 in the St. Michaels area, Talbot County, on December 29, 1954 (Christmas count); 7,000 on the Susquehanna Flats on January 7, 1928 (J. A. Currier); 2,210 in the Ocean City area on December 22, 1951 (Christmas count); 2,000 on Triadelphia Reservoir, Montgomery and Howard Counties, on January 1, 1954 (Christmas count).

BANDING.—See figure 8.

GADWALL *Anas strepera* Linnaeus

STATUS.—*Breeding*: During the late spring of 1948, at least 7 pairs were found nesting in a tidal marsh in Somerset County located from 1 to 2 miles southeast of Dames Quarter (Springer and Stewart, 1950)—several pairs were noted in this same area during 1949 and 1950, and in 1955 a nest with eggs was found about 2 miles south of there on Fish Island in the Manokin River; in 1956, a nest with eggs was found in southern Dorchester County, 6 miles northeast of Elliott. *Transient*: Common in tidewater areas of Charles County along the Potomac and Wicomico Rivers; fairly common in tidewater areas of Dorchester County; uncommon elsewhere on tidewater and inland areas of all sections. *Wintering*: Same as transient status, except that it is absent or rare in the Allegheny Mountain, Ridge and Valley, and Piedmont sections. *Summer vagrant*: Casual in the Western Shore section—recorded in the District of Columbia on June 7, 1930 (W. H. Ball), and June 12, 1952 (J. W. Taylor, Jr.), in Prince Georges County on June 13 to 24, 1949, and in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan) on June 30, 1955.

HABITAT.—*Breeding*: In Somerset County, occurs in a tidal marsh in which salt-meadow grass is predominant with scattered patches of switch grass, salt-marsh bulrush, and needlerush and scattered shrubs of wax-myrtle, sea-myrtle and marsh-elder. *Transient and wintering*: Brackish estuaries, ponds in tidal marshes, and occasionally on inland ponds, lakes, and rivers.

NESTING SEASON.—Late April to early August. *Extreme egg*

dates (4 nests): May 4, 1956, in Dorchester County and July 19, 1955, in Somerset County. A brood of 10 young about 4 or 5 days old was observed on July 3, 1948, in Somerset County (F. M. Uhler).

SPRING MIGRATION.—*Normal period:* March 10–20 to April 25–May 5. *Extreme arrival date:* February 25, 1955, in Anne Arundel County (Mrs. W. L. Henderson). *Extreme departure dates:* May 16, 1954, in Dorchester County (J. K. Wright); May 5, 1951, in Harford County (T. A. Imhof) and in Baltimore County (H. Kolb, E. Willis).

FALL MIGRATION.—August 20–30 to November 20–30; peak, October 10 to November 10. *Extreme arrival dates:* August 19, 1950, in Montgomery County (J. W. Taylor, Jr.); August 20, 1927, in Charles County (E. A. Preble). *Extreme departure date:* December 1, 1951, in Montgomery County (L. Kilham).

MAXIMUM COUNTS.—*Spring:* 1,300 on the Potomac River below Washington, D. C., on March 13, 1928 (H. H. T. Jackson); 670 on Savannah Lake, Dorchester County, on March 3, 1955; 260 in Charles County on March 22, 1953 (A. R. Stickley, Jr.); 220 in Sandy Point–Matapeake area on March 23, 1946. *Fall:* 6,000 on the Potomac River in Charles County on November 1, 1927 (H. C. Oberholser); 650 in southern Dorchester County on November 19, 1950. *Winter:* 3,804 on the Potomac River in Prince Georges County and upper Charles County on December 5, 1930 (H. C. Oberholser); 1,889 in the Wicomico River area in Charles County on January 1, 1950 (Christmas count); 1,300 in the Port Tobacco area in Charles County on January 27, 1953 (A. R. Stickley, Jr.); 700 in the Savannah Lake–Elliott Island area, Dorchester County, on February 25, 1950, and February 22, 1954.

BANDING.—Two Gadwalls recovered in Somerset and Harford Counties (November 22–27) had been banded as juvenals (August 3–17) in north-central North Dakota and Saskatchewan (Wood River, Courval).

PINTAIL *Anas acuta* Linnaeus

STATUS.—*Transient and wintering:* Common in the tidewater areas of the Upper Chesapeake section (east of Chesapeake Bay); fairly common in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the interior of all sections.

HABITAT.—Brackish estuaries, and ponds in tidal marshes; also on inland ponds, lakes, and rivers.

SPRING MIGRATION.—*Normal period:* January 15–25 to April 25–May 5; peak, February 15 to March 20. *Extreme arrival*

date: January 14, 1956, in Dorchester County. *Extreme departure dates*: May 26, 1952, in Caroline County (M. W. Hewitt); May 16, 1954, in Dorchester County (J. K. Wright); May 14, 1922, in the District of Columbia (J. Kittredge, Jr.).

FALL MIGRATION.—*Normal period*: August 25–September 5 to December 10–20; peak, October 25 to December 5. *Extreme date of arrival*: August 22, 1929, in the District of Columbia (W. H. Ball).

MAXIMUM COUNTS.—*Spring*: 2,000 on Otter Creek and 470 on Bush River, both in Harford County on March 5, 1950 (P. F. Springer); 500 in the District of Columbia on March 11, 1950 (J. W. Taylor, Jr.). *Fall*: 6,330 in the Chester River area on December 6, 1955; 2,175 at Blackwater National Wildlife Refuge on November 13, 1955 (H. Sutton); 800 on the Potomac River in Prince Georges County on December 5, 1930 (H. C. Oberholser); 300 in the Gunpowder River area on January 6, 1952

FIGURE 9.—Pintail banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

(T. A. Imhof); 200 in the District of Columbia on November 13, 1940 (W. L. McAtee). *Winter*: 30,000 near Chestertown, Kent County, during January–February, 1955 (R. T. Smith); 3,625 in southern Dorchester County on December 22, 1952 (Christmas count); 550 in the Wicomico River area, Charles County, on January 2, 1949 (Christmas count); 535 in the Ocean City area on December 22, 1951 (Christmas count); 506 on Susquehanna Flats on December 20, 1947 (Christmas count).

BANDING.—See figure 9.

COMMON TEAL *Anas crecca* Linnaeus

STATUS.—Rare winter visitor in the coastal area of Worcester County; casual elsewhere. One or two have been recorded nearly every winter since February 1950 on Heine's Pond.

PERIOD OF OCCURRENCE.—*Extreme dates*: December 27, 1950, 1953, 1954, and 1955 (S. H. Low, et al.) in Worcester County and April 1885 on the Potomac River near Washington (USNM—H. Marshall).

GREEN-WINGED TEAL *Anas carolinensis* Gmelin

STATUS.—*Transient*: Common in the tidewater areas of Dorchester County; fairly common in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the interior of all sections. *Wintering*: Fairly common in tidewater areas of Dorchester County; uncommon in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: 1 observed in Dorchester County on June 21, 1956 (P. F. Springer).

HABITAT.—Tidal ponds and creeks of brackish marshes; also occurs more sparingly in salt marshes, on estuarine waters, and on inland ponds, lakes, and streams.

SPRING MIGRATION.—*Normal period*: February 25–March 5 to May 1–10; peak, March 10 to April 20. *Extreme arrival date*: February 19, 1949, in Prince Georges County. *Extreme departure date*: May 19, 1954, in Dorchester County.

FALL MIGRATION.—*Normal period*: September 5–15 to December 1–10; peak, October 10 to November 25. *Extreme dates of arrival*: August 19, 1950 (J. W. Taylor, Jr.), in Montgomery County; August 24, 1956, in Prince Georges County (P. F. Springer). *Extreme dates of departure*: December 23, 1926, in the District of Columbia (A. Wetmore); December 12, 1948, in Montgomery County (I. R. Barnes).

MAXIMUM COUNTS.—*Spring*: 500 on Mills Island, Worcester County, on April 23, 1938 (G. A. Ammann); 166 in the Patuxent River marsh near Upper Marlboro on April 5, 1955; 162 in southern Dorchester County on March 11, 1955. *Fall*: 3,000 on Blackwater Refuge, Dorchester County, on November 16, 1947 (I. R. Barnes); 250 in the Gunpowder River area on October 21, 1950 (T. A. Imhof); 150 on the Potomac River below Washington, D. C., on November 9, 1925 (A. Wetmore). *Winter* (Christmas counts): 606 in southern Dorchester County on December 28, 1954; 200 in the Ocean City area on December 21, 1952; 75 near St. Michaels in Talbot County on December 29, 1953; 60 on the Susquehanna Flats on January 2, 1950.

BANDING.—See figure 10.

FIGURE 10.—Green-winged Teal banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

BLUE-WINGED TEAL *Anas discors* Linnaeus

STATUS.—*Breeding*: Fairly common in tidewater areas of Dorchester County; uncommon in tidewater areas elsewhere in the Eastern Shore Section; rare in tidewater areas of the Western Shore and Upper Chesapeake sections. Definite records of nests with eggs or broods of downy young are from Worcester (G. A. Ammann), Somerset, Dorchester, St. Marys (E. J. Court), Anne Arundel (R. R. Kerr), and Baltimore (W. A. Putnam) Counties. See figure 11.

FIGURE 11.—Breeding ranges of Blue-winged Teal and Ruffed Grouse.

Transient: Common in the tidewater areas of Dorchester County; fairly common in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common locally in the Allegheny Mountain Section; uncommon elsewhere in the interior of all sections. *Wintering*: Uncommon in the tidewater areas of Dorchester County; casual elsewhere in the Eastern Shore section—1 recorded at Heine's Pond, Worcester County, on December 27, 1950, and 1 on December 27, 1954 (S. H. Low).

HABITAT.—*Breeding*: Usually in short-growth, tidal marsh-meadow types such as salt-meadow grass. *Transient*: Various types of tidal and inland ponds and marshes.

NESTING SEASON.—Mid-April to early August (nesting peak,

early May to late June). *Extreme egg dates* (9 nests): May 4, 1954, in Dorchester County and June 16, 1931 (A. L. Nelson), in Dorchester County. *Extreme downy young dates* (25 broods): May 25, 1919, in Baltimore County (W. A. Warner) and August 4, 1954, in Dorchester County.

SPRING MIGRATION.—*Normal period:* March 10–20 to May 10–20; peak, April 5 to May 5. *Extreme arrival dates:* March 6, 1954, in Montgomery County (E. Hall, P. G. DuMont); March 8, 1926, on the Potomac River below Washington, D. C. (H. C.

FIGURE 12.—Blue-winged Teal banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August.

Oberholser). *Extreme departure dates*: June 6, 1953, in Montgomery County (J. W. Terborgh); June 2, 1892, in Prince Georges County (C. W. Richmond).

FALL MIGRATION.—*Normal period*: August 20–30 to November 10–20; peak, September 5 to October 15. *Extreme arrival dates*: August 7, 1928, in the District of Columbia (W. H. Ball); August 11, 1898, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: December 10, 1927, on the Potomac River below Washington, D. C. (H. H. T. Jackson); December 9, 1899, on Gunpowder River marsh (J. Thomas).

BREEDING POPULATION DENSITY (pairs per 100 acres).—

6.2 (10 in 160 acres) in brackish bay marsh (study tract included tidal ponds and creeks and extensive areas of salt-meadow grass) in Dorchester County in 1956.

MAXIMUM COUNTS.—*Spring*: 173 on the Patuxent River marsh near Upper Marlboro on April 5, 1955; 150 at Marshall Dierssen Refuge, Montgomery County, on April 26, 1953, and March 30, 1954 (both by J. W. Terborgh); 75 on the marsh between Savannah Lake and Elliott Island, Dorchester County, on April 30, 1949; 50 on Mills Island, Worcester County, on April 23, 1938 (G. A. Ammann). *Fall*: 500+ in Elliott Island marsh on September 21, 1954; 185 on the Patuxent River marsh on October 27, 1955; 150 on Savannah Lake on October 2, 1948; 80 in the District of Columbia on September 20, 1930 (C. Cottam); 75 at the Dierssen Refuge on September 8, 1952. *Winter*: 80 on Blackwater Refuge, Dorchester County, on February 22, 1952; 39 in southern Dorchester County on December 28, 1953 (Christmas count).

BANDING.—See figure 12.

[CINNAMON TEAL] *Anas cyanoptera* Vieillot

STATUS.—Hypothetical. B. H. Warren reported observing a male on the Bohemia River in Cecil County on April 9, 1910.

EUROPEAN WIDGEON *Mareca penelope* (Linnaeus)

STATUS.—*Transient and wintering*: Rare in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Piedmont and Allegheny Mountain sections. A total of 41 records, including specimens, have been reported from Maryland and the District of Columbia. These include 18 from the Upper Chesapeake section (including 10 from Harford and Cecil Counties, and 2 each from Kent and Baltimore Counties); 11 from the Eastern Shore section (6 from Dorchester

County, 4 from Worcester County, and 1 from Caroline County); 10 from the Western Shore section (6 from Anne Arundel County, 2 from the District of Columbia, and 1 each from Charles and Prince Georges Counties); 1 from the Piedmont section (near Seneca, in Montgomery County—L. Kilham); and 1 from the Allegheny Mountain section (at Mountain Lake on April 17, 1954—M. G. Brooks).

HABITAT.—Brackish and fresh estuaries and marsh ponds; usually associated with the American Widgeon.

PERIOD OF OCCURRENCE.—*Extreme dates:* October 16, 1892 (USNM), in the Washington, D. C., market (J. R. Massie) and April 17, 1954, in Garrett County (M. G. Brooks). Number of records by month: October, 6; November, 6; December, 7; January, 2; February, 4; March, 7; April, 5. All records were of single birds except for 2 seen at Gibson Island in Anne Arundel County on October 30, 1951 (Mrs. W. L. Henderson, Mrs. G. Tappan); and 2 seen near Perryville in Cecil County on April 5, 1931 (W. Yoder).

BANDING.—One recovered in Dorchester County on November 27, 1929, had been banded at Husavik, Iceland, on August 15, 1929. This was the fourth North American recovery of a European Widgeon from Iceland.

AMERICAN WIDGEON *Mareca americana* (Gmelin)

STATUS.—*Transient:* Common, locally abundant, in the tide-water areas along Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas include the Susquehanna Flats, Eastern Bay, Dorchester County marshes, and the Choptank, Chester, Sassafras, Northeast, Bush, Gunpowder, Middle, and Magothy Rivers, and portions of the Potomac and Wicomico Rivers in southern Charles County); fairly common in the interior of all sections and in the coastal area of Worcester County. *Wintering:* Locally common in tidewater areas along Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the coastal area of Worcester County; rare in the interior of all sections. *Summer vagrant:* Casual visitor—recorded in Harford County on July 14, 1952 (P. F. Springer); in Queen Annes County on June 17, 1952, July 21, 1953, and June 8–15, 1954 (P. F. Springer); in Montgomery County on July 12–16, 1953 (S. H. Low); and in the District of Columbia, July 8–12, 1933 (E. N. Grinnell).

HABITAT.—Brackish estuarine waters, and ponds in brackish

tidal marshes that contain a plentiful aquatic plant growth, including such species as wild celery, red-head pondweed, sago pondweed and ditch grass; also occurs more sparingly on inland ponds and lakes.

SPRING MIGRATION.—*Normal period:* March 1–10 to May 10–20; peak, March 15 to April 15. *Extreme date of arrival:* February 13, 1949, in Prince Georges County. *Extreme dates of departure:* June 1, 1953, in Montgomery County (S. H. Low); May 31, 1951, in Harford County (T. A. Imhof); May 26, 1953, in Prince Georges County (P. F. Springer).

FALL MIGRATION.—*Normal period:* September 5–15 to December 10–20; peak, October 10 to December 10. *Extreme arrival*

FIGURE 13.—American Widgeon banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

dates: August 28, 1935, in Prince Georges County (R. B. Wallace); September 2, 1952, in Frederick County (J. W. Richards).

MAXIMUM COUNTS.—*Spring*: 7,900 in the Carroll Island area, Baltimore County, on March 16, 1947; 6,100 on Gunpowder Neck, Harford County, on March 18, 1951 (T. A. Imhof). *Fall*: 19,000 on Gunpowder Neck on December 7, 1951 (T. A. Imhof); 14,000 on the Potomac River below Washington, D. C., on November 19, 1929 (H. C. Oberholser); 14,000 in the Carroll Island area on November 19, 1950; 5,650 in southern Charles County on December 11, 1948. *Winter*: 19,281 near St. Michaels in Talbot County on December 29, 1953 (Christmas count); 11,000 at Gunpowder Neck on January 2, 1952 (T. A. Imhof); 4,830 on the Susquehanna Flats on January 2, 1950 (Christmas count); 3,165 in the Kent Island area, Queen Annes County, on December 29, 1949 (Christmas count); 2,670 in southern Charles County on December 26, 1948 (Christmas count).

BANDING.—See figure 13.

SHOVELER *Spatula clypeata* (Linnaeus)

STATUS.—*Transient*: Fairly common in tidewater areas of Dorchester County; uncommon elsewhere in tidewater and inland water areas of all sections. *Wintering*: Uncommon in tidewater areas of Dorchester County; rare in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Piedmont section—2 observed throughout the winter of 1955–56 at Owings Mills, Baltimore County (E. G. and J. R. Worthley).

HABITAT.—Shallow ponds in brackish marshes; occasionally in other tidewater habitats and on inland ponds and lakes.

SPRING MIGRATION.—*Normal period*: March 1–10 to May 1–10; peak, March 15 to April 25. *Extreme date of arrival*: February 28, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan). *Extreme dates of departure*: May 19, 1952, in the District of Columbia (M. W. Mulloy); May 17, 1954, in Dorchester County.

FALL MIGRATION.—*Normal period*: August 25–September 5 to December 1–10; peak, September 25 to November 10. *Extreme arrival date*: August 6, 1944, in Prince Georges County. *Extreme departure date*: December 11, 1899, on the Gunpowder River marsh (F. C. Kirkwood).

MAXIMUM COUNTS.—*Spring*: 55 on Blackwater Refuge, Dorchester County, on March 25, 1950 (J. E. Johnson); 40 at Elliott marsh, Dorchester County, on March 21, 1956; 35 at Indiantown,

St. Marys County, on April 3, 1954, and April 8, 1953 (J. W. Terborgh); 20 on Mills Island, Worcester County, on April 23, 1938 (G. A. Ammann). *Fall*: 410 on the Potomac River below Washington, D. C., on October 19, 1929 (H. C. Oberholser); 40+ in the District of Columbia on September 6, 1930 (W. H. Ball); 18 in Worcester County on November 8, 1952 (M. Gilbert). *Winter*: 90 on Blackwater Refuge on February 25, 1950; 40 in the Newport Bay area, Worcester County, on February 21, 1954; 15 on the Sassafras River on December 26, 1948 (J. E. Willoughby, J. W. Taylor, Jr.).

WOOD DUCK *Aix sponsa* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section. *Transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Uncommon in the Eastern Shore and Western Shore sections; rare in the Upper Chesapeake, Piedmont, and Ridge and Valley sections.

HABITAT.—Inland streams, ponds, and lakes that are bordered by trees; also in the upper fresh-water marshes of the tidal estuaries.

NESTING SEASON.—Early March to early September (nesting peak, late March to early July). *Extreme egg dates* (76 nests): March 10, 1951 (12 eggs in another nest on March 14, 1953), and July 25, 1950 (both extremes in Prince Georges County by C. G. Webster). *Extreme downy young dates* (88 broods): April 14, 1953, and September 2, 1953, both in Prince Georges County (C. G. Webster).

SPRING MIGRATION.—*Normal period*: February 20–March 1 to April 10–20; peak, March 1 to April 1. *Extreme date of arrival*: February 18, 1946, in Prince Georges County.

FALL MIGRATION.—August 15–25 to November 15–25; peak, September 5 to November 5. *Extreme date of arrival*: August 12, 1944, in Prince Georges County. *Extreme dates of departure*: December 10, 1927, on the Potomac River below Washington, D. C. (H. H. T. Jackson); December 4, 1951, in Anne Arundel County (Mrs. W. L. Henderson).

BREEDING POPULATION DENSITY (pairs per 100 acres).—

0.4 (3 in 714 acres) in flood-plain forest along Patuxent River, Prince Georges and Anne Arundel Counties, in 1943.

MAXIMUM COUNTS.—*Spring*: 150 near Seneca, Montgomery County, on March 19, 1948 (T. W. Donnelly). *Fall*: 184 at Patuxent Refuge, Prince Georges County, on October 29, 1944; 150 on Mataponi Creek, Prince Georges County, on September 13, 1947 (N. Hotchkiss, F. M. Uhler) ; 90 on the Nanticoke River on November 3, 1955; 40 on Gunpowder Neck, Harford County, on September 5, 1951 (T. A. Imhof) ; 35 in the District of Columbia on September 13, 1930 (W. H. Ball). *Winter* (Christmas

FIGURE 14.—Wood Duck banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

counts) : 12 in the Ocean City area on December 28, 1949; 6 at Patuxent Refuge on December 27, 1940.

BANDING.—See figure 14.

REDHEAD *Aythya americana* (Eyton)

STATUS.—*Transient and wintering*: Locally common in the tidal estuaries adjoining Chesapeake Bay in the Upper Chesapeake, Eastern Shore, and Western Shore sections (concentration areas include the Gunpowder-Middle River area, the Bush River, Chester River, Eastern Bay, Choptank River, and Patuxent River); uncommon (rare in winter) in the coastal area of Worcester County and in the interior of all sections. *Summer vagrant*: Casual in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Brackish estuarine waters with a plentiful aquatic plant growth, including such species as red-head pondweed, sago pondweed, and wild celery; occasional on inland lakes and ponds.

SPRING MIGRATION.—*Normal period*: March 1-10 to May 1-10; peak, March 15 to April 20. *Extreme dates of departure*: May 25, 1939, in Baltimore County (H. Kolb); May 20, 1949, in Queen Annes County; May 15, 1954, in Worcester County (J. K. Wright).

FALL MIGRATION.—*Normal period*: October 5-15 to December 15-25; peak, November 10 to December 10. *Extreme arrival dates*: October 1, 1956, in Cecil County (C. D. Evans, D. P. Fankhauser); October 3, 1889, in Harford County (F. C. Kirkwood).

MAXIMUM COUNTS.—*Spring*: 10,500 in the Carroll Island area, Baltimore County, on March 16, 1947; 4,000 on the Bush River, Harford County, on March 17, 1946 (Mrs. R. C. Simpson); 2,200 on the Potomac River below Washington, D. C., on March 13, 1928 (H. H. T. Jackson). *Fall*: 9,340 on Eastern Bay, Queen Annes County, on December 12, 1955; 5,000 on the Potomac River in Prince Georges and Charles Counties on November 29, 1926 (H. C. Oberholser), and November 30, 1925 (F. C. Lincoln); 3,340 on Chester River on December 6, 1955; 1,500 on Gunpowder Neck, Harford County, on December 10, 1950 (T. A. Imhof). *Winter*: 7,050 in the Kent Island area, Queen Annes County, on December 29, 1949 (Christmas count); 3,000 at Cove Point, Calvert County, on February 5, 1949 (L. K. Couch); 3,000 in the Gunpowder River area on January 6, 1952 (T. A. Imhof); 1,500 on the lower Patuxent River on February 18, 1951 (E. G. Davis)

BANDING.—See figure 15.

FIGURE 15.—Redhead banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

RING-NECKED DUCK *Aythya collaris* (Donovan)

STATUS.—*Transient*: Fairly common in all sections. *Wintering*: Uncommon in the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Piedmont section. *Summer vagrant*: Casual visitor—recorded at Marshall Dierssen Refuge, Montgomery County, on June 6, 1953 (J. W. Terborgh) and at Patuxent Refuge, Prince Georges County, throughout the summers of 1953 (F. M. Uhler) and 1955. This species has become decidedly more common since about 1945, coincident with its general increase as a breeding bird in the Northeast.

HABITAT.—Brackish or fresh estuarine waters and inland ponds and lakes.

SPRING MIGRATION.—*Normal period:* February 10–20 to May 1–10; peak, February 20 to April 5. *Extreme arrival date:* February 5, 1950, in Prince Georges County. *Extreme departure date:* May 18, 1938, in Baltimore County (H. Brackbill).

FALL MIGRATION.—*Normal period:* October 5–15 to December 1–10; peak, October 25 to November 30. *Extreme arrival dates:* September 17, 1935, in Garrett County (M. G. Brooks); October 2, 1948, in Queen Annes County. *Extreme departure date:* December 12, 1948, in Montgomery County (I. R. Barnes).

FIGURE 16.—Ring-necked Duck banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

MAXIMUM COUNTS.—*Spring*: 3,000 on the Bush River, Harford County, on March 26, 1933 (S. Cramer); 720 at Patuxent Refuge, Prince Georges County, on March 10, 1953; 250 at Dierssen Refuge, Montgomery County, on February 28, 1954 (J. W. Terborgh); 200 in the Carroll Island area, Baltimore County, on March 30, 1947. *Fall*: 45 in Montgomery County on November 27, 1949 (S. A. Briggs). *Winter*: 1,715 in southern Dorchester County on December 22, 1952 (Christmas count); 1,500 at Gibson Island, Anne Arundel County, on January 20, 1951 (Mrs. W. L. Henderson); 730 on the Susquehanna Flats on January 2, 1950 (Christmas count).

BANDING.—See figure 16.

CANVASBACK *Aythya valisineria* (Wilson)

STATUS.—*Transient*: Abundant on the Susquehanna Flats in Harford and Cecil Counties; locally common elsewhere in the tidewater areas along Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas include Eastern Bay, Fishing Bay, Tangier Sound, Pocomoke Sound, and Northeast, Sassafras, Chester, Choptank, Honga, Nanticoke, Gunpowder, Magothy, and South Rivers, the lower Patuxent River, and portions of the Potomac and Wicomico Rivers within Charles County); uncommon in the coastal area of Worcester County and in the interior of all sections. *Wintering*: Common in tidewater areas along Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas same as during transient periods); usually uncommon in the coastal area of Worcester County; rare in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: Casual in the Eastern Shore and Western Shore sections.

HABITAT.—Estuarine waters that contain a plentiful aquatic plant growth, including such species as wild celery, sago pondweed, and eel grass; also on inland lakes and ponds. Locally, Canvasbacks occur in large numbers in certain bays and estuaries that contain a rich and varied molluscan fauna.

SPRING MIGRATION.—*Normal period*: February 25–March 5 to May 1–10; peak, March 5 to April 5. *Extreme arrival date*: February 23, 1930, in Montgomery County (A. K. Fisher). *Extreme departure dates*: June 3, 1950, in Anne Arundel County (Mrs. W. L. Henderson); May 28, 1948, in Prince Georges County; May 24, 1952, in Montgomery County (P. A. DuMont).

FALL MIGRATION.—*Normal period:* October 15-25 to December 15-25; peak, November 15 to December 15. *Extreme arrival date:* October 3, 1889, on the Gunpowder River (F. C. Kirkwood).

MAXIMUM COUNTS.—*Spring*: 40,000 on the Potomac River in Prince Georges and Charles Counties on March 7, 1925 (H. C. Oberholser) ; 30,000 on the Susquehanna Flats on March 15, 1931 (C. Marburger) ; 3,000 on Bird River, Baltimore County, on

FIGURE 17.—Canvasback banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

March 7, 1948 (O. W. Crowder); 1,000+ at Gibson Island, Anne Arundel County, on March 18, 1952 (Mrs. W. L. Henderson); 800 on Fishing Bay, Dorchester County, on March 25, 1946. *Fall*: 100,000+ on the Susquehanna Flats on December 7, 1947; 50,000 on the Potomac River, Charles County, on December 5, 1924 (H. C. Oberholser); "thousands" on Fishing Bay on December 9 and 10, 1949; 2,500 in southern Charles County on December 11, 1948. *Winter*: 105,000 on the Potomac River in Prince Georges and Charles Counties on February 13, 1926 (H. C. Oberholser); 91,000 on the Susquehanna Flats on December 27, 1952 (Christmas count); 17,750 in the Ocean City area on December 27, 1955 (Christmas count); 15,424 in the Annapolis area on January 1, 1956 (Christmas count); 12,000 near the Army Chemical Center, Harford County, on January 2, 1952 (T. A. Imhof); 8,520 in southern Charles County on December 30, 1951 (Christmas count); 5,450 on the lower Patuxent River on January 12, 1955; 3,085 in southern Dorchester County on December 28, 1954 (Christmas count); 3,040 in the Kent Island area, Queen Annes County, on December 29, 1949 (Christmas count). *Summer vagrant*: About 100 in the District of Columbia on September 9, 1931 (W. L. McAtee); about 30 in the District of Columbia on August 25, 1929, and June 7, 1930 (W. H. Ball).

BANDING.—See figure 17.

GREATER SCAUP *Aythya marila* (Linnaeus)

STATUS.—*Transient and wintering*: Common in the coastal area of Worcester County; fairly common in tidewater areas along Chesapeake Bay and adjoining estuaries in the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the interior of all sections.

HABITAT.—Bays and estuaries (both salt and brackish); occasional on inland lakes and ponds.

SPRING MIGRATION.—*Normal period*: March 1-10 to May 10-20; peak March 15 to April 20. *Extreme dates of departure*: May 31, 1951, in Harford County (T. A. Imhof); May 27, 1906, in Montgomery County (H. C. Oberholser); May 24, 1901, in Allegany County (G. Eifrig); May 23, 1920, in the District of Columbia (J. Kittredge, Jr.).

FALL MIGRATION.—*Normal period*: October 1-10 to December 1-10. *Extreme date of arrival*: September 26, 1920, in the District of Columbia (J. Kittredge, Jr.).

MAXIMUM COUNTS.—High counts for the Greater Scaup and Lesser Scaup are combined under the latter species.

LESSER SCAUP *Aythya affinis* (Eyton)

STATUS.—*Transient*: Common, occasionally abundant, in tide-water areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the interior of all sections. *Wintering*: Common in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the in-

FIGURE 18.—Lesser Scaup banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

terior of all sections. *Summer vagrant*: Casual visitor—recorded in Worcester, Dorchester, Queen Annes (P. F. Springer), Anne Arundel (I. E. Hampe), Prince Georges, Charles (A. R. Stickley, Jr.), Montgomery (J. Hailman, K. Stecher), and Garrett Counties, and in the District of Columbia (numerous observers).

HABITAT.—Bays and estuaries (both salt and brackish water) and inland ponds, reservoirs, and lakes.

SPRING MIGRATION.—*Normal period*: March 1–10 to May 10–20; peak, March 15 to April 20. *Extreme departure dates*: June 8, 1921 (A. Wetmore), and June 8, 1931 (W. L. McAtee), in the District of Columbia; June 8, 1929, in Prince Georges and Charles Counties (H. C. Oberholser); June 8, 1953, in Garrett County.

FALL MIGRATION.—*Normal period*: September 25–October 5 to December 15–25; peak, November 10 to December 10. *Extreme arrival dates*: September 19, 1927, in the District of Columbia (H. H. T. Jackson); September 24, 1953, in Dorchester County.

MAXIMUM COUNTS (Greater and Lesser Scaup).—*Spring*: 73,000 on the Potomac River in Prince Georges and Charles Counties on March 17, 1926 (H. C. Oberholser); 6,250 in the Carroll Island area, Baltimore County, on March 16, 1947 (O. W. Crowder); 5,000 in the District of Columbia on March 10, 1920 (A. Wetmore); 1,790 in Anne Arundel County on March 30, 1946; 1,500 at Eastern Neck Island, Kent County, on April 1, 1938 (G. A. Ammann); 1,350 on the Choptank River on March 25, 1946. *Fall*: 118,000 on the Potomac River in Charles County on November 17, 1926 (H. C. Oberholser); 25,000 on the Susquehanna Flats on December 7, 1947. *Winter*: 10,000 in southeastern Worcester County on December 22, 1947 (Christmas count); 2,100 on Seneca Creek, Baltimore County, on February 14, 1952; 2,000 on the Susquehanna Flats on December 26, 1952 (Christmas count); 1,400 on the lower Patuxent River on February 18, 1951. *Summer vagrant*: 9 in the District of Columbia on June 21 and August 13, 1930 (W. J. Whiting); 4 at Port Tobacco, Charles County, on June 27, 1953 (A. R. Stickley, Jr.).

BANDING.—See figure 18.

COMMON GOLDENEYE *Bucephala clangula* (Linnaeus)

STATUS.—*Transient and wintering*: Common in tidewater areas of the Eastern Shore and Western Shore sections; fairly common (uncommon in winter) in tidewater areas of the Upper Chesapeake section; uncommon (fairly common locally) in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; uncommon (rare in winter) in the Allegheny Mountain section. Concentration areas

include the lower Potomac River, lower Patuxent River, Chester River, Eastern Bay, Choptank River, Honga River, Fishing Bay, Nanticoke River, Tangier Sound, Pocomoke Sound, and Chincoteague Bay. *Summer vagrant*: Casual visitor—recorded in Charles (J. W. Taylor, Jr.), Calvert (M. H. Martin), Anne Arundel (Mrs. W. L. Henderson, R. R. Kerr), and Baltimore (C. D. Hackman) Counties.

HABITAT.—Bays and estuaries (both salt and brackish waters); also on inland lakes, reservoirs, and large streams.

SPRING MIGRATION.—*Normal period*: March 1–10 to April 20–30; peak, March 15 to April 10. *Extreme departure dates*: May 11, 1953, in Anne Arundel County (Mrs. G. Tappan, Mrs. W. L. Henderson); May 5, 1939, in Charles County (C. Cottam, F. M. Uhler).

FALL MIGRATION.—*Normal period*: October 15–25 to December 15–25; peak, November 10 to December 10. *Extreme arrival dates*: September 17, 1935, in Garrett County (M. G. Brooks); October 8, 1901, on the Potomac River below Washington, D. C. (B. Greenwood).

MAXIMUM COUNTS.—*Spring*: 250 on Chesapeake Bay, Queen Annes County, on March 29, 1955; 150 on the Chester River on March 2, 1946; 100 near Solomons Island, Calvert County, on March 15, 1952 (L. Griffin). *Fall*: 1,500 on Fishing Bay, Dorchester County, on December 10, 1949; 600 in the Kent Island area, Queen Annes County, on December 1, 1951 (Mr. and Mrs. I. C. Hoover). *Winter*: 2,000 on the Potomac River off Mt. Vernon, Virginia, on December 27, 1920 (A. Wetmore); 1,947 near St. Michaels, Talbot County, on December 29, 1953 (Christmas count); 1,646 in the Annapolis area on January 1, 1956 (Christmas count); 1,200 in southern Dorchester County on December 28, 1953 (Christmas count); 1,066 in the Kent Island area on December 29, 1949 (Christmas count); 567 in St. Marys County on January 2, 1956 (Christmas count); 432 in the Solomons Island area on December 21, 1946 (Christmas count); 387 in the Ocean City area on December 27, 1948 (Christmas count); 200 at Dierssen Refuge, Montgomery County, on January 31, 1953 (E. D. Cooley); 80 near Green Spring in Allegany County on February 7, 1924 (M. G. Brooks).

[BARROW'S GOLDENEYE] *Bucephala islandica* (Gmelin)

STATUS.—Hypothetical. About December 20, 1922, 1 was reported to have been taken at the mouth of Bush River by A. J. Dando (Hasbrouck, 1944). As no specimen is available, and particularly because of the similarity of this species to the Com-

mon Goldeneye, this record must remain hypothetical. The female specimen reported by Richmond (1891) as shot on the Potomac River was found to be a Common Goldeneye.

BUFFLEHEAD *Bucephala albeola* (Linnaeus)

STATUS.—*Transient*: Common in tidewater areas of the Eastern Shore and Western Shore sections; fairly common in tidewater areas of the Upper Chesapeake section and in the interior of all sections. *Wintering*: Common in tidewater areas of the Eastern Shore section; fairly common in the tidewater areas of the Western Shore section; uncommon in the tidewater areas of the Upper Chesapeake section; rare in the interior of all sections. One of the outstanding concentration areas is found on the Little Choptank River in Dorchester County. Other concentration areas include Chincoteague and Sinepuxent Bays, Choptank River, Eastern Bay, Chester River, and tidewaters of Anne Arundel and Calvert Counties. *Summer vagrant*: Casual visitor—1 at Sandy Point, Anne Arundel County, on July 7, 1952 (R. R. Kerr).

HABITAT.—Bays and estuaries (both salt and brackish waters); also inland ponds, reservoirs, lakes, and (rarely) streams.

SPRING MIGRATION.—*Normal period*: March 10–20 to April 20–30; peak, March 25 to April 15. *Extreme arrival date*: February 25, 1950, in Prince Georges County (P. F. Springer). *Extreme departure dates*: June 9, 1951, in Charles County (J. W. Taylor, Jr.); June 3, 1955, in Prince Georges County (F. M. Uhler); June 2, 1953, in Anne Arundel County (Mr. and Mrs. W. L. Henderson).

FALL MIGRATION.—*Normal period*: October 20–30 to December 10–20; peak, November 1 to November 30. *Extreme arrival dates*: September 3, 1956, in Caroline County (M. W. Hewitt); October 10, 1893, in Frederick County (W. H. Fisher).

MAXIMUM COUNTS.—*Spring*: 201 on the South River, Anne Arundel County, on April 9, 1954; 77 in southern St. Marys County on April 12, 1954. *Fall*: 500 on Eastern Bay, Queen Annes County, on November 23, 1951 (V. B. Daiker); 280 in the North Beach area, Calvert County, on November 23, 1952 (L. W. Sieck); 240 on South River, Anne Arundel County, on November 14, 1954; 75 on Mountain Lake, Garrett County, on November 2, 1951 (H. E. Slater). *Winter*: 650 in the Ocean City area on December 27, 1948 (Christmas count); 646 in southeastern Worcester County on December 22, 1947 (Christmas count); 591 in the Annapolis area on January 2, 1955 (Christmas count); 553 in St. Marys County on January 2, 1956 (Christmas count); 150

on Chester River, Kent County, on December 17, 1926 (T. Denmead).

BANDING.—Two Buffleheads recovered in Anne Arundel and St. Marys Counties in winter (December 12–January 1) had been banded during late summer (July 22–August 8) in southern Manitoba. Two others banded in Queen Annes County on March 15 and March 18, 1956, were recovered in eastern Wisconsin and southwestern Saskatchewan on October 19, 1956, and September 15, 1956, respectively.

OLDSQUAW *Clangula hyemalis* (Linnaeus)

STATUS.—*Transient and wintering*: Common in tidewater areas of the Eastern Shore and Western Shore sections; uncommon in tidewater areas of the Upper Chesapeake section; rare in the interior of all sections. *Summer vagrant*: Casual visitor—recorded in Anne Arundel County in 1946 (F. M. Uhler), in 1950 (E. La Fleur, R. Beasley) and 1953 (Mr. and Mrs. S. Henderson), and in Prince Georges County in 1897 (G. Marshall).

HABITAT.—Bays and estuaries (chiefly salt-water); more sparingly in the ocean; rarely on inland ponds, lakes, and streams.

SPRING MIGRATION.—*Normal period*: March 1–10 to April 20–30; peak, March 15 to April 15. *Extreme departure dates*: May 11, 1952, in Worcester County (D. A. Cutler); May 8, 1950, in Anne Arundel County (Mrs. W. L. Henderson).

FALL MIGRATION.—*Normal period*: October 20–30 to December 10–20; peak, November 5 to December 5. *Extreme arrival dates*: October 18, 1956, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); October 19, 1956, in Dorchester County.

MAXIMUM COUNTS.—*Spring*: 4,000 in Talbot County on March 18, 1931 (H. C. Oberholser); 664 in the Western Shore section (West River to St. Georges Island) on March 25, 1920 (A. Wetmore); 540 on the Potomac River near the mouth of the Wicomico River on March 26, 1920 (A. Wetmore). *Fall*: "Thousands" near the mouth of the Chester River on November 29, 1945 (E. R. Quortrup); "thousands" at the mouth of the Manokin River, Somerset County, on December 6, 1911 (F. C. Kirkwood); 500 on Eastern Bay and the Choptank River on November 23, 1951; 200 near South Point in Chincoteague Bay on November 11, 1950; 10 near Seneca, Montgomery County, on November 28, 1953 (P. A. DuMont). *Winter*: 7,032 near St. Michaels in Talbot County on December 29, 1953 (Christmas count); 2,413 in Ocean City area on December 27, 1955 (Christmas count); 1,020 in southern Anne Arundel County on January 6, 1955; 927 in southeastern Wor-

cester County on December 22, 1947 (Christmas count). *Summer vagrant*: 12 at Gibson Island, Anne Arundel County, on June 8, 1953 (Mr. and Mrs. W. L. Henderson).

HARLEQUIN DUCK *Histrionicus histrionicus* (Linnaeus)

STATUS.—Casual visitor along the coast. One was recorded at Ocean City on December 28, 1949 (Davis and Willoughby, 1950). Another was observed on March 1, 1955, and April 30, 1955 (D. A. Cutler), at the Ocean City Inlet.

[LABRADOR DUCK] *Camptorhynchus labradorium* (Gmelin)

STATUS.—Hypothetical. Now extinct, this species probably occurred in the Chesapeake Bay area at one time. Audubon (1838 and 1843) mentions seeing them in a market at Baltimore.

COMMON EIDER *Somateria mollissima* (Linnaeus)

STATUS.—Casual visitor. A specimen, formerly in the old collection of the Maryland Academy of Sciences (but no longer extant), was reported to have been collected in Charles County, below Marshall Hall (Kirkwood, 1895). An immature male was closely observed at Ocean City on February 20, 1949 (I. R. Barnes, P. F. Springer), and 1 was observed at the same location on May 15, 1949 (J. Cadbury, D. A. Cutler). Five were seen at Ocean City on December 26 and 27, 1955 (E. G. Baldwin, P. A. DuMont), and 2 on February 26, 1956 (Mr. and Mrs. I. C. Hoover).

KING EIDER *Somateria spectabilis* (Linnaeus)

STATUS.—Casual visitor. One was collected (USNM) on the lower Potomac River (purchased at D. C. market on December 12, 1866). A female was collected on the Severn River on December 12, 1895 (F. C. Kirkwood). Another female, killed on the Honga River in Dorchester County on November 9, 1928, was mounted and exhibited in a store at Hooper Island (Perkins, 1933). Two, a female (McDonogh Museum) and an immature male (Md. Acad. Sci.), were collected on November 18, 1933, at the mouth of the Little Choptank River in Dorchester County (H. Matthai); 2 others (a female collected—USNM) were seen by Mr. Matthai at the same location on November 25, 1933. One immature male and 1 female were seen at Ocean City on January 29, 1950 (Barnes and Handley, 1950); the immature male was observed several times after this, through February 26. A single bird was observed at Ocean City on October 28 and December 28–29, 1951 (J. W. Taylor, Jr.). Another was seen at Ocean City on December 21 and 29, 1952.

WHITE-WINGED SCOTER *Melanitta deglandi* (Bonaparte)

STATUS.—*Transient*: Abundant in the coastal area of Worcester County; common in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; fairly common in tidewater areas of the Upper Chesapeake section; rare in the interior of all sections. *Wintering*: Common in tidewater areas of the Eastern Shore section; fairly common in tidewater areas of the Western Shore section; uncommon in tidewater areas of the Upper Chesapeake section. *Summer vagrant*: Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Most numerous on littoral zone of ocean; also regular in bays and estuaries and occasional on inland lakes and ponds.

SPRING MIGRATION.—*Normal period*: March 10–20 to May 1–10; peak, March 25 to April 25. *Extreme departure dates*: May 21, 1939, in Queen Annes County (H. Kolb); May 21, 1950, between Sandy Point and Kent Island (S. H. Low); May 15, 1954, in Worcester County (J. K. Wright).

FALL MIGRATION.—*Normal period*: October 5–15 to December 5–15; peak, October 20 to December 1. *Extreme arrival date*: September 24, 1954, in Kent County (Mr. and Mrs. W. L. Henderson).

MAXIMUM COUNTS.—*Spring*: 8,000 between Ocean City and the Delaware line on April 6, 1946; 1,000+ on Eastern Bay on May 1, 1925 (F. C. Kirkwood). *Fall*: 3,000 in the Kent Island area, Queen Annes County, on December 1, 1951 (R. R. Kerr); 400 at North Beach, Calvert County, on November 23, 1952 (L. W. Sieck). *Winter* (Christmas counts): 3,391 near St. Michaels, Talbot County, on December 29, 1954; 2,636 in the Ocean City area on December 27, 1954; 565 in southeastern Worcester County on December 22, 1947; 203 in the Solomons Island area, Calvert County, on December 21, 1946.

SURF SCOTER *Melanitta perspicillata* (Linnaeus)

STATUS.—*Transient*: Abundant in the coastal area of Worcester County; common in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; uncommon in tidewater areas of the Upper Chesapeake section; casual in the Piedmont section—1, March 29–30, 1954, at Dierssen Refuge, Montgomery County (J. W. Terborgh, E. G. Baldwin). *Wintering*: Common in the coastal area of Worcester County; fairly common in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; rare in tidewater areas of the Upper Chesapeake section.

Summer vagrant: Casual in the Eastern Shore section—recorded in Worcester County (L. T. Berry).

HABITAT.—Most numerous on littoral zone of ocean; also regular on bays and estuaries (chiefly salt-water).

SPRING MIGRATION.—*Normal period*: February 20–March 1 to May 1–10; peak, March 1 to April 20. *Extreme departure dates*: May 20, 1950, and May 19, 1906 (F. C. Kirkwood), at Ocean City.

FALL MIGRATION.—*Normal period*: October 1–10 to December 1–10; peak, October 15 to November 25. *Extreme arrival date*: September 27, 1949, at Ocean City.

MAXIMUM COUNTS.—Spring: 19,000 between Ocean City and the Delaware line on March 1, 1955. *Winter* (Christmas counts): 5,352 in the Ocean City area on December 27, 1954; 1,066 in southeastern Worcester County on December 23, 1946.

COMMON SCOTER *Oidemia nigra* (Linnaeus)

STATUS.—*Transient*: Common in the coastal area of Worcester County; fairly common elsewhere in tidewater areas of the Eastern Shore and Western Shore sections; uncommon in tidewater areas of the Upper Chesapeake section. *Wintering*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; rare in the tidewater areas of the Upper Chesapeake section.

HABITAT.—Most numerous in littoral zone of ocean; also regular in bays and estuaries (chiefly salt-water).

SPRING MIGRATION.—*Normal period*: February 10–20 to May 5–15; peak, February 25 to April 25. *Extreme date of arrival*: February 6, 1954, in Worcester County. *Extreme dates of departure*: May 22, 1949, and May 20, 1950, at Ocean City.

FALL MIGRATION.—*Normal period*: September 10–20 to November 20–30; peak, October 10 to November 10. *Extreme arrival dates*: August 4, 1945, and August 27, 1900 (F. C. Kirkwood), at Ocean City.

MAXIMUM COUNTS.—*Spring*: 6,300 between Ocean City and the Delaware line on April 6, 1946. *Winter* (Christmas counts): 2,368 in the Ocean City area on December 27, 1954; 71 in southeastern Worcester County on December 22, 1947.

RUDDY DUCK *Oxyura jamaicensis* (Gmelin)

STATUS.—*Transient*: Common, locally abundant, in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common on inland water areas of all sec-

tions. *Wintering*: Common in tidewater areas of the Eastern Shore and Western Shore sections; fairly common in tidewater areas of the Upper Chesapeake section; rare on inland water areas of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. Concentration areas include: the Potomac River in Charles County, Wicomico River in Charles and St. Marys Counties, lower Patuxent River, South River, West River, Magothy River, Patapsco River, Gunpowder River, Susquehanna Flats, Sassafras River, Chester River, Eastern Bay, Choptank River, Fishing Bay, and the Nanticoke River. *Summer vagrant*: Rare visitor in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Brackish bays and estuaries that contain plentiful aquatic plant growth, or a rich molluscan fauna; also on inland lakes and ponds.

SPRING MIGRATION.—*Normal period*: March 1–10 to May 10–20; peak, March 15 to April 10. *Extreme arrival date*: February 27, 1948, in Prince Georges County. *Extreme departure dates*: June 7, 1930, in the District of Columbia (W. H. Ball); June 2, 1953, in Dorchester County (Mr. and Mrs. W. L. Henderson); May 31, 1948, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 15–25 to December 5–15; peak, October 25 to November 30. *Extreme arrival dates*: August 27, 1935, in Garrett County (M. G. Brooks); September 2, 1950, in Anne Arundel County. *Extreme departure date*: December 15, 1935, in Garrett County (M. G. Brooks).

MAXIMUM COUNTS.—*Spring*: 12,500 on Fishing Bay, Dorchester County, on March 21 and March 25, 1946; 6,150 in the South River area, Anne Arundel County, on April 9, 1954; 3,520 in southern Charles County on March 20, 1948; 2,500 in the Point Lookout area, St. Marys County, on March 29, 1953 (J. W. Terborgh); 2,300 in the Carroll Island area, Baltimore County, on March 16, 1947 (O. W. Crowder). *Fall*: 26,330 in northern Anne Arundel County on November 23, 1955; 5,650 in southern Charles County on December 11, 1948; 1,000+ in St. Marys County on November 8, 1946 (F. M. Uhler); 200 at Mountain Lake, Garrett County, on November 2, 1951 (H. E. Slater). *Winter*: 14,190 in the Annapolis area on January 2, 1955 (Christmas count); 10,000 in the Port Tobacco area, Charles County, on December 27, 1941 (Christmas count); 7,500 in the Wicomico River area, St. Marys County, on February 11, 1950 (R. J. Beaton, J. W. Taylor, Jr.); 6,880 on the South and West Rivers, Anne Arundel County, on January 2, 1949; 5,000 on the lower Patuxent

River on February 18, 1951; 4,400 on the Patapsco River on January 25, 1955. *Summer vagrant*: 40 on June 11, 1953, and 37 on June 27, 1953, in the Port Tobacco area, Charles County (A. R. Stickley, Jr.).

BANDING.—One Ruddy Duck recovered in Baltimore County on December 9, 1931, had been banded as a young bird in eastern Wisconsin on September 25, 1931.

MASKED DUCK *Oxyura dominica* (Linnaeus)

STATUS.—Accidental visitor. An adult male was collected (USNM) in Cecil County near Elkton on September 8, 1905 (Houghton, 1906).

HOODED MERGANSER *Lophodytes cucullatus* (Linnaeus)

STATUS.—*Breeding*: Rare in the Allegheny Mountain and Piedmont sections—an adult female and 8 small young were observed on Cherry Creek in Garrett County on June 21, 1946 (Stewart and Robbins, 1947a), and an adult with young was seen near Seneca in Montgomery County on May 1, 1954 (W. B. Tyrrell). *Transient*: Common in tidewater areas of the Eastern Shore section; fairly common in tidewater areas of the Western Shore and Upper Chesapeake sections and in the interior of all sections. *Wintering*: Fairly common in tidewater areas of the Eastern Shore section; uncommon in tidewater areas of the Western Shore and Upper Chesapeake sections; rare in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: Rare in all sections.

HABITAT.—Creeks and ponds in tidal marshes; also on inland streams, lakes, and ponds.

SPRING MIGRATION.—*Normal period*: February 15–25 to May 5–15; peak, March 10 to April 20. *Extreme arrival date*: February 14, 1953, in Frederick County (J. W. Richards). *Extreme departure date*: May 27, 1949, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 25–October 5 to December 5–15; peak, November 1 to November 30. *Extreme arrival dates*: September 17, 1895, in Montgomery County (E. J. Brown); September 20, 1948, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 80 on Blackwater Refuge, Dorchester County, on March 21, 1946. *Fall*: 50 in the Port Tobacco area, Charles County, on November 19, 1950; 31 at Patuxent Refuge, Prince Georges County, on November 26, 1947; 24 at Great Falls, Montgomery County, on November 14, 1948 (K. H. Weber). *Winter*: 100 on the Potomac River, off Mt. Vernon, Virginia, on February 8, 1920 (F. Harper); 70 on Blackwater

Refuge on December 27, 1949 (Christmas count); 50 in the Port Tobacco area on December 27, 1941 (Christmas count); 35 on Gunpowder Neck, Harford County, on December 31, 1950 (T. A. Imhof).

COMMON MERGANSER *Mergus merganser* Linnaeus

STATUS.—*Transient and wintering*: Common in tidewater areas of the Upper Chesapeake section; fairly common in tidewater areas of the Eastern Shore and Western Shore sections and in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; uncommon in the Ridge and Valley, and Allegheny Mountain sections. *Summer vagrant*: Casual visitor—recorded in Montgomery (D. M. Thatcher), Anne Arundel (J. W. Taylor, Jr.), and Prince Georges Counties.

HABITAT.—Brackish bays, estuaries, and marshes, and inland ponds, lakes, and streams (rare in salt-water habitats).

SPRING MIGRATION.—*Normal period*: February 15–25 to May 5–15; peak, March 5 to April 25. *Extreme arrival dates*: February 7, 1903, in Allegany County (G. Eifrig); February 12, 1945, in Prince Georges County. *Extreme departure dates*: May 26, 1905 (H. C. Oberholser), and May 24, 1952 (J. M. Abbott), in the District of Columbia; May 18, 1944, in Prince Georges County.

FALL MIGRATION.—October 20–30 to December 15–25; peak, November 15 to December 10. *Extreme dates of arrival*: September 22, 1951, in the District of Columbia (C. L. Clagett); September 23, 1932, in Prince Georges County (H. C. Oberholser); September 29, 1894, in Baltimore County (F. C. Kirkwood). *Extreme date of departure*: December 27, 1940, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 195 in the Carroll Island area, Baltimore County, on March 16, 1947 (O. W. Crowder); 150 in the District of Columbia on March 13, 1931 (W. L. McAtee); 100+ at Port Tobacco, Charles County, on March 22, 1952 (H. A. Sutton, P. A. DuMont); 85 near Perry Point, Cecil County, on March 5, 1949 (I. R. Barnes). *Winter*: 1,171 on Blackwater Refuge, Dorchester County, on December 23, 1951 (Christmas count); 438 on the Susquehanna Flats on December 28, 1951 (Christmas count); 400 near Accokeek, Prince Georges County, on December 29, 1944 (Christmas count); 350 on Loch Raven Reservoir, Baltimore County, on January 11, 1947 (H. Kolb); 242 in the Wicomico River area, southern Charles County, on January 2, 1949 (Christmas count).

RED-BREASTED MERGANSER *Mergus serrator* Linnaeus

STATUS.—*Transient*: Common, occasionally abundant, in the coastal area of Worcester County; fairly common elsewhere in tidewater areas of the Eastern Shore and Western Shore sections; uncommon in tidewater areas of the Upper Chesapeake section and in the interior of all sections. *Wintering*: Fairly common in the coastal area of Worcester County; uncommon elsewhere in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the interior of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: Rare in the coastal area of Worcester County and in tidewater areas of Somerset County; casual visitor in tidewater areas elsewhere—recorded in Dorchester, Anne Arundel, and St. Marys Counties.

HABITAT.—Bays and estuaries (chiefly salt-water); also occurs on the ocean and occasionally on inland ponds, lakes, and streams.

SPRING MIGRATION.—*Normal period*: March 5–15 to May 15–25; peak, March 25 to April 25. *Extreme dates of departure*: May 30, 1927, in the District of Columbia (W. H. Ball); May 30, 1948, in Frederick County.

FALL MIGRATION.—*Normal period*: October 15–25 to December 10–20; peak, November 1 to November 30. *Extreme arrival date*: September 19, 1945, in Worcester County. *Extreme departure date*: December 23, 1901, in Allegany County (G. Eifrig).

MAXIMUM COUNTS.—*Spring*: 200 on Deep Creek Lake, Garrett County, on April 18–19, 1936 (M. G. Brooks); 153 in the Ocean City area on April 6, 1946; 19 in the District of Columbia on April 17, 1918 (R. W. Moore); 15 near Seneca, Montgomery County, on April 18, 1949 (F. C. Cross). *Fall*: 5,000 on Sinepuxent Bay, south of Ocean City, on November 2–3, 1945; 50 on Gunpowder Neck, Harford County, on October 21, 1950 (T. A. Imhof); 20 on Mountain Lake, Garrett County, on November 3, 1951 (H. E. Slater). *Winter* (Christmas counts): 462 in the Ocean City area on December 28, 1949; 77 near St. Michaels, Talbot County, on December 29, 1953.

Family CATHARTIDAE**TURKEY VULTURE *Cathartes aura* (Linnaeus)**

STATUS.—*Breeding and transient*: Common in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; fairly common in the Ridge and Valley section; uncommon (occasionally fairly common during migration) in the Allegheny Mountain section. *Wintering*: Abundant in the Eastern Shore section;

common in the Western Shore, Upper Chesapeake, and Piedmont sections; fairly common in the Ridge and Valley section; rare in the Allegheny Mountain section.

HABITAT.—A wide-ranging edge species that occurs regularly in agricultural, marsh, and other open areas as well as in adjacent forested tracts.

NESTING SEASON.—Early April to late August (nesting peak, late April to mid-July). *Extreme egg dates* (91 nests): April 3, 1943, in Anne Arundel County and June 10, 1923 (F. C. Kirkwood), in Baltimore County. *Extreme nestling dates* (25 nests): May 13, 1954, in Caroline County (A. J. Fletcher) and August 29, 1942, in Anne Arundel County.

MIGRATION PERIODS.—*Approximate spring period*: January 25 to March 20. *Approximate fall period*: October 25 to December 10.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

0.3 (7 in 2,656 acres) in mixed habitats (including forest and brush, with scattered agricultural areas and abandoned farmlands) along the border between Anne Arundel and Prince Georges Counties in 1943.

0.1 (7 in 11,520 acres) in "general farmland" (various agricultural habitats, chiefly hayfields and pastures, with little cover owing to widespread clean-farming practices) in Frederick County in 1950 (Stewart and Meanley, 1950).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 1,334 in the Ocean City area on December 27, 1955; 704 near Denton, Caroline County, on December 26, 1953; 400 near Crisfield, Somerset County, on December 26, 1949.

BANDING.—Some of the Turkey Vultures, occurring in Maryland during the summer, range farther south during the colder months as shown by the following records: 1 banded in Howard County on August 24 and recovered in northeastern North Carolina on January 23; and 2 recovered in Somerset and Frederick Counties on April 7 and July 19, respectively, that had been banded in southeastern Virginia (Elizabeth City County) in winter (December 15–January 6). A movement from Maryland to the north is also shown by a bird that was banded in Dorchester County on March 12 and recovered in central New Jersey on August 15. Local movements are indicated by 5 birds banded in Prince Georges County in fall and winter (October 4–January 9), all of which were recovered in winter and spring (December 10–April 20) between 12 and 35 miles from the point of banding. Another bird banded in Worcester County on June 5 was recovered the following year on July 3 in Dorchester County (37 miles from

point of banding). Occasional erratic seasonal movements are shown by the following records: 1 recovered in Prince Georges County on December 23 that had been banded in southeastern Virginia on April 19; 1 recovered in Howard County on December 3, that had been banded in northern Virginia (Alexandria) on August 26, and 1 banded in Prince Georges County on October 8, and recovered in south-central Pennsylvania on December 10, 6 years later.

BLACK VULTURE *Coragyps atratus* (Bechstein)

STATUS.—Permanent resident (see fig. 19): Common in the southern part of the Western Shore section (St. Marys, Charles, and Calvert Counties and southern Prince Georges County); fairly common in the Potomac River Valley, extending from the

FIGURE 19.—Breeding range of Black Vulture.

District of Columbia to Williamsport in Washington County; uncommon in the northern part of the Western Shore section (Anne Arundel and northern Prince Georges Counties), in the southern part of the Piedmont section (Howard and Montgomery Counties), in western Frederick County (Frederick Valley), eastern Washington County (Hagerstown Valley and the Blue Ridge), in the Susquehanna River Valley (Harford and Cecil Counties), in the northern part of the Eastern Shore section (southern Queen

Annes and northern Talbot Counties), and along the Pocomoke River (in Wicomico and Worcester Counties); rare, elsewhere in the Eastern Shore, Upper Chesapeake, and Piedmont sections and in the western part of the Ridge and Valley section. Definite nest records are from St. Marys (Court, 1924), Charles (A. D. Jones), Montgomery (Wimsatt, 1939; S. H. Low), Prince Georges (Stewart and Robbins, 1947a), Anne Arundel (Dorsey, 1947), Harford (Kolb, 1949b), Baltimore (Smyth, 1952), and Wicomico Counties. Alexander Wetmore states that this species was rare in Maryland until about 30 years ago.

HABITAT.—A wide-ranging edge species that occurs in agricultural and other open habitats as well as in adjacent forested areas.

NESTING SEASON.—Mid-March to early July. *Extreme egg dates* (12 nests): March 14, 1952, in Charles County (A. D. Jones) and May 17, 1947, in Harford County (Kolb, 1949b). *Extreme nestling dates* (4 nests): April 29, 1951, in Baltimore County (Smyth, 1952) and July 4, 1953, in Montgomery County (S. H. Low).

MAXIMUM COUNTS.—*Spring*: 75 at Carderock, Montgomery County, on March 28, 1948 (E. J. Stivers); 40 near Buckeystown, Frederick County, on April 29, 1950. *Winter*: 100 near Plummers Island, Montgomery County, on February 11, 1945 (A. Wetmore); 90 in St. Marys County on January 31, 1954 (J. W. Terborgh, et al.); 69 in the District of Columbia area on December 20, 1952 (Christmas count); 65 near Accokeek, Prince Georges County, on December 22, 1947 (Christmas count); 62 in the Wicomico River area in southern Charles County on December 28, 1952 (Christmas count); 51 in the Point Lookout area, St. Marys County, on December 22, 1937 (Christmas count); 16 near Denton, Caroline County, on December 26, 1953 (Christmas count); 12 in the Catoctin Mountain area, Frederick County, on December 30, 1951 (Christmas count).

BANDING.—One Black Vulture recovered in Kent County on March 6, 1939, had been banded as an adult in southeastern Virginia (Elizabeth City County) on May 5, 1935.

Family ACCIPITRIDAE

SWALLOW-TAILED KITE *Elanoides forficatus* (Linnaeus)

STATUS.—*Casual visitor.* A specimen (USNM) was collected at Ellicott City, Howard County, on August 7, 1879. A mounted specimen examined by Kirkwood (1895) was shot near Catonsville, Baltimore County, in late July or early August, 1889. An-

other was collected in Montgomery County on August 3, 1895 (Bent, 1937).

GOSHAWK *Accipiter gentilis* (Linnaeus)

STATUS.—*Breeding*: Formerly rare (one nest record) in the Allegheny Mountain section—in 1901, a pair was present all summer and nested about 3 miles above Jennings in Garrett County (Behr, 1914). *Transient and wintering*: Uncommon and irregular in the Allegheny Mountain section; rare and irregular in all other sections. Definite transient and wintering records have been made in Garrett (Brooks, 1936c), Allegany (specimens—Kirkwood, 1895), Washington (specimen—J. N. Hamlet), Montgomery (specimens—USNM), Baltimore (F. C. Kirkwood), Prince Georges (specimen—Fisher, 1918; also several sight records), Talbot (fide R. L. Kleen), and Dorchester (specimen—Cottam and Uhler, 1935) Counties.

HABITAT.—*Breeding*: Behr (1914) mentions that this species disappeared as a breeding bird in Garrett County, with the cutting of spruce and hemlock. *Transient and wintering*: Occurs in various forest edge habitats.

PERIOD OF OCCURRENCE.—The dates of occurrence of transient and wintering birds are uniformly distributed between the extremes of September 28, 1944 (Stewart et al., 1952) and the middle of March, 1918 (Cottam and Uhler, 1935).

SHARP-SHINNED HAWK *Accipiter striatus* Vieillot

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain section; uncommon in the Ridge and Valley section; rare (formerly more numerous) in the Piedmont section. *Transient*: Common in all sections (a concentration area during the fall flight is found on Hooper and Barren Islands in Dorchester County). *Wintering*: Uncommon in the Eastern Shore and Western Shore sections; rare in the Upper Chesapeake, Piedmont, and Ridge and Valley sections.

HABITAT.—Occurs most commonly in areas with extensive wooded tracts. During migration, especially in the fall, this species concentrates along the ridge tops of the Allegheny Mountain, and Ridge and Valley sections, along the Chesapeake Bay shores of the Eastern Shore and Western Shore sections, and along the coast.

NESTING SEASON.—Early May to mid-July. *Extreme egg dates* (5 nests): May 15, 1910, in the District of Columbia (E. J. Court) and May 31, 1891, in Montgomery County (Stabler, 1891).

Nestling date (1 nest): July 11, 1938, in Garrett County (L. M. Llewellyn).

SPRING MIGRATION.—*Normal period*: February 25–March 5 to May 10–20; peak, April 5 to May 5. *Extreme date of arrival*: February 8, 1943, in Prince Georges County. *Extreme date of departure*: May 28, 1953, in Charles County (A. R. Stickley, Jr.).

FALL MIGRATION.—*Normal period*: September 1–10 to November 15–25; peak, September 15 to October 25. *Extreme dates of arrival*: August 16, 1943, in Prince Georges County; August 20, 1889, in the District of Columbia (C. W. Richmond). *Extreme date of departure*: December 6, 1953, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 105 at Patuxent Refuge, Prince Georges County, on April 26, 1946. *Fall*: 190 at Monument Knob on the boundary between Frederick and Washington Counties on October 11, 1953 (R. J. Beaton); 113 at White Marsh, Baltimore County, on October 1, 1954 (C. D. Hackman); 89 at Seneca, Montgomery County, on September 22, 1951 (D. Power). *Winter* (Christmas counts): 17 in the Ocean City area on December 27, 1953; 5 in the Point Lookout area, St. Marys County, on December 22, 1937; 5 in southern Dorchester County on December 28, 1955.

COOPER'S HAWK *Accipiter cooperii* (Bonaparte)

STATUS.—*Breeding*: Fairly common in the Western Shore section; uncommon elsewhere in all sections. *Transient*: Fairly common in all sections (a concentration area during the fall flight is found on Hooper and Barren Islands in Dorchester County). *Wintering*: Uncommon in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; rare in the Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—Forest and wood margin habitats, occurring most commonly in areas that contain extensive forested tracts.

NESTING SEASON.—Mid-April to late July. *Extreme egg dates* (29 nests): April 21, 1918, in the District of Columbia (E. J. Court) and June 5, 1892, in Montgomery County (H. B. Stabler). *Extreme nestling dates* (10 nests): June 5, 1892, in Montgomery County (H. B. Stabler) and July 23, 1937, in Worcester County (Vaughn, 1937).

SPRING MIGRATION.—March 1–10 to May 5–15; peak, April 5 to April 30. *Extreme date of arrival*: February 24, 1949, in Prince Georges County. *Extreme dates of departure*: May 18, 1921, and May 17, 1917, in the District of Columbia area (McAtee, 1921).

FALL MIGRATION.—*Normal period*: September 1–10 to November 15–25; peak, September 15 to October 25. *Extreme dates of*

arrival: August 24, 1945, in Worcester County; August 27, 1953, in Talbot County (R. L. Kleen). *Extreme date of departure*: November 28, 1951, in Frederick County (J. W. Richards).

BREEDING POPULATION DENSITY (pairs per 100 acres).—

0.2 (3 in 1,856 acres) in upland forest and brush (both pine and deciduous), with scattered small agricultural areas and abandoned farmlands, in Prince Georges County in 1943.

MAXIMUM COUNTS.—*Spring*: 19 on Patuxent Refuge, Prince Georges County, on April 26, 1945. *Fall*: 16 on Patuxent Refuge on September 23, 1944; 14 on South Mountain along the boundary between Frederick and Washington Counties on October 15, 1949 (Beaton, 1951); 14 at White Marsh, Baltimore County, on October 1, 1954 (C. D. Hackman). *Winter* (Christmas counts): 8 in the Crisfield area, Somerset County, on December 26, 1949; 8 in the Ocean City area, Worcester County, on December 27, 1955; 7 in southern Dorchester County on December 21, 1947.

BANDING.—A southward movement of Cooper's Hawks from Maryland is shown by the record of an adult banded in Prince Georges County on August 1, 1945, that was recovered in southeastern North Carolina on November 12, 1947. The more northern origin of some of the migrating Cooper's Hawks in Maryland is indicated by the following records of 5 birds recovered in Maryland during early spring (March 6–20) and fall (September 22–October 28) that had been banded as nestlings in summer (June 20–July 12) farther north: 3 recovered in Dorchester, Prince Georges, and Washington Counties had been banded in Massachusetts (eastern and southwestern portions); and single birds recovered in Dorchester and Carroll Counties had been banded in northeastern New Jersey and southeastern Ontario (Leeds County) respectively. More local movements are illustrated by 2 birds recovered in Caroline County in fall (September 3–26, 1931) that had been banded as nestlings (June 18–25, 1931) in central Delaware; and a bird banded as a nestling in Prince Georges County on June 16, 1943, that was recovered about 10 miles distant in Anne Arundel County on April 20, 1944.

RED-TAILED HAWK *Buteo jamaicensis* (Gmelin)

STATUS.—*Breeding*: Fairly common in the Eastern Shore and Western Shore sections; uncommon elsewhere in all sections. *Transient*: Fairly common in all sections. *Wintering*: Common in the Eastern Shore and Upper Chesapeake sections; fairly common in the Western Shore and Piedmont sections; uncommon in the Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—A wide-ranging edge species that occurs regularly in agricultural, marsh, and other open areas as well as in extensive forested tracts.

NESTING SEASON.—Mid-March to late June (peak, late March to early June). *Extreme egg dates* (49 nests): March 12, 1899, and May 3, 1917, in Baltimore County (both extremes by F. C. Kirkwood). *Extreme nestling dates* (9 nests): April 25, 1923, and June 24, 1896, in Baltimore County (both by F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: February 10–20 to April 10–20; peak, February 25 to April 1. *Extreme date of departure*: April 30, 1944, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 5–15 to December 1–10; peak, October 10 to November 15.

BREEDING POPULATION DENSITY (pairs per 100 acres).—0.05 (5 in 10,560 acres) in mixed habitats (forest and brush, including deciduous and pine types, with scattered small agricultural areas and abandoned farmlands) along the boundary between Anne Arundel and Prince Georges Counties in 1951.

MAXIMUM COUNTS.—*Spring*: 28 near Emmitsburg, Frederick County, on March 21, 1953 (J. W. Richards); 15 (12 in one hour) at Patuxent Refuge, Prince Georges County, on February 28, 1948. *Fall*: 231 over South Mountain along the boundary between Frederick and Washington Counties on October 30, 1954 (E. Arnold); 65 at White Marsh, Baltimore County, on November 12, 1952 (C. D. Hackman); 50 (in 15 minutes) in the District of Columbia on November 6, 1947 (E. G. Davis). *Winter* (Christmas counts): 35 in the Ocean City area on December 27, 1955; 23 near Denton, Caroline County, on December 26, 1953; 16 in the Susquehanna Flats area in Harford and Cecil Counties on December 27, 1952; 15 in southern Dorchester County on December 28, 1953; 14 in the Catoctin Mountain area on January 1, 1955; 12 in the District of Columbia area on December 31, 1951.

BANDING.—A nestling banded in Montgomery County on May 6, 1937, was recovered in southwestern Illinois (St. Clair County) on August 30, 1937. Another nestling banded in Montgomery County on May 12, 1940, was recovered in northern Virginia (Page County) on February 19, 1941. An immature bird banded in Prince Georges County on November 1, 1943, was recovered in south-central North Carolina (Union County) on January 21, 1944. One banded near Hagerstown, Washington County, on November 8, 1952, was recovered near Savage River dam, Garrett County, on October 28, 1954. One recovered in the District of Columbia on December 1, 1951, had been banded as a nestling

in central New York (Tompkins County) on May 28, 1951. Another bird recovered in Harford County on December 28, 1943, had been banded in south-central Pennsylvania on December 1, 1943.

RED-SHOULDERED HAWK *Buteo lineatus* (Gmelin)

STATUS.—Regular occurrence throughout the year. Locally common in the Eastern Shore and Western Shore sections—most numerous along the Pocomoke and Patuxent Rivers and their tributaries, and in the Zekiah Swamp (Charles County); fairly common in the Upper Chesapeake and Piedmont sections; uncommon (rare in winter) in the Ridge and Valley, and Allegheny Mountain sections. During migration in the fall this species tends to concentrate along the fall line of the Piedmont section (Hackman, 1954).

HABITAT.—Chiefly flood-plain or river swamp forests (Stewart, 1949); in the Ridge and Valley, and Allegheny Mountain sections, also occurs in moist well-drained forests on the upland.

NESTING SEASON.—Mid-March to late June (nesting peak, late March to late May). *Extreme egg dates* (53 nests): March 17, 1910, in Prince Georges County (E. J. Court) and May 31, 1891, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (75 nests): April 3, 1939, in Prince Georges County (E. McColgan) and June 16, 1941, in Prince Georges County (L. M. Dargan).

MIGRATION PERIODS.—*Spring*: February 15–25 to April 10–20; peak, March 1 to April 5. *Fall*: September 10–20 to November 20–30; peak, September 20 to November 15.

BREEDING POPULATION DENSITY (pairs per 100 acres).—

0.2 (51 in 26,880 acres) in lowland forest (flood-plain forest and adjacent small clearings and areas of river terrace and river bluff forests) along the Patuxent River in Anne Arundel and Prince Georges Counties in 1943 (Stewart, 1949).

MAXIMUM COUNTS.—*Spring* (migrants): 36 at Bethesda, Montgomery County, on March 26, 1954 (J. C. Boyd); 8 near White Marsh, Baltimore County, on February 25, 1953 (C. D. Hackman); 8 near Emmitsburg, Frederick County, on April 14, 1952 (J. W. Richards); 7 on Patuxent Refuge, Prince Georges County, on March 25, 1945. *Fall*: 115 migrating along the fall line near White Marsh on November 12, 1952 (C. D. Hackman); 56 migrating along the fall line at Laurel, Prince Georges County, on October 24, 1954; 22 on South Mountain along the boundary between Frederick and Washington Counties on October 15, 1949 (Beaton,

1951). *Winter* (Christmas counts): 21 in the Ocean City area on December 27, 1954; 12 at Patuxent Refuge on January 12, 1950; 12 in the Point Lookout area, St. Marys County, on December 23, 1938; 11 in southern Dorchester County on December 23, 1951; 10 in the Triadelphia Reservoir area on December 24, 1955.

BANDING.—Ten banded as nestlings in Anne Arundel, Prince Georges, and Montgomery Counties and the District of Columbia in spring (April 3–June 4), were recovered as follows: 5 were taken in spring and early summer (April 7–June 30), including 3 in Maryland (between 10 and 55 miles from point of banding), and 1 each in central New York and east-central Virginia; 4 were taken in fall (September 15–October 25), all in Maryland, between 13 and 48 miles from the point of banding; and 1 was taken in winter (January 20) in central North Carolina. An adult banded in Prince Georges County on March 18, 1944, was recovered in east-central Virginia (reported in letter dated April 10, 1945) and an immature banded in Dorchester County on October 29, 1941, was recovered in central Massachusetts on November 11, 1945. Five recovered in fall, winter, and spring (October 12–April 1) in Prince Georges, Carroll, Kent, Baltimore, and Wicomico Counties had been banded as nestlings (May 2–June 17) in eastern Massachusetts, central New York, northern New Jersey, southeastern Pennsylvania, and central Delaware, respectively. An immature banded in southeastern Pennsylvania on September 5, 1954, was recovered in Baltimore County on January 17, 1955.

BROAD-WINGED HAWK *Buteo platypterus* (Vieillot)

STATUS.—*Breeding*: Common in the Allegheny Mountain, and Ridge and Valley sections; fairly common in the Piedmont and Western Shore sections; uncommon in the Upper Chesapeake and Eastern Shore sections. *Transient*: Common, occasionally abundant, in the Allegheny Mountain, Ridge and Valley, Piedmont, and Western Shore sections; fairly common in the Upper Chesapeake and Eastern Shore sections. Concentration areas during migration, especially in the fall, include most of the higher ridges in the Allegheny Mountain, and Ridge and Valley sections.

HABITAT.—Chiefly well-drained upland deciduous forest or upland deciduous forest mixed with pine.

NESTING SEASON.—Late April to mid-July (nesting peak, early May to late June). *Extreme egg dates* (30 nests): April 23, 1893, in Montgomery County (USNM—M. Clarke) and June 6, 1936, in Baltimore County (M. B. Meanley). *Extreme nestling dates* (7 nests): June 3, 1886, in the District of Columbia (Riley, 1902) and July 14, 1935, in Baltimore County (M. B. Meanley).

SPRING MIGRATION.—*Normal period:* April 5–15 to May 1–10; peak, April 15 to April 30. *Extreme dates of arrival:* March 15, 1884 (H. W. Henshaw), and March 31, 1919 (M. T. Cooke), in the District of Columbia.

FALL MIGRATION.—*Normal period:* September 1–10 to October 10–20; peak, September 15 to September 30. *Extreme dates of arrival:* August 11, 1955, in Talbot County (R. L. Kleen); August 28, 1946, in Prince Georges County (J. N. Hamlet). *Extreme dates of departure:* November 27, 1891, in Montgomery County (USNM—C. W. Richmond); October 21, 1950, along the boundary between Frederick and Washington Counties (R. S. Stauffer).

BREEDING POPULATION DENSITY (pairs per 100 acres).—0.2 (4.5 in 1,856 acres) in upland forest and brush (mixed pine and deciduous forest with small scattered agricultural areas and abandoned farmlands) in Prince Georges County in 1943.

MAXIMUM COUNTS.—*Spring:* 171 at Patuxent Refuge, Prince Georges County on April 16, 1944; 94 on South Mountain along the boundary between Frederick and Washington Counties on April 21, 1951 (R. J. Beaton); 51 at Laurel, Prince Georges County, on April 20, 1952; 40 near Deep Creek Lake, Garrett County, on April 17, 1954 (M. G. Brooks); 36 near Emmitsburg, Frederick County, on April 19, 1954 (J. W. Richards). *Fall:* 2,500 (in 15 minutes) near Emmitsburg, Frederick County, on September 18, 1953 (J. W. Richards); 2,169 at Lore's Pond, Calvert County, on September 21, 1949 (G. Kelly); 1,430 on South Mountain on September 24, 1950 (E. G. Baldwin); 1,399 along the fall line above White Marsh, Baltimore County, on September 23, 1954 (C. D. Hackman); 1,047 (in 75 minutes) on Patuxent Refuge on September 22, 1944; 1,000 in the District of Columbia on September 22, 1918 (M. T. Cooke).

ROUGH-LEGGED HAWK *Buteo lagopus* (Pontoppidan)

STATUS.—*Transient and wintering:* Fairly common in Dorchester County; uncommon elsewhere in the Upper Chesapeake and Eastern Shore sections; rare in all other sections. Birds of the dark phase of this species predominate in Maryland.

HABITAT.—Chiefly, open agricultural areas and tidal marshes.

PERIOD OF OCCURRENCE.—*Normal period:* October 25–November 5 to April 5–15; peak, November 20 to March 25. *Extreme date of arrival:* October 1, 1949, along the boundary between Frederick and Washington Counties (R. J. Beaton). *Extreme dates of departure:* April 21, 1948, in Queen Annes County; April 21, 1951, along the boundary between Frederick and Washington Counties (R. J. Beaton).

MAXIMUM COUNTS.—*Spring*: 3 in Talbot and Dorchester Counties on March 22, 1953 (E. Willis). *Winter*: 6 in Dorchester County on December 22, 1952 (Christmas count).

GOLDEN EAGLE *Aquila chrysaëtos* (Linnaeus)

STATUS.—*Transient*: Uncommon in the Ridge and Valley, and Allegheny Mountain sections; rare elsewhere in all sections. *Wintering*: Rare in the Piedmont, Upper Chesapeake, Western Shore, and Eastern Shore sections. *Summer vagrant*: Casual in the Allegheny Mountain section—1 seen over Negro Mountain, Garrett County, on August 31, 1931 (A. Wetmore).

HABITAT.—A wide-ranging edge species.

SPRING MIGRATION.—*Normal period*: March 1–10 to April 10–20. *Extreme date of departure*: April 21, 1951, along the boundary between Frederick and Washington Counties (R. J. Beaton).

FALL MIGRATION.—*Normal period*: September 20–30 to November 20–30. *Extreme dates of arrival*: September 16, 1951, at White Marsh, Baltimore County (C. D. Hackman) and September 17, 1950, along the boundary between Frederick and Washington Counties (R. J. Beaton). *Extreme date of departure*: December 3, 1949, along the boundary between Frederick and Washington Counties (R. J. Beaton).

MAXIMUM COUNTS.—*Fall*: 3 at Monument Knob along the boundary between Frederick and Washington Counties on September 24, 1950, and October 15, 1949 (Beaton, 1951).

BALD EAGLE *Haliaeetus leucocephalus* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Piedmont section. Definite nest records for Worcester, Somerset, Dorchester, Talbot, Caroline, Queen Annes, Kent, Cecil, Harford, Baltimore, Prince Georges, Anne Arundel, Calvert, St. Marys, Charles, and Montgomery Counties and the District of Columbia. *Transient and wintering*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the Piedmont section and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Ridge and Valley, and Allegheny Mountain sections. *Summer vagrant*: Uncommon in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections.

HABITAT.—Most numerous in tidewater habitats; also occurs along inland lakes, ponds, and streams.

NESTING SEASON.—Early February to early August (peak,

mid-February to early June). *Extreme egg dates** (63 nests): February 8, 1915, in Baltimore County (F. C. Kirkwood) and April 29, 1936, in Baltimore County (W. B. Tyrrell). *Extreme nestling dates* (34 nests): March 18, 1934, in Anne Arundel County (Tyrrell, 1934) and July 9, 1947, in the District of Columbia (J. W. Taylor, Jr.). A nest containing young about 4 weeks old was found on June 26, 1934; these young would not have left the nest until August (W. B. Tyrrell).

PERIODS OF GREATEST ABUNDANCE (transients and vagrants).—*Spring*: March 1 to April 30. *Fall*: August 25 to December 15.

MAXIMUM COUNTS.—*Fall*: 12 along the Potomac River in Prince Georges and Charles Counties on September 19, 1927 (H. H. T. Jackson); 7 near White Marsh, Baltimore County, on September 17, 1953 (C. D. Hackman). *Winter*: 36 in southern Dorchester County on December 22, 1952 (Christmas count); 34 in the Carroll Island area, Baltimore County, on December 29, 1951 (Christmas count); 27 at Army Chemical Center, Harford County, on January 2, 1952 (T. A. Imhof); 17 in the Susquehanna Flats area in Harford and Cecil Counties on December 28, 1951 (Christmas count).

BANDING.—A nestling banded in Charles County on May 6, 1940, was recovered in central North Carolina on September 20, 1940. Another nestling banded in Montgomery County on April 23, 1936, was recovered in northeastern Ohio in August 1936. Two other nestlings banded in Baltimore and Anne Arundel Counties on June 23, 1936, and May 26, 1934, were recovered in Maryland on October 10, 1937, and December 30, 1936, respectively, within 35 miles of the points of banding. Two Bald Eagles recovered in winter in Kent and Worcester Counties had been banded as nestlings in southeastern Ontario and southern New Jersey, respectively. Two others recovered in Dorchester and Calvert Counties in winter and 1 recovered in Calvert County in September had all been banded as nestlings in northern Delaware.

MARSH HAWK *Circus cyaneus* (Linnaeus)

STATUS.—*Breeding* (see fig. 20): Fairly common in the Allegheny Mountain section and in the tidewater areas of Somerset, Wicomico, and Dorchester Counties; uncommon elsewhere in the tidewater areas of the Eastern Shore section. Definite nest records for Somerset, Dorchester, and Garrett Counties. *Transient*: Common in the Eastern Shore and Upper Chesapeake sections; fairly common in all other sections. *Wintering*: Common in the Eastern Shore and Upper Chesapeake sections; fairly common in the Western Shore and Piedmont sections; uncommon in the

FIGURE 20.—Breeding range of Marsh Hawk.

Ridge and Valley section; rare in the Allegheny Mountain section. *Summer vagrant*: Rare in all sections.

HABITAT.—*Breeding*: Tidal marsh and marsh-meadow types and (in Allegheny Mountain section) upland sedge-meadows. *Transient and wintering*: Open agricultural areas and tidal marshes.

NESTING SEASON.—Late April to mid-July. *Extreme egg dates* (6 nests): April 28, 1954, in Dorchester County and June 23, 1950 (W. B. Tyrrell), in Garrett County. *Extreme nestling dates* (4 nests): June 12, 1925, in Garrett County (F. C. Kirkwood) and July 1, 1937 (downy young), in Garrett County (John, 1937).

SPRING MIGRATION.—*Normal period*: March 1–10 to May 1–10; peak, March 20 to April 20. *Extreme date of arrival*: February 28, 1948, in Prince Georges County. *Extreme dates of departure*: May 13, 1946, in Baltimore County (H. Kolb); May 12, 1913, in Prince Georges County (T. H. Kearney, W. R. Maxon).

FALL MIGRATION.—*Normal period*: August 10–20 to November 20–30; peak, October 10 to November 15. *Extreme dates of arrival*: July 27, 1894, in St. Marys County (A. W. Ridgway); July 31, 1938, in Baltimore County (H. Kolb).

MAXIMUM COUNTS.—*Fall*: 20 along South Mountain on the boundary between Frederick and Washington Counties on November 12, 1949 (Beaton, 1951); 13 in Dorchester County on Novem-

ber 23, 1946. *Winter*: 73 in Dorchester County on December 22, 1952 (Christmas count); 50+ near Seneca, Montgomery County, on January 25, 1947 (S. A. Gatti); 45 in the Ocean City area on December 27, 1955 (Christmas count); 31 in the Crisfield area, Somerset County, on December 26, 1949 (Christmas count); 31 in southeastern Worcester County on December 22, 1947 (Christmas count).

BANDING.—Two birds recovered in winter (December 30–January 12) in Caroline and Queen Annes Counties had been banded as nestlings in western New York and northeastern New Jersey. Another, recovered in September in Wicomico County, had been banded as a nestling in southern New Jersey. An adult banded in east-central New York was recovered in Talbot County (dates not known).

OSPREY *Pandion haliaetus* (Linnaeus)

STATUS.—Breeding (see fig. 4): Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Rare in the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Piedmont section—recorded in Montgomery County on February 1, 1918 (A. Wetmore), and December 20, 1952 (L. E. Morgan). *Summer vagrant*: Uncommon in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections.

HABITAT.—Along open tidewater and inland ponds and streams.

NESTING SEASON.—Late March to late August (nesting peak, late April to early July). Nest-building was recorded as early as March 22, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher). *Extreme egg dates* (173 nests): April 20, 1887, in Cecil County (USNM) and July 20, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher). *Extreme nestling dates* (68 nests): "About May 20" in Caroline County (Poole, 1942b) and August 19, 1893, in Talbot County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period*: March 10–20 to May 10–20; peak, April 10 to April 30. *Extreme dates of arrival*: March 2, 1954, in St. Marys County (H. N. Page, V. C. Kirtley); March 5, 1952, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); March 7, 1954, in Caroline County (S. Somers). *Extreme date of departure*: May 24, 1953 in Frederick County (J. W. Richards).

FALL MIGRATION.—*Normal period:* September 5–15 to November 1–10; peak, September 15 to October 5. *Extreme date of arrival:* August 31, 1942, in Prince Georges County. *Extreme dates of departure:* November 30, 1907, in the District of Columbia (A. K. Fisher); November 23, 1951, in Dorchester County.

MAXIMUM COUNTS.—*Spring:* 45 in Charles County on April 18, 1953 (J. W. Terborgh); 43 (in 6½ hours) on Patuxent Refuge on April 26, 1945. *Fall:* 23 in the Ocean City area on September 29, 1945; 16 along the fall line above White Marsh, Baltimore County, on September 20, 1952 (C. D. Hackman), 13 on South Mountain along the boundary between Frederick and Washington Counties on September 23, 1950 (Dr. and Mrs. R. S. Stauffer).

BANDING.—One banded as a nestling at Turkey Point, Cecil County, on July 2, 1954, was recovered in western Mato Grosso, Brazil, on September 25, 1954; another banded as a nestling on Long Marsh Island in Eastern Bay, Queen Annes County on July 2, 1954, was recovered in Oriente Province, Cuba, on November 30, 1955. One shot near Grasonville, Queen Annes County, on April 5, 1956, had been banded on Gardiners Island, New York, on July 20, 1951.

Family FALCONIDAE

PEREGRINE FALCON *Falco peregrinus* Tunstall

STATUS.—*Breeding:* Occurs locally in the Piedmont, Ridge and Valley, and Allegheny Mountain sections (during the period 1932–1952, 10 occupied nest sites found were in Harford, Montgomery, Frederick, Washington, and Allegany Counties). *Transient:* Fairly common along the coast in Worcester County (Assateague Island is an outstanding concentration area during the fall migration); uncommon in the tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections and in the interior in the Ridge and Valley, and Allegheny Mountain sections; rare on inland areas of the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Wintering:* Rare in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections.

HABITAT.—*Breeding:* Usually in the vicinity of cliffs in the mountains or along deep gorges of some of the larger streams. *Transient and wintering:* Occurs most commonly along the ocean beach; also regular along the bay shores and tidal marshes and on the higher ridges in the mountains; in downtown Washington, D. C., 1 or 2 birds are frequently found in the vicinity of the taller buildings.

FIGURE 21.—Peregrine Falcon banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open triangle = banded September through May.

NESTING SEASON.—Mid-February to early June (Wimsatt, 1939 and 1940). *Extreme egg dates* (3 nests): about February 12, 1939 (Wimsatt, 1940), and about May 7, 1937 (allowing for incubation period—Wimsatt, 1939)—both records in Washington County. *Extreme nestling dates* (2 nests): about March 15, 1939 (Wimsatt, 1940), and about June 10, 1937 (Wimsatt, 1939)—both records in Washington County.

SPRING MIGRATION.—*Normal period*: February 20–March 1 to May 10–20. *Extreme date of arrival*: February 19, 1922, in Montgomery County (Fisher, 1935). *Extreme date of departure*: May 22, 1918, in the District of Columbia (L. Griscom).

FALL MIGRATION.—*Normal period*: September 10–20 to November 20–30; peak, September 25 to November 5. *Extreme date of arrival*: August 30, 1943, in Prince Georges County. *Extreme date of departure*: December 9, 1949, in Dorchester County.

MAXIMUM COUNTS.—*Spring*: 5 at Gibson Island, Anne Arundel County, on February 25, 1955 (Mrs. W. L. Henderson, S. Henderson). *Fall*: 75 (12 captured) on Assateague Island in Worcester County on October 13, 1946 (T. H. Cunningham); 4 on South Mountain on October 3, 1953 (R. J. Beaton); 4 on Backbone Mountain, Garrett County, on September 25, 1955 (M. G. Brooks, et al.).

BANDING.—See map, figure 21.

PIGEON HAWK *Falco columbarius* Linnaeus

STATUS.—*Transient*: Fairly common in the coastal area of Worcester County; uncommon elsewhere in all sections. *Wintering*: Rare in the Eastern Shore and Western Shore sections.

HABITAT.—Especially characteristic of the coastal barrier beaches in the zone containing brush and patches of loblolly pine; also occurs in other brush and forest edge habitats and along the bay shores.

SPRING MIGRATION.—*Normal period*: March 20–30 to May 1–10; peak, April 10 to April 30. *Extreme dates of arrival*: March 4, 1955, in Prince Georges County (F. C. Schmid); March 7, 1937, in Anne Arundel County (M. B. Meanley); March 10, 1956, in Talbot County (R. L. Kleen, E. Adams); March 18, 1942, in Caroline County (K. B. Corbett). *Extreme dates of departure*: May 15, 1954, in Worcester County (J. K. Wright); May 13, 1950, in Charles County (M. C. Crone, R. S. Farr); May 11, 1917, in the District of Columbia (H. C. Oberholser).

FALL MIGRATION.—*Normal period*: August 20–30 to November 1–10; peak, September 15 to October 20. *Extreme dates of ar-*

rival: August 13, 1948, in Worcester County; August 17, 1890, in the District of Columbia (W. B. Barrows). *Extreme dates of departure*: November 14, 1943, in Prince Georges County; November 11, 1951, in Worcester County.

MAXIMUM COUNTS.—*Fall*: 8 on Assateague Island, Worcester County, on September 20, 1945; 5 near Emmitsburg, Frederick County, on September 23, 1951 (J. W. Richards).

SPARROW HAWK *Falco sparverius* Linnaeus

STATUS.—*Breeding*: Fairly common in all sections. *Transient*: Locally abundant in the Eastern Shore section (Hooper Island in Dorchester County is one of the principal concentration areas in fall); common elsewhere in all other sections. *Wintering*: Common in the Eastern Shore and Upper Chesapeake sections; fairly common in the Western Shore and Piedmont sections; uncommon in the Ridge and Valley section; rare in the Allegheny Mountain section.

HABITAT.—Chiefly open agricultural areas. During migration, also occurs regularly along the wooded ridges in the Ridge and Valley, and Allegheny Mountain sections; along the fall line in the Piedmont section; and in brush and edge habitats near tide-water.

NESTING SEASON.—Late March to late August (nesting peak, mid-April to early July). *Extreme egg dates* (39 nests): March 31, 1894, in the District of Columbia (USNM—J. H. Riley) and August 4, 1889, in or near the District of Columbia (USNM—F. Robinette). *Extreme nestling dates* (10 nests): May 17, 1898, in Baltimore County (F. C. Kirkwood) and August 5, 1946, in the District of Columbia (J. W. Taylor, Jr.).

NORMAL MIGRATION PERIODS.—*Spring*: March 1–10 to May 1–10; peak, March 15 to April 25. *Fall*: September 1–10 to November 10–20; peak, September 15 to October 10.

MAXIMUM COUNTS.—*Spring*: 75 in Dulaney Valley, Baltimore County, on March 18, 1893 (Kirkwood, 1895). *Fall*: 51 on Hooper Island, Dorchester County, on September 24, 1950; 42 near White Marsh, Baltimore County, on September 20, 1952 (C. D. Hackman); 20 on South Mountain along the boundary between Frederick and Washington Counties on September 24, 1950. *Winter* (Christmas counts): 66 in Caroline County on December 20, 1952; 52 in the Ocean City area on December 27, 1953.

BANDING.—See figure 22.

FIGURE 22.—Sparrow Hawk banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August.

Family TETRAONIDAE

RUFFED GROUSE *Bonasa umbellus* (Linnaeus)

STATUS.—Permanent resident. See figure 11 (p. 79). Common in the Allegheny Mountain section; fairly common in the Ridge and Valley section (absent from Hagerstown Valley); formerly occurred throughout the Piedmont section and in the northern part of the Western Shore section (northern portions of Prince Georges and Anne Arundel Counties) but gradually disappeared from this area during the period 1900–1920. Possibly a few still occur along the Patapsco River in Carroll County, since 1 was reported on the upper Patapsco on December 9, 1930 (Perkins and Allen, 1931), and another was reported near Westminster on May 9, 1953 (D. A. Jones). There have also been recent sight records in northeastern Cecil County (Maryland Conservationist 25 (3): 12, 1948). A most extraordinary record was made by J. Cadbury and J. Arnett who report seeing 2 Ruffed Grouse in the Pocomoke River swamp in Worcester County on May 10, 1953; another was seen in the same area in May 1954 (D. A. Cutler).

HABITAT.—Occurs as an edge species in extensive tracts of forest, being most common in the vicinity of forest openings or in young stands of cut-over second-growth timber.

NESTING SEASON.—Mid-April to early July. *Extreme egg dates* (8 nests): April 28, 1859, in Montgomery County (USNM) and June 15, 1952 and 1956, in Garrett County (Allegheny Bird Club Junior Camp). *Extreme downy young dates* (6 broods): May 30, 1948, in Washington County and June 11, 1925, in Garrett County (F. C. Kirkwood).

MAXIMUM COUNTS.—*Fall*: 14 reported killed by a hunting party near Crellin, Garrett County, on November 1, 1944 (A. Sisler). *Winter* (Christmas counts): 27 in Garrett County on December 31, 1954; 8 in the Catoctin Mountain area, Frederick County, on January 2, 1954.

GREATER PRAIRIE CHICKEN (HEATH HEN)

Tympanuchus cupido (Linnaeus)

STATUS.—Formerly occurred, at least locally, on the Maryland Coastal Plain (Crevier, 1830, and Cabot, 1855). C. S. Wescott, of Philadelphia, reported it as occurring—"according to tradition—in Maryland and Delaware, on the shores of the Chesapeake Bay and on the Peninsula of Maryland and Virginia" (Grinnell, 1910). A specimen, formerly in the U. S. National Museum, was collected near Washington, D. C., on April 10, 1846 (Swales,

1919). This species was also recorded near Marshall Hall, Prince Georges County, during the spring of 1860 (Bent, 1932).

Family PHASIANIDAE

BOBWHITE *Colinus virginianus* (Linnaeus)

STATUS.—Permanent resident. Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section.

HABITAT.—In or near hedgerows, wood margins, and brushy fields, in agricultural areas or on abandoned farmland.

NESTING SEASON.—Early May to late September (nesting peak, mid-May to mid-August). *Extreme egg dates* (39 nests): May 12, 1935, in Baltimore County (M. B. Meanley) and September 16, 1891, in the District of Columbia (Farnham, 1891). *Extreme downy young dates* (25 broods): June 16, 1953, in Caroline County (M. W. Hewitt) and September 25, 1949, in Montgomery County (W. B. Tyrrell).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 5 (3 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).
- 1.5 (25 in 1,694 acres) in upland pine and deciduous forest and brush with small agricultural areas and abandoned farmlands near the boundary between Anne Arundel and Prince Georges Counties in 1943.

MAXIMUM COUNTS.—Winter (Christmas counts): 122 in the Ocean City area on December 27, 1954; 77 in the St. Michaels area, Talbot County, on December 29, 1954; 74 in southern Dorchester County on December 28, 1953; 67 in the Annapolis area on January 2, 1955; 42 at Patuxent Refuge on December 23, 1943; 40 in the Catoctin Mountain area on December 30, 1951.

RING-NECKED PHEASANT *Phasianus colchicus* Linnaeus

STATUS.—Permanent resident. Introductions of this species have been made on numerous occasions, at many locations in Maryland. However, the Ring-necked Pheasant has been unable to maintain itself in numbers except locally in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. This species may be found most commonly near the Pennsylvania boundary in Cecil, Harford, Baltimore, Carroll, Frederick, and Washington Counties. Haven Kolb reports that this species was first noted at Loch Raven in Baltimore County about 1939, and that territories of several crowing males have been maintained there since the spring of 1951.

HABITAT.—Agricultural fields, abandoned fields, hedgerows, and brushy or weedy field margins.

Family MELEAGRIDIDAE

TURKEY *Meleagris gallopavo* Linnaeus

STATUS.—Permanent resident. Fairly common locally in Allegany County; uncommon and local in western Washington County; rare in Garrett County. Formerly occurred throughout the Allegheny Mountain, Ridge and Valley, and Piedmont sections, and in portions of the Western Shore section near the fall line; but was extirpated from the greater part of its range during the last half of the nineteenth century. Turkeys were of regular occurrence in some of the wilder sections of Montgomery County until 1890, the latest record occurring on October 28, 1894, when 4 birds were observed at Seneca (C. W. Richmond). Two were shot at Blue Ridge Summit, Frederick County, on November 11, 1900 (J. V. L. Cook). During recent years the wild populations in Allegany and Washington Counties have been augmented from time to time with introductions of game farm stock. Introduced birds have also become established in Worcester County in the vicinity of the Pocomoke State Forest.

HABITAT.—Occurs only where extensive tracts of forest are found.

NESTING SEASON.—A nest with 2 eggs was found in Montgomery County near Rockville on June 4, 1859 (USNM—W. M. McLain). A nest, containing 7 eggs, was found in Allegany County in May during the mid 1940's, and poults were seen on numerous occasions in June, July, and August; earliest date for poults was June 14, 1945 (K. A. Wilson).

Family RALLIDAE

KING RAIL *Rallus elegans* Audubon

STATUS.—*Breeding* (see fig. 23): Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon and local in the Piedmont section and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Transient*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon elsewhere in all sections. *Wintering*: Fairly common in tidewater areas of the Eastern Shore section; uncommon in tidewater areas of the Western Shore and Upper Chesapeake sections.

HABITAT.—Various brackish and fresh-water marsh types, in-

FIGURE 23.—Breeding ranges of King Rail and Virginia Rail.

cluding narrow-leaved cattail, Olney three-square and switchgrass; occurring most commonly in the higher areas of marsh that contain scattered shrubs.

NESTING SEASON.—Early May to mid-August. *Extreme egg dates* (16 nests): May 17, 1930, in St. Marys County (W. H. Ball) and June 23, 1950, in Caroline County (Mrs. A. J. Fletcher). *Extreme downy young dates* (6 broods): May 29, 1949, in Montgomery County (Cross, 1949) and August 13, 1954, in Dorchester County.

MAXIMUM COUNTS.—*Winter*: 23 in southern Dorchester County on December 28, 1953 (Christmas count); 10 at Cove Point, Calvert County, on February 17, 1946 (R. T. Peterson).

CLAPPER RAIL *Rallus longirostris* Boddaert

STATUS.—*Breeding and transient* (see fig. 24): Fairly common in the coastal area of Worcester County and in the tidewater areas of Somerset County; uncommon and local in the outer fringe of other tidal marshes along Chesapeake Bay, occurring in the Eastern Shore section (north to Parson Island in Queen Annes County—D. E. Davis) and in southern St. Marys County; casual occurrence elsewhere—recorded in the Patapsco River marsh (Kirkwood, 1895) and in the District of Columbia (Coues and

FIGURE 24.—Breeding ranges of Clapper Rail and Saw-whet Owl.

Prentiss, 1883). *Wintering*: Uncommon in the coastal area of Worcester County; rare in tidal areas of Somerset County; casual in the tidewater areas elsewhere in the Eastern Shore and Western Shore sections.

HABITAT.—Restricted to salt marshes, usually either salt-water cordgrass or needlerush.

NESTING SEASON.—Early May to early August. *Extreme egg dates* (4 nests): May 20, 1950 (S. H. Low), and July 20, 1951, both in Worcester County. Half-grown young were seen at Ocean City on August 13, 1949.

MAXIMUM COUNTS.—*Spring*: 6 at Ocean City on May 12, 1946. *Fall*: 12 at Ocean City on September 3, 1953 (J. W. Terborgh). *Winter*: 27 in the Ocean City area on December 27, 1953 (Christmas count).

VIRGINIA RAIL *Rallus limicola* Vieillot

STATUS.—*Breeding and transient* (see fig. 23): Common in tidewater areas of the Eastern Shore and Upper Chesapeake sections; fairly common in the Allegheny Mountain section (locally) and in tidewater areas of the Western Shore section; rare in the Piedmont, and Ridge and Valley sections and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections.

Wintering: Common in tidewater areas of the Eastern Shore section; uncommon in tidewater areas of the Western Shore and Upper Chesapeake sections.

HABITAT.—Brackish tidal marshes, being especially characteristic of Olney three-square type, but also occurring regularly in narrow-leaved cattail, switchgrass and in other types; in the interior it is characteristic of sedge meadows and is occasionally found in stands of common cattail.

NESTING SEASON.—Late April to late August. *Extreme egg dates* (16 nests): May 14, 1933, in Dorchester County (F. R. Smith) and August 16, 1956, in Dorchester County (P. F. Springer). *Extreme downy young dates* (5 broods): May 23, 1944, in Dorchester County (L. M. Llewellyn) and July 8, 1950, in Montgomery County (S. H. Low).

MIGRATION PERIODS.—The periods of migration for this species are imperfectly known. The probable periods would extend through April and early May in spring and through late August, September, and early October in fall; the latest definite migration date is October 8, 1954, in Talbot County (R. L. Kleen).

MAXIMUM COUNTS.—*Fall*: 42 in the Elliott Island area, Dorchester County, on August 31, 1946. *Winter* (Christmas counts): 58 in southern Dorchester County on December 23, 1951; 17 in the Gunpowder River marshes, Baltimore and Harford Counties, on December 29, 1951; 16 in southern Charles County on January 1, 1954.

SORA *Porzana carolina* (Linnaeus)

STATUS.—*Breeding*: Rare and local in the tidewater areas of the Upper Chesapeake and Western Shore sections—a nest with eggs (photograph, p. 469 in Bent, 1926) was found along the Bush River in Harford County on May 25, 1899 (W. H. Fisher); a female, with an egg ready to lay, was killed by a dog on the Gunpowder River marsh on May 5, 1899 (J. Thomas); 4 were seen at North Point, Baltimore County, on July 25, 1893 (G. Todd); 2 were heard calling at Sandy Point, Anne Arundel County, on June 27, 1952 (R. R. Kerr). *Transient*: Common (locally abundant in fall) in the tidewater areas of the Upper Chesapeake and Western Shore sections (concentration areas include the Elk, Bush, Gunpowder, Back, Patapsco, and Patuxent Rivers, and formerly the Anacostia River); fairly common elsewhere in all sections. *Wintering*: Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Various fresh and brackish marsh types; especially

numerous (in fall) in wildrice marshes; but also occurring regularly in narrow-leaved cattail, reed, and many other types; also found sparingly in salt marshes.

SPRING MIGRATION.—*Normal period:* April 20–25 to May 15–20. *Extreme date of arrival:* April 19, 1953, in Anne Arundel County (L. W. Oring).

FALL MIGRATION.—*Normal period:* August 10–20 to October 20–30; peak, August 25 to September 30. *Extreme date of arrival:* August 7, 1895, in the Washington, D. C., area (B. Greenwood). *Extreme dates of departure:* November 9, 1878, in the District of Columbia (S. F. Baird); November 3, 1880, in Prince Georges County (USNM).

MAXIMUM COUNTS.—*Spring:* 8 at Sandy Point, Anne Arundel County, on May 2, 1953 (P. A. DuMont). *Fall:* 55 at Allens Fresh, Charles County, on September 26, 1953; about 50 (21 shot) in the Patuxent River marsh on September 1, 1942; 50 at Seneca, Montgomery County, on September 7, 1953 (J. W. Terborgh); 30 at Sandy Point on September 2, 1953 (J. W. Terborgh, R. R. Kerr); 28 at Mountain Lake, Garrett County, on September 26, 1953 (M. G. Brooks).

BANDING.—One recovered in Cecil County on September 18, 1933, had been banded in northeastern New Jersey on September 7, 1933.

YELLOW RAIL *Coturnicops noveboracensis* (Gmelin)

STATUS.—*Transient:* Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. Records from Worcester, Dorchester, Talbot, Prince Georges, Anne Arundel, Baltimore, and Harford Counties, and the District of Columbia.

HABITAT.—Chiefly, fresh and brackish tidal marshes.

MIGRATION PERIODS.—*Spring* (8 records): March 12, 1909, at Laurel, Prince Georges County (USNM—E. B. Marshall) to May 20, 1917, in the District of Columbia (USNM—Mrs. E. Paminetti). *Fall* (8 records): October 2, 1929, in Patuxent River marsh, Prince Georges County (J. Trennis), to November 19, 1898, on Carroll Island, Baltimore County (F. C. Kirkwood).

BLACK RAIL *Laterallus jamaicensis* (Gmelin)

STATUS.—*Breeding and transient:* Fairly common locally in tidewater areas of Dorchester County; rare and local in tidewater areas elsewhere in the Eastern Shore and Western Shore sections (recorded in Worcester, Anne Arundel, Calvert, St. Marys, Charles, and Prince Georges Counties, and the District of Co-

lumbia). There are definite nest records for Calvert (E. J. Court) and Dorchester Counties, and adults were collected in the District of Columbia on May 29, 1891 (R. L. Jones), and June 6, 1879 (Shekells).

HABITAT.—Principally areas of salt meadow that contain a mixture of salt-meadow grass and spike-grass.

NESTING SEASON.—Nests with eggs were found in Dorchester County on June 16, 1931 (A. L. Nelson, F. M. Uhler), and on May 20, 1953. Dates on Calvert County records are not available.

MIGRATION PERIOD.—*Spring* (5 records): April 26, 1954, in Dorchester County (W. R. Nicholson) to May 22, 1952, in Anne Arundel County (J. W. Terborgh). *Fall* (9 records): September 1, 1908, in the District of Columbia (USNM—H. M. Bailey) to October 19, 1906, in the Patuxent River marsh, Prince Georges County (W. F. Roberts).

MAXIMUM COUNT.—*Summer*: 100+ calling at 11:30 p.m. on June 2, 1954, in Elliott Island marsh, Dorchester County (J. W. Terborgh, J. E. Knudson).

CORN CRAKE *Crex crex* (Linnaeus)

STATUS.—Accidental visitor. One was shot in Worcester County, at Hursley (now Stockton) on November 28, 1900, by John Livesey. The mounted specimen was exhibited at the December 6, 1900, meeting of the Delaware Valley Ornithological Club (*Abstr. Proc. D.V.O.C.* 4:6). Hampe and Kolb (1947) state that Dr. Witmer Stone "well remembered the specimen." This Old World species, which normally winters in Africa, has been taken in a dozen North American tidal localities from Maryland north to Baffin Island.

PURPLE GALLINULE *Porphyrio martinica* (Linnaeus)

STATUS.—Casual visitor. An adult male was collected in the District of Columbia on April 30, 1845 (Deignan, 1943a). One that had been shot on the Potomac River was seen in a market in Washington, D. C., on August 24, 1889 (Kirkwood, 1895). An immature female was collected on the Patuxent River marsh in lower Anne Arundel County on October 12, 1938 (Hampe, et al., 1939). An adult was observed repeatedly during the period June 24–26, 1947, at the Patuxent Research Refuge, Prince Georges County (Stewart, et al., 1952). Another adult was observed repeatedly at Seneca, Montgomery County, during the period July 19–25, 1953 (R. R. Kerr).

COMMON GALLINULE *Gallinula chloropus* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the marshes along the Gunpowder River estuary (Baltimore and Harford Counties); uncommon and local in tidewater areas of the southern half of Dorchester County; possibly breeds sparingly in other tidewater areas—recorded in summer on the Patapsco River (H. Brackbill) and in the District of Columbia (several observers) and 1 bird was observed at the Patuxent Refuge, Prince Georges County on June 9, 1949. *Transient*: Uncommon in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Piedmont section and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Wintering*: Casual visitor in the coastal area of Worcester County—1 recorded at Heine's Pond near Berlin on December 27, 1954 (J. H. Buckalew, S. H. Low), and 2 at West Ocean City on December 27, 1955 (P. A. DuMont).

HABITAT.—Occurs in the vicinity of ponds in brackish marsh types, including narrow-leaved cattail, Olney three-square, and needlerush; during migration, also occurs on inland marshes.

NESTING SEASON.—Early May to mid-July. *Extreme egg dates* (7 nests): May 10, 1916, in Dorchester County (Jackson, 1941) and June 21, 1936, on the Gunpowder River (M. B. Meanley).

MIGRATION PERIODS.—*Spring* (12 records): April 7, 1954, in Anne Arundel County (N. B. Wells) to May 19, 1946, in the District of Columbia (J. W. Taylor, Jr.). *Fall* (16 records): September 22, 1955, in Talbot County (M. Gifford), to November 22, 1953, in Worcester County (E. Arnold).

MAXIMUM COUNTS.—13 on August 31, 1946, and 5 on October 2, 1948, in the Elliott Island area, Dorchester County.

BANDING.—One killed at Ridgely, Caroline County (letter of September 26, 1955), had been banded at Oshawa, Ontario, on August 24, 1955.

AMERICAN COOT *Fulica americana* Gmelin

STATUS.—*Transient*: Locally common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas include the Potomac, Wicomico, Patuxent, and South Rivers in the Western Shore section, the Middle, Gunpowder, Northeast, and Sassafra Rivers and Susquehanna Flats in the Upper Chesapeake section, and the Chester River, Eastern Bay, and Heine's Pond near Berlin, in the Eastern Shore section); fairly common in the Allegheny Mountain section; uncommon elsewhere in all sections. *Wintering*: Locally common in tide-

water areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections (concentration areas, same as during migration); rare in the Piedmont section and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Summer vagrant*: Casual—recorded in the District of Columbia (several records), and in Queen Annes and Prince Georges Counties (P. F. Springer).

HABITAT.—Brackish estuaries, and ponds in brackish marshes that contain a plentiful aquatic-plant growth, including such species as wild celery, red-head pondweed, and sago pondweed; also occurs on inland ponds and lakes.

SPRING MIGRATION.—*Normal period*: March 10–20 to May 5–15; peak, March 25 to April 25. *Extreme date of arrival*: March 8, 1949, in Prince Georges County. *Extreme dates of departure*: June 10, 1954, in Baltimore County (E. Willis); May 30, 1949, in Garrett County; May 23, 1886, in the District of Columbia (C. W. Richmond); May 20, 1926, in Charles County (A. Wetmore).

FALL MIGRATION.—*Normal period*: September 20–30 to December 1–10; peak, October 15 to November 25. *Extreme dates of arrival*: August 28, 1930, on the Potomac River, below Washington, D. C. (H. C. Oberholser); September 14, 1953, in Dorchester County; September 14, 1954, in Queen Annes County (P. F. Springer).

MAXIMUM COUNTS.—*Spring*: 11,350 on the Susquehanna Flats and Northeast River on March 31, 1955; 10,000 on the Middle River, Baltimore County, on March 21, 1953 (E. Willis); 1,500 in the Port Tobacco area, Charles County, on March 21, 1954 (A. R. Stickley, Jr.); 1,000 in the Kent Island area, Queen Annes County, on April 9, 1949 (R. A. Grizzell). *Fall*: 10,000 on the Potomac River in Prince Georges and Charles Counties on November 10, 1928 (H. C. Oberholser); 4,000 in the Carroll Island area, Baltimore County, on November 19, 1950; 1,200 on Heine's Pond, Worcester County, on November 22, 1953 (E. Arnold); 590 on Savannah Lake, Dorchester County, on November 23, 1946; 500 on Deep Creek Lake, Garrett County, on November 2, 1954 (M. G. Brooks). *Winter*: 8,050 in the Carroll Island area, Baltimore County, on December 31, 1949 (Christmas count); 5,460 on the Susquehanna Flats on December 27, 1952 (Christmas count); 4,100 in the Wicomico River area, Charles County, on December 11, 1948; 1,700 in the Kent Island area, Queen Annes County, on December 31, 1948 (Christmas count).

BANDING.—One recovered in the District of Columbia (letter of June 5, 1945) had been banded in northeastern Illinois on No-

vember 10, 1944. Another recovered in Kent County in the fall of 1954 had been banded in Connecticut on February 25, 1953. Five banded in Kent County between February 18 and March 26 were shot during the fall, 1 in northern Minnesota, 2 in east-central Wisconsin, 1 in southeastern Michigan, and 1 in eastern Ontario.

Family HAEMATOPODIDAE

AMERICAN OYSTERCATCHER *Haematopus palliatus* Temminck

STATUS.—*Breeding and transient*: Rare in the coastal area of Worcester County.

HABITAT.—Sandy, shell-strewn beaches on islands along the coast.

NESTING SEASON.—A pair with small downy young (photographed) was observed on Assateague Island about 8 miles south of Ocean City on June 6, 1939 (M. B. Meanley). In 1951, in the northern part of Chincoteague Bay, a pair with large young that could barely fly was seen on an island on July 3 (J. H. Buckalew), and another pair with small young (1 banded) was seen on another island on July 12; in 1952, another young bird was banded in the same area on July 4 (J. H. Buckalew).

PERIOD OF OCCURRENCE.—*Extreme dates*: April 25, 1900 (A. Ludlam), and August 9, 1902 (F. C. Kirkwood), in Worcester County.

Family CHARADRIIDAE

SEMIPALMATED PLOVER *Charadrius semipalmatus* Bonaparte

STATUS.—*Transient*: Common in the coastal area of Worcester County; fairly common in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon elsewhere in all sections. *Wintering and summer vagrant*: Rare in the coastal area of Worcester County.

HABITAT.—Mud flats and wet sand flats, usually along the margins of bays, estuaries, ponds, and lakes; occasional along the ocean beach.

SPRING MIGRATION.—*Normal period*: April 5–15 to June 5–15; peak, May 5 to May 25. *Extreme date of arrival*: April 1, 1948, in the Ocean City area. *Extreme dates of departure*: June 26, 1950, in the Ocean City area; June 22, 1954, in Queen Annes County (P. F. Springer); June 19, 1946, in the District of Columbia (W. H. Ball).

FALL MIGRATION.—*Normal period*: July 15–25 to November 1–10; peak, August 5 to September 15. *Extreme date of arrival*:

July 10, 1949, in the Ocean City area. *Extreme dates of departure*: November 30, 1949, in Dorchester County; November 16, 1947, in the Ocean City area.

MAXIMUM COUNTS.—*Spring*: 525 in the Ocean City area on May 12, 1956; 300 on Mills Island in Chincoteague Bay on May 7, 1938 (G. A. Ammann); 25 in the District of Columbia on May 14, 1927 (W. W. Rubey). *Fall*: 280 on Assateague Island on August 30, 1950; 90 in the Crisfield area, Somerset County, on August 11, 1950; 60 at Sandy Point, Anne Arundel County, on August 21, 1947.

PIPING PLOVER *Charadrius melodus* Ord

STATUS.—*Breeding*: Uncommon in the coastal area of Worcester County. *Transient*: Uncommon in the coastal area of Worcester County; rare in tidewater areas elsewhere in the Eastern Shore and Western Shore sections. *Wintering*: Rare and irregular in the coastal area of Worcester County.

HABITAT.—Coastal barrier beach; occasional on sandy beaches bordering bays and estuaries.

NESTING SEASON.—Early May to late July. *Extreme egg dates* (5 nests): May 17, 1948 (J. E. Willoughby), and June 5, 1939 (M. B. Meanley), both in Worcester County. *Extreme downy young dates* (8 broods): June 16, 1935 (Tyrrell, 1935), and July 23, 1949, both in Worcester County.

PERIOD OF OCCURRENCE (excluding wintering dates).—*Extreme dates*: March 12, 1949, on Assateague Island (J. H. Buckalew) and November 12, 1950, in the Ocean City area.

MAXIMUM COUNTS.—*Spring*: 7 on Assateague Island on April 14, 1951 (J. H. Buckalew). *Summer*: 22 on Assateague Island on July 23, 1949. *Fall*: 6 on Assateague Island on October 5, 1946. *Winter*: 14 in the Ocean City area on December 27, 1954 (Christmas count).

BANDING.—A juvenal banded in Worcester County on July 12, 1947, was recovered in the Bahama Islands (Grand Bahama) on October 22, 1947 (Robbins and Stewart, 1948).

WILSON'S PLOVER *Charadrius wilsonia* Ord

STATUS.—*Breeding and transient*: Rare (formerly more numerous—H. H. Bailey) in the coastal area of Worcester County.

HABITAT.—Sandy shores on the barrier beach or on sandy islands in the coastal bays.

NESTING SEASON.—A pair was observed in courtship at West Ocean City on April 16, 1949. A nest containing 2 newly hatched young and 1 egg was found 1½ miles north of Ocean City on June

26, 1948 (S. H. Low). Downy young were banded on Assateague Island, 2 miles south of Ocean City, on July 10, 1947 (L. D. Cool, Jr.).

PERIOD OF OCCURRENCE.—*Extreme dates*: April 16, 1949, and August 17, 1925 (F. C. Kirkwood), both in the Ocean City area.

BANDING.—A juvenal banded in Worcester County, 2 miles south of Ocean City on July 10, 1947, was collected on Cedar Island, Accomack County, Virginia, on June 3, 1948.

KILLDEER *Charadrius vociferus* Linnaeus

STATUS.—Breeding: Fairly common in all sections. *Transient*: Common in all sections. *Wintering*: Fairly common in the Eastern Shore section; uncommon in the Western Shore and Upper Chesapeake sections; rare (occasionally more numerous) in the Piedmont section.

HABITAT.—Pastures, golf courses, and other extensive areas of short-grass turf; sparsely vegetated agricultural and fallow fields; sand and gravel areas; mud flats and shores.

NESTING SEASON.—Mid-March to late July (nesting peak, mid-April to late June). *Extreme egg dates* (159 nests): March 16, 1919, in Dorchester County (Jackson, 1941) and July 17, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher). *Extreme downy young dates* (48 broods): April 14, 1952 (Mr. and Mrs. W. L. Henderson), and July 27, 1950 (R. W. Dickerman), in Anne Arundel County.

SPRING MIGRATION.—*Normal period*: February 5–15 to April 1–10; peak, March 1 to March 20. *Extreme dates of arrival*: January 23, 1953, in Prince Georges County; January 24, 1953, in Montgomery County (P. F. Springer).

FALL MIGRATION.—*Normal period*: July 5–15 to December 5–15; peak, August 20 to November 25. *Extreme date of arrival*: July 1, 1943, in Prince Georges County. *Extreme dates of departure*: December 22, 1946, in Prince Georges County; December 17, 1951, in Anne Arundel County (Mrs. G. Tappan).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

3.9 (3 in 77½ acres) in recently plowed fields and sprout-wheat fields in Prince Georges County in 1949.

1.4 (4 in 275 acres) in mixed agricultural habitats (including residential areas) in Prince Georges County in 1943 and 1947.

0.2 (22 in 11,520 acres) in "general farmland" (chiefly hayfields and pastures, with little cover owing to widespread clean-farming practices) in Frederick County in 1950 (Stewart and Meanley, 1950).

MAXIMUM COUNTS.—*Fall*: 200 in the Patuxent River marsh on November 23, 1946; 125 on Deep Creek Lake, Garrett County, on

September 23, 1936 (M. G. Brooks) ; 100 in the District of Columbia on November 21-24, 1917 (C. H. M. Barrett) ; 100 at Emmitsburg, Frederick County, on October 27, 1955 (J. W. Richards) ; 75 on the Beltsville Research Center, Prince Georges County, on July 24, 1945. *Winter* (Christmas counts) : 539 in the Ocean City area on December 27, 1953 ; 115 in the District of Columbia area on January 1, 1955 ; 109 in the Denton area, Caroline County, on December 20, 1952 ; 80 in the Triadelphia Reservoir area (Montgomery and Howard Counties), on December 26, 1952.

BANDING.—One banded as a juvenal in Dorchester County on April 20, 1952, was recovered in eastern North Carolina on January 2, 1954. Another banded in Montgomery County on August 23, 1952, was recovered in south-central Virginia on March 5, 1953.

AMERICAN GOLDEN PLOVER *Pluvialis dominica* (Müller)

STATUS.—*Fall transient*: Rare in all sections. *Spring transient*: Casual occurrence—1 collected on Nanjemoy Creek, Charles County, on March 28, 1911 (Swales, 1920) ; 1 seen on Assateague Island, Worcester County, on May 1, 1946 (Stewart and Robbins, 1947a) ; 1 seen at Ocean City on April 16, 1949 ; and 1 recorded along Sinepuxent Bay on May 12, 1956 (R. L. Kleen).

HABITAT.—Mud flats, sand bars, beaches, cultivated fields, and pastures.

PERIOD OF FALL MIGRATION.—*Extreme dates*: August 14, 1955, in Talbot County (R. L. Kleen) and November 22, 1953, in Anne Arundel County (P. A. DuMont). *Migration peak*: September 15 to October 15.

MAXIMUM COUNTS.—20 on October 5, 1930, in the District of Columbia (Mr. and Mrs. W. J. Whiting) ; 6 on October 8, 1953, at Emmitsburg, Frederick County (J. W. Richards, P. O'Brien).

BLACK-BELLIED PLOVER *Squatarola squatarola* (Linnaeus)

STATUS.—*Transient*: Common in the coastal area of Worcester County ; fairly common in tidewater areas elsewhere in the Eastern Shore and Western Shore sections ; uncommon in tidewater areas of the Upper Chesapeake section ; rare in the Piedmont section and in the interior of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Wintering*: Uncommon in the coastal area of Worcester County ; rare elsewhere in tidal areas of the Eastern Shore section. *Summer vagrant*: Rare in the coastal area of Worcester County.

HABITAT.—Sandy beaches and mud flats, usually near salt water

(ocean or bays) ; occasional on fields and pastures, especially near salt water.

SPRING MIGRATION.—*Normal period:* April 20–30 to June 5–15; peak, May 10 to May 30. *Extreme date of arrival:* March 20, 1954, in Charles County (J. W. Terborgh).

FALL MIGRATION.—*Normal period:* July 20–30 to November 20–30; peak, August 15 to September 30. *Extreme date of arrival:* July 15, 1946, in Worcester County. *Extreme date of departure:* December 9, 1949, in Dorchester County.

MAXIMUM COUNTS.—*Spring:* 200 in the Ocean City area on May 24, 1953, and 115 at Sandy Point, Anne Arundel County, on the same day (J. W. Terborgh) ; 100 in the Crisfield area, Somerset County, on May 18, 1947; 11 in the District of Columbia on May 26, 1928 (W. H. Ball, P. Knappen). *Fall:* 199 on Assateague Island on August 30, 1950; 183 in the Ocean City area on August 23, 1945. *Winter:* 97 in the Ocean City area on December 27, 1954 (Christmas count).

RUDDY TURNSTONE *Arenaria interpres* (Linnaeus)

STATUS.—*Transient:* Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore section; rare in tidewater areas of the Western Shore and Upper Chesapeake sections; casual in the Piedmont section—1 seen at Seneca, Montgomery County, on September 14, 1953 (J. W. Terborgh). *Wintering and summer vagrant:* Rare in the coastal area of Worcester County.

HABITAT.—Tidal salt-water flats with a short sparse growth of salt-water cordgrass or glasswort; also on jetties and sandy beaches at tidewater.

SPRING MIGRATION.—*Normal period:* April 20–30 to June 5–15; peak, May 10 to June 1. *Extreme date of arrival:* April 4, 1948, in Worcester County (S. H. Low). *Extreme date of departure:* June 16, 1935, in Worcester County (W. B. Tyrrell).

FALL MIGRATION.—*Normal period:* July 25–30 to November 1–10; peak, August 5 to September 30. *Extreme dates of arrival:* July 23, 1947, and July 23, 1949, on Assateague Island. *Extreme date of departure:* November 12, 1950, in the Ocean City area.

MAXIMUM COUNTS.—*Spring:* 420 near Ocean City on May 15, 1954 (D. C. Aud. Soc.) ; 300 on Assateague Island on May 25, 1947; 75 in the District of Columbia on May 26, 1928 (W. H. Ball, P. Knappen). *Fall:* 100 on Assateague Island on September 25, 1931 (H. E. Richardson).

Family SCOLOPACIDAE

AMERICAN WOODCOCK *Philohela minor* (Gmelin)

STATUS.—*Breeding*: Fairly common locally in the Eastern Shore, Western Shore, Upper Chesapeake, Ridge and Valley, and Allegheny Mountain sections; uncommon and local in the Piedmont section. *Transient*: Fairly common in all sections. *Wintering*: Uncommon in the Eastern Shore section; rare in the Western Shore section; casual in the Piedmont and Allegheny Mountain sections—1 near Thurmont in Frederick County on January 2, 1954 (Christmas count), and 1 seen along Bear Creek in Garrett County on December 31, 1954 (R. B. McCartney).

HABITAT.—*Breeding*: Thickets or open stands of shrubs and small trees on or adjacent to damp or wet areas; pine and sweetgum fields, alder swamps, and slashings on recently cutover or burned-over areas are characteristic habitats. *Transient and wintering*: Various types of shrub and forest swamps.

NESTING SEASON.—Late February to mid-June (nesting peak, mid-March to early May). *Extreme egg dates* (23 nests): February 25, 1891, in Baltimore County (USNM) and May 8, 1943, in Prince Georges County. *Extreme downy young dates* (19 broods): April 5, 1936, in Baltimore County (M. B. Meanley) and June 16, 1896, in Baltimore County (G. Holland).

SPRING MIGRATION.—*Normal period*: February 10–20 to March 20–30; peak, February 25 to March 15. *Extreme dates of arrival*: January 19, 1953, in Prince Georges County; January 27, 1953, in Charles County (M. C. Crone, A. R. Stickley, Jr.). *Extreme date of departure*: April 11, 1952, in Frederick County (Mrs. J. W. Richards).

FALL MIGRATION.—*Normal period*: October 1–10 to December 1–10; peak, October 25 to November 25. *Extreme date of departure*: December 12, 1894, in Allegany County (Z. Laney).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

5.6 (7 in 125 acres) in brushy, poorly drained, abandoned farmland in Prince Georges County in 1943.

1.5 (19 in 1,280 acres) in upland, poorly drained brushland (cutover and burned-over forest land with scattered, small abandoned clearings) in Prince Georges County in 1951 (Stewart, 1952).

MAXIMUM COUNTS.—*Spring*: 19 on Patuxent Refuge (in half-mile walk) on March 4, 1945; 18 near Elliott, Dorchester County, on February 22, 1954 (J. W. Terborgh, J. E. Knudson). *Fall*: 8 on Patuxent Refuge on November 12, 1947. *Winter*: 12 in Anne

Arundel County on December 26, 1950 (Christmas count); 6 at Allens Fresh, Charles County, on January 31, 1953 (J. W. Terborgh); 5 in the Ocean City area on December 27, 1953 (Christmas count).

COMMON SNIFE *Capella gallinago* (Linnaeus)

STATUS.—*Transient*: Fairly common in all sections. *Wintering*: Uncommon in tidewater areas of the Eastern Shore and Western Shore sections; rare in the Piedmont and Upper Chesapeake sections and in the interior of the Western Shore and Eastern Shore sections.

HABITAT.—Usually on wet grassy areas such as low pastures, and wet meadow types in tidal marshes; also occurs on mud flats and shores that are adjacent to open water, and occasionally occurs on cultivated fields following heavy rains.

SPRING MIGRATION.—*Normal period*: March 1–10 to May 5–15; peak, March 15 to April 25. *Extreme dates of arrival*: February 24, 1895, in Baltimore County (F. C. Kirkwood); February 28, 18—, in Allegany County (Z. Laney). *Extreme dates of departure*: May 23, 1937, in Baltimore County (M. B. Meanley); May 21, 1903, in Allegany County (G. Eifrig); May 18, 1947, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 15–25 to December 10–20; peak, October 1 to December 5. *Extreme dates of arrival*: August 3, 1955, in Prince Georges County; August 23, 1956, in Dorchester County (P. F. Springer); August 26, 1928, in the District of Columbia (W. H. Ball); September 2, 1898, at Patapsco Marsh (John W. Edel). *Extreme dates of departure*: December 23, 1950, in Frederick County (R. T. Smith); December 23, 1951, in Garrett County (J. G. Smart).

MAXIMUM COUNTS.—*Spring*: 120 at Allens Fresh, Charles County, on March 29, 1953, and March 20, 1954 (J. W. Terborgh, et al.); 110 near Easton, Talbot County, on March 25, 1956 (C. Welsh, R. L. Kleen); 100 in Frederick County on March 17, 1951 (R. T. Smith); 55 at Sandy Point, Anne Arundel County, on March 22, 1953 (E. Willis, D. A. Jones). *Fall*: 100 at Allens Fresh on December 6, 1952 (J. W. Terborgh); 25 in Frederick County on December 23, 1950 (R. T. Smith); 24 on Bush River, Harford County, on October 3, 1948. *Winter*: 130 at Allens Fresh on January 31, 1953 (J. W. Terborgh); 61 in the Wicomico River area (Charles and St. Marys Counties) on January 1, 1954 (Christmas count); 20 in the Ocean City area on December 27, 1955 (Christmas count); 12 in southern Dorchester County on December 28, 1953 (Christmas count).

LONG-BILLED CURLEW *Numenius americanus* Bechstein

STATUS.—Casual visitor: A specimen (USNM) was taken in the District of Columbia on April 11, 1842, by W. Walker (Swales, 1920). Another specimen (USNM) was collected in September 1843 in St. Marys County (Deignan, 1943a). One was shot from a flock of 6 or 7 on the Gunpowder River marsh on May 19, 1899 (J. Thomas—head and wings examined by F. C. Kirkwood). There are also several sight records for the nineteenth century.

WHIMBREL *Numenius phaeopus* (Linnaeus)

STATUS.—*Transient*: Fairly common in the coastal area of Worcester County; rare in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Salt-marsh flats with a sparse growth of short vegetation, usually either glasswort or salt-water cordgrass; also occurs on the ocean beach and on mud flats adjoining the coastal bays. This species often concentrates in areas of salt marsh that contain high populations of fiddler crabs (*Uca pugnax*).

SPRING MIGRATION.—*Normal period*: April 25–30 to May 20–25; peak, May 1 to May 20. *Extreme arrival date*: April 21, 1906, in Worcester County (F. C. Kirkwood). *Extreme departure date*: May 27, 1935, in the District of Columbia (Ball, 1928b).

FALL MIGRATION.—*Normal period*: July 5–10 to September 10–20; peak, July 15 to August 15. *Extreme arrival date*: July 3, 1906, in Worcester County (F. C. Kirkwood). *Extreme departure date*: September 25, 1931, in Worcester County (H. E. Richardson).

MAXIMUM COUNTS.—*Spring*: 40 at Ocean City on May 15, 1906 (F. C. Kirkwood); 37 on Assateague Island on May 1, 1946; 18 in the District of Columbia on May 26, 1928 (Ball, 1928b). *Fall*: 116 in the Ocean City area on July 27, 1952.

ESKIMO CURLEW *Numenius borealis* (Forster)

STATUS.—Now probably extinct. Apparently formerly occurred in Maryland as a rare transient. A specimen (USNM) was taken on the Potomac River (cataloged in Baird's handwriting in 1861). One was reported seen at Ocean City in 1913 by R. C. Walker, who had personally collected nearly all other species of Maryland shorebirds and who gave a detailed description of this bird.

UPLAND PLOVER *Bartramia longicauda* (Bechstein)

STATUS.—*Breeding* (see fig. 25): Fairly common in the Frederick Valley (in Frederick County between the Monocacy River and Catoctin Mountain); uncommon locally elsewhere in the

FIGURE 25.—Breeding ranges of Upland Plover and Willet.

Piedmont section and in the Ridge and Valley, and Allegheny Mountain sections—occurring in Baltimore County in the Worthington Valley and (formerly) in Dulaney Valley; in Montgomery County in the vicinity of Dickerson, Poolesville, Whites Ferry, and (formerly) Sandy Spring; in Washington County in the Hagerstown Valley; in Garrett County in the vicinity of Accident; and (formerly) in Allegany County at Vale Summit. *Transient*: Uncommon in all sections. *Summer vagrant*: Casual—2, apparently non-breeding, recorded in the District of Columbia from June 11 to June 26, 1935 (Ball and Wallace, 1936).

HABITAT.—*Breeding*: Agricultural areas with extensive hay fields and pastures, usually on land with a slightly concave contour. *Transient*: Various types of open fields and meadows and, less frequently, in marsh and shore habitats with short or sparse vegetation.

NESTING SEASON.—Early May to late June. *Extreme egg dates* (12 nests): May 10, 1942, and June 10, 1940, both in Baltimore County (Meanley, 1943b). *Extreme downy young dates* (6 broods): May 25, 1947, in Frederick County and June 21, 1941, in Baltimore County (both by M. B. Meanley).

SPRING MIGRATION.—*Normal period*: April 1–10 to May 5–15; peak, April 10 to May 5. *Extreme dates of arrival*: March 21,

1896, in the District of Columbia (P. W. Shufeldt); March 25, 1944, in Prince Georges County. *Extreme dates of departure*: May 27, 1952, in Prince Georges County (G. B. Saunders); May 21, 1903, in Allegany County (G. Eifrig).

FALL MIGRATION.—*Normal period*: July 5–15 to September 15–25; peak, July 15 to September 5. *Extreme dates of arrival*: June 29, 1902, in the District of Columbia (W. W. Cooke); July 3, 1895, in Baltimore County (Kirkwood, 1895). *Extreme date of departure*: September 26, 1919, in Montgomery County (A. Wetmore).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

0.2 (20 in 11,520 acres) in "general farmland" (various agricultural habitats, chiefly hayfields and pastures, with little cover owing to widespread clean-farming practices) in Frederick County near Buckeystown in 1950 (Stewart and Meanley, 1950).

MAXIMUM COUNTS (nonbreeding).—*Fall*: 20 near Emmitsburg, Frederick County, on July 18, 1952 (J. W. Richards); 12 near Lilypons, Frederick County, on August 5, 1951 (L. M. Wendt).

SPOTTED SANDPIPER *Actitis macularia* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the tidewater areas of the Eastern Shore section; uncommon elsewhere in all sections. *Transient*: Common in all sections. *Wintering*: Accidental—1 seen along the Choptank River near Cambridge on December 27, 1949 (T. W. Donnelly).

HABITAT.—Various shore habitats along inland ponds and streams, tidal bays, and estuaries. During the breeding season also frequents various field and meadow habitats that are adjacent to open water.

NESTING SEASON.—Early May to late July (nesting peak, mid-May to late June). *Extreme egg dates* (35 nests): May 11, 1911, in Dorchester County (Jackson, 1941) and July 15, 1946, in Anne Arundel County (F. M. Uhler). *Extreme downy young dates* (9 broods): June 4, 1939, in Prince Georges County (M. B. Meanley) and July 9, 1949, in Worcester County.

SPRING MIGRATION.—*Normal period*: April 5–15 to May 25–June 5; peak, April 25 to May 20. *Extreme dates of arrival*: April 2, 1905, in Montgomery County (W. L. McAtee); April 3, 1861, in the District of Columbia (C. E. Schmidt). *Extreme date of departure*: June 6, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 5–15 to October 1–10;

peak, July 25 to September 5. *Extreme date of arrival*: July 1, 1948, in Prince Georges County. *Extreme dates of departure*: November 13, 1949, in Dorchester County; October 28, 1906, in Montgomery County (A. K. Fisher); October 25, 1947, in Baltimore County (R. M. Bowen); October 25, 1954, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); October 24, 1936, in Garrett County (Brooks, 1938).

MAXIMUM COUNTS.—*Spring*: 127 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones); 63 in the District of Columbia area on May 11, 1917 (H. C. Oberholser); 45 in the Port Tobacco area, Charles County, on May 7, 1940 (I. N. Gabrielson, A. L. Nelson). *Fall*: 50 near Centerville, Queen Annes County, on July 4, 1900 (F. C. Kirkwood); 20 on Gibson Island, Anne Arundel County, on July 25, 1952 (Mrs. W. L. Henderson, Mrs. G. Tappan).

SOLITARY SANDPIPER *Tringa solitaria* Wilson

STATUS.—*Transient*: Fairly common in all sections. *Summer vagrant*: Casual—small numbers, presumably non-breeding, were observed throughout June, during several summers at Deep Creek Lake in Garrett County (Brooks, 1936b), and 1 was seen at Middle River in Baltimore County on June 17 and 19, 1951 (E. Willis).

HABITAT.—Mud flats and other marginal habitats along freshwater ponds and streams.

SPRING MIGRATION.—*Normal period*: April 10–20 to May 20–25; peak, April 25 to May 15. *Extreme dates of arrival*: March 29, 1954, in Caroline County (M. W. Hewitt); March 30, 1883, in the District of Columbia (H. W. Henshaw); March 30, 1952, in Baltimore County (E. Willis). *Extreme dates of departure*: May 30, 1891, in Montgomery County (H. W. Stabler); May 27, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 15–25 to October 10–20; peak, August 10 to September 25. *Extreme dates of arrival*: July 12, 1948, in Prince Georges County; July 12, 1956, in Queen Annes County (R. P. Dubois); July 14, 1893, in Baltimore County (P. T. Blogg, G. H. Gray). *Extreme dates of departure*: November 2, 1906, in Calvert County (J. H. Riley); October 28, 1916, in the District of Columbia (L. D. Miner).

MAXIMUM COUNTS.—*Spring*: 50 in the Port Tobacco area, Charles County, on May 11, 1943 (A. L. Nelson, F. M. Uhler); 37 in St. Marys County on May 8, 1954 (J. W. Terborgh, J. W. Taylor, Jr.); 30 near Seneca, Montgomery County, on April 26, 1953 (J. W. Terborgh); 13 at Patuxent Refuge, Prince Georges County, on May 12, 1945. *Fall*: 8 at Chesapeake Beach, Calvert

County, on August 10, 1946; 7 at Sandy Point, Anne Arundel County, on August 20, 1947.

WILLET *Catoptrophorus semipalmatus* (Gmelin)

STATUS.—*Breeding* (see fig. 25): Locally common in tidewater areas of Somerset and Wicomico Counties and southern Dorchester County; uncommon in the coastal area of Worcester County. *Transient*: Common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; rare in tidewater areas of the Upper Chesapeake section.

HABITAT.—Tidal salt marshes, including salt-water cordgrass, salt-meadow grass and glasswort types. During the spring and fall also occurs on the ocean beach, bay shores, mud flats, and sand bars.

NESTING SEASON.—Mid-May to late July. *Extreme egg dates* (11 nests): May 10, 1904 (R. W. Jackson), and July 12, 1951 (both extremes in Worcester County).

SPRING MIGRATION.—*Extreme date of arrival*: April 15, 1953, in Dorchester County (W. R. Nicholson). *Migration peak*: April 25 to May 15. One bird was observed in the District of Columbia as late as June 11, 1926 (Ball, 1927).

FALL MIGRATION.—*Normal period*: July 10–20 to October 1–10; peak, July 25 to September 1. *Extreme date of arrival*: July 10, 1949, in Worcester County. *Extreme date of departure*: A fresh bird found in the Baltimore market on November 3, 1894, had been shot nearby, possibly 1 or 2 days before (Kirkwood, 1895).

BREEDING POPULATION DENSITY (pairs per 100 acres).—10.5 (21 in 200 acres) in brackish bay marsh (strip 220 yards wide along tidal creek and containing extensive areas of salt-meadow grass) in Dorchester County in 1956.

MAXIMUM COUNTS.—*Spring*: 65 in the Ocean City area on May 2, 1953 (R. Strosnider). *Fall*: 200 on Assateague Island on August 23, 1947; 50 in the District of Columbia on August 10–11, 1893 (Cooke, 1929); 9 at Sandy Point, Anne Arundel County, on August 14, 1947 (J. W. Taylor, Jr.).

GREATER YELLOWLEGS *Totanus melanoleucus* (Gmelin)

STATUS.—*Transient*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common elsewhere in all sections. *Wintering*: Uncommon in tidewater areas of the Eastern Shore section; rare in tidewater areas of the Western Shore and Upper Chesapeake sections.

Summer vagrant: Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Shallow flats in marshes or at the margins of ponds, bays, and estuaries.

SPRING MIGRATION.—*Normal period*: March 25–April 5 to May 25–June 5; peak, April 20 to May 15. *Extreme dates of arrival*: March 16, 1904, in the Patapsco River marsh (F. C. Kirkwood); March 18, 1946, in Dorchester County. *Extreme dates of departure*: June 13, 1946, in Dorchester County; June 12, 1946, in Somerset County; June 8, 1938, in Worcester County (G. A. Ammann).

FALL MIGRATION.—*Normal period*: July 25–August 5 to November 15–25; peak, August 25 to September 30. *Extreme date of arrival*: July 15, 1946, in Worcester County. *Extreme date of departure*: November 28, 1953, in St. Marys County (J. W. Terborgh).

MAXIMUM COUNTS.—*Spring*: 500 on Mills Island in Chincoteague Bay on May 7, 1938 (G. A. Ammann); 113 in the Ocean City area on May 2, 1953 (R. Strosnider). *Fall*: 60 near Elliott Island, Dorchester County, on November 19, 1948; 50 on Blackwater National Wildlife Refuge, Dorchester County, on September 4, 1948. *Winter*: 26 in southern Dorchester County on December 28, 1953 (Christmas count).

LESSER YELLOWLEGS *Totanus flavipes* (Gmelin)

STATUS.—*Transient*: Common in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Allegheny Mountain section; uncommon elsewhere in all sections. *Wintering*: Rare in tidewater areas of the Eastern Shore section (most numerous in vicinity of Blackwater National Wildlife Refuge, Dorchester County); casual elsewhere—recorded in the District of Columbia on January 2, 1954 (J. M. Abbott). *Summer vagrant*: Casual—recorded in the District of Columbia on June 21, 1929 (W. H. Ball).

HABITAT.—Shallow flats in marshes or at the margins of ponds, bays, and estuaries.

SPRING MIGRATION.—*Normal period*: April 1–10 to May 25–June 5; peak, April 15 to May 20. *Extreme dates of arrival*: March 12, 1906, in the District of Columbia (Cooke, 1929); March 15, 1895, in Harford County (Kirkwood, 1895); March 18, 1950, in Queen Annes County (J. W. Aldrich). *Extreme date of departure*: June 13, 1946, in Dorchester County.

FALL MIGRATION.—*Normal period*: July 15–25 to November 1–

10; peak, August 10 to September 30. *Extreme dates of arrival*: July 12, 1947, in Worcester County; July 13, 1952, in Baltimore County (E. Willis). *Extreme dates of departure*: November 23, 1951, in Dorchester County (E. J. Stivers); November 16, 1941, in Garrett County (M. G. Brooks); November 14, 1948, in Harford County.

MAXIMUM COUNTS.—*Spring*: 45 at Kent Island, Queen Annes County, on May 5, 1956 (R. P. and M. Dubois); 30+ at Chincoteague Bay on May 29, 1922 (A. H. Howell). *Fall*: 500 (50 shot) at Ocean City on September 16, 1901 (E. F. Armstrong); 225 on Blackwater National Wildlife Refuge, Dorchester County, on August 24, 1947; 79 in the District of Columbia on August 27, 1928 (W. H. Ball). *Winter*: 16 on Blackwater Refuge on February 19, 1949.

KNOT *Calidris canutus* (Linnaeus)

STATUS.—*Transient*: Fairly common in the coastal area of Worcester County; rare in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Ocean beach, and sandy flats on the inland side of the barrier beaches that adjoin the coastal bays.

SPRING MIGRATION.—*Extreme dates*: May 1, 1953, in Worcester County (R. Strosnider) and June 4, 1954, in Worcester County (J. W. Terborgh, J. E. Knudson).

FALL MIGRATION.—*Extreme dates*: August 4, 1945, in the Ocean City area and November 2, 1952, at Heine's Pond, Worcester County. *Migration peak*: August 10 to September 20.

MAXIMUM COUNTS.—*Spring*: 175 in the Ocean City area on June 1, 1952 (E. G. Baldwin); 170 on May 22, 1948, and 76 on May 17, 1947, on Assateague Island; 15 in the District of Columbia on May 26, 1928 (W. H. Ball). *Fall*: 46 on Assateague Island on August 30, 1950; 34 at Ocean City on August 17, 1925 (F. C. Kirkwood).

PURPLE SANDPIPER *Erolia maritima* (Brünnich)

STATUS.—*Transient and wintering*: Fairly common in the vicinity of the Ocean City Inlet in Worcester County; casual elsewhere—1 observed at Sandy Point in Anne Arundel County on November 22, 1953 (P. A. DuMont).

HABITAT.—Usually found on the rocky jetties that border the Ocean City Inlet.

PERIOD OF OCCURRENCE.—*Extreme dates*: October 28, 1950 (I. R. Barnes) and May 21, 1950, at Ocean City. *Peak*: November 20 to May 15.

MAXIMUM COUNTS.—68 on December 27, 1954 (Christmas count), and 61 on May 5, 1956 (P. A. DuMont), at Ocean City Inlet.

PECTORAL SANDPIPER *Erolia melanotos* (Vieillot)

STATUS.—*Transient*: Fairly common in the Allegheny Mountain section and in tidewater areas of the Upper Chesapeake, Western Shore, and Eastern Shore sections; uncommon elsewhere in all sections. *Summer vagrant*: Casual—recorded in the District of Columbia on June 21, 1929 (W. H. Ball).

HABITAT.—Marshes with short vegetation and mud flats. On the barrier beaches they are especially characteristic of the grassy sloughs just back of the sand dunes—American three-square and *Fimbristylis* sp. are usually the principal plant species in this type.

SPRING MIGRATION.—*Normal period*: April 1–10 to May 25–June 5; peak, April 25 to May 20. *Extreme date of arrival*: March 20, 1954, in Charles County (J. W. Terborgh, R. R. Kerr). *Extreme date of departure*: June 11, 1926, in the District of Columbia (Ball, 1927).

FALL MIGRATION.—*Normal period*: July 20–30 to November 1–10; peak, August 10 to October 25. *Extreme date of arrival*: July 15, 1952, in Baltimore County (E. Willis). *Extreme date of departure*: November 12, 1945, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 34 near Essex, Baltimore County, on May 8, 1949 (D. A. Jones); 31 in Anne Arundel County on May 10, 1952; 22 at Allens Fresh, Charles County, on April 3, 1954 (J. W. Terborgh). *Fall*: 350+ in the District of Columbia on September 7, 1928 (W. H. Ball); 220 on Assateague Island on August 14, 1948; 75 near Elliott, Dorchester County, on September 22, 1954; 50 at Sandy Point, Anne Arundel County, on August 20, 1947.

WHITE-RUMPED SANDPIPER *Erolia fuscicollis* (Vieillot)

STATUS.—*Transient*: Uncommon in the coastal area of Worcester County; rare elsewhere in all sections.

HABITAT.—Sandy beaches and mud flats at the margins of ponds, bays, and estuaries. Occurs in greater numbers on the barrier beaches than elsewhere.

SPRING MIGRATION.—*Extreme dates*: May 2, 1953, in Worcester County (R. Strosnider) and June 14, 1926, in the District of Columbia (Ball, 1927). *Migration peak*: May 10 to June 10.

FALL MIGRATION.—*Normal period*: August 1–10 to October 20–30; peak, August 20 to September 30. *Extreme date of arrival*: July 26, 1947, in Worcester County. *Extreme dates of departure*:

November 13, 1954, in Dorchester County; November 12, 1949, in Worcester County.

MAXIMUM COUNTS.—*Spring*: 20 in the District of Columbia on May 20, 24, and 26, 1928 (W. H. Ball). *Fall*: 18 in the District of Columbia on September 12, 1930 (W. J. Whiting); 14 on Assateague Island on August 30, 1950.

BAIRD'S SANDPIPER *Erolia bairdii* (Coues)

STATUS.—*Fall transient*: Rare—recorded in the Eastern Shore, Western Shore, and Allegheny Mountain sections.

HABITAT.—Mud flats at the margins of ponds, bays, and estuaries.

PERIOD OF OCCURRENCE.—Single birds were recorded as follows: August 14, 1948, on Assateague Island; August 17, 1952, at Sandy Point, Anne Arundel County (C. N. Mason); August 19, 1928, at Scotland Beach, St. Marys County (Ball, 1930a); September 3, 1928, and September 28, 1930, in the District of Columbia (Ball, 1931b); September 29, 1945 (USNM), at Ocean City; October 18 and 24, 1936, at Deep Creek Lake in Garrett County (Brooks, 1938).

LEAST SANDPIPER *Erolia minutilla* (Vieillot)

STATUS.—*Transient*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common elsewhere in all sections. *Wintering*: Uncommon in the coastal area of Worcester County; rare in tidewater areas elsewhere in the Eastern Shore section. *Summer vagrant*: Casual—recorded in the District of Columbia on June 21, 1929 (W. H. Ball).

HABITAT.—Marshes with short vegetation, and mud flats at the margins of ponds, bays, and estuaries.

SPRING MIGRATION.—*Normal period*: April 15–25 to May 25–June 5; peak, May 1 to May 20. *Extreme dates of arrival*: March 22, 1947, in Dorchester County; April 4, 1953, in Worcester County. *Extreme dates of departure*: June 14, 1926, in the District of Columbia (Ball, 1927); June 12, 1946, in Somerset County.

FALL MIGRATION.—*Normal period*: July 10–20 to November 1–10; peak, July 25 to September 25. *Extreme date of arrival*: July 1, 1951, in Baltimore County (E. Willis). *Extreme dates of departure*: November 29, 1945, in Worcester County; November 27, 1954, in Dorchester County; November 22, 1917, in the District of Columbia (C. H. M. Barrett).

MAXIMUM COUNTS.—*Spring*: 900 in the Crisfield area, Somerset County, on May 18, 1947; 549 in the Ocean City area on May

2, 1953; 500+ on Mills Island in Chincoteague Bay on May 7, 1938 (G. A. Ammann); 150 at Sandy Point, Anne Arundel County, on May 23, 1954 (C. N. Mason). *Fall*: 210 on Assateague Island on August 14, 1948; 194 in the Ocean City area on August 5, 1945; 51 on Blackwater Refuge, Dorchester County, on August 24, 1947. *Wintering*: 25 in the Ocean City area on December 21, 1952 (Christmas count).

DUNLIN *Erolia alpina* (Linnaeus)

STATUS.—*Transient*: Abundant in the coastal area of Worcester County; common in tidewater areas elsewhere in the Eastern Shore section; uncommon in the Allegheny Mountain section and in the tidewater areas of the Western Shore and Upper Chesapeake sections; rare elsewhere in all sections. *Wintering*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore section; rare in tidewater areas of the Western Shore section.

HABITAT.—Sandy beaches and mud flats at the margins of ponds, bays, and estuaries. This species is especially characteristic of the tidal mud flats along the coastal bays and lower Chesapeake Bay.

SPRING MIGRATION.—*Normal period*: March 20–30 to June 1–10; peak, May 1 to May 25. *Extreme date of arrival*: March 13, 1892, in Baltimore County (W. N. Wholey). *Extreme date of departure*: June 11, 1949, in Worcester County (B. Williams).

FALL MIGRATION.—*Normal period*: July 25–August 5 to December 10–20; peak, October 15 to November 30. *Extreme date of arrival*: July 23, 1949, in Worcester County. *Extreme date of departure*: December 30, 1951, in Anne Arundel County (Mrs. W. L. Henderson).

MAXIMUM COUNTS.—*Spring*: 700 in the Crisfield area, Somerset County, on May 18, 1947; 315 in the Ocean City area on May 2, 1953 (R. Strosnider); 130 (1 flock) near Elliott Island, Dorchester County, on May 20, 1953; 60 in the District of Columbia on May 26, 1928 (W. H. Ball, P. Knappen). *Fall*: 400 in the Ocean City area on November 27, 1945; 200+ in the Elliott Island area on October 30, 1949, and on November 18, 1947; 150 at Kent Narrows, Queen Annes County, on October 24, 1949. *Wintering* (Christmas counts): 1,102 in the Ocean City area on December 27, 1955; 177 in southern Dorchester County on December 28, 1954.

SHORT-BILLED DOWITCHER *Limnodromus griseus* (Gmelin)

STATUS.—*Transient*: Common in the tidewater areas of Wor-

cester, Somerset, Wicomico, and Dorchester Counties; fairly common in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare elsewhere in all sections. *Wintering*: Casual in the coastal area of Worcester County—1 at Ocean City on December 27, 1950 (F. M. Packard). *Summer vagrant*: Rare in the coastal area of Worcester County.

HABITAT.—Mud flats at the margins of ponds, bays, and estuaries.

SPRING MIGRATION.—*Normal period*: April 1–10 to May 25–June 5; peak, May 1 to May 25. *Extreme date of arrival*: March 6, 1875, in Baltimore County (A. Resler). *Extreme date of departure*: June 6, 1939, in Worcester County (M. B. Meanley).

FALL MIGRATION.—*Normal period*: July 1–10 to November 10–20; peak, July 15 to September 5. *Extreme dates of arrival*: June 26, 1950, and June 27, 1948 (M. A. Elliott), in Worcester County. *Extreme date of departure*: November 20, 1948, in Dorchester County.

MAXIMUM COUNTS.—*Spring*: 525 in the Crisfield area, Somerset County, on May 18, 1947; 300 on Assateague Island on May 1, 1946; 17 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones). *Fall*: 104 on Assateague Island on August 23, 1947; 44 in the Crisfield area on July 27, 1947; 40 along the Blackwater River, Dorchester County, on November 1, 1952.

LONG-BILLED DOWITCHER *Limnodromus scolopaceus* (Say)

STATUS.—Rare spring and fall transient. Seven were killed from a flock on the Anacostia River, District of Columbia, in April 1884 (Smith and Palmer, 1888). One was collected (USNM) at Hains Point in the District of Columbia on September 10, 1929 (Ball, 1932a). Two were seen on Columbia Island in the District of Columbia on September 27, 1930 (Mr. and Mrs. W. J. Whiting). One was seen on Triadelphia Reservoir in both Montgomery and Howard Counties on October 28, 1951 (S. H. Low).

STILT SANDPIPER *Micropalama himantopus* (Bonaparte)

STATUS.—*Fall transient*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore section; rare in the Western Shore, Upper Chesapeake, and Allegheny Mountain sections. *Spring transient*: Casual—1 seen in the District of Columbia on June 3, 1926 (Ball, 1927); 1 seen at Middle River on May 9, 1954 (D. A. Jones); 1 seen at Ocean City on May 16, 1954 (D. A. Cutler, J. K. Wright); and 1 at Kent Narrows, Queen Annes County, on May 5, 1956 (R. P. and M. Dubois).

HABITAT.—Mud flats at the margins of ponds, bays, and estuaries.

FALL MIGRATION.—*Normal period:* July 25–August 1 to October 5–15; peak, August 5 to September 30. *Extreme date of arrival:* July 23, 1949, in Worcester County. *Extreme date of departure:* October 26, 1916, in the District of Columbia (F. Harper).

MAXIMUM COUNTS.—126 on Assateague Island on August 14, 1948; 14 at Heine's Pond in Worcester County on September 6, 1954 (J. W. Terborgh); 12 in the District of Columbia on September 30, 1930 (W. J. Whiting); 7 at Kent Narrows, Queen Annes County, on October 2, 1948.

SEMIPALMATED SANDPIPER *Ereunetes pusillus* (Linnaeus)

STATUS.—*Transient:* Abundant in the coastal area of Worcester County; common in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Allegheny Mountain section; uncommon elsewhere in all sections. *Wintering:* Uncommon or rare in the coastal area of Worcester County. *Summer vagrant:* Uncommon or rare in the coastal area of Worcester County; casual elsewhere—recorded in the District of Columbia on June 21, 1929 (W. H. Ball).

HABITAT.—Sandy beaches and mud flats at the margins of ponds, bays, and estuaries; less commonly on the ocean beach. This species is especially characteristic of the tidal sandy mud flats along the coastal bays and lower Chesapeake Bay.

SPRING MIGRATION.—*Normal period:* April 20–30 to June 5–10; peak, May 5 to June 1. *Extreme date of arrival:* April 4, 1953, in Worcester County (J. H. Buckalew). *Extreme dates of departure:* June 15, 1954, in Queen Annes County (P. F. Springer); June 14, 1926, in the District of Columbia (Ball, 1927); June 14, 1944, in Anne Arundel County.

FALL MIGRATION.—*Normal period:* July 1–10 to November 5–15; peak, July 25 to September 20. *Extreme dates of arrival:* June 26, 1950, in Worcester County; June 27, 1954, in Queen Annes County (P. A. DuMont).

MAXIMUM COUNTS.—*Spring:* 1,660 in the Ocean City area on May 12, 1956; 700 in the Crisfield area, Somerset County, on May 18, 1947. *Fall:* 1,700 on Assateague Island on August 13, 1950; 700 in the Crisfield area on August 11, 1950; 325 on Blackwater National Wildlife Refuge, Dorchester County, on August 24, 1947; 200 at Sandy Point, Anne Arundel County, on August 20, 1947; 75+ in the District of Columbia on August 24, 1928 (W. H. Ball). *Winter:* 34 in the Ocean City area on December 27, 1955 (Christmas count).

WESTERN SANDPIPER *Ereunetes mauri* Cabanis

STATUS.—*Fall transient*: Fairly common in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare elsewhere in all sections. *Spring transient*: Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Wintering*: Usually rare in the coastal area of Worcester County.

HABITAT.—Sandy beaches and mud flats at the margins of ponds, bays, and estuaries.

FALL MIGRATION.—*Normal period*: July 15–20 to October 25–November 5; peak, July 25 to October 5. *Extreme dates of arrival*: July 1, 1951, in Baltimore County (E. Willis); July 13, 1947, in Worcester County.

SPRING MIGRATION.—*Extreme dates*: May 2, 1953, in Worcester County (R. Strosnider) and June 5, 1948, in Calvert County.

MAXIMUM COUNTS.—*Fall*: 260 on Blackwater National Wildlife Refuge, Dorchester County, on August 24, 1947; 200 on Assateague Island on August 13, 1950; 100 at Sandy Point, Anne Arundel County, on August 21, 1947; 90 at Elliott Island, Dorchester County, on October 2, 1948. *Wintering*: 65 in the Ocean City area on December 22, 1951 (Christmas count).

MARBLED GODWIT *Limosa fedoa* (Linnaeus)

STATUS.—*Fall transient*: Rare in the coastal area of Worcester County; casual elsewhere—recorded at Sandy Point in Anne Arundel County on August 14, 1953 (E. G. Davis), August 28, 1954 (C. N. Mason), and on September 15 and 18, 1951 (I. C. Hoover, Mrs. W. L. Henderson). *Spring transient*: Casual—singles recorded at Gibson Island, Anne Arundel County, on May 6, 1950 (Mrs. G. Tappan); at Ocean City on May 14, 1955; and at West Ocean City on May 19, 1956 (P. G. DuMont).

HABITAT.—Sandy beaches, and mud flats at the margins of tidal ponds and bays, chiefly along the coast.

FALL MIGRATION.—*Extreme dates*: July 23, 1949, and October 10, 1948 (J. H. Buckalew), in Worcester County. *Peak*: August 10 to October 5.

MAXIMUM COUNTS.—14 in the Ocean City area on August 31, 1952 (L. Griffin, L. Westhaver); 8 in the Ocean City area on September 6, 1952 (D. E. Power); 4 on Assateague Island on October 2, 1948 (J. H. Buckalew).

HUDSONIAN GODWIT *Limosa haemastica* (Linnaeus)

STATUS.—*Fall transient*: Rare in the coastal area of Worcester

County; casual in the Western Shore section—1 seen in the District of Columbia on August 27–28, 1933 (Deignan, 1943b). *Spring transient*: Accidental—1 was reported shot at West River, Anne Arundel County, on May 16, 1886 (Kirkwood, 1895).

HABITAT.—Sandy beaches, and mud flats at the margins of tidal ponds and bays, chiefly along the coast.

FALL MIGRATION.—*Extreme dates*: July 17, 1948 (J. H. Buckalew), and September 24, 1950 (J. H. Buckalew, E. O. Mellinger), in Worcester County.

MAXIMUM COUNTS.—6 (2 collected) on September 17, 1950, and 6 on September 24, 1950, all on Assateague Island (J. H. Buckalew, E. O. Mellinger).

[RUFF] *Philomachus pugnax* (Linnaeus)

STATUS.—Hypothetical. One was seen on August 6, 1948, at Green Run on Assateague Island (Buckalew, 1948).

SANDERLING *Crocethia alba* (Pallas)

STATUS.—*Transient*: Abundant in the coastal area of Worcester County; uncommon in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare elsewhere in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Wintering*: Fairly common in the coastal area of Worcester County; rare in tidewater areas elsewhere in the Eastern Shore and Western Shore sections. *Summer vagrant*: Uncommon in the coastal area of Worcester County.

HABITAT.—Especially characteristic of the ocean beach; also found sparingly on sandy beaches that border bays and estuaries.

SPRING MIGRATION.—*Normal period*: April 20–30 to June 5–15; peak, May 5 to June 5. *Extreme date of departure*: June 16, 1935, in Worcester County (W. B. Tyrrell).

FALL MIGRATION.—*Normal period*: July 10–20 to October 20–30; peak, July 25 to September 20.

MAXIMUM COUNTS.—*Spring*: 500 on Assateague Island on June 3, 1938 (G. A. Ammann); 300 in the Ocean City area on May 9, 1948, and on May 23, 1948. *Fall*: 2,800 on August 14, 1948, and 2,385 on August 30, 1950, on Assateague Island; 1,925 in the Ocean City area on August 4, 1945. *Winter*: 775 in the Ocean City area on December 27, 1955 (Christmas count).

Family RECURVIROSTRIDAE

AMERICAN AVOCET *Recurvirostra americana* Gmelin

STATUS.—Casual fall visitor. Two were seen (photograph taken) in Dorchester County at the Blackwater Refuge during the

period September 30 to October 17, 1940, and 1 remained until November 2, 1940 (Black, 1941). Another was recorded in Somerset County at Deal Island on December 11, 1941 (T. Denmead), and 1 at Cove Point, Calvert County, on November 5, 1947 (G. Kelly). One was observed in St. Marys County at Point No Point on October 23, 1951 (J. H. Buckalew). One was seen at Ocean City on September 4, 1955 (R. L. Kleen, T. Lord), and September 7, 1955 (Mr. and Mrs. I. C. Hoover).

Family PHALAROPODIDAE

RED PHALAROPE *Phalaropus fulicarius* (Linnaeus)

STATUS.—Rare transient in the Eastern Shore, Western Shore, and Piedmont sections.

SPRING RECORD.—Two were seen at Ocean City on May 20, 1950 (J. H. Buckalew, S. H. Low).

FALL RECORDS.—One was photographed at Solomons, Calvert County, on July 10, 1947 (G. Kelly); 1 was seen off Ocean City on August 21, 1948 (S. H. Low, P. F. Springer); 1 was collected (USNM) in the District of Columbia on October 3, 1912 (W. Palmer); 1 was collected (USNM) at Whites Ferry, Montgomery County, on October 4, 1897 (Swales, 1920); 1 was collected (USNM) in the District of Columbia on October 17, 1885 (F. S. Webster).

WILSON'S PHALAROPE *Steganopus tricolor* Vieillot

STATUS.—Rare transient in the Eastern Shore, Western Shore, Piedmont, and Allegheny Mountain sections.

SPRING RECORD.—An adult female was seen at Dickerson, Montgomery County, on May 12, 1929 (Wetmore, 1929).

FALL RECORDS.—On August 3, 1949, 1 was collected on Assateague Island (Buckalew, 1949); in late August, 1953, 1 was seen at Deep Creek Lake, Garrett County (M. G. Brooks); on September 8, 1947, 1 was seen on Triadelphia Reservoir along the boundary between Howard and Montgomery Counties (Hassbrouck, 1948); in 1930, 1 was seen in the District of Columbia on September 19 (W. J. Whiting), 3 were seen there on September 27, 3 on September 30, and 1 was collected (USNM) on October 2 (Ball, 1948).

NORTHERN PHALAROPE *Lobipes lobatus* (Linnaeus)

STATUS.—Rare spring and fall transient in the Eastern Shore and Western Shore sections.

SPRING RECORDS.—One was seen on the Potomac River in Charles County on May 10 and June 7, 1930 (H. C. Oberholser);

1 was seen at Ocean City on May 20, 1950 (J. H. Buckalew, S. H. Low), and another on May 13, 1951 (D. A. Cutler, et al.); 1 was observed near Elliott, Dorchester County, on May 23, 1954; a single remained on the Patuxent Refuge, Prince Georges County, from May 26 to June 3, 1955 (photographed—F. M. Uhler).

FALL RECORDS.—One was seen on Assateague Island on August 14, 1948; 3 at Ocean City on August 21, 1948 (P. F. Springer); 1 in the District of Columbia on August 29, 1916 (R. W. Moore, C. R. Shoemaker); 1 (collected, USNM) on Assateague Island on August 30, 1950; 1 (collected, USNM) in the District of Columbia on August 31, 1891 (T. Marron); 1 at Gibson Island, Anne Arundel County, on September 20, 1950 (Mrs. W. L. Henderson, Mrs. G. Tappan); 2 flocks of 12 each and several singles at Ocean City on October 5, 1928 (A. Wetmore); and 3 at Cornfield Harbor, St. Marys County, on October 14, 1928 (A. Wetmore).

Family STERCORARIIDAE

[POMARINE JAEGER] *Stercorarius pomarinus* (Temminck)

STATUS.—Hypothetical. One was reported on the Potomac River in Prince Georges County on January 12, 1929 (H. C. Oberholser), and 2 were recorded 13 miles offshore from Ocean City on September 9, 1950.

PARASITIC JAEGER *Stercorarius parasiticus* (Linnaeus)

STATUS.—Rare visitor. An immature male was collected in the District of Columbia on September 23, 1899 (Ball, 1932b). One was seen in Worcester County, a short distance offshore from Maryland Beach on May 11, 1946 (Stewart and Robbins, 1947a).

[LONG-TAILED JAEGER] *Stercorarius longicaudus* Vieillot

STATUS.—Hypothetical. F. C. Kirkwood recorded 1 on a fish pound off Ocean City on May 1, 1906.

Family LARIDAE

GLAUCOUS GULL *Larus hyperboreus* Gunnerus

STATUS.—*Transient and wintering*: Rare in the tidewater areas of the Eastern Shore and Western Shore sections.

RECORDS.—One on the Potomac River, Charles County, on November 1, 1927 (H. C. Oberholser); 1 at South Point, Worcester County, on December 21, 1952 (S. H. Low); 1 in the District of Columbia from January 28 to March 31, 1937 (A. L. Curl); 1 at Tilghman, Talbot County, on February 12, 1949 (J. B. May, O. W. Crowder); 1 in Prince Georges County on February 17, 1935 (R.

Overing); 1 on the Potomac River, Charles County, on February 18, 1926 (H. C. Oberholser); 1 at Annapolis on March 23-28, 1920 (A. Wetmore); 1 in the District of Columbia on April 5-9, 1914 (E. A. Preble); several at Ocean City on April 28, 1929 (A. Wetmore); and 1 at Ocean City on May 6, 1949 (Buckalew, 1950).

ICELAND GULL *Larus glaucoides* Meyer

STATUS.—Rare visitor in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

RECORDS.—Kirkwood (1895) reports observing an immature at Baltimore on November 23, 1893; single adults were seen along the former ferry route between Sandy Point, Anne Arundel County, and Matapeake, Queen Annes County, on January 18, 1946, February 18 and 25, 1945 (Hampe, 1945), May 8, 1950 (Mr. and Mrs. W. L. Henderson), May 12, 1945, and May 12, 1946; an immature was recorded in the District of Columbia on March 12, 1945 (Stewart and Robbins, 1947a); 1 was seen at Ocean City on May 15, 1948 (P. B. Street); and 1 at Gibson Island, Anne Arundel County, on June 4 and June 6, 1956 (Mrs. W. L. Henderson, Mrs. G. Tappan).

GREAT BLACK-BACKED GULL *Larus marinus* Linnaeus

STATUS.—*Transient and wintering:* Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore and Western Shore sections; rare in tidewater areas in the Upper Chesapeake section. *Summer vagrant:* Single birds were seen at Ocean City on July 7, 1951 (D. A. Cutler), and July 19, 1955; 2 on Sharps Island, Talbot County, on July 15, 1953 (J. Hailman); and 1 in Dorchester County on July 30, 1953 (Mr. and Mrs. W. L. Henderson).

HABITAT.—Open water and adjacent beaches of the ocean, bays, and larger estuaries.

PERIOD OF OCCURRENCE.—*Normal period:* August 5-15 to May 15-25; peak, August 25 to May 10. *Extreme date of departure:* June 3, 1938, in Worcester County (G. A. Ammann).

MAXIMUM COUNTS.—*Spring:* 12 in the Ocean City area on May 5, 1951; 6 at Point Lookout, St. Marys County, on April 6, 1953 (J. W. Terborgh). *Fall:* 18 in the Ocean City area on November 11, 1950. *Winter* (Christmas counts): 26 in the Ocean City area on December 27, 1954; 24 in Talbot County on December 29, 1953; 13 in the Annapolis area on January 2, 1955.

LESSER BLACK-BACKED GULL *Larus fuscus* Linnaeus

STATUS.—Accidental visitor. An adult female was collected (USNM) on Assateague Island, Worcester County, on October 7,

1948 (Buckalew, 1950). One was closely observed at Gibson Island, Anne Arundel County, on October 7, 1952 (Mrs. W. L. Henderson, Mrs. G. Tappan).

HERRING GULL *Larus argentatus* Pontoppidan

STATUS.—*Breeding*: Three nests with eggs were found on Sharps Island, Talbot County, on July 24, 1955, and 7 nests (4 with eggs, or eggs and young) on July 1, 1956 (R. L. Kleen). *Transient and wintering*: Abundant in the coastal area of Worcester County; common in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common (in spring) in the Allegheny Mountain section; uncommon elsewhere in all sections. *Summer vagrant*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections. Immature birds predominate during the summer months.

HABITAT.—Ocean, bays, estuaries, and adjacent beaches and fields; also on inland bodies of water, including lakes, reservoirs, and the larger streams.

SPRING MIGRATION.—*Normal period*: February 20–March 1 to May 20–30; peak, March 20 to May 15.

FALL MIGRATION.—*Normal period*: August 1–10 to November 10–20; peak, September 15 to October 20.

MAXIMUM COUNTS.—*Spring*: 3,000 in the District of Columbia on March 7, 1936 (H. C. Oberholser); 1,238 in the Ocean City area on May 17, 1947; nearly 1,000 along the Potomac River in Charles and Prince Georges Counties in mid-March, 1926. *Fall*: 2,090 in the Ocean City area on October 6, 1946. *Winter* (Christmas counts): 2,554 in the Ocean City area on December 27, 1955; 1,231 in the Kent Island area, Queen Annes County, on December 29, 1949; 730 in the Susquehanna Flats area on December 28, 1951.

BANDING.—A total of 68 recovered throughout the year in tide-water Maryland had been banded as young birds in the following areas: New Brunswick, 25; coast of Maine, 10; northern Michigan, 9; coast of New Hampshire, 8; coast of Massachusetts, 7; southeastern Ontario, 3; coast of New York, 2; southern Quebec, 2; southern Nova Scotia, 1; northeastern Wisconsin, 1. A full-grown immature bird banded in west-central Florida on December 28, 1937, was recovered in Baltimore County on November 15, 1939.

RING-BILLED GULL *Larus delawarensis* Ord

STATUS.—*Transient*: Abundant in the tidewater areas of the

Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common elsewhere in all sections. *Wintering*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon elsewhere in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections. *Summer vagrant*: Uncommon in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. In spring, a noticeable westward flight occurs along the Potomac River into western Maryland.

HABITAT.—Ocean, bays, estuaries, and adjacent beaches and fields; also inland lakes, reservoirs, and rivers.

SPRING MIGRATION.—*Normal period*: February 15–25 to May 20–30; peak, March 1 to May 10.

FALL MIGRATION.—*Normal period*: July 5–15 to November 10–20; peak, August 15 to October 25.

MAXIMUM COUNTS.—*Spring*: “Thousands” in the District of Columbia on April 10, 1940 (W. L. McAtee); 1,200 in Susquehanna Flats area on March 25, 1947; 1,000 at Seneca, Montgomery County, on February 28, 1954 (J. W. Terborgh). *Fall*: 840 on August 30, 1950, and 590 on August 13, 1950, on Assateague Island; 400 in the District of Columbia on October 19, 1937 (W. L. McAtee); 302 in the Middle River area, Baltimore County, on August 27, 1950 (E. Willis). *Winter* (Christmas counts): 1,270 in the Ocean City area on December 21, 1952; 878 in the Carroll Island area, Baltimore County, on December 22, 1946; 801 in the District of Columbia area on January 1, 1955.

BANDING.—A total of 29 recovered throughout the year in tide-water Maryland had been banded as young birds in the following areas: northeastern Michigan, 17; southeastern Ontario, 11; and northwestern New York, 1.

LAUGHING GULL *Larus atricilla* Linnaeus

STATUS.—*Breeding*: Uncommon and local in Chincoteague Bay—a colony of about 100 pairs was located on Striking Marsh in 1915 (H. H. Bailey); in 1951 a colony of about 15 pairs was found on Robins Marsh, but in 1955 only half a dozen pairs were present; in 1953 a colony of 25 pairs was found on an island one mile southeast of South Point and by 1955 this colony had doubled; rare and local elsewhere in tidewater areas of the Eastern Shore and Western Shore sections—a small colony was located at Cornfield Harbor, St. Marys County, during the period 1935–1946 (A. Wetmore), and a colony was found on Sharps Island, Talbot County, during the summer of 1954 (fide Mrs. W. L. Henderson).

Transient: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Allegheny Mountain section—1 at Deep Creek Lake on October 18, 1936 (Handlan, 1936). *Summer vagrant*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Wintering*: Rare in tidewater areas of the Eastern Shore and Western Shore sections.

HABITAT.—Ocean, bays, and estuaries, and adjacent beaches and fields. Usually nests on islands of salt marsh, chiefly salt-water cordgrass.

NESTING SEASON.—Late May to early August. *Extreme egg dates* (5 records, about 40 nests): June 6, 1953, and July 18, 1955, in Worcester County. *Downy young dates* (3 records, 175 young in all stages): June 6, 1954, in Talbot County (fide Mrs. W. L. Henderson) and July 25, 1956, in Worcester County (E. F. Mashburn).

SPRING MIGRATION.—*Normal period*: April 1–10 to May 10–20. *Extreme dates of arrival*: March 27, 1948, in Calvert County; March 27, 1949, in Worcester County. *Extreme date of departure*: May 22, 1940, in the District of Columbia (W. L. McAtee).

FALL MIGRATION.—*Normal period*: July 20–30 to November 20–30; peak, August 15 to November 1. *Extreme date of arrival*: July 18, 1927, in Calvert County (W. H. Ball). *Extreme dates of departure*: December 10, 1927, on the Potomac River below Washington, D. C. (H. H. T. Jackson); December 3, 1950, in Anne Arundel County (A. M. Smith).

MAXIMUM COUNTS.—*Fall*: 3,000 on Back River, Baltimore County, on September 3, 1948 (E. Willis); 1,000 at Gibson Island, Anne Arundel County, on September 14, 1950, and November 1, 1951 (Mrs. W. L. Henderson, Mrs. G. Tappan); 500–1,200 on the Potomac River off Alexandria, Virginia, in late September and early October 1951 (E. G. Davis). *Winter* (Christmas count): 6 near St. Michaels, Talbot County, on December 29, 1953.

BANDING.—Eight recovered throughout tidewater Maryland in fall (September 1–October 15) had been banded as young birds in the following areas: Cobb Island, Virginia (Northampton County), 6; and southern New Jersey (Cape May County), 2. One banded as a juvenal near South Point, Worcester County, on July 18, 1955, was recovered at Coco Solo, Canal Zone, on December 11, 1955.

BONAPARTE'S GULL *Larus philadelphia* (Ord)

STATUS.—*Transient*: Fairly common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon elsewhere in all sections. *Wintering*: Fairly common in the coastal area of Worcester County; uncommon in tidewater areas elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections.

HABITAT.—Open water and adjacent beaches of the ocean, bays, and estuaries; also on inland bodies of water, including lakes, reservoirs, and the larger streams.

SPRING MIGRATION.—*Normal period*: March 5–15 to May 10–20; peak, March 25 to May 1. *Extreme dates of arrival*: February 18, 1950, in St. Marys County (R. J. Beaton, J. W. Taylor, Jr.); February 22, 1938, in Baltimore County (H. Kolb); February 23, 1927, in the District of Columbia (H. C. Oberholser). *Extreme dates of departure*: June 8, 1929, in the District of Columbia (H. C. Oberholser); June 7, 1930, in Prince Georges County (H. C. Oberholser).

FALL MIGRATION.—*Normal period*: September 10–20 to December 10–20; peak, October 20 to November 30. *Extreme dates of arrival*: August 9, 1901, 8 miles off Ocean City (F. C. Kirkwood); August 17, 1955, in Anne Arundel County (L. W. Oring); August 23, 1928, in the District of Columbia (W. J. Whiting); August 25, 1948, in Queen Annes County (S. H. Low). *Extreme date of departure*: December 30, 1922, in the District of Columbia (M. J. Pellew).

MAXIMUM COUNTS.—Spring: 225 at Ocean City on April 1, 1948; 200+ at Annapolis on May 1, 1925 (F. C. Kirkwood); about 200 at Washington, D. C., on March 8, 1935 (W. L. McAtee); 130 on Chesapeake Bay, between Sandy Point in Anne Arundel County and Kent Island in Queen Annes County on April 6, 1946. *Fall*: 200+ on Deep Creek Lake, Garrett County, during October 1939 (M. G. Brooks); 170 on December 10, 1927, and 52 on September 12, 1928, on the Potomac River below Washington, D. C. (H. H. T. Jackson). *Winter*: 332 at Ocean City on December 27, 1953 (Christmas count).

BLACK-LEGGED KITTIWAKE *Rissa tridactyla* (Linnaeus)

STATUS.—Casual visitor in the coastal area of Worcester County. An immature Kittiwake was closely observed on Assateague Island on August 30, 1950 (Stewart, 1951). An adult female was found dead near Ocean City on March 4, 1951 (Cutler, 1952).

GULL-BILLED TERN *Gelochelidon nilotica* (Gmelin)

STATUS.—*Breeding*: Fairly common locally in the coastal area of Worcester County. *Transient*: Uncommon in the coastal area of Worcester County; casual in tidewater areas in the Western Shore section—1 seen in the District of Columbia on May 20, 1928 (Ball, 1928a), recorded in St. Marys County at Point Lookout on July 21, 1928, and at Cornfield Harbor on September 6, 1931 (A. Wetmore), 1 seen at Sandy Point, Anne Arundel County, on September 4, 1949 (R. D. Cole, E. H. La Fleur), and 2 seen there on September 11, 1949 (R. J. Beaton, I. E. Hampe).

HABITAT.—Ocean and coastal bays and adjacent sandy beaches. Nests on sandy islands in the coastal bays.

NESTING SEASON.—Mid-May to early August. *Extreme egg dates* (26 nests): June 6, 1953, and July 18, 1955, in Worcester County. *Extreme downy young dates* (about 31 broods): June 6, 1946, and July 18, 1949 (J. H. Buckalew), in Worcester County.

PERIOD OF OCCURRENCE.—*Extreme dates*: April 30, 1955 (D. C. Aud. Soc.), and September 25, 1949 (K. H. Weber), in Worcester County.

HIGH BREEDING POPULATIONS.—Twenty-five pairs on the group of islands about 1 mile south-southeast of South Point in Chincoteague Bay on July 12, 1951.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 10 in the Ocean City area on May 14, 1949 (E. G. Davis). *Fall*: 5 on Assateague Island on September 5, 1948.

BANDING.—A juvenal, banded near South Point in Chincoteague Bay on July 4, 1952, was recovered in Cuba during the fall of 1952. Another juvenal, banded near South Point on July 12, 1951, was recovered near Quimby in Accomack County, Virginia, on August 16, 1951.

FORSTER'S TERN *Sterna forsteri* Nuttall

STATUS.—*Breeding*: Locally common in the coastal area of Worcester County (north to Ocean City); rare in tidewater areas of Somerset County. *Fall transient*: Common in the tidewater areas of the Eastern Shore and Western Shore sections; fairly common in tidewater areas of the Upper Chesapeake section; casual in the Piedmont section—recorded in Montgomery County on October 4, 1942, and August 25–26, 1945 (A. Wetmore). *Spring transient*: Uncommon in the coastal area of Worcester County; rare elsewhere in tidewater areas of the Eastern Shore and Western Shore sections; probably casual in the Allegheny Mountain section—2 believed seen on Deep Creek Lake on May 3, 1938

(M. G. Brooks). *Wintering*: Rare in the coastal area of Worcester County; casual elsewhere—1 recorded in the District of Columbia on December 28, 1928 (W. H. Ball), and several seen there on December 29–30, 1946 (D. Berkheimer, E. L. Poole); 1 recorded at Denton, Caroline County, on February 16, 1955 (A. Knotts). *Summer vagrant*: Casual—10 seen on Chesapeake Bay out from Gibson Island, Anne Arundel County, on June 2, 1953 (Mr. and Mrs. W. L. Henderson).

HABITAT.—*Breeding*: Salt marshes and adjacent open water; nesting colonies are usually located on islands of salt marsh, chiefly salt-water cordgrass in the coastal bays. *Transient*: Ocean, bays, estuaries, and adjacent beaches or salt marsh.

NESTING SEASON.—Late April to late July (nesting peak, early May to late June). *Extreme egg dates* (9 records, about 1,200 nests): May 7, 1938 (G. A. Ammann), and July 18, 1955, in Worcester County. *Extreme downy young dates* (6 records, about 450 broods): June 6, 1953, and July 20, 1951, in Worcester County.

SPRING MIGRATION.—*Extreme dates*: April 3, 1954, in Charles and St. Marys Counties (J. W. Terborgh, et al.), and May 9, 1953, in Charles County (J. K. Merritt, J. W. Terborgh).

FALL MIGRATION.—*Normal period*: July 5–15 to November 15–25; peak, August 15 to October 20. *Extreme date of arrival*: June 28, 1953, in Anne Arundel County (E. J. and A. Besson). *Extreme dates of departure*: December 6, 1953, in Charles County (M. C. Crone, R. L. Farr); November 28, 1953, in St. Marys County (J. W. Terborgh).

HIGH BREEDING POPULATIONS.—Approximately 1,000 pairs on a marshy island near North Beach (Assateague Island) on June 6, 1894 (Kirkwood, 1895); about 700 pairs on Robins Marsh Island in Chincoteague Bay on July 11, 1951.

MAXIMUM COUNTS (nonbreeding).—*Fall*: 150 at Beverly Beach, Anne Arundel County, on September 9, 1947; 75 in the Ocean City area on September 29–30, 1945; 60 at Point Lookout, St. Marys County, on November 23, 1935 (W. H. Ball); 45 in the District of Columbia area on October 9, 1928 (Lincoln, 1928). *Winter*: 7 in the Ocean City area on January 10, 1945, and 7 in the same area on December 27, 1954 (Christmas count).

BANDING.—Two juvenals, banded in Worcester County (Robins Marsh) on June 19, 1953, were recovered on the wintering ground, 1 in central Florida (Orange County) on December 13, 1953, and 1 in eastern North Carolina on January 2, 1954. A juvenal, banded on Robins Marsh on July 11, 1951, was recovered in Dorchester County, near Cambridge (letter of April 30, 1952). An-

other juvenal, banded on the Clam Harbor Tumps (near the south tip of Mills Island in Chincoteague Bay) on July 6, 1946, was trapped about 10 miles distant, on Robins Marsh on July 11, 1951.

COMMON TERN *Sterna hirundo* Linnaeus

STATUS.—*Breeding*: Common in the coastal area of Worcester County; fairly common locally in tidewater areas of Somerset County; rare and local in tidewater areas of Dorchester, Talbot, and St. Marys Counties—colonies were found near Holland Island, Dorchester County, in 1919 and 1920 (Jackson, 1941) and in 1924 (F. C. Kirkwood), on Sharps Island, Talbot County, on July 24, 1955 (R. L. Kleen), and at Point Lookout, St. Marys County, in 1937 (E. G. Holt, W. L. McAtee). *Transient*: Common in the coastal area of Worcester County; fairly common in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon or rare elsewhere in all sections.

HABITAT.—Ocean, bays, and adjacent sandy beaches; also on inland ponds, lakes, and rivers. This species usually nests in colonies on sandy islands in the coastal bays. Three colonies found on the Manokin River in Somerset County in 1954 and 1955 were situated on marshy islands, comprised chiefly of salt-water cordgrass.

NESTING SEASON.—Mid-May to mid-August (nesting peak, early June to late July). *Extreme egg dates* (34 records, about 1,650 nests): May 30, 1937, in St. Marys County (E. G. Holt, W. L. McAtee) and August 5, 1950, in Worcester County (R. W. Dickerman). *Extreme downy young dates* (34 records, about 1,075 broods): June 6, 1953, and August 5, 1939 (Kolb, 1939), in Worcester County.

SPRING MIGRATION.—*Normal period*: April 5–15 to May 25–30; peak, April 20 to May 25. *Extreme date of arrival*: April 4, 1953, in Worcester County (J. H. Buckalew). *Extreme date of departure*: June 8, 1929, in the District of Columbia (H. C. Oberholser).

FALL MIGRATION.—*Normal period*: July 5–15 to November 10–20; peak, August 10 to September 30. *Extreme date of arrival*: July 2, 1950, in Baltimore County (E. Willis). *Extreme date of departure*: November 30, 1953, in Worcester County (E. G. Davis).

HIGH BREEDING POPULATIONS.—About 415 pairs on the group of islands 1 mile south-southeast of South Point in Chincoteague Bay on July 3, 1945.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 3,050 in the Ocean City area on May 11, 1952 (D. A. Cutler); 112 on the Potomac

River below Washington, D. C., on May 12, 1928 (H. H. T. Jackson). *Fall*: 285 on Assateague Island on August 23, 1947.

BANDING.—See figure 26.

FIGURE 26.—Common Tern banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August.

ROSEATE TERN *Sterna dougallii* Montagu

STATUS.—*Breeding*: Formerly nested in the coastal area of Worcester County—a good-sized colony was found on the barrier beach 5 miles south of Ocean City on June 10, 1933, and adults and

8 sets of eggs were collected (Court, 1936); nested commonly on islands in Sinepuxent Bay during June 1936 and 1938 (Poole, 1942b); an adult was collected on Assateague Island on June 3, 1938 (G. A. Ammann). There are no definite breeding records in recent years although a single adult was closely observed at Ocean City on June 18, 1948. *Spring transient*: Rare in the coastal area of Worcester County.

HABITAT.—Ocean and coastal bays, and adjacent sandy beaches.

PERIOD OF OCCURRENCE—*Extreme dates*: May 11, 1952 (D. A. Cutler), and June 18, 1948, in Worcester County.

SOOTY TERN *Sterna fuscata* Linnaeus

STATUS.—Accidental visitor. One was collected at Baltimore on October 1, 1876, by Alexander Wolle (Kirkwood, 1895). This specimen was given to the U. S. National Museum (cat. 70756) and later (on January 28, 1881) was sent to the Chicago Academy of Sciences. Another specimen was found alive at Baltimore on October 17, 1954 (H. Kolb). Both specimens were collected shortly following the passage of hurricanes.

LEAST TERN *Sterna albifrons* Pallas

STATUS.—*Breeding* (see fig. 27): Common in the coastal area of Worcester County; fairly common locally in tidewater areas

FIGURE 27.—Breeding colonies of Least Tern.

along Chesapeake Bay, occurring along the eastern shore of the bay north to Swan Point in Kent County (W. L. Henderson) and along the western shore north to Strawberry Point in Baltimore County (E. Willis); also occurs up the Potomac River to Leonardtown (E. J. Court). *Transient*: Uncommon in tidewater areas of the Eastern Shore and Western Shore sections; rare in tidewater areas of the Upper Chesapeake section; casual in the interior—recorded on August 13, 1955, following the passage of a hurricane when 16 were seen near Emmitsburg, Frederick County (J. W. Richards), 4 near Laytonsville, Montgomery County (S. H. Low), 2 at Patuxent Refuge, Prince Georges County, and 2 at Goldsboro, Caroline County (Mr. and Mrs. A. J. Fletcher).

HABITAT.—Ocean, bays, and estuaries, and adjacent sandy beaches; nests on sandy islands or beaches.

NESTING SEASON.—Late May to early August (nesting peak, early June to mid-July). *Extreme egg dates* (32 records, about 415 nests): May 20, 1953, in Queen Annes County and July 24, 1955 (R. L. Kleen), in Talbot County. *Extreme downy young dates* (16 records, about 250 broods): June 18, 1945, in Worcester County and July 24, 1955 (R. L. Kleen), in Talbot County.

SPRING MIGRATION.—*Extreme dates*: April 21, 1948, in Worcester County and May 27, 1950 (E. Willis), in Baltimore County.

FALL MIGRATION.—*Normal period*: July 15–25 to September 1–10; peak, August 1 to August 20. *Extreme date of arrival*: July 10, 1952, in Baltimore County (E. Willis). *Extreme dates of departure*: September 28, 1952, in Queen Annes County (Mrs. W. L. Henderson); September 27, 1953, in Charles County (M. C. Crone, K. Keeley).

HIGH BREEDING POPULATIONS.—About 285 pairs on the barrier beach between Ocean City and the Delaware line, on June 17, 1948; about 100 pairs at Kent Narrows, Queen Annes County, on July 6, 1935 (M. B. Meanley).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 150 in the Ocean City area on May 12, 1951. *Fall*: 74 in the Ocean City area on August 4, 1945; about 50 along the Potomac River in the District of Columbia on August 13, 1955, following a hurricane (E. G. Davis).

ROYAL TERN *Thalasseus maximus* (Boddaert)

STATUS.—*Breeding*: First recorded in July 1950 when 2 nests with eggs (collected) were found on an island in Chincoteague Bay, about 1 mile south of South Point (J. H. Buckalew); 165 nests with eggs and young were found in the same area on July

6, 1953 (J. H. Buckalew); on June 26, 1954, about 500 adults were noted there (P. A. DuMont); on July 18, 1955, 76 large young (nearly all that were present) were caught and banded; and on July 25, 1956 (E. F. Mashburn), 31 young (all that were present) were caught and banded. *Fall transient*: Fairly common in the coastal area of Worcester County; uncommon in tide-water areas elsewhere in the Eastern Shore and Western Shore sections. *Spring transient and summer vagrant*: Rare in the coastal area of Worcester County; casual in lower Chesapeake Bay—1 observed at Plum Point, Calvert County, on April 23, 1955 (J. H. Fales). *Wintering*: Casual in the coastal area of Worcester County—1 seen at Ocean City on December 21, 1952.

HABITAT.—Ocean and bays, and adjacent sandy beaches.

SPRING MIGRATION.—Extreme dates of arrival: April 23, 1955, in Calvert County (J. H. Fales); April 25, 1953, in Worcester County (D. A. Cutler).

FALL MIGRATION.—Normal period: July 15–25 to November 15–25; peak, August 20 to October 25. *Extreme date of arrival*: July 12, 1951, in Worcester County. *Extreme date of departure*: November 27, 1945, in Worcester County.

MAXIMUM COUNTS.—*Fall*: 69 on Assateague Island on September 17, 1950 (J. H. Buckalew, E. O. Mellinger); 32 at Point Lookout, St. Marys County, on October 24, 1953 (J. W. Terborgh); 30 at Tilghman Island, Talbot County, on August 31, 1956 (H. Armistead). *Spring*: 18 near South Point, Worcester County, on May 2, 1953 (R. Strosnider).

BANDING.—One banded as a juvenal near South Point, Worcester County, on July 18, 1955, was recovered in the Province of Pinar del Rio, Cuba, on February 19, 1956.

[SANDWICH TERN] *Thalasseus sandvicensis* (Latham)

STATUS.—Hypothetical. On September 19, 1945, 1 day after a tropical hurricane, 2 were observed at Ocean City (Stewart and Robbins, 1947a).

CASPIAN TERN *Hydroprogne caspia* (Pallas)

STATUS.—*Spring transient*: Uncommon in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; casual in the Piedmont section—1 seen at Plummers Island, Montgomery County, on May 5, 1918 (Fisher, 1935), and recorded at Loch Raven in Baltimore County on April 18, 1942, and April 23, 1943 (H. Kolb). *Fall transient*: Fairly common in the coastal area of Worcester County; uncommon in other tidewater areas of the Eastern Shore and Western Shore sections; rare in tidewater

areas of the Upper Chesapeake section; casual elsewhere—1 seen at Plummers Island, Montgomery County, on October 30, 1938 (A. Wetmore) and 1 seen near Seneca, Montgomery County, on September 5, 1953 (H. A. Sutton). *Summer vagrant*: Rare in tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Wintering*: Casual—1 seen at Matapeake, Queen Annes County, on December 22, 1948 (T. W. Donnelly).

HABITAT.—Ocean, bays, estuaries, and adjacent beaches.

SPRING MIGRATION.—*Normal period*: April 10–20 to May 25–June 5; peak, April 25 to May 20. *Extreme date of arrival*: April 4, 1953, in Worcester County (J. W. Terborgh). *Extreme dates of departure*: June 11, 1930, in the District of Columbia (W. J. Whiting); June 9, 1951, in Charles County (J. W. Taylor, Jr.); June 6, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan).

FALL MIGRATION.—*Normal period*: August 10–20 to October 25–November 5; peak, August 20 to September 30. *Extreme date of arrival*: August 7, 1949, in Anne Arundel County (C. N. Mason). *Extreme date of departure*: November 7, 1948, in Worcester County.

MAXIMUM COUNTS.—*Spring*: 31 on Middle River, Baltimore County, on May 13, 1950 (E. Willis); 13 at Deal Island, Somerset County, on April 28, 1946; 9 at Gibson Island, Anne Arundel County, on April 30, 1952 (Mrs. W. L. Henderson); 7 in the District of Columbia on May 21, 1927 (W. W. Rubey). *Fall*: 59 at Ocean City on September 19, 1945; 8 in the District of Columbia on September 19, 1927 (H. H. T. Jackson). *Summer vagrant*: 4 in the District of Columbia on June 28, 1927 (H. C. Oberholser).

BANDING.—One recovered at Breezy Point, Calvert County, on October 29, 1944, had been banded as a juvenal on Gravelly Island, Delta County, Wisconsin, on June 21, 1944.

BLACK TERN *Chlidonias niger* (Linnaeus)

STATUS.—*Breeding(?)*: Possibly nests occasionally in the Allegheny Mountain section—on June 9, 1935, 2 were seen on a pond near Grantsville, Garrett County, and, according to the people living on the property, had been there since spring (Denmead, 1937). *Fall transient*: Fairly common in the coastal area of Worcester County; uncommon in other tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections and in the Allegheny Mountain section; rare elsewhere in all sections. *Spring transient*: Uncommon in tidewater areas of the Eastern

Shore, Western Shore, and Upper Chesapeake sections; rare elsewhere in all sections.

HABITAT.—Ocean, bays, estuaries, and adjacent beaches and marshes; also on inland ponds, lakes, reservoirs, and rivers.

SPRING MIGRATION.—*Normal period:* May 1–10 to June 1–10; peak, May 10 to May 30. *Extreme date of arrival:* April 29, 1950, in Prince Georges County. *Extreme date of departure:* June 12, 1952, in Montgomery County (J. W. Taylor, Jr.).

FALL MIGRATION.—*Normal period:* July 5–15 to September 20–25; peak, July 20 to September 20. *Extreme date of arrival:* June 28, 1927, in Prince Georges County (Mr. and Mrs. L. D. Miner). *Extreme dates of departure:* October 16, 1899, in Baltimore County (F. C. Kirkwood); September 28, 1952, in Queen Annes County (Mr. and Mrs. W. L. Henderson); September 26, 1929, in the District of Columbia (W. H. Ball).

MAXIMUM COUNTS.—*Spring:* 24 at Ocean City an May 5, 1956 (P. A. DuMont); about 20 in the District of Columbia on May 27, 1926 (Mrs. T. M. Knappen); 8 in Anne Arundel County on May 8, 1954 (P. A. DuMont); 6 at Ocean City on May 11, 1952 (D. A. Cutler). *Fall:* 81 on September 5, 1948, and 70 on July 23, 1949, on Assateague Island; 37 in the District of Columbia on September 17, 1930 (W. H. Ball); 12 at Oxford, Talbot County, on July 13, 1950 (Mr. and Mrs. W. L. Henderson); 12 at Sandy Point, Anne Arundel County, on September 13, 1947 (J. W. Taylor, Jr.); 8 at Seneca, Montgomery County, on September 8, 1952 (J. W. Terborgh).

Family RYNCHOPIDAE

BLACK SKIMMER *Rynchops nigra* Linnaeus

STATUS.—*Breeding:* Common in the coastal area of Worcester County. *Transient:* Common in the coastal area of Worcester County; casual elsewhere—1 on the Potomac River on September 8, 1858 (Coues and Prentiss, 1883), singles in the District of Columbia on April 14, 1928 (C. H. M. Barrett), and on August 18, 1952 (Johnson, 1952), 2 at Sandy Point, Anne Arundel County, on August 28, 1955, and 1 at Tilghman Island on May 18 and 19, 1956 (R. L. Kleen). *Wintering:* Casual visitor—1 seen in St. Marys County on December 29, 1940 (Dargan, et al., 1941); 2 seen at Ocean City on December 27, 1954 (I. N. Gabrielson), and 1 at Ocean City on January 24, 1947.

HABITAT.—Coastal bays and adjacent sandy beaches. Nests on sandy islands in the coastal bays.

NESTING SEASON.—Late May to late August (nesting peak, mid-

June to late July). *Extreme egg dates* (23 records, about 635 nests): June 1, 1938 (Poole, 1942b), and August 3, 1939 (Kolb, 1939), in Worcester County. *Extreme downy young dates* (23 records, about 640 broods): June 18, 1945, and August 12, 1955, in Worcester County.

SPRING MIGRATION.—*Extreme arrival dates*: April 14, 1928, in the District of Columbia (C. H. M. Barrett); April 20, 1900, in Worcester County (Ansley Ludlam). *Migration peak*: May 5 to May 20.

FALL MIGRATION.—*Normal period*: August 10–20 to November 10–20; peak, September 1 to November 1. *Extreme date of departure*: November 24, 1946, in Worcester County.

HIGH BREEDING POPULATIONS.—About 250 pairs on islands in Sinepuxent Bay and northern Chincoteague Bay on July 12, 1951.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 560 in the Ocean City area on May 11, 1952 (D. A. Cutler). *Fall*: 400 in the Ocean City area on September 27, 1949, and September 29, 1945.

BANDING.—Five, banded as juvenals in Worcester County in summer (June 24–July 4), were recovered in Florida during the period September 12–April 6; 3 of these were recovered on the east coast of central Florida, and 2 were taken on the Gulf coast of southern Florida. Five others, banded as juvenals in Worcester County, were recovered as follows: 2 in Georgia on January 15 and April 1; 1 in South Carolina in late December; 1 in southern Delaware on August 9; and 1 at Salisbury, Wicomico County, during the hurricane of August 12, 1955.

Family ALCIDAE

[RAZORBILL] *Alca torda* Linnaeus

STATUS.—Hypothetical. One was seen on the barrier beach 2 miles south of Ocean City on December 4, 1926 (Wetmore, 1927). Another was seen near the former Isle of Wight Coast Guard station (north of Ocean City) on February 3, 1938 (J. H. Buckalew).

THICK-BILLED MURRE *Uria lomvia* (Linnaeus)

STATUS.—Casual visitor. Five specimens (USNM), found in the Washington, D. C., market, were taken in the District of Columbia during the period, December 14, 1896, to January 1, 1897 (Bartsch, 1897). A specimen was collected at Havre de Grace, Harford County, on November 5, 1899 (examined by F. C. Kirkwood). Another was taken near Kensington, Montgomery County, on November 24, 1899 (USNM—R. S. Shepherd), and on

the same day at least 2 other freshly killed birds were offered for sale in Washington.

DOVEKIE *Plautus alle* (Linnaeus)

STATUS.—*Transient and wintering*: Rare (occasionally more numerous) in the coastal area of Worcester County.

HABITAT.—Pelagic and littoral zones of the ocean.

PERIOD OF OCCURRENCE.—*Extreme dates*: November 18, 1898 (F. C. Kirkwood), and March 11, 1952 (J. H. Buckalew), both in Worcester County. *Occurrence peak*: December 10 to February 10.

MAXIMUM COUNT.—Thousands were reported 10 to 15 miles offshore from Ocean City (hundreds caught in mackerel nets) during early January 1949 (J. H. Buckalew).

[BLACK GUILLEMOT] *Cephus grylle* (Linnaeus)

STATUS.—Hypothetical. Audubon (1840-1844) reported that he had seen this species "as far south as the shores of Maryland."

Family COLUMBIDAE

MOURNING DOVE *Zenaidura macroura* (Linnaeus)

STATUS.—*Breeding and transient*: Common in the Piedmont, Upper Chesapeake, and Western Shore sections; fairly common in the Allegheny Mountain, Ridge and Valley, and Eastern Shore sections. *Wintering*: Fairly common in the Eastern Shore and Western Shore sections; uncommon in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

HABITAT.—Agricultural areas and adjacent hedgerows, wood margins, woodlots, and residential areas.

NESTING SEASON.—Early March to early October (nesting peak, mid-April to mid-July). *Extreme egg dates* (151 nests): March 10, 1953, in the District of Columbia (J. A. Madden) and September 21, 1949, in Montgomery County (S. H. Low). *Extreme nestling dates* (67 nests): March 29, 1950, in the District of Columbia (W. B. Tyrrell) and October 4, 1952, in Baltimore County (C. D. Hackman).

SPRING MIGRATION.—*Normal period*: February 10-20 to April 20-30; peak, March 10 to April 10.

FALL MIGRATION.—July 20-30 to November 1-10; peak, August 15 to October 15.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 1.2 (32 in 2,563 acres) in mixed forest and brush habitats with clearings (both pine and deciduous trees with small scattered agricultural areas and abandoned farmlands) along the border between Anne Arundel and Prince Georges Counties in 1943.
- 0.4 (50 in 11,520 acres) in "general farmland" (various agricultural habitats, chiefly hayfields and pastures with little cover, owing to widespread clean-farming practices) in Frederick County in 1950 (Stewart and Meanley, 1950).

MAXIMUM COUNTS.—*Fall*: 200 near Baltimore on August 26, 1893 (W. H. Fisher); 115 on Patuxent Refuge, Prince Georges County, on September 28, 1946. *Winter* (Christmas counts): 1,624 in the Ocean City area on December 27, 1955; 370 near Denton in Caroline County on December 26, 1953; 319 in the St. Michaels area, Talbot County, on December 29, 1955; 317 in the Triadelphia Reservoir area on December 24, 1955; 316 in the District of Columbia area on January 1, 1955; 218 in southern Dorchester County on December 28, 1955; 215 in southern Charles County on January 1, 1954. *Spring*: 200 in Anne Arundel County in March 1933 (T. Denmead).

BANDING.—See figure 28.

PASSENGER PIGEON *Ectopistes migratorius* (Linnaeus)

STATUS.—Now extinct. Formerly abundant at times, at least locally. Grant (1951) states that this species formerly nested in Garrett County in the vicinity of Deer Park, Mountain Lake Park, Oakland, and Grantsville. An immense roost was located near Oakland according to Eifrig (1904). In Allegany County during the 1870's (Grant, 1951) the Passenger Pigeon was a regular spring and fall migrant arriving from the south in about the middle of April and returning during the Indian summer, probably about the first of October. The last big flight was reported in western Allegany County in the vicinity of Barton (Grant, 1951) and Vale Summit (Kirkwood, 1895) on the unusual date of January 1, 1877 (mistakenly published by Grant as 1876). Grant reported a flock containing thousands of birds, and Kirkwood stated that at that time the sky was black with them and that large numbers were killed.

In Howard County (Fisher, 1896) during the period about 1840-45, "large flocks would be seen reaching as far as the eye could see—the birds making their appearance in the fall and remaining until about Christmas although at times a few would winter with us." Large numbers were killed at night while roosting and their bodies fed to the hogs (Fisher, 1894). Until about 1880, Passenger Pigeons were seen regularly in the vicinity of

FIGURE 28.—Mourning Dove banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

Baltimore almost every season, generally migrating in September and October in flocks of from 15 to several hundred individuals (Fisher, 1896). In 1878, for about 10 days in October, flocks containing from 5 to 20 birds were seen flying over Baltimore between 7:00 and 7:30 a.m., 6 to 12 flocks being seen each day (Kirkwood, 1895). In the vicinity of Washington, D. C., this species appeared in flocks at irregular intervals throughout the fall, winter, and spring; the last large flight took place in the fall of about 1858 or 1859 (Coues and Prentiss, 1883).

By 1880, this species had become quite rare throughout its range. The latest records were made during the period 1888 to 1903. In Dorchester County several were shot during the latter part of the 1880's (Hampe and Kolb, 1947). In the District of Columbia and nearby sections of Maryland (Cooke, 1929) a few were seen and specimens collected in 1887, 1889 (small flock near Laurel and flock of 12 at Jefferson), and 1891 (latest 1 collected on May 2, 1891). In the vicinity of Baltimore 1 was shot near Bradshaw in September 1888 and another, with a flock of Mourning Doves in Dulaney Valley in September 1889 (Fisher, 1896); quite a few were seen in the fall of 1893, including a record of 3 on August 27, a flock of 50 or 60 on September 17, and a flock of about 40 on September 19 (Kirkwood, 1895). The last record east of the mountains was of 3 birds seen on the ridge near Loch Raven Station in Baltimore County about August 15, 1899, by Gilmore. Near Hancock, in Washington County, a flock of 8 or 10 birds was observed several times during the year, 1889 (Denmead, 1954). In Garrett County, Eifrig (1904) believed that he saw 5 on July 19, 1901, and a pair on July 17, 1903. He states further that farmers and others in Garrett County at that time were occasionally seeing small flocks of from 2 to 12 individuals.

GROUND DOVE *Columbigallina passerina* (Linnaeus)

STATUS.—Accidental visitor. Two female specimens (USNM) have been taken. One was collected in the District of Columbia on September 1, 1844 (entered in catalog as 1843), by J. C. McGuire, and the other was collected at Broad Creek in Prince Georges County on October 14, 1888, by Thomas Marron.

Family PSITTACIDAE

CAROLINA PARAKEET *Conuropsis carolinensis* (Linnaeus)

STATUS.—Now extinct. "In September, 1865, while gunning for Sora on the Potomac River, Mr. Edward Derrick fired into a flock of strange birds flying overhead, killing several, which

proved to be Carolina Paroquets. He had one mounted, and kept the specimen in his house for a number of years. Other parties on the marsh at the same time shot numbers of the birds. Descriptions furnished by Mr. Derrick and careful questioning by ourselves, leave no doubt as to the identity of the birds" (Smith and Palmer, 1888). Kirkwood (1895) states that this species was originally well known in tidewater Maryland. Wright (1912) quotes Rev. Andrew White as reporting in about 1677: "A Relation of the Colony of Lord Baron of Baltimore, in Maryland, near Virginia, etc." recorded, that "During the winter it abounds in . . . parrots, and many others unknown to our parts of the world."

Family CUCULIDAE

YELLOW-BILLED CUCKOO *Coccyzus americanus* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section.

HABITAT.—Swamp or moist, brushy open forest and wood margin types; also in orchards and residential areas.

NESTING SEASON.—Mid-May to mid-September (nesting peak, late May to mid-August). *Extreme egg dates* (38 nests): May 13, 1946, in Prince Georges County (R. B. Overington) and August 28, 1951, in Baltimore County (C. D. Hackman). *Extreme nestling dates* (18 nests): May 26, 1935, in Baltimore County (M. B. Meanley) and September 16, 1951, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period*: May 1-5 to June 1-20; peak, May 10 to May 25. *Extreme dates of arrival*: April 9, 1954, in Anne Arundel County (Col. and Mrs. U. Amoss); April 20, 1954, in Allegany County (L. McCollough, Mrs. G. M. Miller); April 28, 1888, in Baltimore County (A. Resler); April 28, 1955, in Caroline County (Mrs. A. J. Fletcher); April 29, 1948, in Prince Georges County. In 1951 very few arrivals were noted before June 10, and the major influx occurred in July.

FALL MIGRATION.—*Normal period*: August 1-10 to October 10-20; peak, August 15 to September 25. *Extreme dates of departure*: November 12, 1954, in Baltimore County (S. W. Simon); November 6, 1954, in Caroline County (A. J. Fletcher); November 3, 1954, in Prince Georges County (L. M. Llewellyn); October 29, 1954, in Frederick County (J. W. Richards); October 25, 1952, in Montgomery County (A. Baugness).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 8 (2 in 23 $\frac{2}{3}$ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 6 (1.5 in 24 $\frac{1}{4}$ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 6 (2 in 32 $\frac{1}{2}$ acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) in Prince Georges County in 1944; 3 (2.6 in 85 acres) in other areas of this habitat in 1945 (Stewart, et al., 1946).
- 4 (2 in 47 $\frac{1}{4}$ acres) in hedgerows in agricultural areas and abandoned farmlands (including strip 27 $\frac{1}{2}$ yards wide on each side of hedgerow) in Prince Georges County in 1945.
- 2 (1.5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948 (Trever, 1952); absent in 1949, 1951, 1952, 1953, and 1954.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 7 at Patuxent Refuge in Prince Georges County on May 9, 1943, and on May 12, 1944; 7 in Worcester County on May 11, 1952 (D. A. Cutler). *Fall*: 10 in Carroll County on August 18, 1953 (D. H. McIntosh); 10 near Seneca, Montgomery County, on September 1, 1953 (J. K. Wright); 8 on Patuxent Refuge on August 16, 1943; 8 in Dorchester County on September 25, 1953.

BLACK-BILLED CUCKOO *Coccyzus erythrophthalmus* (Wilson)

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain section; uncommon in the Ridge and Valley, Piedmont, and Upper Chesapeake sections; rare in the Western Shore and Eastern Shore sections. *Transient*: Uncommon in all sections.

HABITAT.—Brushy open forest and wood margin types.

NESTING SEASON.—Early May to late July. *Extreme egg dates* (8 nests): May 18, 1935 (H. Kolb), and July 19, 1950 (E. Willis), both in Baltimore County. *Extreme nestling dates* (5 nests): May 23, 1946, in Prince Georges County (E. G. Cooley) and July 26, 1950 (E. Willis), in Baltimore County.

SPRING MIGRATION.—*Normal period*: April 25–May 5 to June 1–5; peak, May 5 to May 20. *Extreme dates of arrival*: April 18, 1931, in Harford County (S. Mason, Jr.); April 20, 1905, in Baltimore County (F. C. Kirkwood). *Extreme dates of departure*: June 30, 1951 (a year of exceptionally late cuckoo migration), and June 7, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 25–August 5 to October 5–15; peak, August 10 to September 1. *Extreme date of arrival*: July 20, 1952, in Prince Georges County. *Extreme dates of departure*: November 2, 1955, in Caroline County (Mrs. A. J. Fletcher); October 28, 1925, in the District of Columbia (Mr. and Mrs. L. D. Miner); October 19, 1947, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 7 at Patuxent Refuge, Prince Georges County, on May 8, 1943; 6 at Gibson Island, Anne Arundel County, on May 11, 1952 (Mrs. W. L. Henderson).

Family TYTONIDAE

BARN OWL *Tyto alba* (Scopoli)

STATUS.—Fairly common locally in the Eastern Shore section; uncommon locally in the Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section (Brooks, 1944). There are definite breeding records for Worcester, Dorchester, Talbot, Caroline, Queen Annes, Calvert, St. Marys, Charles, Anne Arundel, Prince Georges, Montgomery, Baltimore, Harford, and Washington Counties and the District of Columbia.

HABITAT.—Open agricultural lands or marshes in the vicinity of woodlots or buildings or other man-made structures; also in towns and cities.

NESTING SEASON.—Throughout the year (nesting peak, early March to late July). *Extreme egg dates* (20 nests): January 2, 1949, in the District of Columbia (J. W. Aldrich) and September 20, 1956, in Dorchester County (P. F. Springer). *Extreme nestling dates* (25 nests): April 11, 1930, in Montgomery County (E. J. Court) and November 6, 1956, in Dorchester County (P. F. Springer). Young just out of the nest were seen on December 8, 1893, and on February 27, 1895, in the District of Columbia (Bendire, 1895). Young not over 2 weeks out of the nest were also seen in the District of Columbia on January 7, 1896 (A. K. Fisher).

MAXIMUM COUNTS.—12 on Blackwater Refuge, Dorchester County, on May 10, 1952 (W. S. Webster); 5 in the Ocean City area on December 27, 1954 (Christmas count).

BANDING.—Two adults banded in Prince Georges County in spring (April 2–8) were recovered the same or the following spring (April 30–May 14) in central and southeastern Pennsylvania. A nestling banded in Montgomery County on June 17, 1939, was recovered on September 7 of the same year just across the Pennsylvania line from Grantsville, Garrett County, Maryland. Two banded as nestlings in Dorchester County on April 23, 1952, were recovered in southern New Jersey and nearby Maryland (12 miles from the point of banding) on (letter of) February 21, 1955, and June 24, 1952, respectively. Two recovered in Howard and Worcester Counties in fall (September 25, November 8) had been banded as nestlings the same year they

were recovered (July 16, July 30) in southeastern Pennsylvania and southeastern Massachusetts, respectively. Another banded in west-central New Jersey on November 14, 1925, was caught in Talbot County, Maryland, on April 5, 1926.

Family STRIGIDAE

SCREECH OWL *Otus asio* (Linnaeus)

STATUS.—Permanent resident. Uncommon (fairly common locally) in all sections. Alexander Wetmore states that this species "has decreased decidedly over abundance of 40 years ago in the area adjacent to Washington."

HABITAT.—Woodlots, orchards, and other wood-margin types near agricultural areas; also in towns and suburban areas.

NESTING SEASON.—Late March to mid-July (nesting peak, early April to mid-June). *Extreme egg dates* (16 nests): March 25, 1889, in the District of Columbia (C. W. Richmond) and May 4, 1899, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (17 nests): April 24, 1890, in Montgomery County (H. B. Stabler) and June 20, 1950, in Baltimore County (T. C. Buck). Nearly full-grown young, still being fed by the parents, were recorded as late as July 24, 1893, in Baltimore County (Kirkwood, 1895).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 5 in the Ocean City area on December 27, 1953; 5 in the St. Michaels area, Talbot County, on December 29, 1955.

GREAT HORNED OWL *Bubo virginianus* (Gmelin)

STATUS.—Permanent resident. Common in the tidewater areas of Dorchester County; fairly common elsewhere in the Eastern Shore section and in the Allegheny Mountain section; uncommon in all other sections.

HABITAT.—Forests and woodlots and adjacent agricultural fields and marshes.

NESTING SEASON.—Late January to late May (nesting peak, early February to late April). *Extreme egg dates* (44 nests): January 27, 1933, in Dorchester County (Jackson, 1941) and April 12, 1893, in Baltimore County (A. Wolle). *Extreme nestling dates* (22 nests): February 24, 1945, in Prince Georges County (J. N. Hamlet) and May 14, 1932, in Anne Arundel County (M. B. Meanley).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 27 in the Ocean City area on December 27, 1955; 25 in southern Dorchester County on December 28, 1954; 9 in Garrett County on January 1, 1950.

SNOWY OWL *Nyctea scandiaca* (Linnaeus)

STATUS.—Rare and irregular winter visitor in all sections (usually most numerous in the tidewater areas).

PERIOD OF OCCURRENCE.—*Extreme arrival dates:* November 13, 1954, in Anne Arundel County (H. A. Sutton); November 15, 1876, in the District of Columbia (W. Holmead). *Extreme departure date:* March 21, 1950, in St. Marys County (R. J. Beaton, J. W. Taylor, Jr.). *Peak of abundance:* November 25 to February 20.

NUMBERS.—During most years, this species was either absent or only a few scattered records of singles were made. Occasionally, however, larger numbers were recorded. About 15 specimens were taken in the vicinity of Washington, D. C., during the winter of 1876–77 (C. W. Richmond). There were 12 records from Maryland during the flight of 1926–27 (Gross, 1927). On February 16, 1936, 6 were found in pole traps on Spesutie Island in Harford County (M. B. Meanley). At least 5 were taken in Maryland and brought to a taxidermist in Baltimore during the winter of 1945–46 (Brackbill, 1946). During the great flight of 1949–50 at least 25 were recorded in Maryland and the District of Columbia; 3 of these were observed at Mills Point on the Wicomico River in St. Marys County on March 21, 1950 (R. J. Beaton, J. W. Taylor, Jr.).

BARRED OWL *Strix varia* Barton

STATUS.—Permanent resident. Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake, Piedmont, Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—Flood-plain and swamp forests; also in various moist forest types on the upland.

NESTING SEASON.—Late February to late June (nesting peak, early March to early May). *Extreme egg dates* (45 nests): February 25, 1931, in the District of Columbia (J. C. Jones) and May 26, 1943, in Prince Georges County. *Extreme nestling dates* (37 nests): March 23, 1935, in Baltimore County (M. B. Meanley) and June 21, 1947, in Montgomery County (T. H. Cunningham).

BREEDING POPULATION DENSITY (pairs per 100 acres).—

0.5 (6 in 1,142 acres) in lowland forest (flood-plain forest with small adjacent clearings and areas of river terrace and river bluff forest) along the Patuxent River in Anne Arundel and Prince Georges Counties in 1943.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 15 in the Ocean City area on December 27, 1954; 9 in the District of Colum-

bia area on January 1, 1955; 6 at Patuxent Refuge on December 28, 1945.

BANDING.—One recovered in Montgomery County on October 20, 1942, had been banded in northeastern Ohio on May 1, 1942.

LONG-EARED OWL *Asio otus* (Linnaeus)

STATUS.—Rare and local permanent resident in the Piedmont and Western Shore sections. Also occurs, at least occasionally, in the Allegheny Mountain, Ridge and Valley, Upper Chesapeake, and Eastern Shore sections. There are definite breeding records for Baltimore County near Randalstown in 1893 (Kirkwood, 1895), in Dulaney Valley in 1898 (F. C. Kirkwood), near Sweetair in 1936 (F. C. Kirkwood), and near Loch Raven Reservoir in 1946 (Kolb, 1947); for Montgomery County near Rockville (Baird, et al., 1874), near Brighton in 1892 and Olney in 1950 (H. B. Stabler); for Prince Georges County near College Park in 1945 (J. N. Hamlet); for Anne Arundel County (E. J. Court); and for the District of Columbia in 1890 (C. W. Richmond, E. M. Hasbrouck) and 1894 (W. Palmer, E. M. Hasbrouck). Other records of occurrence in fall and winter have been made in Dorchester (E. Willis), Caroline (M. W. Hewitt, A. J. Fletcher), Calvert (E. M. Barry), Charles (F. M. Uhler), Harford (M. B. Meanley), Washington (E. A. Small), and Garrett Counties. Alexander Wetmore states that this species "has decreased greatly over the recorded abundance of 50–60 years ago."

HABITAT.—Usually this species is found in or near dense stands of young pine.

NESTING SEASON.—Mid-March to early June. *Extreme egg dates* (5 nests): April 3, 1898, in Baltimore County (F. C. Kirkwood) and May 1, 1950, in Montgomery County (H. B. Stabler). *Extreme nestling dates* (4 nests): April 14, 1946, in Baltimore County (Kolb, 1947) and June 1, 1950, in Montgomery County (H. B. Stabler).

SHORT-EARED OWL *Asio flammeus* (Pontoppidan)

STATUS.—*Breeding* (?): A "marsh owl" nest with eggs was reported found in Dorchester County in June 1923 by Orrille Mills (F. C. Kirkwood); an adult was seen near the Blackwater Refuge in Dorchester County on July 22, 1938 (N. Hotchkiss); 1 was collected on Assateague Island, Worcester County, on August 6, 1906 (W. H. Fisher); an adult was collected in the District of Columbia on May 23, 1871 (R. Ridgway); a pair was observed on May 5, 1956, at Kent Narrows, Queen Annes County (R. P. and M. Dubois). *Transient and wintering*: Uncommon in the Upper Chesapeake and Eastern Shore sections and locally (Point Look-

out) in the Western Shore section; rare (formerly more numerous—Kirkwood, 1895) in other sections.

HABITAT.—Usually most numerous on extensive areas of tidal marsh; also occurs on large, open agricultural areas.

PERIOD OF OCCURRENCE (transient and wintering).—*Normal period:* October 20–30 to April 5–15. *Extreme date of arrival:* October 16, 1953, in Prince Georges County (S. F. Blake). *Extreme dates of departure:* April 21, 1939, in Garrett County (M. G. Brooks); April 20, 1861, in the District of Columbia (D. W. Prentiss); April 19, 1953, in Anne Arundel County (L. W. Oring).

SAW-WHET OWL *Aegolius acadicus* (Gmelin)

STATUS.—*Breeding* (see fig. 24): Uncommon and local in the Allegheny Mountain section—recorded in summer near Cumberland on July 6, 1903 (Eifrig, 1904); in Cranberry Swamp (3 miles south of Finzel) on July 5, 1945; in the Maryland portion of Cranesville Swamp (just east of Cranesville, West Virginia) on July 7, 1945; and in Wolf Swamp (about 4 miles southeast of Grantsville) during the period May 30 to June 16, 1951. *Transient and wintering:* Rare or uncommon in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections (probably also occurs in the Allegheny Mountain section although there are no definite records during fall and winter).

HABITAT.—During the breeding season this species appears to be restricted to boreal wooded bogs that contain stands of red spruce, hemlock, or tamarack. At other seasons, it occurs in various wood margin thickets or in forest types with an understory brush layer.

NESTING SEASON.—A full-grown young bird was captured near Cumberland on July 6, 1903 (Eifrig, 1904), and a young bird in juvenal plumage was seen at Wolf Swamp on June 16, 1951. Another young bird in juvenal plumage was found in the West Virginia portion of Cranesville Swamp on June 22, 1932 (Brooks, 1936c).

PERIOD OF OCCURRENCE (transient and wintering).—*Normal period:* October 20–30 to March 20–30. *Extreme dates of arrival:* October 3, 1886, in the District of Columbia (F. S. Webster); October 15, 1944, in Prince Georges County. *Extreme dates of departure:* May 2, 1953, in Frederick County, near Emmitsburg (J. W. Richards); April 6, 1953, in Prince Georges County. F. C. Kirkwood recorded 1 in Baltimore County on the unusual date of June 24, 1921.

Family CAPRIMULGIDAE

CHUCK-WILL'S-WIDOW *Caprimulgus carolinensis* Gmelin

STATUS.—*Breeding* (see fig. 29): Common in or near the tide-water areas of the Eastern Shore section and the southern part of the Western Shore section (occurring regularly north to the Delaware line along the coast, north to Kent Island in Queen Annes County along the eastern shore of Chesapeake Bay, north to the Shadyside Peninsula in Anne Arundel County on the western shore of Chesapeake Bay; north along the Patuxent River to Jarboesville, and north along the Potomac River to Morgantown in Charles County); uncommon in the interior of the Eastern Shore section and in the interior of the southern part of the Western Shore section (St. Marys, Charles, and Calvert Counties). This species occurs only as a casual visitor in the northern part of the Western Shore section, having been recorded in the vicinity of Laurel in Prince Georges County in the summer of 1896 (C. W. Richmond), in the fall of 1929 (R. B. Overington), and on May 12, 1935 (Wetmore, 1936); at Cheverly in Prince Georges County on May 4, 1944 (W. M. Perrygo); in Anne Arundel County at Odenton on 2 occasions (Kirkwood, 1895); at Sandy Point on June 2, 1954 (J. W. Terborgh); and in the District of

FIGURE 29.—Breeding ranges of Chuck-will's-widow and Traill's Flycatcher.

Columbia on July 22, 1895 (R. Ridgway), and in the summer of 1896 (C. W. Richmond).

HABITAT.—Brushy open stands or wood margins of loblolly pine, usually near tidewater.

NESTING SEASON.—*Egg dates* (3 nests): May 10, — (Court, 1921), and May 27, 1930 (F. C. Kirkwood), in St. Marys County and July 8, 1954, in Talbot County (J. Spurry).

PERIOD OF OCCURRENCE.—*Extreme arrival dates*: April 19, 1956, in Talbot County (J. Reese); April 23, 1955, in Anne Arundel County (H. E. Slater, K. F. Sanders); April 25, 1953, in Worcester County; April 26, 1952, in St. Marys County (J. W. Terborgh); April 26, 1955, in Caroline County (V. Wright). *Extreme departure date*: September 1, 1954, in Talbot County (R. L. Kleen).

MAXIMUM COUNTS.—*Spring*: 32 in Talbot County on May 8, 1954 (R. L. Kleen); 16 in the Ocean City area on May 5, 1951.

WHIP-POOR-WILL *Caprimulgus vociferus* Wilson

STATUS.—*Breeding and transient*: Common in the Eastern Shore, Western Shore, and Ridge and Valley sections; fairly common in the Upper Chesapeake, Piedmont, and Allegheny Mountain sections.

HABITAT.—Various types of upland forest in the vicinity of clearings or wood margins.

NESTING SEASON.—Late April to mid-July (nesting peak, early May to early July). *Extreme egg dates* (15 nests): April 24, 1922, in Dorchester County (Jackson, 1941) and June 27, 1946, in Prince Georges County (L. M. Dargan). *Extreme nestling dates* (7 nests): May 25, 1941, in Prince Georges County (W. H. Lawrence) and July 17, 1908, in Garrett County (G. Eifrig).

SPRING MIGRATION.—*Normal period*: April 5–15 to May 15–25; peak, April 20 to May 10. *Extreme dates of arrival*: March 22, 1948, in Prince Georges County (H. Severance); March 26, 1921, in Dorchester County (R. W. Jackson); March 29, 1903, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: August 10–20 to October 1–10; peak, September 1 to September 20. *Extreme date of arrival*: July 29, 1920, in Dorchester County (R. W. Jackson). *Extreme dates of departure*: October 27, 1937, October 24, 1935, and October 23, 1936, in the District of Columbia (R. Overing).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

1.4 (15 in 1,047 acres) in upland forest and brush habitats (pine and decidu-

ous trees and brush, with small scattered agricultural areas and abandoned farmlands) in Prince Georges County in 1943.

A total of 66 Whip-poor-wills was recorded between 9:28 p.m. and 12:30 a.m. during the evening of May 20, 1945, at 29 stops along the highway from southern St. Marys County to north-central Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 200 on May 7, 1949, in Washington County (Dr. R. S. Stauffer, M. Stauffer); 33 in the Ocean City area on May 5, 1951; 24 on Patuxent Refuge in Prince Georges County on May 6, 1950.

COMMON NIGHTHAWK *Chordeiles minor* (Forster)

STATUS.—*Breeding*: Uncommon and somewhat local in all sections. *Fall transient*: Common, occasionally abundant, in all sections. *Spring transient*: Uncommon in all sections.

HABITAT.—Open country such as agricultural fields and marshes; also in towns and cities.

NESTING SEASON.—Late May to mid-July. *Extreme egg dates* (16 nests): May 31, 1955, in Caroline County (A. J. Fletcher) and July 4, 1931, in St. Marys County (E. J. Court). One small nestling was observed in Baltimore County on June 8, 1891 (Kirkwood, 1895). Two juvenals were collected in St. Marys County on July 18, 1894 (R. Ridgway).

SPRING MIGRATION.—*Normal period*: May 1-10 to May 25-30; peak, May 10 to May 20. *Extreme dates of arrival*: April 14, 1949, in the District of Columbia (C. N. Mason); April 19, 1955, in Baltimore (C. M. Buchanan); April 19, 1891, in Wicomico County (F. C. Kirkwood); April 20, 1927, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: July 20-30 to September 25-October 5; peak, August 15 to September 10. *Extreme date of arrival*: July 17, 1944, in Prince Georges County. *Extreme dates of departure*: October 14, 1929, in Baltimore County (F. C. Kirkwood); October 14, 1947, in the District of Columbia (T. W. Donnelly).

MAXIMUM COUNTS.—*Spring*: 13 near Emmitsburg in Frederick County on May 26, 1954 (P. J. O'Brien); 11 at Westminster, Carroll County, on May 10, 1952 (D. A. Jones); 10 in the District of Columbia on May 11, 1917 (H. C. Oberholser). *Fall*: 700 at Emmitsburg, Frederick County, on August 30, 1953 (J. W. Richards); 500 over the Gunpowder River marsh on September 3, 1903 (F. C. Kirkwood); 250 at Rockville, Montgomery County, on September 3, 1954 (J. W. Terborgh); 200 at Patuxent Refuge on September 4, 1942, and on September 2, 1943.

Family APODIDAE

CHIMNEY SWIFT *Chaetura pelagica* (Linnaeus)

STATUS.—*Breeding*: Common in all sections. *Transient*: Common, occasionally abundant, in all sections.

FIGURE 30.—Chimney Swift banding recoveries. Each symbol represents the number of records for a State or Province. Recovered in Maryland, banded elsewhere: open triangle = banded September through May.

HABITAT.—Aerial, usually most numerous in the vicinity of towns and cities.

NESTING SEASON.—Early May to early September (nesting peak, late May to early August). *Extreme egg dates* (40 nests): May 9, 1918, in Dorchester County (Jackson, 1941) and July 14, 1891, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (27 nests): June 22, 1949, in Prince Georges County and September 1, 1907 (F. C. Kirkwood), in Allegany County. Flying young were recorded as early as June 29, 1924, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: April 5–15 to May 10–20; peak, April 15 to May 5. *Extreme dates of arrival*: March 30, 1895, in Baltimore County (P. T. Blogg); April 4, 1950, in Frederick County (R. T. Smith).

FALL MIGRATION.—*Normal period*: August 15–25 to October 10–20; peak, September 5 to October 10. *Extreme dates of departure*: November 2, 1954, in Talbot County (J. Spurry); October 25, 1906 (W. W. Cooke), October 25, 1915 (E. A. Preble), and October 25, 1925 (V. Bailey), all in the District of Columbia.

BREEDING POPULATION DENSITY (pairs per 100 acres).—

0.6 (16 in 2,656 acres) in mixed forest, brush and field habitats (in an area that included 12 buildings with chimneys) along the border between Anne Arundel and Prince Georges Counties in 1943.

MAXIMUM COUNTS.—*Spring*: “Thousands” in the District of Columbia on April 20, 1925 (M. J. Pellew), and during April 26–May 2, 1931, and 2,000 on May 9, 1932 (Cottam, 1932); 1,000 at Port Tobacco, Charles County, on May 7, 1940 (C. Cottam, F. M. Uhler); 500+ at Emmitsburg, Frederick County, on April 15, 1953 (J. W. Richards); 500 at Gunpowder River marsh on April 22, 1901 (F. C. Kirkwood). *Fall*: 4,100 on October 2, 1947, and 4,000–5,000 about September 18, 1924 (H. C. Oberholser), in the District of Columbia; “several thousand” at College Park, Prince Georges County, on October 5, 1948 (A. C. Martin); 950 on September 12, 1954, at Swallow Falls, Garrett County (L. W. Oring).

BANDING.—See figure 30.

Family TROCHILIDAE

RUBY-THROATED HUMMINGBIRD *Archilochus colubris* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in all sections.

HABITAT.—*Breeding*: In moist forest types and in hedgerows, wood margins, and other edge types that contain brush or small trees. *Transient*: Various edge habitats; usually most numerous in areas that contain an abundance of showy flowers. Native

flowers that are particularly attractive to this species include the jewelweed and trumpet creeper.

NESTING SEASON.—Mid-May to early September (nesting peak, late May to mid-July). One was observed on a nest as early as May 10, 1953, in Worcester County (J. M. Cadbury, D. A. Cutler). *Extreme egg dates* (58 nests): May 17, 1949, in Prince Georges County (M. B. Meanley) and August 20, 1904 (hatching eggs) in Washington County (Harlow, 1906). *Extreme nestling dates* (17 nests): June 8, 1898, in Baltimore County (J. Sommer) and August 20, 1904 (hatching), in Washington County (Harlow, 1906).

SPRING MIGRATION.—*Normal period:* April 20–30 to May 25–June 1; peak, May 5 to May 25. *Extreme dates of arrival:* April 11, 1954, in Caroline County (A. M. Thompson); April 12, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 13, 1893, in Baltimore County (W. H. Fisher); April 14, 1954, in Montgomery County (P. G. DuMont).

FALL MIGRATION.—*Normal period:* August 1–10 to September 25–October 5; peak, August 15 to September 10. *Extreme dates of departure:* October 20, 1913, in the District of Columbia (A. K. Fisher); October 15, 1918 (A. T. Hoen), and October 15, 1930 (F. C. Kirkwood), in Baltimore County; October 14, 1950, in Anne Arundel County (Mrs. W. L. Henderson).

BREEDING POPULATION DENSITIES (breeding pairs per 100 acres).—

- 15 (13 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the border between Anne Arundel and Prince Georges Counties in 1945 (Stewart et al., 1946).
- 8 (1.5 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).
- 8 (2 in 23½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 7 (2.4 in 34½ acres) in pine field (weedy, abandoned fields with open growth of young scrub pine) in Prince Georges County in 1945.
- 6 (1.5 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 6 (1.5 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 4 (2 in 47¼ acres) in hedgerows in agricultural areas and abandoned farmlands (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1945.
- 4 (1.5 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 3 (2 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948 and 1949; absent in 1951 (Trever, 1952) and in 1952, 1953, and 1954.

MAXIMUM COUNTS.—*Spring*: 9 at Patuxent Refuge on May 22, 1945; 9 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan). *Fall*: 35 on Patuxent River marsh near Nottingham on August 21, 1947; 30 in Dorchester County (Hurlock to Salem) on August 30, 1930 (H. B. Curry); 30 at Seneca, Montgomery County, on September 12, 1954 (J. W. Terborgh); 25+ on 1 tree in Deer Park, Garrett County, on August 18, 1894 (J. E. Tylor); 20 on the Patapsco River marsh on August 25, 1896 (F. C. Kirkwood).

[RUFIOUS HUMMINGBIRD] *Selasphorus rufus* (Gmelin)

STATUS.—Hypothetical. On November 8, 1952, a hummingbird with a rufous back was closely observed in flight by J. W. Richards at Emmitsburg (Richards, 1954). Twenty-two days later another was observed at Jamesville on the Eastern Shore of Virginia (Fuller, 1953). The Rufous Hummingbird now occurs regularly in fall and winter as far east as Louisiana. The only specimen for the Atlantic Coast was taken at Charleston, South Carolina, on December 18, 1909. Any hummingbird seen in Maryland after early October should be studied with care.

Family ALCEDINIDAE

BELTED KINGFISHER *Megasceryle alcyon* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in the tide-water areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon elsewhere in all sections. *Wintering*: Fairly common in the Eastern Shore section and in the tide-water areas of the Western Shore section; uncommon elsewhere in the Western Shore section and in the Upper Chesapeake section; rare in the Piedmont, Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—Margins of inland streams, ponds, and lakes, and tidal bays and estuaries.

NESTING SEASON.—Late March to mid-July. Two were observed entering a fresh hole in a bank in the District of Columbia as early as March 26, 1922 (W. W. Rubey). *Extreme egg dates* (27 nests): April 11, 1930, in Baltimore County (M. B. Meanley) and June 4, 1911, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (12 nests): May 30, 1881, in Kent County (Fisher, 1892) and July 7, 1954, in Baltimore County (J. R. Worthley).

SPRING MIGRATION.—*Normal arrival*: March 5 to March 15. *Extreme dates of arrival*: February 13, 1898, in Baltimore County (F. C. Kirkwood); February 19, 1949, in Montgomery County (J. Criswell).

FALL MIGRATION.—*Normal departure*: November 1 to November 10. *Extreme date of departure*: November 18, 1945, in Prince Georges County.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 104 in the Annapolis area on January 2, 1955; 22 in the Ocean City area on December 27, 1954; 22 in southern Dorchester County on December 28, 1954; 22 in the District of Columbia area on January 1, 1955; 19 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954.

Family PICIDAE

YELLOW-SHAFTED FLICKER *Colaptes auratus* (Linnaeus)

STATUS.—*Breeding*: Common in the Allegheny Mountain section; uncommon (formerly common) in all other sections. *Transient*: Common in all sections (during the fall flight this species concentrates in exceptionally large numbers on Hooper and Barren Islands in Dorchester County). *Wintering*: Fairly common in the Eastern Shore and Western Shore sections; uncommon in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

HABITAT.—Marginal areas that include forest, wood margins, and fields, as well as brushland and hedgerows.

NESTING SEASON.—Early April to late July (nesting peak, late April to mid-June). Nest building was recorded as early as April 7, 1950, in Baltimore County (E. Willis). *Extreme egg dates* (92 nests): April 18, 1910, in Dorchester County (Jackson 1941) and June 23, 1893, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (68 nests): May 22, 1892, in Baltimore County, (F. C. Kirkwood) and July 30, 1940, in Baltimore County (H. Brackbill).

SPRING MIGRATION.—*Normal period*: March 5–15 to May 1–5; peak, March 20 to April 25. *Extreme dates of arrival*: February 12, 1913, in Dorchester County (R. W. Jackson); February 24, 1890, in Montgomery County (H. W. Stabler); February 25, 1891, in Talbot County (R. H. Blain); February 27, 1910, in the District of Columbia (A. H. Howell).

FALL MIGRATION.—*Normal period*: September 5–15 to November 5–15; peak, September 25 to October 20. *Extreme dates of arrival*: August 24, 1931, in the District of Columbia (W. L. McAttee); September 4, 1901, in Baltimore and Washington Counties (F. C. Kirkwood). *Extreme dates of departure*: December 3, 1941, in Baltimore County (H. Brackbill); November 17, 1944, in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 3 (2 in 66 acres) in field and edge habitats (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).
- 3 (2 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948 (Trever, 1952) and in 1954 (Wright, 1955); 1 (1 in 80 acres) in 1949, 1951, 1952, and 1953 (Trever, 1952; Claggett, 1952 and 1953).

MAXIMUM COUNTS.—*Spring*: "Hundreds" near Baltimore on March 25, 1893 (F. C. Kirkwood). *Fall*: "Nearly 1,000" on Hooper Island, Dorchester County, on September 30, 1933 (W. B. Tyrrell); a flock of 200+ at Patuxent Refuge on October 15, 1942. *Winter* (Christmas counts): 239 in the Ocean City area on December 27, 1954; 107 in the Annapolis area on January 1, 1956; 104 in the District of Columbia area on January 2, 1954; 80 in southern Dorchester County on December 28, 1953; 79 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 75 on Patuxent Refuge on December 23, 1941.

PILEATED WOODPECKER *Dryocopus pileatus* (Linnaeus)

STATUS.—Permanent resident (see fig. 31). Fairly common in the Allegheny Mountain section and in the western part of the Ridge and Valley section (west of Hagerstown Valley); fairly common locally in the Eastern Shore section (most numerous

FIGURE 31.—Breeding range of Pileated Woodpecker.

along the Pocomoke River and its tributaries, and in Dorchester County), in the Western Shore section (most numerous along the Patuxent River and its tributaries in Prince Georges and Anne Arundel Counties and in the Zekiah Swamp in Charles County), and in the Piedmont section (chiefly along Potomac River valley of Montgomery County); uncommon locally in the eastern part of the Ridge and Valley section (mountains of eastern Washington County and northwestern Frederick County).

HABITAT.—Extensive areas of upland, moist forest types in the mountains of the Allegheny Mountain, and Ridge and Valley sections; also in extensive areas of flood-plain or swamp forests in the Eastern Shore, Western Shore, and Piedmont sections.

NESTING SEASON.—Early April to late June. Nest-building was recorded as early as April 2, 1950, in Montgomery County (S. B. Van Meter, M. G. Van Meter). *Extreme egg dates* (7 nests): April 17, 1949 (probable—adult flushed from nest), in Montgomery County (P. A. DuMont) and “early June” 1895 in Dorchester County (Kirkwood, 1895). *Extreme nestling dates* (14 nests): May 2, 1949, in Montgomery County (S. B. Van Meter, M. G. Van Meter) and June 23, 1950 (W. B. Tyrrell), in Garrett County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

0.6 (5 in 775 acres) in flood-plain forest (including forest and brush habitats) along the border between Anne Arundel and Prince Georges Counties in 1950, 1951, and 1952; 0.5 (4 in 775 acres) in 1949; about 0.2 (1.5 in 775 acres) during the period 1942-48.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 20 in the Ocean City area (Pocomoke swamp) on December 27, 1954; 15 in southeastern Worcester County (Pocomoke swamp) on December 22, 1947; 11 in Garrett County on December 31, 1954; 8 in the Blackwater Refuge area on December 21, 1947, on December 28, 1948, and on December 23, 1951; 8 on Patuxent Refuge on January 14, 1952.

RED-BELLIED WOODPECKER *Centurus carolinus* (Linnaeus)

STATUS.—Permanent resident. Common in the Western Shore section; locally common in the Eastern Shore section (most numerous along the Pocomoke River and its tributaries); fairly common in the Upper Chesapeake and Piedmont sections; rare in the Ridge and Valley, and Allegheny Mountain Sections.

HABITAT.—Flood-plain or swamp forests; also rich moist forests on the upland.

NESTING SEASON.—Mid-April to mid-June. An occupied nest was found as early as April 25, 1953, in Montgomery County (L.

Kilham). *Extreme egg dates* (6 nests): May 2, 1919, in Dorchester County (Jackson, 1941) and May 16, 1936, in Harford County (M. B. Meanley). *Extreme nestling dates* (9 nests): May 4, 1945, in Prince Georges County (J. B. Cope) and June 10, 1891, in Baltimore County (Kirkwood, 1895).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 19 (7 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
7 (6 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the border between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 6 (2 in 32½ acres) in another area of this habitat in 1944.
6 (4.5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1951, 2 (1.5 in 80 acres) in 1948 and 1949 (Trever, 1952); 1 (1 in 80 acres) in 1952 and 1953 (Clagett, 1952 and 1953), and in 1954 (Wright, 1955).
5 (2 in 44½ acres) in river bluff forest (beech-white oak) in Prince Georges County in 1944, 2 (1 in 44½ acres) in 1945 (J. W. Aldrich, A. J. Duvall).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 111 in the Annapolis area on January 1, 1956; 94 in the Ocean City area on December 27, 1955; 86 in the District of Columbia area on January 1, 1955; 72 in the Triadelphia Reservoir area on December 24, 1955; 56 on Patuxent Refuge on January 12, 1950; 56 in the Wicomico River area in Charles and St. Marys Counties on December 28, 1952.

RED-HEADED WOODPECKER *Melanerpes erythrocephalus* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common locally in the Allegheny Mountain section; rare or uncommon and local in the Ridge and Valley, Piedmont, Western Shore, and Eastern Shore sections (breeds in Washington, Frederick, Montgomery, Baltimore, Harford, Prince Georges, and Anne Arundel Counties and the District of Columbia, and formerly in Caroline, Dorchester, and Talbot Counties). *Wintering*: Uncommon and local in the Piedmont, Upper Chesapeake, and Western Shore sections (common near Seneca, Montgomery County—L. Kilham, and near Accokeek, Prince Georges County—E. T. McKnight); rare and local in the Eastern Shore section. Alexander Wetmore states that this species has become "greatly reduced in numbers since 40 years ago."

HABITAT.—Woodlots, parks, and open woodland; usually most numerous in open stands of oak trees or in areas with an abundance of dead trees.

BREEDING SEASON.—Late April to early July. *Extreme egg dates* (11 nests): May 3, 1891, in Baltimore County (Kirkwood, 1895) and June 23, 1885, in the District of Columbia (USNM). *Extreme nestling dates* (11 nests): May 8, 1920, in Baltimore County (F. C. Kirkwood) and July 6, 1945, in Garrett County.

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: March 31, 1890, in Wicomico County (A. E. Acworth); April 7, 1902, in Carroll County (R. Watts); April 7, 1940, in Baltimore County (E. A. McGinity); April 8, 1905, in the District of Columbia (W. W. Cooke). *Extreme departure dates*: June 2, 1916, and May 30, 1905, in the District of Columbia (H. C. Oberholser).

FALL MIGRATION.—*Normal period*: August 25–September 5 to October 5–15; peak, September 10 to October 1. *Extreme arrival date*: August 23, 1952, in Frederick County (J. W. Richards). *Extreme departure dates*: October 20, 1950, in Anne Arundel County (Mrs. G. Tappan); October 19, 1948, in Baltimore County (H. Brackbill).

MAXIMUM COUNTS.—*Spring*: 50 near Seneca, Montgomery County, on April 13, 1939 (W. H. Lawrence); 11 in the District of Columbia area on May 11, 1917 (H. C. Oberholser). *Fall*: 13 near Seneca, Montgomery County, on October 2, 1948 (I. R. Barnes, D. M. Thatcher). *Winter*: 100 near Accokeek, Prince Georges County, on December 22, 1940 (Christmas count); 50 near Seneca, Montgomery County, on November 13, 1955 (H. E. Smith); 5 at Port Tobacco, Charles County, on December 26, 1926 (Christmas count).

YELLOW-BELLIED SAPSUCKER *Sphyrapicus varius* (Linnaeus)

STATUS.—*Breeding* (see fig. 32): Fairly common locally in the Allegheny Mountain section (most numerous in Garrett County in the Cherry Creek swamps and in the vicinity of Herrington Manor—uncommon elsewhere). *Transient*: Fairly common in all sections. *Wintering*: Uncommon in the Eastern Shore and Western Shore sections; rare in the Upper Chesapeake, Piedmont, and Ridge and Valley sections. *Summer vagrant*: Accidental—1 seen at Denton on June 20, 1956 (A. M. Thompson).

HABITAT.—*Breeding*: Moist or swamp forests in or near boreal-type bogs at elevations of 2,400 feet or more; also in forests on the higher ridges at elevations over 3,000 feet. *Transient and wintering*: Swamps and flood-plain forests and moist forest types on the upland; also in orchards, parks, and in wooded areas around houses.

FIGURE 32.—Breeding range of Yellow-bellied Sapsucker, Solitary Vireo, Magnolia Warbler, Black-throated Blue Warbler, Northern Waterthrush, Purple Finch, and Slate-colored Junco.

NESTING SEASON.—A nest containing eggs was found in Garrett County on June 5, 1925 (F. C. Kirkwood). Nests containing young were observed in Garrett County on May 29, 1949, and on July 7, 1945. Adults were recorded feeding young out of the nest in Garrett County on June 12, 1949 (R. S. Stauffer), and on July 6, 1895 (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period:* March 20–30 to May 1–10; peak, April 5 to April 25. *Extreme arrival dates:* March 12, 1892, in Baltimore County (G. H. Gray); March 15, 1908, in the District of Columbia (W. L. McAtee); and March 17, 1907, in Montgomery County (W. L. McAtee). *Extreme departure date:* May 17, 1953, in Frederick County (Mr. and Mrs. A. J. Fletcher).

FALL MIGRATION.—*Normal period:* September 15–25 to October 10–20; peak, September 25 to October 10. *Extreme arrival date:* September 10, 1905, in the District of Columbia (W. W. Cooke). *Extreme departure dates:* November 1, 1947, in Baltimore County (H. Kolb); October 24, 1935, in Prince Georges County (R. Overing); October 24, 1951, in Anne Arundel County (K. Brooks).

MAXIMUM COUNTS.—*Spring:* 6 in the District of Columbia on April 12, 1891 (C. W. Richmond). *Fall:* 15 near Seneca, Mont-

gomery County, on October 10, 1953 (A. Baugness, H. Oberlin); 12 at Gibson Island, Anne Arundel County, on September 28, 1953 (Mrs. W. L. Henderson, Mrs. G. Tappan); 7 at Patuxent Refuge on September 28, 1944, and on October 2, 1944. *Winter* (Christmas counts): 15 in the District of Columbia area on December 31, 1955; 11 at Patuxent Refuge on December 29, 1944; 10 at Accokeek, Prince Georges County, on December 21, 1937; 8 in the St. Michaels area on December 29, 1955; 8 in the Ocean City area on December 27, 1955; 6 near the eastern base of Catoctin Mountain in Frederick County on December 30, 1951, and December 27, 1952.

HAIRY WOODPECKER *Dendrocopos villosus* (Linnaeus)

STATUS.—Permanent resident. Fairly common in all sections.

HABITAT.—Extensive tracts of deciduous forest.

NESTING SEASON.—Early April to mid-June. *Extreme egg dates* (5 nests): April 19, 1934, in Montgomery County (E. J. Court) and April 29, 1935, in Baltimore County (M. B. Meanley). *Extreme nestling dates* (26 nests); April 25, 1953, in Wicomico County (J. C. Miller) and June 13, 1931, in Baltimore County (M. B. Meanley)—also an extremely early record of young on April 9, 1900, in the District of Columbia (Daniel, 1901b).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 2 (2 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1949, 1951, and 1953 (Trever, 1952; Clagett, 1953); 1 (1 in 80 acres) in 1952 and 1954 (Clagett, 1952; Wright, 1955).
- 2 (1.5 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the border between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 45 in the Ocean City area (including Pocomoke swamp) on December 27, 1955; 29 in the Catoctin Mountain area in Frederick and Washington Counties on January 2, 1954; 27 at Patuxent Refuge on January 12, 1951; 27 in the Triadelphia Reservoir area on December 24, 1955; 19 near Chase in Baltimore and Harford Counties on December 31, 1950; 16 in Garrett County on December 31, 1954.

DOWNY WOODPECKER *Dendrocopos pubescens* (Linnaeus)

STATUS.—Permanent resident. Common in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; fairly common in the Allegheny Mountain section.

HABITAT.—Wood margins, open woodland, orchards, and other forest edge habitats.

NESTING SEASON.—Late April to mid-June. An occupied nest was found as early as April 23, 1945, in Prince Georges County (J. W. Brainerd). *Extreme egg dates* (16 nests): May 1, 1930, in the District of Columbia (E. J. Court) and May 30, 1907, in Allegany County (F. C. Kirkwood). *Extreme nestling dates* (41 nests): May 7, 1945 (J. B. Cope), and June 17, 1956, both in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 14 (5 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 7 (2 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1948 (Oresman, et al., 1948).
- 6 (5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1954 (Wright, 1955); 6 (4.5 in 80 acres) in 1953 (Clagett, 1953); 5 (4 in 80 acres) in 1952 (Clagett, 1952); 4 (3 in 80 acres) in 1948, 1949, and 1951 (Trever, 1952).
- 6 (4.7 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the border between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 6 (2 in 32½ acres) in another area in 1944.
- 5 (2 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1948 (Kolb, et al., 1948), and in 1949 (Kolb, 1949a); 5 (2 in 37 acres) in 1952 and 1953 (Kaufmann, et al., 1952; Cole and Kolb, 1953); 3 (1 in 40 acres) in 1950 (Kolb, 1950); 3 (1 in 37 acres) in 1951 (Kolb and Cole, 1951).
- 5 (3 in 66 acres) in field and edge habitats (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 207 in the District of Columbia area on December 31, 1955; 168 in the Annapolis area on January 1, 1956; 141 in the Ocean City area on December 27, 1954; 100 at Patuxent Refuge on January 12, 1950; 86 in the Catoctin Mountain area in Frederick and Washington Counties on January 2, 1954.

RED-COCKADED WOODPECKER *Dendrocopos borealis* (Vieillot)

STATUS.—Rare and local permanent resident in the Eastern Shore section. Small numbers occur in a rather restricted area in the vicinity of Golden Hill in Dorchester County. They were first recorded there by F. R. Smith, who observed singles or small flocks during the periods, June 2–November 29, 1932, and April 8–September 30, 1933. More recent records in the Golden Hill area include 1 seen on October 8, 1955 (P. Hurlock) and 2 seen on September 20, 1956 (P. F. Springer). Elsewhere, a young bird

was observed on Assateague Island, Worcester County, on June 9, 1939 (Meanley, 1943a).

HABITAT.—Open stands of loblolly pine along the margins of tidal marshes.

[IVORY-BILLED WOODPECKER] *Campephilus principalis* (Linnaeus)

STATUS.—Hypothetical. Audubon (1831 and 1842) records this species as occurring in Maryland.

Family TYRANNIDAE

EASTERN KINGBIRD *Tyrannus tyrannus* (Linnaeus)

STATUS.—*Breeding:* Fairly common in all sections. *Spring transient:* Common in all sections. *Fall transient:* Common in the Eastern Shore section; fairly common elsewhere in all sections. *Wintering:* Accidental—1 was closely observed on Assateague Island, Worcester County, on December 23, 1946 (J. H. Buckalew).

HABITAT.—Marginal habitats such as orchards, farmyards, residential areas, cut-over forests, etc.

NESTING SEASON.—Early May to late August (nesting peak, late May to mid-July). Nest-building was recorded as early as May 6, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher). *Extreme egg dates* (108 nests): May 21, 1899, and July 18, 1923, both in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (66 nests): May 31, 1946, in Prince Georges County (E. G. Cooley) and August 22, 1953, in Carroll County (D. H. McIntosh).

SPRING MIGRATION.—*Normal period:* April 20–30 to May 20–25; peak, May 1 to May 20. *Extreme arrival dates:* March 10, 1955, in Anne Arundel County (Mrs. W. L. Henderson); April 12, 1922, in Dorchester County (R. W. Jackson); April 13, 1883, in Washington County (E. A. Small); April 14, 1895, in Baltimore County (F. C. Kirkwood). *Extreme departure date:* May 26, 1901, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period:* July 15–25 to September 15–25; peak, August 5 to September 5. *Extreme arrival dates:* July 12, 1926, and July 13, 1911, in Baltimore County (F. C. Kirkwood). *Extreme departure dates:* October 13, 1955, in Caroline County (M. W. Hewitt); October 7, 1931, in Baltimore County (F. C. Kirkwood); October 5, 1947, in Prince Georges County; October 4, 1936, in Anne Arundel County (E. A. McGinity).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

10 (2 in 20 acres) in suburban type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1942.

3 (7 in 260 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1949.

MAXIMUM COUNTS.—*Spring*: 150 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 117 near Greenbelt, Prince Georges County, on May 8, 1954 (L. W. Oring); 100+ (on 1 plowed field) in Baltimore County on May 14, 1920 (W. Marshall); 75 at Port Tobacco, Charles County, on May 6, 1938, and on May 8, 1937 (I. N. Gabrielson, F. M. Uhler). *Fall*: 2,000 on Gunpowder River marsh on September 2, 1902 (J. Thomas); 250 in Worcester County on September 4, 1953 (R. R. Kerr, J. W. Terborgh); 57 on Assateague Island, Worcester County, on September 1, 1945; 40 in Dorchester County on August 22, 1930 (H. B. Curry).

WESTERN KINGBIRD *Tyrannus verticalis* Say

STATUS.—Rare fall transient; accidental winter visitor and spring transient. A specimen (USNM) found in the Washington, D. C., market on September 30, 1874, had been collected in nearby Maryland (Coues and Prentiss, 1883). Another specimen was obtained near Denton in Caroline County on September 28, 1931, by S. E. Perkins III (Lincoln, 1932). Two were seen at St. Marys City, St. Marys County, on September 18, 1938 (Wetmore, 1939). One was recorded at South Point, Worcester County, on November 14, 1954 (H. Sutton). Two were observed at Wye Island, Queen Annes County, on September 9, 1956 (N. Nevius, et al.), and 2 others at Ocean City on September 17, 1956 (R. D. Cole, et al.); 1 was banded at the latter location on the following day. One was collected (USNM) in Worcester County, about 4 miles southwest of Snow Hill on December 23, 1946. One was seen near Claiborne, Talbot County, on May 22 and 23, 1956 (R. L. Kleen).

[SCISSOR-TAILED FLYCATCHER] *Muscivora forficata* (Gmelin)

STATUS.—Hypothetical. A bird, presumably of this species, was reported seen in the District of Columbia on May 6, 1861 (Coues and Prentiss, 1883). Another was reported near the Potomac River in Prince Georges County during August of about the year 1865 (Palmer, 1896). A third sight record was reported in this same area during April 1881 (C. W. Richmond).

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (Linnaeus)

STATUS.—*Breeding*: Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section. *Transient*: Fairly common in all sections.

HABITAT.—Wood margin habitats and open stands of pine or upland deciduous forest.

NESTING SEASON.—Mid-May to early August (nesting peak, late May to early July). *Extreme egg dates* (112 nests): May 13, 1881, in the District of Columbia (USNM—M. Thompson) and July 15, 1913, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (26 nests): June 11, 1912, in Dorchester County (R. W. Jackson) and August 4, 1949, in Prince Georges County (J. S. Cooley).

SPRING MIGRATION.—*Normal period*: April 20–30 to May 15–20; peak, May 5 to May 15. *Extreme arrival dates*: April 18, 1931 (J. C. Jones), and April 19, 1914 (W. W. Cooke), in the District of Columbia.

FALL MIGRATION.—*Normal period*: August 15–25 to September 15–25; peak, August 25 to September 10. *Extreme departure dates*: November 21, 1948, in Baltimore County (E. Willis); October 29, 1952, in Montgomery County (M. G. Van Meter).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 8 (3 in 36 acres) in "virgin central hardwood deciduous forest" (white oak–tulip–poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 8 (3 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1950 (Kolb, 1950); 5 (2 in 40 acres) in 1948 (Kolb, et al., 1948); 3 (1 in 40 acres) in 1949 (Kolb, 1949a); 3 (1 in 37 acres) in 1951 (Kolb and Cole, 1951) and 1952 (Kaufmann, et al., 1952); none in 1953.
- 7 (2 in 28 acres) in partially opened flood-plain forest (sycamore, elm, ash, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 7 (1.5 in 21 acres) in "dense second growth" (oak–maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 6 (5 in 80 acres) in "central hardwood forest (oaks–tulip–poplar) with scattered pine" in the District of Columbia in 1948; 4 (3 in 80 acres) in 1949, 2 (2 in 80 acres) in 1951 (Trever, 1952); 4 (3.5 in 80 acres) in 1954 (Wright, 1955); 4 (3 in 80 acres) in 1952 (Claggett, 1952); 3 (2.5 in 80 acres) in 1953 (Claggett, 1953).
- 5 (2 in 44% acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1944 and 1945 (J. W. Aldrich, A. J. Duvall).
- 4 (2 in 47% acres) in hedgerows in agricultural areas and abandoned fields (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1945.

MAXIMUM COUNTS.—*Spring*: 41 in Talbot County on May 8, 1954 (R. L. Kleen); 22 in Worcester County on May 11, 1952 (D. A. Cutler); 21 in the District of Columbia area on May 12, 1913 (Oberholser, 1917a); 20 in Frederick County on May 9, 1953 (J. W. Richards). *Fall*: 9 in Dorchester County on August 31, 1946.

ASH-THROATED FLYCATCHER *Myiarchus cinerascens* (Lawrence)

STATUS.—Accidental visitor. A specimen (USNM) was collected at Beltsville, Prince Georges County, on November 25, 1911, by E. B. Marshall.

EASTERN PHOEBE *Sayornis phoebe* (Latham)

STATUS.—*Breeding*: Fairly common in all sections. *Transient*: Common in all sections. *Wintering*: Fairly common in Worcester County; uncommon elsewhere in the Eastern shore section and in the southern part of the Western Shore section (Calvert, St. Marys, and Charles Counties); rare in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties), and in the Upper Chesapeake and Piedmont sections; casual in the Ridge and Valley section—1 seen in the Hagerstown Valley of Washington County during the winter of 1882-83 (Small, 1883a).

HABITAT.—Various edge habitats including wood margin and field edge types. During the breeding season, this species is usually restricted to areas near bridges, culverts, buildings, or other man-made structures.

NESTING SEASON.—Late March to early August (nesting peak, mid-April to late June). *Extreme egg dates* (272 nests): March 25, 1929, in Prince Georges County (R. V. Truitt) and July 21, 1956, in Prince Georges County. *Extreme nestling dates* (183 nests): May 1, 1929, in the District of Columbia (G. B. Roth) and August 1, 1956, in Prince Georges County (P. F. Springer).

SPRING MIGRATION.—*Normal period*: March 5-15 to April 20-30; peak, March 20 to April 15. *Extreme arrival dates*: February 23, 1902, in the District of Columbia (H. W. Oldys); February 27, 1953, in Prince Georges County (L. M. Horn, A. C. Martin); February 28, 1954, in Montgomery County (J. W. Terborgh); March 1, 1953, in Caroline County (A. Knotts).

FALL MIGRATION.—*Normal period*: September 10-20 to November 1-10; peak, September 25 to October 15. *Extreme arrival date*: September 1, 1944, in Prince Georges County. *Extreme departure dates*: November 29, 1893, in Montgomery County (H. B. Stabler); November 29, 1896, in Baltimore County (F. C. Kirkwood); November 28, 1954, in Prince Georges County; November 26, 1948, in Caroline County (Mrs. A. J. Fletcher).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

7 (6 in 84 acres) in mixed agricultural habitats (including bridges and buildings) in Prince Georges County in 1949; 6 (5 in 84 acres) in 1947 and 1948; 5 (4 in 84 acres) in 1950 and 1951.

0.6 (15 in 2,656 acres) in mixed forest and field habitats (containing scattered bridges, culverts, and buildings that are used for nesting sites) in Anne Arundel and Prince Georges Counties in 1943; 0.4 (11 in 2,656 acres) in 1942.

MAXIMUM COUNTS.—*Spring*: 20 on the Gunpowder River marsh on March 22, 1904 (J. Thomas); 20 at Port Tobacco, Charles County, on April 7, 1953 (J. Hailman); 18 on Patuxent Refuge on March 16, 1945; 15 at Seneca, Montgomery County, on February 28, 1954 (J. W. Terborgh). *Fall*: 13 on Patuxent Refuge on October 7, 1945. *Winter* (Christmas counts): 32 in the Ocean City area on December 27, 1953; 11 in southeastern Worcester County on December 22, 1947; 8 near Denton, Caroline County, on December 23, 1950; 3 in the Triadelphia Reservoir area of Montgomery and Howard Counties on January 1, 1954.

YELLOW-BELLIED FLYCATCHER *Empidonax flaviventris*

(Baird and Baird)

STATUS.—*Transient*: Uncommon in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; rare in the Upper Chesapeake, Western Shore, and Eastern Shore sections.

HABITAT.—Various types of evergreen and deciduous forests, with some preference shown for the former.

SPRING MIGRATION.—*Normal period*: May 10–15 to May 30–June 1; peak, May 20 to May 30. *Extreme arrival dates*: May 7, 1949, in Montgomery County (M. C. Crone, L. M. Wendt); May 9, 1886 (W. Palmer), and May 9, 1902 (A. K. Fisher), in the District of Columbia. *Extreme departure dates*: June 1, 1917, in the District of Columbia (F. Harper); June 1, 1925, in Garrett County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: August 10–20 to September 25–October 5; peak, August 25 to September 25. *Extreme arrival dates*: July 28, 1859, in the District of Columbia (E. Coues—USNM); August 3, 1893, in Baltimore County (G. H. Gray); August 5, 1894, in the District of Columbia (C. W. Richmond). *Extreme departure dates*: October 26, 1955 (banded), in Baltimore County (S. W. Simon); October 11, 1926, and October 8, 1905, in Baltimore County (F. C. Kirkwood); October 6, 1881, in the District of Columbia (H. M. Smith).

MAXIMUM COUNTS.—*Spring*: 17 near Laurel, Prince Georges County, on May 30, 1917 (W. L. McAtee, A. Wetmore); 5 in Baltimore County on May 21, 1893 (W. N. Wholey). *Fall*: 8+ at Holly Point, Baltimore County, on September 23, 1896 (F. C. Kirkwood); 6 banded at Ocean City, Worcester County, on September

13, 1955; 3 in the District of Columbia on September 18, 1930 (W. L. McAtee).

ACADIAN FLYCATCHER *Empidonax virescens* (Vieillot)

STATUS.—*Breeding*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, and Ridge and Valley sections; uncommon and local in the Allegheny Mountain section—occurs along Bear Creek in Garrett County (Brooks, 1936c). *Transient*: Fairly common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon in the Piedmont, and Ridge and Valley sections.

HABITAT.—Flood-plain and swamp forests; also rich, moist forests on the upland.

NESTING SEASON.—Late May to mid-August (nesting peak, early June to early July). *Extreme egg dates* (71 nests): May 26, 1943, in Prince Georges County (J. B. Cope) and July 30, 1893, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (21 nests): June 9, 1952, in Caroline County (M. W. Hewitt) and August 11, 1953, in Calvert County (W. B. Tyrrell).

PERIOD OF OCCURRENCE.—*Normal period*: May 1–10 to September 5–15; peak, May 10 to August 1. *Extreme arrival dates*: April 29, 1845, in the District of Columbia (USNM—Hutton); April 29, 1951, in Prince Georges County. *Extreme departure dates*: October 2, 1927, in Baltimore County (F. C. Kirkwood, J. Sommer); September 28, 1952, in St. Marys County (J. W. Terborgh); September 24, 1950, in Montgomery County (S. A. Briggs); September 19, 1947, and September 19, 1951, in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 47 (6 in 12½ acres) in lowland seepage swamp (red maple, sweetgum, pin oak with brushy understory of sweet-bay, winterberry, arrow-wood, etc.) in Prince Georges County in 1946.
- 39 (33.7 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the border between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 34 (11 in 32½ acres) in another area of this type in 1944.
- 33 (12 in 36 acres) in "virgin central hardwood deciduous forest" (white oak–tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 29 (4 in 14½ acres) in poorly drained flood-plain forest (pin oak, sweetgum, red maple, red ash, etc.) in Prince Georges County in 1946.
- 28 (22.5 in 80 acres) in "central hardwood forest (oaks–tulip-poplar) with scattered pine" in the District of Columbia in 1954 (Wright, 1955); 28 (22 in 80 acres) in 1949, 26 (21 in 80 acres) in 1948 and 1953, 19 (15 in 80 acres) in 1951 (Trever, 1952; Claggett, 1953); 20 (16 in 80 acres) in 1952 (Claggett, 1952).

- 23 (6.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
 12 (3 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
 12 (1.5 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
 9 (4 in 44½ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1945; absent in 1944 (J. W. Aldrich, A. J. Duvall).
 9 (3.5 in 37 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1953 (Cole and Kolb, 1953); 8 (3 in 37 acres) in 1951 and 1952 (Kolb and Cole, 1951; Kaufmann, et al., 1952); 5 (2 in 40 acres) in 1948 (Kolb, et al., 1948); 4 (1.5 in 40 acres) in 1949 (Kolb, 1949a) and 1950 (Kolb, 1950).

MAXIMUM COUNTS.—*Spring*: 34 in Charles and St. Marys Counties on May 9, 1953 (J. W. Terborgh, et al.); 30 along the C. & O. Canal in Montgomery County on May 9, 1953 (E. J. Stivers, et al.); 25 at Patuxent Refuge on May 10, 1952. *Fall*: 9 at Patuxent Refuge on August 17, 1944.

TRAILL'S FLYCATCHER *Empidonax traillii* (Audubon)

STATUS.—*Breeding* (see fig. 29): Uncommon in the Allegheny Mountain section; uncommon and local in the Piedmont section—in late June of 1951, territorial males were recorded at 6 locations in the northern half of Carroll County and at 1 location a mile west of Frederick in Frederick County, while in 1954, C. M. Buchanan found an occupied nest at Loch Raven in Baltimore County; rare in the District of Columbia—1 singing male was closely observed at Kenilworth on July 15, 1950 (E. G. Davis, J. E. Willoughby), and on June 27, 1951 (R. F. Deed). *Transient*: Rare in the Allegheny Mountain, Ridge and Valley, Piedmont, Upper Chesapeake, and Western Shore sections, and (in fall only) in the Eastern Shore section.

HABITAT.—Alder thickets, located along streams or in swamps; occasionally in other types of brushy thickets in damp situations.

NESTING SEASON.—A nest containing 3 dead young was found at Mountain Lake in Garrett County on June 11, 1939 (M. G. Brooks). A nest, just completed, found at Loch Raven, Baltimore County, on July 10, contained 3 young on July 31, 1954 (C. M. Buchanan). Another nest containing young was found in Garrett County, near Bittering, on August 24, 1938 (L. M. Llewellyn).

SPRING MIGRATION.—*Normal period*: May 10–15 to May 25–June 1. *Extreme arrival dates*: May 5, 1893 (collected), in Baltimore County (A. Resler); May 7, 1922, in the District of Columbia (H. C. Oberholser); May 8, 1954, in Howard County.

Extreme departure dates: June 9, 1953, in Frederick County (J. W. Richards); June 2, 1943 (USNM), in Prince Georges County.

FALL MIGRATION.—*Normal period:* August 20–25 to September 10–15. *Extreme arrival dates:* August 16, 1886, in the District of Columbia (A. K. Fisher); August 18, 1927, in Baltimore County (F. C. Kirkwood). *Extreme departure dates:* September 24, 1955, in Baltimore County (C. M. Buchanan); September 17, 1890, in the District of Columbia (USNM—C. W. Richmond).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 5 near Seneca, Montgomery County, on May 14, 1949 (L. M. Ashley); 3 in the District of Columbia on June 1, 1917 (F. Harper).

LEAST FLYCATCHER *Empidonax minimus* (Baird and Baird)

STATUS.—*Breeding* (see fig. 33): Fairly common in the Allegheny Mountain section; uncommon in the western part of the Ridge and Valley section (Allegany County); rare and local in the Piedmont and Western Shore sections—occurring irregularly in the vicinity of Baltimore (A. A. Brandenburg, A. Stokes), in the northern part of Baltimore County, in Carroll County, and in Prince Georges County in the vicinity of the Patuxent Research Refuge. *Transient:* Fairly common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; uncommon in the Upper

FIGURE 33.—Breeding range of Least Flycatcher.

Chesapeake and Western Shore sections; rare in the Eastern Shore section.

HABITAT.—*Breeding*: Open deciduous woodland, and orchards. *Transient*: Various types of deciduous forests and forest edge.

NESTING SEASON.—Early May to mid-August (nesting peak, late May to early July). Nest building was recorded in Baltimore County as early as May 4, 1951 (A. A. Brandenburg). *Extreme egg dates* (8 nests): May 19, 1935, in Allegany County (L. M. Llewellyn) and June 17, 1949, in Prince Georges County. Nestlings were observed in Baltimore County during the period June 2–10, 1951 (A. A. Brandenburg). An occupied nest was found in Garrett County at Friendsville on about August 15, 1949 (A. Wright).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: April 19, 1880, in Prince Georges County (USNM—G. Marshall); April 20, 1881, in the District of Columbia (W. Palmer); April 20, 1954, in Baltimore County (Mrs. R. E. Kaestner). *Extreme departure dates*: June 11, 1953, in Frederick County (J. W. Richards); June 6, 1953, in Montgomery County (R. F. Deed); June 2, 1905, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: August 20–25 to September 15–25; peak, August 25 to September 15. *Extreme arrival dates*: August 13, 1887, in the District of Columbia (A. K. Fisher); August 18, 1927, in Baltimore County (F. C. Kirkwood); August 19, 1942, in Prince Georges County. *Extreme departure dates*: October 1, 1916, in Montgomery County (D. C. Mabbott); September 28, 1892, in Baltimore County (A. Resler); September 28, 1901, in Allegany County (G. Eifrig).

EASTERN WOOD PEWEE *Contopus virens* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in all sections.

HABITAT.—Wood margins or open stands of upland deciduous and pine forests; also in mature orchards and in wooded residential areas. During the fall migration period, this species also occurs in more open habitats such as field margins and hedgerows.

NESTING SEASON.—Late May to mid-September (nesting peak, early June to late July). *Extreme egg dates* (116 nests): May 21, 1953, in Charles County (A. R. Stickley, Jr.) and August 15, 1897, in Baltimore County (J. Sommer). *Extreme nestling dates* (53 nests): June 13, 1950, in Harford County (R. B. Thomas) and September 13, 1951, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period:* May 1-10 to May 25-June 5; peak, May 10 to May 25. *Extreme arrival dates:* April 20, 1930, in Montgomery County (F. C. Lincoln); April 24, 1932, in Baltimore County (W. B. Tyrrell); April 26, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period:* September 1-10 to October 5-15; peak, September 10 to October 1. *Extreme departure dates:* October 31, 1950, in Anne Arundel County (Mrs. W. L. Henderson); October 25, 1937, in St. Marys County (J. C. Jones, F. H. May); October 19, 1901, in Allegany County (G. Eifrig); October 17, 1883, on the Patapsco River marsh (A. Resler).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 19 (7 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 17 (3.5 in 21 acres) in "immature loblolly-shortleaf pine stand" in Worcester County in 1948 (Springer and Stewart, 1948c).
- 11 (4.5 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1949 (Kolb, 1949a); 10 (4 in 40 acres) in 1948 (Kolb, et al., 1948); 8 (3 in 37 acres) in 1951 and 1953 (Kolb and Cole, 1951; Cole and Kolb, 1953); 4 (1.5 in 37 acres) in 1952 (Kaufmann, et al., 1952); 3 (1 in 40 acres) in 1950 (Kolb, 1950).
- 10 (8 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1954 (Wright, 1955); 8 (6 in 80 acres) in 1948 and 1953; 6 (5 in 80 acres) in 1949 and 6 (4.5 in 80 acres) in 1951 (Trever, 1952; Clagett, 1953); 7 (5.5 in 80 acres) in 1952 (Clagett, 1952).
- 7 (1.5 in 22 acres) in "unsprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 6 (1.4 in 23½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 5 (2 in 44½ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1945; 2 (1 in 44½ acres) in 1944 (J. W. Aldrich, A. J. Duvall).
- 5 (1.6 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, Spanish oak) in Prince Georges County in 1944.
- 5 (1.5 in 30 acres) in "damp deciduous scrub with standing dead trees" in Prince Georges County in 1947 (Stewart, et al., 1947).

MAXIMUM COUNTS.—*Spring:* 20 at Unity, Montgomery County, on May 9, 1953 (S. H. Low); 16 in St. Marys and Charles Counties on May 8, 1954 (J. W. Terborgh, J. W. Taylor, Jr.); 16 in the District of Columbia and southern Montgomery County on May 10, 1952 (P. A. DuMont, et al.). *Fall:* 16 near Seneca, Montgomery County, on September 5, 1953 (H. A. Sutton); 16 at Port Tobacco, Charles County, on September 2, 1954 (A. R. Stickley, Jr.); 15 on September 9, 1944, at Patuxent Refuge.

OLIVE-SIDED FLYCATCHER *Nuttallornis borealis* (Swainson)

STATUS.—*Breeding*: Formerly found sparingly in summer in Garrett County at Cranesville Swamp (Brooks, 1936c), being of regular occurrence there until about 1937 (M. G. Brooks). *Transient*: Uncommon in the Allegheny Mountain section; rare in the Ridge and Valley, Piedmont, Upper Chesapeake, and Western Shore sections; casual in the Eastern Shore section—1 seen in the Pocomoke Swamp on May 17, 1952 (P. A. DuMont); 1 seen at Royal Oak, Talbot County, on September 26, 1953 (R. L. Kleen); and 1 seen at Tilghman, Talbot County, on September 14, 1955 (R. L. Kleen).

HABITAT.—Brushy, cut-over or burned-over forest land with scattered standing dead trees.

SPRING MIGRATION.—*Normal period*: May 10–15 to June 1–5; peak, May 15 to June 1. *Extreme arrival dates*: May 5, 1956, in Prince Georges County; May 9, 1912, in the District of Columbia (A. K. Fisher); May 9, 1953, in Frederick County (J. W. Richards). *Extreme departure date*: June 10, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 15–25 to September 15–25; peak, August 25 to September 15. *Extreme arrival dates*: August 10, 1943 (USNM), in Prince Georges County; August 13, 1917, in the District of Columbia (R. W. Moore). *Extreme departure dates*: October 2, 1928, in Baltimore County (F. C. Kirkwood); September 30, 1950, in Montgomery County (C. N. Mason).

MAXIMUM COUNTS.—*Fall*: 3 near Seneca, Montgomery County, on September 5, 1953 (H. A. Sutton); 3 at Herrington Manor in Garrett County on September 11, 1954 (L. W. Oring).

Family ALAUDIDAE**HORNED LARK *Eremophila alpestris* (Linnaeus)**

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections, and in the coastal area of Worcester County; uncommon elsewhere in the Eastern Shore section and in the Western Shore and Upper Chesapeake sections. *Transient*: Fairly common in all sections. *Wintering*: Fairly common in the Eastern Shore section; uncommon in all other sections.

This species has been gradually expanding its breeding range southeastward during the past 50 years. In Garrett and Allegheny Counties it was first recorded in summer in about 1900 and the first definite breeding records were obtained in 1904 (Eifrig,

1923). Farther east, the first indication of breeding was evident when an adult and 2 juvenals were collected near Laurel, Prince Georges County, on June 23, 1922 (Swales, 1922).

HABITAT.—Cultivated fields, pastures, golf courses, airfields, sandy beaches, and other open habitats with sparse or short vegetation.

NESTING SEASON.—Early March to late July (nesting peak, mid-March to mid-May). Nest-building was recorded as early as March 3, 1939, in Prince Georges County (M. B. Meanley). *Extreme egg dates* (17 nests): March 18, 1952, in Baltimore County (E. Willis) and July 6, 1931, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (15 nests): March 19, 1954, in Baltimore County (E. Willis) and July 14, 1946, in Worcester County. Fledglings were observed being fed by a parent in Baltimore County on August 2, 1954 (C. D. Hackman).

SPRING MIGRATION.—*Normal period*: January 15–25 to March 20–30; peak, January 25 to March 10. *Extreme departure date*: April 9, 1931, in the District of Columbia (W. L. McAtee).

FALL MIGRATION.—*Normal period*: September 25–October 5 to December 10–20; peak, October 10 to December 1.

MAXIMUM COUNTS.—*Spring*: 400 in Worcester County on February 22, 1948 (E. Arnold); 200 in Baltimore County on March 20, 1928 (W. Marshall); 100 (1 flock) near Emmitsburg, Frederick County, on February 7, 1952 (J. W. Richards). *Fall*: 300 on the Gunpowder River marsh on December 7, 1902 (J. Thomas); 200 in Baltimore County on November 12, 1929 (W. Marshall); 150 on Taylors Island, Dorchester County, on December 1, 1893 (R. C. Watters). *Winter*: 500 at Indiantown, St. Marys County, on January 31, 1952 (J. W. Terborgh); "hundreds" at Cumberland during February 1901 (Eifrig, 1902b); 270 at Ocean City on December 27, 1948 (Christmas count); 240 in the Catoctin Mountain area of Frederick County on January 2, 1954 (Christmas count); 154 in southeastern Worcester County on December 22, 1947 (Christmas count); 127 near Denton, Caroline County, on December 26, 1953 (Christmas count).

Family HIRUNDINIDAE

TREE SWALLOW *Iridoprocne bicolor* (Vieillot)

STATUS.—*Breeding* (see fig. 34): Fairly common in the tidewater areas of Somerset, Wicomico, and Dorchester Counties; uncommon or rare in the tidewater areas elsewhere in the Eastern Shore section and in the Western Shore and Upper Chesapeake sections; locally uncommon or rare in the Allegheny Mountain

FIGURE 34.—Breeding range of Tree Swallow.

section—recorded in Garrett County at Cranesville Swamp, Deep Creek Lake (Brooks, 1936c), Crellin (Eifrig, 1920b), Hammel Glade and Lake Louise. *Spring transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Fall transient*: Abundant in the Eastern Shore section; common in the tidewater areas of the Upper Chesapeake and Western Shore sections; uncommon elsewhere in all sections. *Wintering*: Uncommon and irregular in the coastal area of Worcester County and in the tidewater areas of Somerset and Dorchester Counties; casual elsewhere in the Eastern Shore section and in the Western Shore and Piedmont sections—1 seen at Cobb Island, Charles County, on January 7, 1950 (F. M. Uhler), a small flock recorded at Gibson Island, Anne Arundel County, on January 15, 1950 (Mrs. W. L. Henderson), 1 seen at Westminster, Carroll County, on January 12, 1952 (D. A. Jones).

HABITAT.—*Breeding*: Usually near open water or marsh in areas with standing dead trees. *Transient*: Most numerous in the vicinity of open water or marsh, but also occurring regularly over agricultural fields and other open habitats. *Wintering*: Usually found in the vicinity of wax-myrtle thickets on the barrier beaches or adjacent to salt marshes.

NESTING SEASON.—Early May to mid-July. *Extreme egg dates* (8 nests): May 12, 1894 (W. H. Fisher), and July 3, 1893 (P. T. Blogg), in Baltimore County. *Extreme nestling dates* (9 nests): June 3, 1954, in Caroline County (Mrs. A. J. Fletcher) and June 28, 1920, in Garrett County (Eifrig, 1920b).

SPRING MIGRATION.—*Normal period*: March 25–April 5 to May 10–20; peak, April 5 to May 5. *Extreme arrival dates*: February 22, 1954, in Dorchester County (J. W. Terborgh); February 28, 1953, in St. Marys County (J. E. Knudson); March 4, 1903, in Baltimore County (F. C. Kirkwood); March 10, 1956, in Caroline County (Mrs. A. J. Fletcher). *Extreme departure dates*: June 6, 1953, in Frederick County (R. F. Deed); May 28, 1949, in Montgomery County (P. A. DuMont); May 26, 1908, in Allegany County (F. C. Kirkwood); May 24, 1951, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 1–10 to November 5–15; peak, August 25 to October 25. *Extreme arrival dates*: June 21, 1950, in Prince Georges County; June 30, 1906, in Worcester County (F. C. Kirkwood). *Extreme departure dates*: November 26, 1900, in Baltimore County (F. C. Kirkwood); November 17, 1948, in Dorchester County.

MAXIMUM COUNTS.—*Spring*: 2,500 at Allens Fresh, Charles County, on April 12, 1952 (L. Griffin, et al.); 1,000 in Baltimore County on April 7, 1901 (F. C. Kirkwood). *Fall*: 50,000+ in the Elliott Island area, Dorchester County, on October 22, 1949; 30,000+ between Vienna and Cambridge in Dorchester County on October 2, 1948; 5,000 in Baltimore County on August 29, 1903, and October 18, 1901 (F. C. Kirkwood); 3,800 on Assateague Island, Worcester County, on September 5, 1948. *Winter*: 200 on Assateague Island on February 8, 1938 (G. A. Ammann); 150 in the Ocean City area on January 31, 1906 (F. C. Kirkwood); 50 near Westover, Somerset County, on December 8, 1911 (W. H. Fisher).

BANK SWALLOW *Riparia riparia* (Linnaeus)

STATUS.—*Breeding* (see fig. 35): Fairly common locally in the tidewater areas of the Western Shore and Upper Chesapeake sections and along the Chesapeake Bay shores of the Eastern Shore section (south to the Choptank River); uncommon and local in the Piedmont, and Ridge and Valley sections—recorded in Baltimore County at Herring Run and Dulaney Valley (F. C. Kirkwood), in Harford County along Broad Creek near Pylesville (P. Heaps) and Darlington (S. Mason, Jr.) and occurring along the

FIGURE 35.—Breeding ranges of Bank Swallow and Cliff Swallow.

Potomac River in Washington County (M. G. Brooks). *Spring transient*: Fairly common in all sections. *Fall transient*: Common in the tidewater areas of the Upper Chesapeake section; fairly common in the Allegheny Mountain section and in the tidewater areas of the Eastern Shore and Western Shore sections; uncommon elsewhere in all sections.

HABITAT.—*Breeding*: Restricted to areas near water with suitable sandy banks for nesting. *Transient*: In the vicinity of open water and marshes; also over pastures, agricultural fields, barrier beaches, and other open habitats.

NESTING SEASON.—Mid-April to mid-July (nesting peak, early May to late June). In Baltimore County, this species was observed excavating nest burrows as early as April 19, 1895 (W. H. Fisher). *Extreme egg dates* (50 nests): May 10, 1916, in the District of Columbia (E. J. Court) and June 23, 1912, in Anne Arundel County (J. Sommer). *Extreme nestling dates* (100+ nests): May 30, 1950, in Cecil County (A. A. Brandenburg) and July 17, 1892, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: April 10–20 to May 15–25; peak, April 25 to May 10. *Earliest arrival dates*: April 4, 1918, in the District of Columbia (I. N. Gabrielson); April 5, 1916, in Dorchester County (R. W. Jackson); April 5, 1952, in Mont-

gomery County (E. J. Stivers). *Extreme departure dates*: May 26, 1886, in the District of Columbia (C. W. Richmond); May 26, 1949, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 5–15 to September 5–15; peak, July 15 to September 5. *Extreme departure dates*: September 29, 1930, in Kent County (W. Baker); September 21, 1920, in the District of Columbia (F. C. Lincoln); September 21, 1940, in Baltimore County (E. A. McGinity).

MAXIMUM COUNTS.—*Spring*: 110 in the District of Columbia on May 11, 1917 (Oberholser, 1918). *Fall*: 10,000 on the Gunpowder River marsh on July 15, 1900 (F. C. Kirkwood); 3,000 on Back River, Baltimore County, on July 17, 1891 (F. C. Kirkwood); "thousands" on the Patapsco River marsh on August 16, 1897 (F. C. Kirkwood); 500 in Kent County on August 10, 1954; 250 at Seneca, Montgomery County, on September 7, 1953 (J. W. Terborgh).

ROUGH-WINGED SWALLOW *Stelgidopteryx ruficollis* (Vieillot)

STATUS.—*Breeding*: Fairly common along the Potomac River in Montgomery County; uncommon and local elsewhere in all sections. *Transient*: Uncommon in all sections.

HABITAT.—Usually in the vicinity of open water, including rivers, ponds, bays, and estuaries.

NESTING SEASON.—Mid-April to late June (nesting peak, mid-May to mid-June). Nest-building was recorded in Caroline County as early as April 19, 1952 (Mr. and Mrs. A. J. Fletcher). *Extreme egg dates* (42 nests): May 13, 1886, in Baltimore County (F. C. Kirkwood) and June 20, 1887, in the District of Columbia (USNM—H. Thompson). *Extreme nestling dates* (10 nests): May 22, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher) and June 27, 1893, in Baltimore County (P. T. Blogg).

SPRING MIGRATION.—*Normal period*: April 1–10 to May 5–15; peak, April 10 to May 5. *Extreme arrival dates*: March 22, 1952, in Caroline County (Mr. and Mrs. A. J. Fletcher); March 26, 1950, in Montgomery County (J. W. Taylor, Jr.). *Extreme departure date*: May 25, 1952, in Prince Georges County.

FALL MIGRATION.—*Normal period*: June 25–July 5 to August 25–September 5. *Extreme arrival date*: June 20, 1945, in Prince Georges County. *Extreme departure dates*: September 14, 1954, in Charles County (R. R. Kerr, J. W. Terborgh); September 11, 1920, in Montgomery County (H. C. Oberholser).

MAXIMUM COUNTS.—*Spring*: 125 at Allens Fresh, Charles County, on April 12, 1952 (R. R. Kerr); 87 at Gibson Island, Anne

Arundel County, on May 5, 1956 (Mrs. W. L. Henderson, et al.) ; 80 near Cabin John, Montgomery County, on April 17, 1949 (P. A. DuMont). *Fall*: 50 in the District of Columbia on August 31, 1917 (H. C. Oberholser).

BARN SWALLOW *Hirundo rustica* Linnaeus

STATUS.—*Breeding*: Common in all sections. *Transient*: Abundant in the Eastern Shore, Western Shore, and Upper Chesapeake sections; common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Accidental—1 recorded in the District of Columbia on December 27, 1935 (G. Petrides).

HABITAT.—*Breeding*: In open country, usually in the vicinity of barns, bridges, and other types of buildings. *Transient*: In open country, usually most numerous near water.

NESTING SEASON.—Late April to late August (nesting peak, late May to early July). Nest-building was recorded as early as April 13, 1956, in Caroline County. *Extreme egg dates* (380 nests): May 5, 1955, in Caroline County (A. Bilbrough) and August 4, 1950, in Prince Georges County. *Extreme nestling dates* (297 nests): May 18, 1949, in Prince Georges County and August 21, 1950 (E. Willis), in Baltimore County.

SPRING MIGRATION.—*Normal period*: April 1–10 to May 10–20; peak, April 20 to May 5. *Extreme arrival dates*: March 20, 1880, in Washington County (E. A. Small); March 20, 1900, on the Gunpowder River marsh (J. Thomas); March 25, 1954, in Caroline County (A. J. Fletcher); March 26, 1954, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan). *Extreme departure date*: May 28, 1940, in Baltimore County (H. Brackbill).

FALL MIGRATION.—*Normal period*: July 1–10 to September 10–20; peak, July 10 to September 1. *Extreme arrival dates*: June 22, 1956, in Worcester County; June 27, 1914, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: November 6, 1948, in Worcester County (K. H. Weber); October 12, 1917, in Dorchester County (R. W. Jackson); October 12, 1954, in Prince Georges County; October 6, 1929, in the District of Columbia (M. T. Donoho).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

11 (31 in 275 acres) in mixed agricultural and residential habitats (including several barns and sheds) in Prince Georges County in 1949; 5 (13 in 275 acres) in 1947; 3 (9 in 275 acres) in 1943.

MAXIMUM COUNTS.—*Spring*: 283 in Worcester County on May 11, 1952 (D. A. Cutler); 200 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan).

Fall: 10,000 on the Gunpowder River marsh on July 15, 1900 (F. C. Kirkwood); 1,600 in Montgomery County on July 26, 1953 (R. R. Kerr); 1,000 in Worcester County on August 14, 1948.

CLIFF SWALLOW *Petrochelidon pyrrhonota* (Vieillot)

STATUS.—*Breeding* (see fig. 35): Common in the Allegheny Mountain section; fairly common in the western part of the Ridge and Valley section (Alleghany County and western Washington County, east to Indian Springs); rare and local in the Piedmont section, the most recent records occurring in Baltimore and Harford Counties—including a colony found 20 miles north of Baltimore in 1924 (Kirkwood, 1925), 2 occupied nests between Glyndon and Shawan on June 5, 1948 (M. B. Meanley), and 2 nests at Norrisville in 1955 (O. W. Crowder); formerly common in Baltimore and Harford Counties and occurring in Frederick County (F. C. Kirkwood); formerly occurred sparingly in the District of Columbia (Coues and Prentiss, 1861), and in Prince Georges County near Hyattsville—a colony of 15 pairs in 1898 (E. J. Court). *Transient*: Common in the Allegheny Mountain section; fairly common in the Ridge and Valley section; uncommon in the Piedmont, Upper Chesapeake, and Western Shore sections; rare in the Eastern Shore section.

HABITAT.—*Breeding*: Open country, usually in the vicinity of unpainted barns. *Transient*: Open country generally, frequently near water.

NESTING SEASON.—Early May to late July (nesting peak, late May to early July). Nest-building was recorded as early as May 6, 1953, in Garrett County (M. Taylor), and May 12, 1902, in Baltimore County (F. C. Kirkwood). *Extreme egg dates* (10 colonies): May 22, 1898, in Prince Georges County (E. J. Court) and June 17, 1883, in Harford County (F. C. Kirkwood). *Extreme nestling dates* (9 colonies): June 17, 1883, in Harford County and July 27, 1902, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: April 20–30 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates*: April 6, 1952, in Charles County (M. C. Crone); April 10, 1887 (A. K. Fisher), April 10, 1908 (W. W. Cooke), and April 10, 1916 (L. D. Miner), in the District of Columbia; April 13, 1930, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: June 4, 1883, in the District of Columbia (H. W. Henshaw); May 31, 1903, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: July 1–10 to September 5–15; peak, July 10 to September 5. *Extreme departure dates*:

September 23, 1950, along the boundary between Frederick and Washington Counties (M. W. Goldman); September 17, 1929, in Baltimore County (F. C. Kirkwood); September 16, 1944, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 36 at Patuxent Refuge on May 12, 1945; 35 near Seneca, Montgomery County, on May 8, 1948. *Fall*: 1,500 on the Patapsco River marsh on September 15, 1896 (F. C. Kirkwood); 1,000 in Long Green Valley, Baltimore County, on July 11, 1909 (F. C. Kirkwood); "hundreds" in Garrett County on August 14, 1903 (G. Eifrig).

PURPLE MARTIN *Progne subis* (Linnaeus)

STATUS.—*Breeding*: Common in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont section; uncommon elsewhere. *Transient*: Fairly common in all sections (abundant during the fall flight in the District of Columbia—see Oberholser, 1917b and Cooke, 1929).

HABITAT.—Open country, frequently near water (in the vicinity of martin houses during breeding season).

NESTING SEASON.—Late April to late August (nesting peak, mid-May to mid-July). Nest-building was recorded as early as April 28, 1949, in Caroline County (A. J. Fletcher). *Extreme egg dates* (20 colonies): May 29, 1894, and July 9, 1895, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (79 nests): June 12, 1894, in Worcester County (Kirkwood, 1895) and August 24, 1951, in Caroline County (A. J. Fletcher).

SPRING MIGRATION.—*Normal period*: March 25–April 5 to May 10–20; peak, April 5 to April 25. *Extreme arrival dates*: March 10, 1940, in St. Marys County (R. C. McClanahan); March 13, 1952, in Caroline County (R. Maloney); March 13, 1953, in Washington County (R. S. Stauffer). *Extreme departure dates*: May 26, 1889, in the District of Columbia (C. W. Richmond); May 24, 1942, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 1–10 to September 5–15; peak, July 15 to September 1. *Extreme arrival date*: June 27, 1919, in the District of Columbia (M. J. Pellew). *Extreme departure dates*: October 15, 1893, in Baltimore County (F. C. Kirkwood); October 12, 1911, in the District of Columbia (F. G. Heaton); October 11, 1936, in Anne Arundel County (E. A. McGinity).

MAXIMUM COUNTS.—*Spring*: 40 at Patuxent Refuge on April 6, 1944; 30 at Magnolia, Harford County, on April 4, 1895 (F. C.

Kirkwood). *Fall*: 100,000 in the District of Columbia during the third week in July 1947; 3,000 near Riverview, Baltimore County, on September 12, 1908 (F. C. Kirkwood); 2,000 on Coaches Island, Talbot County, on August 30, 1952 (Judge and Mrs. W. L. Henderson); 1,500 at Cambridge, Dorchester County, on August 1, 1947 (I. R. Barnes).

BANDING.—One bird, banded as a juvenal near Laurel, Prince Georges County, on July 1, 1945, was recovered in the District of Columbia on July 27, 1950.

Family CORVIDAE

BLUE JAY *Cyanocitta cristata* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain, Ridge and Valley, Piedmont, Upper Chesapeake, and Western Shore sections; uncommon in the Eastern Shore section. *Transient*: Common in the Allegheny Mountain, Ridge and Valley, Piedmont, Upper Chesapeake, and Western Shore sections; uncommon in the Eastern Shore section. *Wintering*: Fairly common in the Piedmont, Upper Chesapeake, and Western Shore sections; uncommon in the Allegheny Mountain, Ridge and Valley, and Eastern Shore sections.

HABITAT.—Various types of forests, wood margins, and hedgerows.

NESTING SEASON.—Early April to mid-August (nesting peak, late April to mid-June). Nest-building was recorded as early as April 1, 1945, in Prince Georges County (E. Ediger). *Extreme egg dates* (46 nests): April 12, 1929, in Baltimore County (J. Sommer) and July 26, 1925, in the District of Columbia (K. Baird). *Extreme nestling dates* (60 nests): May 8, 1943, in the District of Columbia (Fr. F. Kekich) and August 16, 1951, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 15–25; peak, April 25 to May 15. *Extreme arrival date*: April 8, 1954, in Prince Georges County. *Extreme departure date*: May 27, 1888, in the District of Columbia (C. W. Richmond).

FALL MIGRATION.—*Normal period*: September 5–15 to November 1–10; peak, September 25 to October 20. *Extreme arrival date*: September 3, 1944, in Baltimore County (H. Brackbill). *Extreme departure date*: November 12, 1945, in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—
5 (4.2 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam,

river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

- 5 (2 in 44% acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1944 and 1945 (J. W. Aldrich, A. J. Duvall).
 4 (1.5 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1948 (Kolb, et al., 1948); 3 (1 in 40 acres) in 1949 (Kolb, 1949a) and 1950 (Kolb, 1950); 3 (1 in 37 acres) in 1951 (Kolb and Cole, 1951) and in 1952 (Kaufmann, et al., 1952).

MAXIMUM COUNTS.—*Spring*: 597 at Laurel, Prince Georges County, on May 5, 1955; 346 in the District of Columbia and adjacent Montgomery County on May 10, 1952 (P. A. DuMont, et al.); 200 near Emmitsburg, Frederick County, on April 27 and again on April 28, 1954 (J. W. Richards); 134 at Patuxent Refuge on May 6, 1950; 100 over the Gunpowder River marsh on May 7, 1900 (F. C. Kirkwood). *Fall*: 862 in one-half hour, migrating along the fall line in Prince Georges County on September 29, 1954; 532 in 1½ hours along the fall line in Montgomery County on October 5, 1955 (K. A. Goodpasture); 500 in the Gunpowder River area on October 2, 1902 (F. C. Kirkwood); 150 in Baltimore County on October 4, 1898, and October 30, 1901 (F. C. Kirkwood). *Winter* (Christmas counts): 326 in the Catoctin Mountain area in Frederick County on December 30, 1951; 324 in the Triadelphia Reservoir area on December 24, 1955; 246 in the Annapolis area on January 2, 1955; 246 in the District of Columbia area on January 1, 1955; 237 at Patuxent Refuge on January 12, 1951; 89 in Garrett County on December 31, 1954; 72 in southern Dorchester County on December 28, 1953.

BANDING.—See figure 36.

[BLACK-BILLED MAGPIE] *Pica pica* (Linnaeus)

STATUS.—Hypothetical. This western species has been recorded from St. Marys (June 28, 1931), Frederick (August 1950 to January 2, 1951), Allegany (December 23, 1950), and Montgomery (July 3 to December 18, 1952) Counties. Two of the birds, those in Frederick and Montgomery Counties, later proved to be escaped cage birds, and there is no assurance that the other 2 had not also been transported here in captivity.

COMMON RAVEN *Corvus corax* Linnaeus

STATUS.—Uncommon and local resident in the Allegheny Mountain, and Ridge and Valley sections (formerly more numerous, but increasing in recent years). This species also occurs as a rare visitor in the Piedmont section—records in this area are as follows: Montgomery County, 1 seen near Woodside on January 9, 1949 (J. H. Fales), 1 seen near Rockville on July 4, 1938 (W. H.

FIGURE 36.—Blue Jay banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

Lawrence), and 2 seen near Unity on April 10, 1949 (S. H. Low); Baltimore County, 1 shot at Sunnybrook on November 8, 1929 (Kirkwood, 1930), 1 seen on the Back River Road on February 11, 1930 (F. C. Kirkwood, J. Sommer), and 1 seen at White Marsh on October 12, 1951 (C. D. Hackman); District of Columbia, 1 seen on December 29, 1952 (A. Wetmore). A few other records from the Piedmont section were found to be birds that had escaped from captivity.

HABITAT.—Usually on the higher ridges and in the vicinity of cliffs.

NESTING SEASON.—A pair found in Garrett County at Finzel during the summer of 1899 was reported to have nested there for several years (Preble, 1900), and an occupied nest was found there on May 15, 1903 (Eifrig, 1904). In Allegany County, about 25 pairs were found nesting in a colony at Rocky Gap, 6 miles east of Cumberland (Eifrig, 1904), and on May 15, 1902, several were observed carrying food there (G. Eifrig). A nest containing nearly full-grown young was observed on March 28 and April 4, 1904, on Will's Mountain at the Narrows, a mile northwest of Cumberland (Eifrig, 1905). Three young were banded in an Allegany County nest on May 7, 1950 (S. F. Sigwald).

COMMON CROW *Corvus brachyrhynchos* Brehm

STATUS.—*Breeding and transient:* Common in all sections. *Wintering:* Abundant in the Piedmont section, in the eastern part of the Ridge and Valley section (Hagerstown Valley in Washington County), and in or near the tidewater areas of the Eastern Shore section; common elsewhere in the Eastern Shore section and in the Upper Chesapeake and Western Shore sections; fairly common in the western part of the Ridge and Valley section (west of Hagerstown Valley); uncommon in the Allegheny Mountain section.

HABITAT.—Agricultural lands and adjacent woodland.

NESTING SEASON.—Early March to early June (nesting peak, late March to mid-May). *Extreme egg dates* (243 nests): March 13, 1888, in Baltimore County (W. N. Wholey) and May 20, 1900, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (73 nests): April 7, 1917, in Dorchester County (R. W. Jackson) and June 10, 1948, in Montgomery County.

SPRING MIGRATION.—*Normal period:* February 1-10 to April 10-20; peak, February 20 to March 20.

FALL MIGRATION.—*Normal period:* September 10-20 to November 20-30; peak, October 20 to November 20.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 0.6 (16 in 2,656 acres) in mixed forest and brush habitats (both pine and deciduous) with small scattered agricultural areas and abandoned fields, near the boundary between Anne Arundel and Prince Georges Counties in 1943.
- 0.1 (9 in 11,520 acres) in "general farm land" (various agricultural habitats, chiefly hayfields and pastures, with little cover owing to widespread clean-farming practices) in Frederick County in 1950 (Stewart and Meanley, 1950).

MAXIMUM COUNTS.—*Winter*: 200,000 in a roost in the District of Columbia during the winter of 1919–20 (Oberholser, 1920); 11,000 at Elliott Island, Dorchester County, on December 28, 1953 (J. W. Terborgh, et al.); 10,000 near Hampstead, Carroll County, on January 2, 1950 (Christmas count); 6,542 near St. Michaels, Talbot County, on December 29, 1954 (Christmas count).

BANDING.—One banded as a young bird in St. Marys County on July 26, 1939, was recovered in Montgomery County (letter of December 2, 1939), and an adult banded in Prince Georges County on June 18, 1947, was recovered in Anne Arundel County (about 12 miles from point of banding) on December 27, 1948. Two birds, recovered in Howard and Washington Counties in late fall and winter (November 14, January 7), had both been banded as juvenals in southeastern Quebec in late spring (May 15, June 7).

FISH CROW *Corvus ossifragus* Wilson

STATUS.—*Breeding* (see fig. 37): Fairly common in the tide-water areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; uncommon and local in the Piedmont, and Ridge and Valley sections (occurring in Frederick and Hagerstown Valleys). *Transient*: Common in the Eastern Shore section; fairly common in the Upper Chesapeake section and in the tide-water areas of the Western Shore section; uncommon elsewhere in the Western Shore section and in the Piedmont, and Ridge and Valley sections. *Wintering*: Uncommon in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the interior of these sections and in the Piedmont and Ridge and Valley sections.

HABITAT.—Wood margin, field, shore, and marsh habitats that are adjacent to tidewater; in the interior, also occurs sparingly in Frederick and Washington Counties in agricultural fields and field borders.

NESTING SEASON.—Late March to late June (nesting peak, late April to early June). *Extreme egg dates* (27 nests): March 30.

FIGURE 37.—Breeding range of Fish Crow.

1864, in Montgomery County, near the District of Columbia line (USNM—T. B. Rice) and June 8, 1894, in Worcester County (Kirkwood, 1895). *Extreme nestling dates* (4 nests): May 14, 1932, in Anne Arundel County (M. B. Meanley) and June 8, 1894, in Worcester County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period:* February 1–10 to May 1–10; peak, March 1 to April 15.

FALL MIGRATION.—*Normal period:* September 20–30 to December 15–25; peak, October 20 to December 10.

MAXIMUM COUNTS.—*Spring:* 250 at Allens Fresh, Charles County, on March 29, 1953 (J. W. Terborgh); 160 in Talbot County on April 2, 1946; 125 in Worcester County on April 7, 1946. *Fall:* 75 in southern Dorchester County on November 27, 1954; 50 in the District of Columbia on October 13, 1950 (I. R. Barnes). *Winter:* 200 in the District of Columbia on December 23, 1906 (W. L. McAtee); 175 at Pt. Lookout, St. Marys County, on December 23, 1938 (Christmas count); 103 at the Susquehanna Flats on December 20, 1947 (Christmas count).

Family PARIDAE

BLACK-CAPPED CHICKADEE *Parus atricapillus* Linnaeus

STATUS.—*Breeding* (see fig. 38): Common in the Allegheny

FIGURE 38.—Breeding ranges of Black-capped Chickadee and Carolina Chickadee.

Mountain section; fairly common in the western part of the Ridge and Valley section (Allegany County); rare and local in the eastern part of the Ridge and Valley section and in the northern part of the Piedmont section (occurring near the Pennsylvania line in Carroll County and on the higher ridges of Washington and Frederick Counties). *Transient and wintering:* Common in the Allegheny Mountain section and in the western part of the Ridge and Valley section (Allegany County); uncommon in the eastern part of the Ridge and Valley section and in the northern part of the Piedmont section (most numerous in the mountains and along the Potomac River in Washington and Frederick Counties and in the tier of counties along the Pennsylvania State line); rare and irregular (fairly common in flight years) elsewhere in the Piedmont, Upper Chesapeake, Western Shore, and Eastern Shore sections—much more numerous than usual during the winter of 1884–85 in Baltimore County (A. H. Jennings) and the District of Columbia (Palmer, 1885), and during the winter of 1954–55 throughout the State.

HABITAT.—Various forest and wood margin types; in winter shows a greater preference for weedy fields and pine stands than does the Carolina Chickadee.

NESTING SEASON.—In Garrett County an occupied nest was found on May 29, 1949, and nest-building was observed on June 26, 1949. *Extreme nestling dates* (3 nests): June 12, 1955 (J. R. Worthley), and June 17, 1955 (Dr. and Mrs. J. R. Travis), all in Garrett County.

PERIOD OF OCCURRENCE OUTSIDE OF BREEDING AREAS.—*Extreme arrival dates*: October 15, 1892, and October 15, 1893, in Baltimore County (F. C. Kirkwood); October 22, 1954, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); October 23, 1954, in Baltimore County (C. M. Buchanan); October 24, 1954, in Prince Georges County; October 24, 1896, in the District of Columbia (USNM—W. Palmer). *Occurrence peak*: November 1 to March 1. *Extreme departure dates*: May 8, 1955, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); May 6, 1955, in Baltimore County (S. W. Simon); April 24, 1955, in Prince Georges County; April 23, 1885, in the District of Columbia (USNM—A. H. Jennings).

MAXIMUM COUNTS.—*Spring*: 25+ near Oakland, Garrett County, on March 14, 1953 (K. F. Sanders, H. E. Slater). *Winter* (Christmas counts during flight year, 1954–55): 173 in the District of Columbia area on January 1, 1955; 158 in Garrett County on December 31, 1954; 138 in the Catoctin Mountain area in Frederick and Washington Counties on January 1, 1955; 14 in the St. Michaels area, Talbot County, on December 29, 1954; 12 in the Ocean City area on December 27, 1954. *Winter* (Christmas counts during other years): 104 in Allegany County on December 31, 1949; 85 in the Catoctin Mountain area, Frederick County, on January 2, 1950; 7 near Perry Point, Cecil County, on December 27, 1952.

BANDING.—One banded in north-central Connecticut on January 13, 1925, was recovered in Baltimore County on April 12, 1930.

CAROLINA CHICKADEE *Parus carolinensis* Audubon

STATUS.—Permanent resident (see fig. 38). Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont section and the eastern part of the Ridge and Valley section (Frederick and Washington Counties); uncommon in Allegany County.

HABITAT.—Various forest and wood margin types.

NESTING SEASON.—Mid-March to late June (nesting peak, mid-April to late May). Nest-building was observed in Montgomery County as early as March 18, 1950 (W. B. Tyrrell). A female

with an egg nearly ready to be laid was collected in the District of Columbia on April 11, 1888 (Cooke, 1929). *Extreme egg dates* (47 nests): April 16, 1913, in Dorchester County (Jackson, 1941) and May 29, 1950, in Prince Georges County. *Extreme nestling dates* (45 nests): April 30, 1949, and June 29, 1944, both in Prince Georges County. Young not long out of the nest were observed on July 23, 1893 (Kirkwood, 1895).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 9 (7 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1951; 6 (5 in 80 acres) in 1949; 5 (4 in 80 acres) in 1948, 1952, and 1953 (Trever, 1952; Clagett, 1952 and 1953); 4 (3½ in 80 acres) in 1954 (Wright, 1955).
- 6 (2 in 32½ acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1944; 5 (4.3 in 85 acres) in other areas of this habitat in 1945 (Stewart, et al., 1946).
- 5 (1.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 5 (1.5 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1948 (Oresman, et al., 1948).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 816 in the District of Columbia area on January 1, 1955; 508 in the Ocean City area on December 27, 1954; 372 in the Annapolis area on January 1, 1956; 347 in the St. Michaels area, Talbot County, on December 29, 1955; 219 at Patuxent Refuge on January 12, 1950; 185 in southern Dorchester County on December 28, 1953.

BOREAL CHICKADEE *Parus hudsonicus* Forster

STATUS.—Accidental visitor. One was seen near Rockville, Montgomery County, on December 12 (P. G. DuMont, K. Stecher) and was collected (USNM) at the same location on December 19, 1954 (Stecher, 1955). On January 25, 1955, 1 was seen at the feeding station of Mrs. H. W. Smith in Cumberland, and at about the same time another was seen, also in Cumberland (fide N. Livingston).

TUFTED TITMOUSE *Parus bicolor* Linnaeus

STATUS.—Permanent resident. Common in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; fairly common in the Ridge and Valley section; uncommon in the Allegheny Mountain section.

HABITAT.—Various types of deciduous forest.

NESTING SEASON.—Mid-March to mid-July (nesting peak, mid-April to early June). Nest-building was recorded as early as

March 14, 1939, in Montgomery County (W. B. Tyrrell). *Extreme egg dates* (73 nests): April 14, 1946, in Montgomery County (J. N. Hamlet) and June 26, 1918, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (36 nests): May 7, 1914, in Prince Georges County (A. Wetmore) and July 10, 1953, in Caroline County (M. W. Hewitt). Young not long out of the nest were recorded on August 3, 1919 (Cooke, 1929), and on August 4, 1894 (Kirkwood, 1895).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 13 (11 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 12 (4 in 32½ acres) in another area of the same habitat in 1944.
- 13 (3 in 23½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 12 (10 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1951; 6 (5 in 80 acres) in 1948, 1949, 1953, and 1954 (Trever, 1952; Clagett, 1953; Wright, 1955); only 2 pairs were present in 1952 (Clagett, 1952).
- 11 (4 in 37 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1951, 1952, and 1953 (Kolb and Cole, 1951; Kaufmann, et al., 1952; Cole and Kolb, 1953); 6 (2.5 in 40 acres) in 1948 (Kolb, et al., 1948); 5 (2 in 40 acres) in 1949 and 1950 (Kolb, 1949a and 1950).
- 11 (2 in 18½ acres) in "second growth river swamp" (red maple, sweetgum, black gum, etc. with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 10 (3.5 in 36 acres) in "central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 9 (4 in 44½ acres) in river bluff forest (beech, white oak, and scarlet oak) in Prince Georges County in 1945; 7 (3 in 44½ acres) in 1944 (J. W. Aldrich, A. J. Duvall).
- 7 (2 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 6 (2 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, and Spanish oak) in Prince Georges County in 1944.
- 6 (1.5 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 476 in the District of Columbia area on December 31, 1955; 290 in the Ocean City area on December 27, 1954; 217 in the Annapolis area on January 1, 1956; 180 on Patuxent Refuge on December 28, 1945; 112 in the Catoctin Mountain area in Frederick and Washington Counties on January 2, 1954; 92 in southern Dorchester County on December 28, 1955; 84 in Allegany County on December 31, 1949.

Family SITTIDAE

WHITE-BREASTED NUTHATCH *Sitta carolinensis* Latham

STATUS.—*Breeding* (see fig. 39): Fairly common in the Allegheny Mountain and Piedmont sections; fairly common locally in the Eastern Shore and Western Shore sections (most numerous in the swamp along the Pocomoke River and its tributaries, and in the Greensand District of east-central Prince Georges County—see Harper, 1918; rare and irregular elsewhere); uncommon in the Ridge and Valley section; rare or absent in the Upper Chesapeake section. *Transient and wintering*: Usually fairly common in all sections, but varying considerably in abundance from year to year.

HABITAT.—Flood-plain and swamp forests; and moist deciduous forest types on the upland.

NESTING SEASON.—Late March to mid-July (nesting peak, mid-April to late May). Nest-building was recorded as early as March 31, 1894, in Baltimore County (P. T. Blogg). *Extreme egg dates* (11 nests): April 7, 1894, in Baltimore County (P. T. Blogg) and May 17, 1881, in Washington County (Small, 1881b). *Extreme nestling dates* (11 nests): April 30, 1948, in the District of Columbia (T. W. Donnelly) and June 10, 1956, in Garrett

FIGURE 39.—Breeding range of White-breasted Nuthatch.

County (G. Knight). Nest-building was recorded as late as June 1, 1935, in Allegany County (L. M. Llewellyn). Kirkwood (1895) recorded young just out of the nest as late as July 26, 1894.

SPRING MIGRATION.—*Normal period:* February 25–March 5 to April 25–May 5; peak, March 5 to April 10.

FALL MIGRATION.—*Normal period:* September 15–25 to November 1–10; peak, October 10 to November 1. As early as the first week in July there frequently is a light movement of White-breasted Nuthatches into areas that are within 5 or 10 miles of its nesting range.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 6 (2 in 36 acres) in "virgin central hardwood forest" (white oak–tulip–poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 6 (5 in 80 acres) in "central hardwood forest (oaks–tulip–poplar) with scattered pine" in the District of Columbia in 1948; 5 (4 in 80 acres) in 1951, 3 (2.5 in 80 acres) in 1949 (Trever, 1952); and 2.5 (2 in 80 acres) in 1952 and 1953 (Clagett, 1952 and 1953).
- 5 (2 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1949 (Kolb, 1949a); 5 (2 in 37 acres) in 1951, 1952, and 1953 (Kolb and Cole, 1951; Kaufmann, et al., 1952; Cole and Kolb, 1953); 3 (1 in 40 acres) in 1948 (Kolb, et al., 1948) and in 1950 (Kolb, 1950).
- 5 (1.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 188 in the District of Columbia area on January 1, 1955; 71 at Patuxent Refuge on January 14, 1952; 71 in the Catoctin Mountain area on December 30, 1951; 36 near Chase, Baltimore County, on December 29, 1951; 25 in southeastern Worcester County on December 22, 1947; 22 in Garrett County on December 31, 1954.

RED-BREASTED NUTHATCH *Sitta canadensis* Linnaeus

STATUS.—*Breeding* (?): Rare and irregular in the Allegheny Mountain section. "A small flock of these birds, evidently a family, was seen on the branches of a tall dead tree, in the deep woods near Bittering [during the period June 17–July 24, 1899]. It was also seen near Finzel about the middle of May when it was undoubtedly breeding" (Preble, 1900). A singing male was observed along the Youghiogheny River on June 4, 1919 (J. M. Sommer), and this species has also been referred to as nesting along the Youghiogheny River by Brooks (1937). Brooks reports that 1 was seen in the Maryland portion of Cranesville Swamp in June, 1932. *Transient and wintering:* Of irregular occurrence in all sections but usually most numerous in the Piedmont and

Western Shore sections. This species is very erratic in its movements and extremely variable in abundance from year to year, ranging from being entirely absent to locally common. *Summer vagrant*: One was seen in Prince Georges County on July 22, 1943 (Stewart, et al., 1952).

HABITAT.—*Breeding*: Stands of red spruce and hemlock. *Transient and wintering*: Most numerous in stands of pine, particularly scrub pine and pitch pine; also occurs occasionally in various deciduous forest types.

SPRING MIGRATION.—*Normal period*: March 5–15 to May 5–15; peak, March 20 to April 10. *Extreme departure dates*: May 23, 1949, in Prince Georges County; May 18, 1886 (H. M. Smith), and May 18, 1913 (J. H. Riley), in the District of Columbia.

FALL MIGRATION.—*Normal period*: September 1–10 to October 25–November 5; peak, September 20 to October 20. *Extreme arrival dates*: August 22, 1903, in the District of Columbia (W. L. McAtee); August 30, 1948, in Prince Georges County; August 31, 1918, in Montgomery County (R. W. Moore).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 109 in the District of Columbia area on January 1, 1955; 58 at Patuxent Refuge on January 14, 1952; 36 near Denton, Caroline County, on January 1, 1955; 24 in the Ocean City area on December 27, 1954; 23 at Point Lookout, St. Marys County, on December 22, 1937.

BROWN-HEADED NUTHATCH *Sitta pusilla* Latham

STATUS.—Permanent resident (see fig. 40). Common in the tidewater areas of Somerset, Wicomico, Dorchester, and Talbot Counties, and locally in the coastal area of Worcester County; fairly common in the tidewater areas of southern St. Marys County; uncommon and local in the tidewater areas of Queen Annes County and southern Calvert County.

HABITAT.—Open stands of loblolly pine near tidewater (usually at the margins of tidal marshes).

NESTING SEASON.—Early April to mid-June. *Extreme egg dates* (7 nests): April 15, 1931, in St. Marys County (E. J. Court) and May 7, 1920, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (4 nests): May 5, 1925, in Talbot County (R. W. Jackson) and June 10, 1896, in Somerset County (F. C. Kirkwood). Kirkwood (1895) also recorded a pair building a nest in Queen Annes County as late as May 25, 1892.

MAXIMUM COUNTS.—*Winter*: 214 in southern Dorchester County on December 28, 1953 (Christmas count); 130 in the St.

FIGURE 40.—Breeding ranges of Brown-headed Nuthatch and Hermit Thrush.

Michaels area, Talbot County, on December 29, 1955 (Christmas count); 127 along the western shores of Sinepuxent and Newport Bays on December 27, 1953 (Ocean City Christmas count); 70 at Point Lookout, St. Marys County, on January 31, 1954 (J. W. Terborgh, et al.).

Family CERTHIIDAE

BROWN CREEPER *Certhia familiaris* Linnaeus

STATUS.—*Breeding* (?): Possibly nests occasionally in the Allegheny Mountain section—a female was collected in Garrett County at Bittinger on June 28, 1899 (Preble, 1900). This species has been found during the nesting season in the West Virginia portion of Cranesville Swamp (Brooks, 1936c). *Transient and wintering*: Fairly common in all sections. *Summer vagrant*: A singing bird was observed on Patuxent Refuge, Prince Georges County, on June 2, 1944 (Stewart, et al., 1952); 1 was observed near Pikesville, Baltimore County, on July 22, 1949 (I. K. Kuch); 1 was recorded at Gibson Island, Anne Arundel County, on August 30, 1953 (Mrs. W. L. Henderson).

HABITAT.—Various types of deciduous and coniferous forests.

SPRING MIGRATION.—*Normal period*: March 15–25 to April 20–30; peak, March 25 to April 15. *Extreme departure dates*:

May 13, 1930, in Baltimore County (W. Marshall); May 12, 1951, in Montgomery County (C. N. Mason, K. Niles); May 8, 1954, in Caroline County (N. W. Hewitt).

FALL MIGRATION.—*Normal period*: September 25–October 5 to November 10–20; peak, October 15 to November 10. *Extreme arrival dates*: September 11, 1911, in Montgomery County (R. W. Moore); September 14, 1913, in Baltimore County (J. M. Sommer).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 87 in the District of Columbia area on January 1, 1955; 58 in the Ocean City area on December 27, 1954; 48 at Patuxent Refuge on January 14, 1952; 31 in southern Dorchester County on December 28, 1955; 21 in the Catoctin Mountain area of Frederick and Washington Counties on January 2, 1954.

Family TROGLODYTIDAE

HOUSE WREN *Troglodytes aedon* Vieillot

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Uncommon in Worcester County; rare in Somerset, Wicomico, Dorchester, and St. Marys Counties; casual elsewhere—recorded in Prince Georges County on February 11, 1953 (L. W. Oring), in Baltimore County on December 11, 1948 (H. Kolb), December 16, 1928 (J. M. Sommer), December 30, 1952–January 2, 1953, and January 3, 1954 (E. Willis), in Frederick County on December 27, 1952 (Mrs. J. W. Richards), in Charles County on January 30, 1954 (J. W. Terborgh, R. R. Kerr).

HABITAT.—Various edge habitats, including brushland, wood margins, hedgerows, orchards, and residential areas.

NESTING SEASON.—Early May to early September (nesting peak, mid-May to late July). *Extreme egg dates* (248 nests): May 3, 1946, in Prince Georges County and August 12, 1947, in Prince Georges County (E. G. Cooley). *Extreme nestling dates* (317 nests): May 22, 1945, in Prince Georges County (E. G. Cooley) and September 2, 1919, in Baltimore County (W. Marshall).

SPRING MIGRATION.—*Normal period*: April 10–20 to May 10–20; peak, April 20 to May 5. *Extreme arrival dates*: March 26, 1910, in the District of Columbia (E. B. Gregg); March 26, 1950, in Montgomery County (P. A. DuMont); April 2, 1949, in Prince Georges County (E. G. Davis).

FALL MIGRATION.—*Normal period*: September 1–10 to October 10–20; peak, September 10 to September 25. *Extreme departure dates*: November 19, 1950, in the District of Columbia (T. D.

Burleigh); November 13, 1954, in Baltimore County (C. M. Buchanan).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 100 (5 in 5 acres) in farmyard and orchard in Prince Georges County in 1948.
- 58 (13 in 22½ acres) in abandoned field saturated with nesting boxes in Prince Georges County in 1949.
- 50 (15 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over poorly drained upland forest) in Prince Georges County in 1947 (Stewart, et al., 1947).
- 47 (7 in 15 acres) in abandoned farmyard in Prince Georges County in 1947.
- 15 (3 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1942.
- 14 (3 in 22 acres) in "unsprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 11 (2 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).

MAXIMUM COUNTS.—*Spring*: 135 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 75 at Unity, Montgomery County, on May 9, 1953 (S. H. Low); 31 at Greenbelt, Prince Georges County, on May 9, 1953 (L. W. Oring, et al.). *Fall*: 13 at Patuxent Refuge on September 13, 1943. *Winter*: 4 in the Ocean City area on December 27, 1950 (Christmas count); 3 at Point Lookout, St. Marys County, on January 31, 1954 (R. R. Kerr, J. W. Terborgh).

BANDING.—One banded as a nestling at Unity, Montgomery County, on July 26, 1953, was recovered 15 miles away at Beltsville, Prince Georges County, on May 28, 1954.

WINTER WREN *Troglodytes troglodytes* (Linnaeus)

STATUS.—*Breeding*: Formerly locally common in the Allegheny Mountain section, occurring in Garrett County along the headwaters of the Casselman River in the valley between Negro and Meadow Mountains (Behr, 1914); they were last recorded in this area by Eifrig (1915 and 1920), who found a small colony during the summer of 1914; the only recent indication of this species breeding in Garrett County was 1 seen in summer in the Maryland portion of Cranesville Swamp (M. G. Brooks). *Transient*: Fairly common in all sections. *Wintering*: Locally common in the Eastern Shore section (most numerous along the Pocomoke River and its tributaries); fairly common in the Western Shore and Upper Chesapeake sections; uncommon in

the Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

HABITAT.—*Breeding*: To be looked for in boreal types of forest that contain red spruce. *Transient and wintering*: Swamp and flood-plain forests and rich, moist forests on the upland.

SPRING MIGRATION.—*Normal period*: March 25–April 5 to April 25–May 5; peak, April 10 to April 25. *Extreme departure dates*: May 10, 1950, in Prince Georges County; May 9, 1909, in Montgomery County (A. M. Stimson); May 9, 1950, in Baltimore County (A. A. Brandenburg).

FALL MIGRATION.—*Normal period*: September 25–October 5 to November 15–25; peak, October 10 to November 10. *Extreme arrival dates*: September 19, 1953, in Washington County (R. S. Stauffer); September 20, 1947, in Baltimore County (H. Kolb); September 21, 1901, in Allegany County (G. Eifrig); September 23, 1948, in Frederick and Prince Georges Counties.

MAXIMUM COUNTS.—*Spring*: 11 on April 27, 1950, on Patuxent Refuge. *Fall*: 10 on October 27, 1943, on Patuxent Refuge. *Winter* (Christmas counts): 68 in the Ocean City area on December 27, 1954; 47 in southeastern Worcester County on December 23, 1946; 39 in southern Dorchester County on December 28, 1953; 33 in the District of Columbia area on January 1, 1955; 26 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954; 19 at Patuxent Refuge on December 29, 1944; 18 in the Catoctin Mountain area in Frederick and Washington Counties on January 2, 1954; 5 in Garrett County on December 31, 1954.

BANDING.—One banded in southeastern Massachusetts on October 10, 1940, was recovered in Somerset County on April 8, 1941.

BEWICK'S WREN *Thryomanes bewickii* (Audubon)

STATUS.—*Breeding* (see fig. 41): Fairly common in the western part of the Ridge and Valley section (east to Indian Springs); uncommon in the Allegheny Mountain section and in the eastern part of the Ridge and Valley section; casual in the Piedmont section—found nesting near Cooksville, Howard County, in 1949 (D. H. McIntosh), and at Millers, Carroll County, in 1954 (J. R. Worthley). *Transient*: Uncommon in the Ridge and Valley, and Allegheny Mountain sections; rare in the Piedmont section; casual in the Western Shore, Upper Chesapeake, and Eastern Shore sections—1 collected in Prince Georges County on April 8, 1944 (Stewart, et al., 1952), 1 seen in Baltimore County on

FIGURE 41.—Breeding range of Bewick's Wren.

April 16, 1950 (E. Willis), 1 seen in Worcester County on April 3, 1948 (S. H. Low). *Summer vagrant*: Rare and irregular in the Piedmont section. *Wintering*: Casual—recorded in Worcester County in 1953 (J. E. Knudson), in Caroline County in 1954-55 (Mr. and Mrs. A. J. Fletcher), in Baltimore County in 1953-54 (Worthley, 1954), in Montgomery County in 1954 (S. W. Simon, R. P. Dubois), and in the District of Columbia in 1890 (C. W. Richmond).

HABITAT.—Various edge habitats in the vicinity of farm houses or in towns.

NESTING SEASON.—Late April to mid-July. *Extreme egg dates* (8 nests): April 30, 1890, in Washington County (G. H. Gray) and June 26, 1907, in Allegany County (F. C. Kirkwood). *Extreme nestling dates* (10 nests): May 12, 1907 (young left nest), and July 13, 1907, both in Allegany County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: March 25–April 5 to April 25–May 5; peak, April 5 to April 25. *Extreme arrival date*: March 12, 1901, in Allegany County (G. Eifrig). *Extreme departure date*: May 9, 1953, in Montgomery County (S. H. Low).

FALL MIGRATION.—*Extreme arrival date*: September 9, 1928, in Montgomery County (H. H. T. Jackson). *Extreme departure dates*: November 23, 1954, in Washington County (Mrs. R. B.

Green); November 22, 1953, in Montgomery County (T. W. Davis).

CAROLINA WREN *Thryothorus ludovicianus* (Latham)

STATUS.—Permanent resident. Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section. Periodically, large numbers of this species are winter-killed; during subsequent years, a gradual build-up to usual population levels may be noted.

HABITAT.—Brushy swamps and flood-plain forests and rich, moist forests on the upland.

NESTING SEASON.—Late March to late September (nesting peak, mid-April to early July). Nest-building was recorded as early as March 22, 1954, in Baltimore County (E. Willis). *Extreme egg dates* (43 nests): April 5, 1949, in Baltimore County (I. K. Kuch) and August 10, 1893, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (34 nests): April 25, 1926, in the District of Columbia (W. H. Ball) and September 26, 1955, in Baltimore County (M. R. Gatchell).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 11 (9 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1951, absent in 1948 and 1949 (Trever, 1952); also absent in 1952 and 1954, 1 pair in 1953 (Clagett, 1953).
- 8 (3 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 6 (4.8 in 85 acres) in "well-drained flood-plain forest" (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 6 (2 in 32% acres) in another area of this habitat in 1944.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 286 in the Ocean City area on December 27, 1954; 207 in the Annapolis area on January 2, 1955; 181 in the District of Columbia area on January 1, 1955; 148 in the St. Michaels area, Talbot County, on December 29, 1955; 55 in the Catoctin Mountain area on January 2, 1954.

LONG-BILLED MARSH WREN *Telmatodytes palustris* (Wilson)

STATUS.—*Breeding* (see fig. 4): Abundant in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sections. *Transient*: Abundant in the tidewater areas of the Eastern Shore, Western Shore, and Upper Chesapeake sec-

tions; uncommon elsewhere in all sections. *Wintering*: Fairly common in the tidewater areas of Somerset, Wicomico, and Dorchester Counties; uncommon in the tidewater areas elsewhere in the Eastern Shore and Western Shore sections; rare in the tidewater areas of the Upper Chesapeake section.

HABITAT.—In the salt marshes during the breeding season this species occurs in the greatest numbers in stands of needlerush but also occurs regularly in areas of salt-meadow grass and salt-water cordgrass that contain scattered shrubs of marsh elder and sea myrtle. In brackish tidal marshes, this species is found abundantly in marshes of cattail, salt reed-grass and reed. It also occurs commonly in Olney three-square marshes, especially when scattered shrubs are present. Transients occur in large numbers in many types of tidal marsh, and are found sparingly in the interior marshes and marsh-meadows. Wintering birds are usually most common in stands of salt reed-grass.

NESTING SEASON.—Early May to late August (nesting peak, early June to late July). *Extreme egg dates* (217 nests): May 3, 1938, in St. Marys County (R. C. McClanahan) and August 9, 1950, in Baltimore County (E. Willis). *Extreme nestling dates* (78 nests): June 9, 1950, and August 24, 1952, both in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 10–20; peak, April 25 to May 10.

FALL MIGRATION.—*Normal period*: September 5–15 to October 25–November 5; peak, September 15 to October 15. *Extreme arrival date*: August 31, 1916, in the District of Columbia (Mr. and Mrs. L. D. Miner). *Extreme departure date*: November 16, 1926, in the District of Columbia (W. H. Ball).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

104 (23.2 in 22¼ acres) in a uniform, nearly pure stand of "needlerush marsh" in Somerset County in 1948 (Springer and Stewart, 1948a).

36 (6 in 16½ acres) in "cattail marsh" (mostly narrow-leaved cattail with scattered swamp rose-mallow) in Calvert County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS.—*Fall*: 50 in the Gunpowder River marsh on October 25, 1900 (F. C. Kirkwood). *Winter* (Christmas counts): 127 in southern Dorchester County on December 28, 1953; 27 in the Ocean City area on December 21, 1952.

SHORT-BILLED MARSH WREN *Cistothorus platensis* (Latham)

STATUS.—*Breeding* (see fig. 42): Common in the tidewater

FIGURE 42.—Breeding range of Short-billed Marsh Wren.

areas of Somerset, Wicomico, and Dorchester Counties; uncommon in the tidewater areas elsewhere in the Eastern Shore and Western Shore sections; uncommon and local in the Allegheny Mountain section; rare and irregular in the interior of the Western Shore section and in the Piedmont section—recorded in summer from Baltimore County (F. C. Kirkwood, H. Kolb), Montgomery County (P. F. Springer), Prince Georges County (Stewart, et al., 1952), and Frederick County. *Transient*: Fairly common in the tidewater areas of the Eastern Shore section; rare elsewhere in all sections. *Wintering*: Common in the tidewater areas of Somerset, Wicomico, and Dorchester Counties; uncommon in the coastal area of Worcester County; rare in the tidewater areas of Talbot, Queen Annes, St. Marys, and Charles Counties.

HABITAT.—In the Eastern Shore and Western Shore sections, this species is most commonly found in switchgrass meadows situated along the inner margins of the tidal marshes; in the Allegheny Mountain section, the open sedge-meadows situated in boreal bogs are preferred. Other marsh types, including mixed brush-wet meadow areas of the barrier beaches, saltmarsh bulrush stands, and mixed stands of Olney three-square and salt-meadow grass are occasionally inhabited. This species also

occurs irregularly on the upland in orchard grass hayfields or pastures.

NESTING SEASON.—In the District of Columbia, 1 was seen that was apparently nest-building on May 26, 1935, and a cock nest was found on June 15, 1935 (Ball and Wallace, 1936); other cock nests were found in this same area on June 25, 1935 (Ulke, 1935). At least 8 cock nests were found near Dames Quarter in Somerset County on June 20, 1952 (N. Hotchkiss and E. Miller). A nest containing heavily incubated eggs was found on June 25, 1935, in St. Marys County near Point Lookout (Wetmore, 1935). On September 13, 1896, a young bird was observed begging an adult for food in Dulaney Valley in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period:* May 1–5 to May 20–25; peak, May 5 to May 20. *Extreme arrival dates:* April 27, 1953, in Prince Georges County; April 30, 1929, in Montgomery County (W. H. Ball). *Extreme departure date:* June 8, 1948, in Prince Georges County.

FALL MIGRATION.—*Extreme dates:* September 23, 1951, in Charles County (M. C. Crone) and November 13, 1929, in Calvert County (Ball, 1930b). In Garrett County this species was reported to be fairly common during early September (M. G. Brooks).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

10 (3 in 30 acres) in "switchgrass marsh-meadow" in Somerset County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS.—*Spring:* 8 at Patuxent Refuge on May 9, 1953; 7 at White Marsh, Baltimore County, on May 9, 1953 (C. D. Hackman). *Fall:* 8 at Plum Point, Calvert County, on November 13, 1929 (Ball, 1930c). *Winter* (Christmas counts): 164 in southern Dorchester County on December 23, 1951; 35 in the Ocean City area on December 21, 1952.

Family MIMIDAE

MOCKINGBIRD *Mimus polyglottos* (Linnaeus)

STATUS.—Semi-permanent resident (slight migratory movement between September 10 and October 10). Common in the Western Shore and Eastern Shore sections; fairly common in the Upper Chesapeake section and in the southern part of the Piedmont section (Howard and Montgomery Counties); uncommon elsewhere in the Piedmont section and in the eastern part of the Ridge and Valley section (Frederick and Washington

Counties); rare in the western part of the Ridge and Valley section (Alleghany County) and in the Allegheny Mountain section.

Coues and Prentiss (1883) called the Mockingbird a rare summer resident at Washington, D. C., arriving on April 25 and departing in the middle of September. Kirkwood (1895) stated that in 1895, it was resident in the southern counties of Maryland and regular in summer as far north as Kent and Anne Arundel Counties; in the remainder of the State, he considered it only a straggler, and he cited all known occurrences in the Baltimore area, including 2 nests with eggs at Towson in 1882. Starting in 1901 this species began a gradual increase in the Baltimore area, but it was not until 1905 in Washington, D. C., and 1908 in Baltimore County, that it began to be seen regularly throughout the year. The first nesting record for western Maryland was obtained in 1909 at Oldtown, Alleghany County (Eifrig, 1909), and the first wintering bird was recorded in Alleghany County in 1920-21 (Eifrig, 1921).

HABITAT.—Hedgerows, wood margins, and other edge habitats in the vicinity of residential and agricultural areas.

NESTING SEASON.—Early April to early September (nesting peak, late April to mid-July). Nest-building was recorded in Prince Georges County as early as April 7, 1948 (A. C. Martin). *Extreme egg dates* (98 nests): April 10, 1945 (B. Hoyland), and August 21, 1954, both in Prince Georges County. *Extreme nestling dates* (103 nests): April 19, 1945, in Prince Georges County (B. Hoyland) and September 1, 1953, in Carroll County (D. H. McIntosh).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 15 (3 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1951 and 1952; 10 (2 in 20 acres) in 1942.
- 2 (3 in 175 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1951.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 278 in the Annapolis area on January 1, 1956; 179 in the Triadelphia Reservoir area on December 24, 1955; 163 in the Washington, D. C., area on January 1, 1955; 137 in the St. Michaels area, Talbot County, on December 29, 1955; 70 in the Ocean City area on December 27, 1955; 33 in the Catoctin Mountain area of Frederick and Washington Counties on December 31, 1955.

BANDING.—Two young birds banded in Prince Georges County

in summer (June 7, July 9) were recovered in Anne Arundel and Baltimore Counties in May and September (both between 15 and 20 miles from the point of banding). One banded in Anne Arundel County on September 12, 1954, was recovered in north-central West Virginia on May 20, 1956.

CATBIRD *Dumetella carolinensis* (Linnaeus)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Uncommon in Worcester County and uncommon locally in Charles and St. Marys Counties; rare elsewhere in the Eastern Shore and Western Shore sections; casual in the Upper Chesapeake and Piedmont sections (see Cooke, 1929, and Brackbill, 1942—also other scattered records); accidental in the Ridge and Valley section—1 recorded at Cumberland on January 23, 1921 (Eifrig, 1921), and 1 seen at McCoole, Allegany County, on December 21, 1947 (L. M. Llewellyn).

HABITAT.—Especially characteristic of shrub swamps and other brush areas on wet or moist sites; also in hedgerows and wood margins, and in edge habitats in residential areas.

NESTING SEASON.—Late April to late August (nesting peak, late May to mid-July). Nest building was recorded as early as April 30, 1953, in Anne Arundel County (Mrs. W. L. Henderson). *Extreme egg dates* (589 nests): May 6, 1956, in Prince Georges County (E. C. Robbins) and August 17, 1950, in Baltimore County (E. Willis). *Extreme nestling dates* (298 nests): May 25, 1900, in the District of Columbia (Bartsch, 1900) and August 27, 1950, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period*: April 20–30 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates*: April 14, 1952, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 15, 1922, in the District of Columbia (L. D. Miner); April 15, 1938, in Prince Georges County (R. Overing); April 15, 1940, in Baltimore County (E. A. McGinity). *Extreme departure date*: May 31, 1914, in the District of Columbia (Oberholser, 1919).

FALL MIGRATION.—*Normal period*: September 1–10 to October 20–30. *Extreme departure dates*: December 1, 1955, in Frederick County (J. W. Richards); November 28, 1950, in Anne Arundel County (Mr. and Mrs. G. Englar); November 23, 1936, in Baltimore County (E. A. McGinity); November 20, 1949, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 80 (10.4 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, etc.) in Prince Georges County in 1945.
- 74 (7 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young red spruce, hemlock, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 47 (9 in 19.2 acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 42 (8 in 19.2 acres) in 1946 (Cooley, 1947).
- 35 (19 in 53½ acres) in brushy, poorly drained abandoned farmland in Prince Georges County in 1948; 22 (13 in 58 acres) in another area of similar habitat in 1947.
- 9 (1.5 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).

MAXIMUM COUNTS.—*Spring*: 200+ in the Port Tobacco area, Charles County, on May 11, 1943 (I. N. Gabrielson, et al.); 150 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 77 in the Rosedale area, Baltimore County, on May 6, 1950 (D. A. Jones); 65 in Howard County on May 8, 1954; 59 each in 2 District of Columbia areas on May 12, 1913 (Oberholser, 1917a). *Winter* (Christmas counts): 30 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954; 17 in the Ocean City area on December 27, 1954; 12 in southern Dorchester County on December 28, 1953.

BANDING.—One banded in Cecil County on May 13, 1951, was recovered in northeastern New Jersey on June 10, 1951. Another recovered in Somerset County on May 6, 1950, had been banded in southeastern Pennsylvania on May 14, 1948. One bird banded in the District of Columbia on September 29, 1937, was recovered in southeastern New York on May 30, 1938. One banded at Ocean City on May 13, 1956, was found dead at Amityville, New York, on May 16, 1956.

BROWN THRASHER *Toxostoma rufum* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in all sections. *Wintering*: Uncommon in Worcester County; rare (locally uncommon) elsewhere in the Eastern Shore and Western Shore sections; casual in the Upper Chesapeake section.

HABITAT.—Upland, dry or moist brushland; also in hedgerows, wood margins, and in edge habitats in residential areas.

NESTING SEASON.—Mid-April to early August (nesting peak, mid-May to early July). *Extreme egg dates* (195 nests): April 22, 1954, in Caroline County (Mrs. A. J. Fletcher) and July 20, 1897, in Baltimore County (J. M. Sommer). *Extreme nestling dates* (166 nests): May 10, 1921, in the District of Columbia

(S. F. Blake) and August 6, 1893, in Baltimore County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period:* March 25–April 5 to May 1–10; peak, April 15 to April 30. *Extreme arrival dates:* March 17, 1953, in Caroline County (Mrs. A. J. Fletcher); March 22, 1908, in the District of Columbia (A. H. Howell); March 23, 1953, in Baltimore County (E. Willis). *Extreme departure date:* May 12, 1946, in Baltimore County (H. Brackbill).

FALL MIGRATION.—*Normal period:* September 5–15 to October 5–15. *Extreme departure dates:* November 7, 1955, in Frederick County (Mrs. J. W. Richards); November 5, 1893, in Baltimore County (F. C. Kirkwood); November 4, 1935, in Prince Georges County (R. Overing); November 3, 1930, in Kent County (W. Baker).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 15 (3 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1951 and 1952.
- 7 (2 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1948 (Oresman, et al., 1948); 5 (1.5 in 30 acres) in 1947 (Stewart, et al., 1947).

MAXIMUM COUNTS.—*Spring:* 100 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 35 in Washington County on May 7, 1949 (R. S. and M. Stauffer); 24 in Charles and St. Marys Counties (J. W. Terborgh) and in Howard County on May 8, 1954; 23 in Baltimore County on May 5, 1951 (E. Willis, D. A. Jones). *Winter* (Christmas counts): 60 in the Ocean City area on December 27, 1955; 42 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954; 20 in southern Dorchester County on December 28, 1954.

BANDING.—The winter distribution of Brown Thrashers that nest in Maryland is indicated by 3 records of banded birds that were recovered in the coastal plain of South and North Carolina. Another bird banded as a juvenile in the District of Columbia was found dead the following May in Baltimore, 35 miles to the north. The recovery of a south-bound bird of the year in Hanover County, Virginia, on September 28, 1950, is directly in line between its hatching locality in Prince Georges County, Maryland, and the coastal plain of South Carolina. Another Brown Thrasher, found dead in summer in Connecticut, had been banded at Baltimore during spring migration 4 years earlier, on May 9, 1943.

Family TURDIDAE

ROBIN *Turdus migratorius* Linnaeus

STATUS.—*Breeding*: Common in all sections. *Transient*: Abundant in all sections. *Wintering*: Common in Worcester County; fairly common elsewhere in the Eastern Shore section and locally in the Western Shore section; uncommon in the Upper Chesapeake section; rare in the Piedmont, and Ridge and Valley sections; casual (usually) in the Allegheny Mountain section (Brooks, 1936)—regular occurrence throughout Garrett County during the winter of 1952–53.

HABITAT.—*Breeding*: Marginal habitats with a short-grass herbaceous cover in agricultural and residential areas. *Transient and wintering*: Various marginal and forest habitats that are situated on wet or rich, moist sites.

NESTING SEASON.—Late March to late August (nesting peak, late April to mid-June). Nest-building was recorded as early as March 25, 1921, in Baltimore County (J. M. Sommer). *Extreme egg dates* (476 nests): April 4, 1945, in Prince Georges County (E. G. Cooley) and August 3, 1894, in Baltimore County (F. C. Kirkwood). In Carroll County, an adult was observed building a nest on August 6, 1953, and on August 25 was observed on the nest and turning eggs that were probably infertile (D. H. McIntosh), *Extreme nestling dates* (440 nests): April 22, 1945, in Baltimore County (Brackbill, 1947b) and August 24, 1951, in Caroline County (Mr. and Mrs. A. J. Fletcher).

SPRING MIGRATION.—February 1–10 to April 20–30; peak, March 5 to April 10. *Extreme arrival dates*: January 21, 1922, in Anne Arundel County (fide T. Denmead); January 21, 1944, in Prince Georges County. *Extreme departure dates*: May 2, 1944, and May 2, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 10–20 to November 10–20; peak, October 10 to November 1. *Extreme departure date*: December 5, 1944, in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 45 (9 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1942.
- 24 (5 in 20½ acres) in "moderately sprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 21 (4 in 19.2 acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 16 (3 in 19.2 acres) in 1946 (Cooley, 1947).
- 21 (2 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c.)

FIGURE 43.—Robin banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = banded September through May.

- 17 (3 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 7 (6 in 84 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1949, 5 (4 in 84 acres) in 1952, 4 (3 in 84 acres) in 1950 and 1951.

MAXIMUM COUNTS.—*Spring*: 3,000 near Emmitsburg, Frederick County, on March 19, 1952 (J. W. Richards); 1,500 on the Gunpowder River marsh on March 4, 1902 (F. C. Kirkwood); 750 near Rockville, Montgomery County, on March 20, 1951 (R. F. Deed). *Fall*: 500 on the Gunpowder River marsh on October 23, 1901, and on October 26, 1903 (F. C. Kirkwood); 344 on Patuxent Refuge on October 26, 1944. *Winter* (Christmas counts): 2,931 in the Annapolis area on January 1, 1956; 2,080 in the St. Michaels area, Talbot County, on December 29, 1955; 1,301 in the Ocean City area on December 27, 1953; 1,103 in St. Marys County on January 2, 1956; 620 in southern Dorchester County on December 22, 1952; 369 near Denton, Caroline County, on December 20, 1952; 270 in the Triadelphia Reservoir area on December 24, 1955; 179 in the Catoctin Mountain area on December 31, 1955.

BANDING.—See figure 43.

WOOD THRUSH *Hylocichla mustelina* (Gmelin)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Accidental—1 was closely observed at South Point, Worcester County, on December 22, 1951 (J. H. Buckalew).

HABITAT.—Flood-plain, swamp and upland rich, moist deciduous forests that contain an understory of small trees and shrubs.

NESTING SEASON.—Early May to mid-August (nesting peak, late May to late July). *Extreme egg dates* (353 nests): May 8, 1949, in Montgomery County (W. B. Tyrrell) and July 29, 1900, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (197 nests): May 25, 1907, in the District of Columbia (R. H. True) and August 12, 1900, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: April 20–30 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates*: April 13, 1888, in the District of Columbia (E. M. Hasbrouck); April 13, 1892, in Baltimore County (F. C. Kirkwood); April 13, 1930, in Washington County (W. Middlekauff).

FALL MIGRATION.—*Normal period*: August 20–30 to October 5–15; peak, September 1 to September 20. *Extreme departure dates*: November 27, 1931, in the District of Columbia (P. Knappen); November 21, 1926, in Montgomery County (W. W.

Rubey); November 14, 1948, in Prince Georges County (M. B. Meanley).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 40 (14.5 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 24 (19.5 in 80 acres) in "central hardwood (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1949, 18 (14 in 80 acres) in 1951 and 16 (13 in 80 acres) in 1948 and 1953 (Trever, 1952; Clagett, 1953); 20 (16 in 80 acres) in 1954 (Wright, 1955); 19 (15.5 in 80 acres) in 1952 (Clagett, 1952).
- 24 (20.1 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 15 (5 in 32½ acres) in another area of this habitat in 1944.
- 20 (4 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).
- 18 (2 in 11 acres) in upland seepage swamp forest (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, clammy azalea, maleberry, etc.) in Prince Georges County in 1946.
- 16 (2 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, red maple, etc.) in Prince Georges County in 1945.
- 12 (3.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 12 (1.5 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 11 (2.5 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 10 (4 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1949 (Kolb, 1949a); 8 (3 in 40 acres) in 1948 (Kolb, et al., 1948); 5 (2 in 37 acres) in 1951, 1952, and 1953 (Kolb and Cole, 1951; Kaufmann, et al., 1952; Cole and Kolb, 1953); 3 (1 in 40 acres) in 1950 (Kolb, 1950).
- 10 (2 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1946; 5 (1 in 19½ acres) in 1947 (Cooley, 1947).
- 9 (4 in 44½ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1945; 7 (3 in 44½ acres) in 1944 (J. W. Aldrich, A. J. Duvall).
- 8 (2 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 8 (2 in 23½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 6 (3 in 47½ acres) in hedgerows in agricultural areas and abandoned farmlands (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1945.
- 4 (1.3 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, and Spanish oak) in Prince Georges County in 1944.

MAXIMUM COUNTS.—*Spring*: 160 at Greenbelt, Prince Georges County, on May 9, 1953 (L. W. Oring, et al.); 124 at Middle River, Baltimore County, on May 5, 1951 (E. Willis, D. A. Jones); 122 in Howard County on May 8, 1954. *Fall*: 100 near Gwynns Falls, Baltimore County, on September 21, 1897 (E. Armstrong); 22 on Patuxent Refuge on September 6, 1944.

BANDING.—One banded as a nestling in Baltimore County on June 18, 1949, was found in southern Alabama on March 11, 1950. Bent (1949) gives March 16 as the earliest spring arrival date for anywhere in the United States, so this bird was either an exceptionally early migrant or a winter straggler.

HERMIT THRUSH *Hylocichla guttata* (Pallas)

STATUS.—*Breeding* (see fig. 40): Uncommon and local in the Allegheny Mountain section at elevations above 2,500 feet—occurring in Garrett County near Grantsville, on Little Savage Mountain near Finzel and at Mountain Lake Park (Preble, 1900); on Negro Mountain near Accident (Eifrig, 1938); in Cranberry Swamp near Finzel (G. Eifrig); in Cherry Creek Swamps near Bittering and Piney Creek Swamps near Finzel (Stewart and Robbins, 1947a); in Wolf Swamp; in Cranesville Swamp; in the vicinity of Herrington Manor; and in the vicinity of Deep Creek Lake. *Transient*: Fairly common in all sections. *Wintering*: Common in the swamp along the Pocomoke River and its tributaries; fairly common elsewhere in the Eastern Shore and Western Shore sections; uncommon in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; casual in the Allegheny Mountain section—1 seen at Cranesville swamp on December 31, 1954 (B. Miller, Mrs. G. M. Miller). *Summer vagrant*: Accidental—1 was collected in Howard County on July 9, 1890 (A. Resler).

HABITAT.—*Breeding*: Usually open spruce-hemlock bogs, pine plantations in the vicinity of bogs, and oak and pine barrens on the ridge tops. *Transient and wintering*: Wood margins; hedgerows; and swamp, flood-plain, and upland moist forest types with brushy understory.

SPRING MIGRATION.—*Normal period*: March 20–30 to May 1–10; peak, April 5 to April 25. *Extreme arrival dates*: March 15, 1907, in the District of Columbia (W. W. Cooke); March 15, 1953, in Frederick County (J. W. Richards). *Extreme departure dates*: May 21, 1892, in Baltimore County (G. H. Gray); May 19, 1898, in Harford County (F. C. Kirkwood); May 17, 1891, in the District of Columbia (C. W. Richmond).

FALL MIGRATION.—*Normal period*: October 1–10 to November 25–December 5; peak, October 10 to October 30. *Extreme arrival dates*: September 18, 1900, in the District of Columbia (R. W. Shufeldt); September 19, 1914, in Dorchester County (R. W. Jackson); September 21, 1954, in Frederick County (J. W. Richards).

MAXIMUM COUNTS.—*Spring*: 100+ at Waverly, Baltimore County, on April 15, 1893 (W. N. Wholey); 100 on Negro Mountain, Garrett County, on April 20, 1903 (G. Eifrig). *Fall*: 50 at Tilghman, Talbot County, on October 14, 1953 (R. L. Kleen); 22 at Patuxent Refuge on October 26, 1944. *Winter* (Christmas counts): 130 in the Ocean City area on December 27, 1955; 72 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 64 in southern Dorchester County on December 28, 1953; 44 in the Annapolis area on January 2, 1954; 34 at Patuxent Refuge on December 29, 1944.

BANDING.—One banded at Monkton, Baltimore County, on October 3, 1955, was recovered in north-central South Carolina on October 25, 1955.

SWAINSON'S THRUSH *Hylocichla ustulata* (Nuttall)

STATUS.—*Breeding*: Formerly a regular summer resident in Garrett County—occurring in the vicinity of Jennings, until about 1908 when the last of the spruce was cut (Behr, 1914); a nest with eggs (in sapling 4 feet above ground) near Oakland on June 13, 1917, was reported by J. M. Sommer; there are no recent records. *Transient*: Common in all sections (uncommon in spring in the Eastern Shore section). *Wintering*: Accidental—1 reported at Gibson Island, Anne Arundel County, from January 1 to 18, 1954 (Mrs. W. L. Henderson, Mrs. G. Tappan), and 1 near Berlin, Worcester County, on December 27, 1955 (J. R. Worthley, R. Dubois).

HABITAT.—Flood-plain, swamp, and upland moist forest types with brushy understory.

SPRING MIGRATION.—*Normal period*: May 1–10 to May 20–30; peak, May 10 to May 20. *Extreme arrival dates*: April 20, 1954, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 24, 1948, in Montgomery County (I. R. Barnes); April 25, 1921, in the District of Columbia (H. C. Oberholser); April 28, 1953, in Frederick County (J. W. Richards); April 28, 1954, in Talbot County (R. L. Kleen). *Extreme departure dates*: June 5, 1945, in Prince Georges County; June 4, 1917, in Baltimore County (C. H. Grace).

FALL MIGRATION.—*Normal period:* September 5–15 to October 5–15; peak, September 15 to October 5. *Extreme arrival dates:* August 25, 1944, in Montgomery County (A. Wetmore); August 29, 1955, in Prince Georges County; September 2, 1888, in the District of Columbia (A. K. Fisher). *Extreme departure dates:* November 7, 1954, in Talbot County (R. L. Kleen); October 26, 1954, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); October 24, 1948, in the District of Columbia (J. W. Taylor, Jr.).

MAXIMUM COUNTS.—*Spring:* 66 at Patuxent Refuge on May 10, 1950; 35 in the District of Columbia on May 9, 1953 (C. L. Clagett). *Fall:* 60 at Tilghman, Talbot County, on September 23, 1953 (R. L. Kleen); 18 at Patuxent Refuge on September 6, 1944. Occasionally large numbers are heard calling while migrating overhead at night; high counts include 1,900 at Laurel, Prince Georges County on September 29, 1950; 1,300 in northeastern Garrett County on September 20, 1952; 1,200 in the District of Columbia on October 15, 1947 (I. R. Barnes).

GRAY-CHEEKED THRUSH *Hylocichla minima* (Lafresnaye)

STATUS.—*Transient:* Fairly common in all sections.

HABITAT.—Forest types with brushy understory, particularly flood-plain and swamp forests, and rich moist forests on the upland.

SPRING MIGRATION.—*Normal period:* May 5–15 to May 25–30; peak, May 15 to May 25. *Extreme arrival dates:* April 30, 1956, in Anne Arundel County (Mrs. W. L. Henderson); May 2, 1956, in Prince Georges County; May 3, 1930, in the District of Columbia (W. J. Whiting); May 3, 1953, in Charles County (M. C. Crone, A. R. Stickley, Jr.). *Extreme departure dates:* June 2, 1927, in Baltimore County (J. M. Sommer); June 1, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period:* September 10–20 to October 10–20; peak, September 20 to October 5. *Extreme arrival dates:* September 5, 1950, in Baltimore County (Mr. and Mrs. R. D. Cole); September 5, 1952, in Prince Georges County. *Extreme departure dates:* October 30, 1927, in Montgomery County (W. H. Ball); October 21, 1954, in Prince Georges County.

MAXIMUM COUNTS.—The maximum number seen per day during both spring and fall flights, would usually range between 5 and 10 birds. Much larger numbers were occasionally heard calling while migrating overhead at night; high counts include 90 on May 24, 1947, at Patuxent Refuge; 1,000 on September 29, 1950,

at Laurel, Prince Georges County; and 600 on September 20, 1952, in northeastern Garrett County.

VEERY *Hylocichla fuscescens* (Stephens)

STATUS.—Breeding (see fig. 44): Common in the Allegheny Mountain section; rare in the Ridge and Valley section; rare and local in the Piedmont section. Summer occurrence in the Piedmont section was recorded as follows: In the District of Columbia along Rock Creek (Halle, 1943 and 1948) and in Glover-Archbold Park (Briggs, 1954); in Montgomery County at Forest Glen (in 1952—E. Miller) and Cabin John Park (E. J. Court, 1952); in Baltimore County along Gunpowder Falls near the Carroll County line (M. B. Meanley) and near Lake Roland (A. Simon); in northwest Baltimore City (R. D. Cole); and in Harford County near Norrisville (O. W. Crowder). **Transient:** Fairly common in all sections (in spring, uncommon in the Eastern Shore and Western Shore sections).

HABITAT.—Breeding: Swamp and bog forests and moist forests on the upland; also in plantations of pine situated on moist sites. **Transient:** Forest types with brushy understory, particularly flood-plain and swamp forests, and rich moist forests on the upland.

FIGURE 44.—Breeding range of Veery.

NESTING SEASON.—Early May to mid-July. *Extreme egg dates* (6 nests): May 12, 1945, in Montgomery County (E. J. Court) and June 26, 1948, in the District of Columbia (Halle, 1948). *Extreme nestling dates* (6 nests): June 17, 1918, in Garrett County (G. Eifrig) and July 10, 1948, in the District of Columbia (Halle, 1948).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: April 20, 1889, in the District of Columbia (A. K. Fisher); April 24, 1881, in Washington County (E. A. Small). *Extreme departure dates*: June 8, 1947, in Baltimore County (E. G. Cooley); June 2, 1907, in the District of Columbia (A. K. Fisher).

FALL MIGRATION.—*Normal period*: August 20–30 to September 15–25; peak, September 1 to September 15. *Extreme arrival dates*: August 17, 1927, in Baltimore County (F. C. Kirkwood); August 18, 1889, in the District of Columbia (J. D. Figgins). *Extreme departure dates*: October 16, 1952, in Montgomery County (J. S. Moon); October 11, 1947, in Prince Georges County.

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

8 (1.5 in 20 acres) in "virgin hemlock stand" in Garrett County in 1949 (Robbins, 1949a).

MAXIMUM COUNTS.—*Spring*: 22 in Rock Creek Park, District of Columbia, on May 9, 1953 (C. L. Clagett); 15 at Patuxent Refuge on May 10 and again on May 13, 1950. *Fall*: 12 at Patuxent Refuge on September 5, 1943. On May 5, 1952, 130 were heard calling, while migrating overhead at night at the Patuxent Refuge.

EASTERN BLUEBIRD *Sialia sialis* (Linnaeus)

STATUS.—*Breeding*: Fairly common in all sections. *Transient*: Common in all sections. *Wintering*: Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake and Piedmont sections; uncommon in the Ridge and Valley section; rare in the Allegheny Mountain section.

HABITAT.—Chiefly marginal habitats in agricultural and residential areas.

NESTING SEASON.—Early March to late August (nesting peak, early April to mid-July). Nest-building was recorded as early as March 4, 1900, in Baltimore County (F. C. Kirkwood). *Extreme egg dates* (232 nests): March 12, 1898, in Baltimore County (W. H. Fisher) and July 27, 1881, in Baltimore County

(F. C. Kirkwood). *Extreme nestling dates* (161 nests): April 17, 1946, in Prince Georges County (E. G. Cooley) and August 24, 1945, in Prince Georges County (J. B. Cope).

SPRING MIGRATION.—*Normal period*: February 5–15 to April 10–20; peak, March 1 to April 1. *Extreme arrival dates*: February 3, 1900, in Allegany County (G. Eifrig); February 3, 1945, in Baltimore County (H. Brackbill). *Extreme departure date*: May 11, 1941, in Baltimore County (H. Brackbill).

FALL MIGRATION.—*Normal period*: September 15–25 to December 10–20; peak, October 5 to November 15. *Extreme arrival dates*: August 30, 1896, in Baltimore County (F. C. Kirkwood); August 31, 1901, in Allegany County (G. Eifrig). *Extreme departure date*: December 28, 1938, in Baltimore County (H. Brackbill).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 23 (5 in 21½ acres) in an abandoned field saturated with nesting boxes in Prince Georges County in 1949 and 1950, 19 (4 in 21½ acres) in 1951.
- 20 (4 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1943, 1944, and 1945; 15 (3 in 20 acres) in 1942.
- 14 (3 in 22 acres) in "unsprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 7 (2 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1947 (Stewart et al., 1947).
- 4 (3 in 75 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1947.

MAXIMUM COUNTS.—*Spring*: 100 at Point Lookout, St. Marys County, on March 2, 1954 (H. N. Page, V. C. Kirtley); 61 at Patuxent Refuge on March 22, 1944. *Fall*: 5,000 on the Gunpowder River marsh on October 26, 1903 (J. Thomas); 400+ at Cambridge, Dorchester County, on November 1 and 2, 1914 (R. W. Jackson); "hundreds" at Cumberland, Allegany County, on October 3, 1901, October 18, 1902, and October 24, 1900 (G. Eifrig). *Winter* (Christmas counts): 378 in the Annapolis area on January 2, 1955; 336 at Port Tobacco, Charles County, on December 21, 1941; 231 in the Ocean City area on December 27, 1954; 102 in the Triadelphia Reservoir area on December 26, 1952.

BANDING.—One recovered in Calvert County on October 7, 1934, had been banded as a juvenal in southwestern New Hampshire on August 10, 1933. Another banded in Prince Georges County on October 13, 1943, was recovered on April 15, 1946, in northern Virginia (about 20 miles from the point of banding).

Family SYLVIIDAE

BLUE-GRAY GNATCATCHER *Polioptila caerulea* (Linnaeus)

STATUS.—*Breeding and transient* (see fig. 45): Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Ridge and Valley section and in the Potomac River valley of the Piedmont section; uncommon elsewhere in the Piedmont section; rare in the Allegheny Mountain section. *Wintering:* Accidental—1 was observed in the District of Columbia on January 1, 1924 (Blake, 1924); 1 in Caroline County on December 20, 1953, and January 1 and 5, 1954 (Mr. and Mrs. A. J. Fletcher); and 2 near Annapolis on January 2, 1955 (E. P. Wilson).

FIGURE 45.—Breeding ranges of Blue-gray Gnatcatcher and Golden-crowned Kinglet.

HABITAT.—Brushy, partially open swamp and flood-plain forests; in the Ridge and Valley, and Allegheny Mountain sections it is also found in orchards and in open stands of upland forest.

NESTING SEASON.—Early April to late June (nesting peak, late April to early June). Nest-building was recorded as early as April 8, 1945, in Prince Georges County. *Extreme egg dates* (32 nests): April 11, 1953, in Montgomery County (J. Love) and June 8, 1940, in Montgomery County (W. H. Lawrence).

Extreme nestling dates (18 nests): May 6, 1950, in Charles County (M. C. Crone) and June 16, 1946, in Calvert County.

SPRING MIGRATION.—*Normal period*: April 1–10 to May 1–10; peak, April 10 to April 25. *Extreme arrival dates*: March 26, 1921, in Dorchester County (R. W. Jackson); March 29, 1952, in Montgomery County (C. L. Clagett, et al.); March 29, 1953, in Caroline County (Mrs. A. J. Fletcher). *Extreme departure dates*: May 18, 1901, in Allegany County (G. Eifrig); May 12, 1934, in Prince Georges County (R. Overing).

FALL MIGRATION.—*Normal period*: August 5–15 to September 5–15. *Extreme departure dates*: December 1, 1953, in Anne Arundel County (J. W. Taylor, Jr.); November 23, 1890, in the District of Columbia (C. W. Richmond); November 11, 1950, in Baltimore County (E. Willis); October 3, 1954, in Montgomery County (P. A. DuMont); October 2, 1951, in Caroline County (Mrs. A. J. Fletcher).

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 7 (2 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich and A. J. Duvall).
- 6 (1.5 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 2 (1.4 in 85 acres) in well-drained, flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 77 at Greenbelt, Prince Georges County, on April 10, 1954 (L. W. Oring); 77 along the Pocomoke River on April 21, 1954 (P. G. DuMont); 65 near Allens Fresh, Charles County, on April 12, 1952; 50 near Largo, Prince Georges County, on April 19, 1947; 18 in Washington County on May 7, 1949 (R. S. and M. Stauffer). *Fall*: 17 near Seneca in Montgomery County on August 20, 1949 (I. R. Barnes).

GOLDEN-CROWNED KINGLET *Regulus satrapa* Lichtenstein

STATUS.—*Breeding* (see fig. 45): Uncommon and local in the Allegheny Mountain section at elevations above 2,500 feet—occurring in Garrett County during recent years in Wolf Swamp (about 4 miles southeast of Grantsville); in the Maryland portion of Cranesville Swamp (just east of Cranesville, West Virginia), and on the east slope of Backbone Mountain (2 to 3 miles west-southwest of Bayard, West Virginia)—also formerly occurred regularly in the vicinity of Jennings before the last of the spruce was cut in 1908 (Behr, 1914). *Transient*: Common in all sections. *Wintering*: Common in the Eastern Shore and Western

Shore sections; fairly common in the Upper Chesapeake and Piedmont sections; uncommon in the Ridge and Valley section; rare in the Allegheny Mountain section. *Summer vagrant*: Accidental—1 recorded in the District of Columbia on July 25, 1932 (Burleigh, 1932); 1 recorded at Cumberland, Allegany County, on August 7, 1901 (G. Eifrig).

HABITAT.—*Breeding*: Largely restricted to areas with fairly dense stands of mature red spruce. *Transient and wintering*: Most numerous in stands of scrub pine, pitch pine and loblolly pine; also of regular occurrence in various deciduous forest types.

NESTING SEASON.—Dependent young out of the nest were observed in Garrett County on July 6, 1945.

SPRING MIGRATION.—*Normal period*: March 15–25 to April 15–25; peak, March 25 to April 15. *Extreme departure dates*: May 23, 1903, in Allegany County (Eifrig, 1904); May 12, 1919, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: September 25–October 5 to December 1–10; peak, October 15 to November 10. *Extreme arrival dates*: September 20, 1910, in the District of Columbia (E. J. Brown); September 22, 1942, in Prince Georges County (M. B. Meanley); September 24, 1950, in Baltimore County (E. Willis). *Extreme departure dates*: December 28, 1919, in the District of Columbia (F. Harper); December 20, 1946, in Baltimore County (H. Brackbill).

BREEDING POPULATION DENSITY (pairs per 100 acres).—32 (4 in 12½ acres) in "virgin spruce-hemlock bog forest" (red spruce and hemlock with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).

MAXIMUM COUNTS.—*Spring*: 50 at Emmitsburg, Frederick County, on both April 8 and 9, 1953 (J. W. Richards); 35 at Patuxent Refuge on April 7, 1944. *Fall*: "Hundreds" at Ocean City on October 2, 1949 (M. B. Meanley); 100 at Gibson Island, Anne Arundel County, on October 16, 1952 (Mrs. W. L. Henderson, Mrs. G. Tappan); 70 at Patuxent Refuge on October 27, 1943. *Winter* (Christmas counts): 380 at Patuxent Refuge on December 23, 1943; 354 in the District of Columbia area on January 2, 1954; 156 in the Ocean City area on December 27, 1955; 105 in southern Dorchester County on December 28, 1953; 92 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954.

RUBY-CROWNED KINGLET *Regulus calendula* (Linnaeus)

STATUS.—*Transient*: Common in all sections. *Wintering*: Un-

common in the Eastern Shore and Western Shore sections; rare in the Upper Chesapeake and Piedmont sections; casual in the Ridge and Valley section.

HABITAT.—Brushy forested areas including pine and deciduous types.

SPRING MIGRATION.—*Normal period:* March 25–April 5 to May 1–10; peak, April 10 to April 25. *Extreme arrival date:* March 20, 1905, in the District of Columbia (T. H. Levering). *Extreme departure dates:* May 19, 1950, in Washington County; May 16, 1954, in Worcester County (J. K. Wright); May 15, 1920, in Montgomery County (D. C. Aud. Soc.).

FALL MIGRATION.—*Normal period:* September 20–30 to November 10–20; peak, October 5 to October 30. *Extreme arrival dates:* September 6, 1935, in the District of Columbia (Overing, 1936); September 9, 1955, in Frederick County (J. W. Richards); September 13, 1880, in Washington County (E. A. Small); September 14, 1913, in Prince Georges County (W. W. Cooke). *Extreme departure date:* November 30, 1901, in Allegany County (G. Eifrig).

MAXIMUM COUNTS.—*Spring:* 50 at Emmitsburg, Frederick County, on April 11, 1952, and April 18, 1953 (J. W. Richards); 36 at Patuxent Refuge on April 21, 1944. *Fall:* 155 at Patuxent Refuge on October 27, 1943. *Winter* (Christmas counts): 29 in the Ocean City area on December 27, 1953; 23 at Patuxent Refuge on January 14, 1949; 22 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 16 in southern Dorchester County on December 27, 1949; 16 in the Catoctin Mountain area in Frederick County on December 30, 1951.

Family MOTACILLIDAE

WATER PIPIT *Anthus spinoletta* (Linnaeus)

STATUS.—*Transient:* Common in the Piedmont section; fairly common in all other sections. *Wintering:* Fairly common in the Eastern Shore section and in the southern part of the Western Shore section (St. Marys and southern Charles Counties); rare elsewhere in the Western Shore, Upper Chesapeake, and Piedmont sections.

HABITAT.—Open agricultural fields with short or sparse vegetation, including pastures, and grain fields with young sprout growth; also occurs on mud flats and tidal marshes with sparse vegetation.

SPRING MIGRATION.—*Normal period:* March 1–10 to May 1–10; peak, March 10 to April 10. *Extreme arrival dates:* February

16, 1908, in the District of Columbia (W. W. Cooke); February 24, 1924, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: May 21, 1925, in Dorchester County (R. W. Jackson); May 18, 1949, in Prince Georges County; May 18, 1950, in Washington County.

FALL MIGRATION.—*Normal period*: September 20–30 to November 25–December 5; peak, October 10 to November 5. *Extreme arrival dates*: September 12, 1901, in Harford County (W. H. Fisher); September 12, 1911, in Baltimore County (F. C. Kirkwood); September 15, 1951, in Allegany County. *Extreme departure dates*: January 12, 1949, in Prince Georges County; December 23, 1914, in Baltimore County (F. C. Kirkwood).

MAXIMUM COUNTS.—*Spring*: 600 at Emmitsburg, Frederick County, on April 7, 1953 (J. W. Richards); 200 near Lanham, Prince Georges County, on March 26, 1949; 150 near Loch Raven Reservoir, Baltimore County, on March 13, 1940 (I. E. Hampe, H. Kolb); 150 at Queen Anne, Queen Annes County, on April 15, 1956 (W. Rittenhouse). *Fall*: 2,000 near Seneca, Montgomery County, on October 25, 1952 (J. W. Terborgh); 1,500 at Monkton, Baltimore County, on November 13, 1955 (S. W. Simon); 1,000 at Oxon Hill, Prince Georges County, on November 26, 1938 (W. Perrygo); 300 in Montgomery County near Triadelphia Reservoir on October 28, 1951 (S. H. Low). *Winter* (Christmas counts): 830 in the Ocean City area on December 27, 1948; 250 near Denton, Caroline County, on December 20, 1952; 235 in the Kent Island area, Queen Annes County, on December 31, 1948; 165 in the Wicomico River area in Charles and St. Marys Counties on December 26, 1948.

Family BOMBYCILLIDAE

CEDAR WAXWING *Bombycilla cedrorum* Vieillot

STATUS.—*Breeding*: Common in the Allegheny Mountain section; uncommon in the Ridge and Valley, Piedmont, and Upper Chesapeake sections; rare in the Western Shore and Eastern Shore sections. *Transient*: Common in all sections. *Wintering*: Uncommon in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section (Brooks, 1936c).

HABITAT.—Open or brushy woodland and marginal habitats in agricultural and residential areas.

NESTING SEASON.—Late May to mid-September (nesting peak, mid-June to mid-August). In Montgomery County, a new nest was found as early as May 30, 1905 (Oberholser, 1905). *Extreme*

egg dates (21 nests): June 7, 1936, in Harford County (W. B. Tyrrell) and Anne Arundel County (M. B. Meanley), and August 21, 1892, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (5 nests): June 18, 1950, in Baltimore County (C. D. Hackman) and September 11, 1923, in the District of Columbia (S. F. Blake).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 25–June 5; peak, May 5 to May 25. In 1952, the migration was much earlier than usual, large numbers arriving at the close of February (earliest record, February 24, 1952, in Prince Georges County), and high counts were made in numerous areas, throughout March and early April, while a few small flocks lingered until the end of April. *Extreme departure dates*: June 15, 1902, in Baltimore County (J. Thomas); June 8, 1887, in the District of Columbia (C. W. Richmond); June 8, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 15–25 to January 1–10; peak, September 25 to November 10. *Extreme arrival date*: August 9, 1944, in Prince Georges County. *Extreme departure date*: January 12, 1940, in Prince Georges County.

BREEDING POPULATION DENSITIES (pairs per 100 acres).—

- 16 (1.5 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 15 (4 in 27½ acres) in "red pine plantation" (young trees about 20 feet in height) in Garrett County in 1949 (Robbins and Barnes, 1949).
- 15 (3 in 20 acres) in suburban-type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1946; absent in other years during the period 1942–52.

MAXIMUM COUNTS.—*Spring*: 450 near Port Tobacco, Charles County, on March 23, 1952 (A. R. Stickley, Jr., M. C. Crone); 350 near College Park, Prince Georges County, on March 25 and 27, 1952 (C. L. Clagett); 150 near the Gunpowder River marsh on May 24, 1903 (J. Thomas). *Fall*: 400 in Baltimore County on October 23, 1896 (W. H. Fisher); 350 near Seneca, Montgomery County, on October 17, 1953 (J. K. Wright); 268 at Patuxent Refuge on October 26, 1944. *Winter*: 1,325 at Patuxent Refuge on February 23, 1956 (L. M. Llewellyn); 300 in the Port Tobacco area on December 23, 1931 (Christmas count).

Family LANIIDAE

NORTHERN SHRIKE *Lanius excubitor* Linnaeus

STATUS.—*Wintering*: Rare and irregular in all sections. Ordinarily, during most winters this species is absent; and during

the occasional flight years, only a few scattered individuals are recorded. The latest flights occurred during the winters of 1950-51 and 1954-55, when the species was recorded in Garrett, Washington, Frederick, Montgomery, Anne Arundel, and Worcester Counties (various observers). The only previous winters when more than single specimens or observations were recorded were 1887-88 and 1892-93.

HABITAT.—Brushy wood-margins, hedgerows, and other "edge" habitats, chiefly in agricultural areas.

PERIOD OF OCCURRENCE.—*Extreme dates*: October 26, 1887 (collected), on the Patapsco River marsh (A. Resler) and March 10, 1951, in Worcester County (J. H. Buckalew). *Occurrence peak*: December 20 to February 20.

LOGGERHEAD SHRIKE *Lanius ludovicianus* Linnaeus

STATUS.—*Breeding*: Uncommon in the east-central portion of Prince Georges County; rare and local elsewhere in the Western Shore section and in the Eastern Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections. *Transient*: Fairly common in the Eastern Shore section; uncommon in the Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section. *Wintering*: Uncommon in the Eastern Shore section and the southern part of the Western Shore section; rare in the Upper Chesapeake and Piedmont sections and in the northern part of the Western Shore section; casual in the Ridge and Valley section. A. Wetmore states that in Maryland, this species "has decreased appreciably in the past 15 years."

HABITAT.—Hedgerows, wood margins, and other edge types in agricultural areas; during the breeding season usually found in the vicinity of hedgerows or groves of red cedar.

NESTING SEASON.—Mid-April to late June. *Extreme egg dates* (4 nests): April 19, 1925, in the District of Columbia and May 4, 1924, in Montgomery County (both by S. F. Blake). *Extreme nestling dates* (5 nests): May 20, 1910, in Prince Georges County (R. H. True) and June 29, 1931, in Montgomery County (W. M. Davidson).

SPRING MIGRATION.—*Normal period*: March 5-15 to April 10-20; peak, March 20 to April 10. *Extreme arrival date*: March 2, 1954, in St. Marys County (H. N. Page, V. C. Kirtley). *Extreme departure dates*: April 23, 1893, in Baltimore County (G. H. Gray); April 21, 1904, in the District of Columbia (T. H. Levering).

FALL MIGRATION.—*Normal period:* August 10–20 to November 1–10; peak, August 25 to October 25. *Extreme arrival dates:* July 31, 1906, in Montgomery County (H. W. Maynard); August 1, 1917, in Dorchester County (R. W. Jackson); August 5, 1898, in Prince Georges County (S. J. Judd). *Extreme departure date:* November 27, 1919, in the District of Columbia (J. Kittredge, Jr.).

MAXIMUM COUNTS.—*Winter* (Christmas counts): 20 in the Ocean City area on December 27, 1954; 13 in the Wicomico River area in Charles and St. Marys Counties on January 1, 1954; 11 near Denton, Caroline County, on January 1, 1955; 6 in the Triadelphia Reservoir area in Howard and Montgomery Counties on January 1, 1954.

Family STURNIDAE

STARLING *Sturnus vulgaris* Linnaeus

STATUS.—Permanent resident. Common (locally abundant) in all sections.

HABITAT.—Marginal habitats in agricultural and residential areas. In winter, large numbers roost on buildings in the business sections of Baltimore and Washington, D. C.

NESTING SEASON.—Early February to mid-July (nesting peak, mid-April to mid-June). Nest-building was recorded as early as February 1, 1939, in Baltimore County (H. Brackbill). *Extreme egg dates* (68 nests): April 7, 1950, in Prince Georges County and June 12, 1950, in Prince Georges County (R. W. Dickerman). *Extreme nestling dates* (173 nests): April 12, 1933, in the District of Columbia (W. H. Ball) and July 18, 1940, in Baltimore County (H. Brackbill).

BREEDING POPULATION DENSITY (pairs per 100 acres).—

5 (15 in 275 acres) in mixed agricultural habitats (including residential areas and hedgerows and wood margins) in Prince Georges County in 1943.

MAXIMUM COUNTS (nonbreeding).—*Winter:* 100,000 in Washington, D. C. (Barnes, 1950); 30,000 in Susquehanna Flats area on December 27, 1952 (Christmas count); 9,338 in the Ocean City area on December 27, 1955 (Christmas count); 7,166 near Chase, Baltimore County, on December 28, 1952 (Christmas count); 6,000 in the Port Tobacco area, Charles County, on December 22, 1928 (Christmas count).

HISTORY OF STARLING INVASION.—This European species became established in the United States following its successful introduction in New York City on March 6, 1890, and April 25,

1891 (Chapman, editorial in *Bird Lore*, 1907, Vol. 9, p. 206). Its first appearance in Maryland was reported in 1906 at Baltimore by Chapman. On February 15, 1910, 1 was found dead following a storm in Talbot County near Easton (A. K. Fisher); on January 19-20, 1912, 2 were collected in the District of Columbia (USNM—C. Zeller). In the vicinity of Baltimore, this species was again recorded at the town of Cockeysville on October 24, 1913, when 2 were seen (D. C. Clark); the first nest containing young was found in Baltimore on May 27, 1917 (F. C. Kirkwood); at this time the species had become fairly common in that area, as several hundred were seen on January 27, 1917, and about 10,000 on December 4, 1917 (W. H. Fisher). In the vicinity of Washington, D. C., this species was next recorded on January 9, 1914, when a flock of about 200 was seen (A. Wetmore); young of the year were seen on June 26, 1916 (F. Harper), and on April 25, 1917, a nest with young was found nearby in Montgomery County (Oldys, 1917); by late January, 1922, this species had become quite common, as thousands were roosting on the buildings of downtown Washington (Cooke, 1929).

Other early records in the Eastern Shore section include a flock of over 75 seen at Cambridge, Dorchester County, on February 14, 1916 (Jackson, 1916), and a nesting record at Cambridge on May 2, 1920 (Jackson, 1941). In its spread westward over the State, the Starling was first recorded at Frederick on June 1, 1918, when an occupied nest was found (J. B. Semple); at Cumberland it was first reported during February 1920, when a flock of about 100 was observed (Eifrig, 1920b); in the Allegheny Mountain section it was first recorded during the summer of 1928, when a flock of 40 was seen near Accident (Eifrig, 1933).

BANDING.—Forty-five banded in Maryland and the District of Columbia during December, January, February, and March were subsequently taken outside the Maryland-District of Columbia-Virginia area. Only 2 of these were recovered in the spring immediately following the winter of banding. Both were taken in southern Pennsylvania, 1 on an unspecified date in February, the other on March 15. These data as well as recoveries from subsequent years indicate that the principal northward movement takes place in February and March. Kessel (1953) shows a map of all recoveries of Starlings banded in the vicinity of the District of Columbia in winter. The records are fairly evenly distributed within a "V" stretching from Washington northward through Buffalo on the west and Albany on the east. An examination of the dates of recovery shows that the migrants which

winter in the Washington roosts nest primarily in central New York State and adjacent counties of Ontario, Quebec and Vermont. All of the 24 Pennsylvania recoveries were made during the migration periods or in subsequent winters.

Recovery records indicate that the great majority of Starlings that winter in the Washington roosts nest within 20 miles of the Capitol; 4 out of every 5 summer recoveries of winter-banded birds were taken within 20 miles of the place of banding. Recoveries of Maryland and District of Columbia Starlings south of a 40-mile radius from the banding station are very few—perhaps due in part to the relatively small number banded during the nesting season. Four birds banded in Washington (January to March) were taken at various seasons of the year from 40 to 160 miles away in Virginia; and 1 banded at Raleigh, North Carolina, in mid-February was killed on the lower Patuxent River 2 years later in January. There have been too few bandings on the Eastern Shore to yield recoveries, but Kessel (1953) has shown that a coastal flight from New England and another flight from the Hudson and Connecticut River valleys probably account for many of the wintering birds in our Eastern Shore section.

Family VIREONIDAE

WHITE-EYED VIREO *Vireo griseus* (Boddaert)

STATUS.—*Breeding and transient*: Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake section and in the Potomac River valley of the Piedmont section; uncommon elsewhere in the Piedmont section and in the Ridge and Valley section; rare in the Allegheny Mountain section.

HABITAT.—Chiefly shrub swamps and brushy cutover forest swamps; also in hedgerows and wood margins in agricultural areas.

NESTING SEASON.—Mid-April to early August (nesting peak, early May to late June). Nest-building was recorded as early as April 16, 1949, in Worcester County (J. H. Buckalew). *Extreme egg dates* (24 nests): April 25, 1949, in Worcester County (J. H. Buckalew) and July 11, 1901, in Harford County (W. H. Fisher). *Extreme nestling dates* (13 nests): June 1, 1902, in Washington County (J. M. Sommer) and August 6, 1893, in Baltimore County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 10–20; peak, April 25 to May 10. *Extreme arrival dates*: April 10, 1912, in the District of Columbia (W. D. Appel); April 12, 1953, in

Charles County (M. C. Crone, K. Keeley); April 12, 1954, in Caroline County (M. W. Hewitt); April 14, 1929, in Baltimore County (J. M. Sommer).

FALL MIGRATION.—*Normal period:* August 15–25 to September 25–October 5; peak, August 25 to September 15. *Extreme departure dates:* October 30, 1927, in Baltimore County (F. C. Kirkwood, J. M. Sommer); October 28, 1910, in the District of Columbia (M. D. Suter); October 28, 1933, in Prince Georges County (R. Overing).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

40 (5.2 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, red maple, etc.) in Prince Georges County in 1945.

32 (6 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).

28 (16 in 58 acres) in brushy, poorly drained, abandoned farmland in Prince Georges County in 1947.

Seventy-four singing males were counted during a 20 mile canoe trip on the Pocomoke River, from Poorhouse Branch to Pocomoke City, on June 16, 1946.

MAXIMUM COUNTS (nonbreeding).—*Spring:* 59 in the Ocean City area (including the upper Pocomoke River) on May 5, 1951; 40 in Charles and St. Marys Counties on May 8, 1954 (J. W. Terborgh). *Fall:* 18 killed at the Washington Monument in Washington, D. C., on September 12, 1937 (Overing, 1938); 15 at Patuxent Refuge on September 9, 1943.

YELLOW-THROATED VIREO *Vireo flavifrons* Vieillot

STATUS.—*Breeding and transient:* Fairly common in the Eastern Shore, Western Shore, and Upper Chesapeake sections and in the Potomac River valley of the Piedmont section; uncommon elsewhere in the Piedmont section and in the Ridge and Valley section; rare in the Allegheny Mountain section.

HABITAT.—Flood-plain and lowland swamp forests and rich, moist forests on the upland; usually occurring in forest areas with a partially opened canopy.

NESTING SEASON.—Mid-April to late July (nesting peak, mid-May to late June). Nest building was recorded as early as April 19, 1949, in Worcester County (J. H. Buckalew). *Extreme egg dates* (18 nests): May 9, 1917, in Dorchester County (Jackson, 1941) and July 21, 1922, in the District of Columbia (S. F. Blake). *Extreme nestling dates* (15 nests): June 4, 1916, and July 18, 1915, both in Baltimore County (J. M. Sommer).

SPRING MIGRATION.—*Normal period:* April 20–30 to May 15–

25; peak, May 1 to May 15. *Extreme arrival dates*: April 5, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 11, 1922, in the District of Columbia (J. Kittredge); April 13, 1890, in Baltimore County (J. H. Pleasants).

FALL MIGRATION.—*Normal period*: August 20–30 to September 20–30; peak, September 1 to September 20. *Extreme departure dates*: October 9, 1897, along the Patapsco River marsh (F. C. Kirkwood); October 4, 1953, in Charles County (M. C. Crone, A. R. Stickley, Jr.).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 19 (7 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 9 (2.5 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 9 (4 in 44% acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1945; absent in 1944 (J. W. Aldrich, A. J. Duvall).
- 8 (6 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948 and 1949; 2 (2 in 80 acres) in 1951 (Trever, 1952); 4 (3.5 in 80 acres) in 1954 (Wright, 1955); 3 (2.5 in 80 acres) in 1952 (Clagett, 1952); 2 (1.5 in 80 acres) in 1953 (Clagett, 1953).
- 8 (1.5 in 18% acres) in "second-growth river swamp (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 7 (2.5 in 37 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1952 (Kaufmann, et al., 1952); 4 (1.5 in 37 acres) in 1953 (Cole and Kolb, 1953); 3 (1 in 37 acres) in 1951 (Kolb and Cole, 1951); 3 (1 in 40 acres) in 1949 and 1950 (Kolb, 1949 and 1950); 1 (0.5 in 40 acres) in 1948 (Kolb, et al., 1948).
- 3 (2.9 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart et al., 1946).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 20 on May 11, 1952, at Port Tobacco, Charles County (M. C. Crone); 20 at Patuxent Refuge on May 8, 1954. *Fall*: 25 at Wills Mountain, Allegany County, on September 3, 1901 (F. C. Kirkwood).

SOLITARY VIREO *Vireo solitarius* (Wilson)

STATUS.—*Breeding* (see fig. 32): Fairly common in the Allegheny Mountain section at elevations above 2,000 feet. *Transient*: Fairly common in the Allegheny Mountain, and Ridge and Valley sections; uncommon in the Piedmont, Upper Chesapeake, and Western Shore sections; rare in the Eastern Shore section.

HABITAT.—*Breeding*: Hemlock and white pine forests and

mixed mesophytic forests. *Transient*: Various types of deciduous and coniferous forests.

NESTING SEASON.—Late May to mid-July. The earliest record of nest-building was made on May 27, 1919, in Garrett County (J. M. Sommer). *Egg dates* (2 nests): June 1, 1925 (J. M. Sommer), and June 1, 1951, both in Garrett County. *Nestling dates* (2 nests): June 15, 1918 (J. M. Sommer), and June 25, 1949, both in Garrett County. Nest-building was recorded as late as June 25, 1949.

SPRING MIGRATION.—*Normal period*: April 10–20 to May 5–15; peak, April 20 to May 5. *Extreme arrival dates*: April 3, 1932, in the District of Columbia (E. N. Grinnell); April 6, 1952, in Baltimore County (E. Willis); April 7, 1946, in Worcester County. *Extreme departure dates*: June 2, 1924, in the District of Columbia (A. Wetmore); June 1, 1930, in Calvert County (H. E. Ewing); May 30, 1947, in Prince Georges County (J. E. Willoughby).

FALL MIGRATION.—*Normal period*: September 20–30 to October 20–30; peak, October 1 to October 20. *Extreme arrival dates*: August 30, 1953, in Frederick County (J. W. Richards); September 2, 1951, in Montgomery County (M. C. Merrill, C. K. Schoenbauer); September 6, 1903 (W. L. McAtee), and September 6, 1935 (R. Overing), in the District of Columbia; September 11, 1927, in Baltimore County (J. M. Sommer). *Extreme departure dates*: November 15, 1955, in Frederick County (J. W. Richards); November 10, 1951, in Anne Arundel County (F. C. Cross); November 5, 1911, in Montgomery County (A. K. Fisher).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

27 (5.5 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a);

17 (4 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 10 at Patuxent Refuge on April 29, 1944. *Fall*: 20 at Patuxent Refuge on October 15, 1947.

RED-EYED VIREO *Vireo olivaceus* (Linnaeus)

STATUS.—*Breeding and transient*: Abundant in all sections except the Eastern Shore section where it is common.

HABITAT.—Various types of deciduous forests.

NESTING SEASON.—Mid-May to mid-August (nesting peak, late May to mid-July). *Extreme egg dates* (165 nests): May 19,

1945, in Prince Georges County (J. B. Cope) and July 31, 1893, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (75 nests): June 4, 1945, in Prince Georges County (J. B. Cope) and August 18, 1954, in Caroline County (Mrs. A. J. Fletcher). Young birds, still partly dependent on their parents, were observed at Baltimore on September 11, 1940 (H. Brackbill).

SPRING MIGRATION.—*Normal period*: April 25–May 1 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates*: April 17, 1954, in St. Marys County (J. W. Terborgh); April 17, 1954, in Prince Georges County (L. W. Oring); April 19, 1954, in Baltimore County (A. S. Kaestner); April 21, 1895, in the District of Columbia (H. W. Oldys). *Extreme departure date*: May 28, 1914, in the District of Columbia (Oberholser, 1919).

FALL MIGRATION.—*Normal period*: August 10–20 to October 5–15; peak, August 25 to September 25. *Extreme departure dates*: November 11, 1888, in Montgomery County (J. D. Fig-gins); November 11, 1917, in the District of Columbia (P. Bartsch).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 100 (36 in 36 acres) in "virgin central hardwood deciduous forest" (white oak–tulip–poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 92 (78.2 in 85 acres) in well-drained, flood-plain forest (sweetgum, hornbeam, river birch, tulip–poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 55 (18 in 32¼ acres) in another area of this habitat in 1944.
- 65 (29 in 44¾ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1946, and 40 (18 in 44¾ acres) in 1945 (J. W. Aldrich, A. J. Duvall).
- 62 (8 in 13 acres) in upland forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 61 (8.5 in 14¼ acres) in poorly drained flood-plain forest (pin oak, sweetgum, red maple, red ash, etc.) in Prince Georges County in 1946.
- 60 (14 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 53 (42 in 80 acres) in "central hardwood forest (oaks–tulip–poplar) with scattered pine" in the District of Columbia in 1948, 51 (41 in 80 acres) in 1949, 49 (39 in 80 acres) in 1951 (Trever, 1951); 51 (41 in 80 acres) in 1954 (Wright, 1955); 48 (38.5 in 80 acres) in 1953 (Clagett, 1953); 41 (32.5 in 80 acres) in 1952 (Clagett, 1952).
- 52 (11 in 21 acres) in "dense second-growth" (oak–maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 50 (20 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1948 (Kolb, et al., 1948); 49 (18 in 37 acres) in 1951 (Kolb and Cole, 1951); 38 (15 in 40 acres) in 1949 (Kolb,

- 1949a); 38 (14 in 37 acres) in 1953 (Cole and Kolb, 1953); 33 (13 in 40 acres) in 1950 (Kolb, 1950); 33 (12 in 37 acres) in 1952 (Kaufmann, et al., 1952).
- 45 (5 in 11 acres) in upland seepage swamp forest (red maple, sweetgum, black gum, with dense understory of holly, sweet pepperbush, clammy azalea, maleberry, etc.) in Prince Georges County in 1946.
- 44 (5.5 in 12½ acres) in "mature oak-maple ridge forest" in Garrett County in 1949 (Robbins, 1949b);
- 39 (5 in 12¼ acres) in lowland seepage swamp forest (red maple, sweetgum, pin oak, with brushy understory of sweet bay, winterberry, arrow-wood, etc.) in Prince Georges County in 1946.
- 37 (8.2 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 34 (8 in 23¾ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 34 (11 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, Spanish oak) in Prince Georges County in 1944.
- 28 (3.6 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, red maple, etc.) in Prince Georges County in 1945.
- 21 (6 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 16 (3 in 18¼ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 10 (2 in 21 acres) in "immature loblolly-shortleaf pine stand" in Worcester County in 1948 (Springer and Stewart, 1948c).
- 10 (1.5 in 15 acres) in "open slash area" (cutover oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 205 at Patuxent Refuge on May 3, 1947; 200+ near Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson); 195 in Montgomery County on May 9, 1953 (E. J. Stivers, et al.). *Fall*: 209 killed at the Washington Monument in Washington, D. C., on September 12, 1937 (Overing, 1938); 47 at Patuxent Refuge on September 5, 1943.

PHILADELPHIA VIREO *Vireo philadelphicus* (Cassin)

STATUS.—*Transient*: Uncommon in the Allegheny Mountain, and Ridge and Valley sections; rare in the Piedmont, Upper Chesapeake, and Western Shore sections, and (in fall only) in the Eastern Shore section.

HABITAT.—Various types of deciduous forests.

SPRING MIGRATION.—*Normal period*: May 5–10 to May 25–30; peak, May 10 to May 20. *Extreme arrival date*: May 3, 1931, in Baltimore County (F. C. Kirkwood). *Extreme departure date*: June 8, 1927, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: September 1–5 to October

1-5; peak, September 5 to September 25. *Extreme arrival dates:* August 25, 1951, in Baltimore County (Mr. and Mrs. R. D. Cole) and Montgomery County (I. R. Barnes); August 29, 1931, in Baltimore County (F. C. Kirkwood); August 29, 1953, in Talbot County (R. L. Kleen). *Extreme departure dates:* October 21, 1948, in the District of Columbia (E. G. Davis); October 11, 1941 (collected), in Baltimore County (Kolb and Hampe, 1941).

MAXIMUM COUNTS.—*Spring:* 3 near Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones). *Fall:* 10 at Towson, Baltimore County, on August 27, 1951 (Mr. and Mrs. R. D. Cole); 4 at Chevy Chase, Montgomery County, on September 16, 1928 (W. H. Ball); 3 at Emmitsburg, Frederick County, on September 17, 1952 (J. W. Richards); 3 on South Mountain, along the boundary between Frederick and Washington Counties on September 20, 1952 (R. J. Beaton); 3 banded on the barrier beach north of Ocean City on September 13, 1955.

WARBLING VIREO *Vireo gilvus* (Vieillot)

STATUS.—*Breeding* (see fig. 46): Fairly common in the Ridge and Valley, and Upper Chesapeake sections; uncommon in the Piedmont section and in the northern part of the Eastern Shore section (Queen Annes, Caroline, and Talbot Counties); uncommon and local in the southern part of the Eastern Shore section

FIGURE 46.—Breeding range of Warbling Vireo.

(occurring in the vicinity of the towns of Cambridge, Hurlock, Vienna, Salisbury, Berlin, and Princess Anne); rare in the Allegheny Mountain section (Brooks, 1936c); rare and local in the Western Shore section—summer records in Charles County at Marshall Hall (S. F. Judd) and Chapel Point (A. Wetmore), in Anne Arundel County near Deale (N. Hotchkiss) and Rock Creek (J. M. Sommer), in Prince Georges County at Hyattsville (N. Hotchkiss), and in the District of Columbia. *Transient*: Uncommon in the Ridge and Valley, and Piedmont sections; rare in the Allegheny Mountain, Upper Chesapeake, Western Shore, and Eastern Shore sections.

HABITAT.—Open stands of shade trees in residential areas of towns and farms; in Ridge and Valley, and Piedmont sections, also occurs in open-growth flood-plain forests.

NESTING SEASON.—Mid-May to mid-July (probably). Nest-building was recorded as early as May 17, 1917, in Dorchester County (R. W. Jackson). *Extreme egg dates* (15 nests): May 24, 1925, and June 22, 1925, both in Dorchester County (R. W. Jackson).

SPRING MIGRATION.—*Normal period*: April 20–25 to June 1–10; peak, May 1 to May 20. *Extreme arrival date*: April 19, 1919, in Dorchester County (R. W. Jackson). *Extreme departure dates*: June 12, 1951, in Howard County; June 11, 1946, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 20–30 to September 20–30; peak, September 1 to September 15. *Extreme arrival dates*: August 17, 1927, and August 17, 1930, in Baltimore County (F. C. Kirkwood). *Extreme departure date*: October 9, 1892, in Baltimore County (F. C. Kirkwood).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

10 (2 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1946; 5 (1 in 19½ acres) in 1947 (Cooley, 1947).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 75 in Washington County on May 7, 1949 (R. S. and M. Stauffer); 9 near Seneca, Montgomery County, on May 12, 1956 (C. N. Mason); 7 in the District of Columbia on May 12, 1913 (Oberholser, 1917a); 3 at Patuxent Refuge on May 9, 1953.

Family PARULIDAE

BLACK-AND-WHITE WARBLER *Mniotilta varia* (Linnaeus)

STATUS.—*Breeding*: Common in the Allegheny Mountain, and Ridge and Valley sections; fairly common in the Piedmont and

Western Shore sections; fairly common locally in the Eastern Shore section (most numerous in Worcester County, and in eastern portions of Wicomico and Somerset Counties); rare in the Upper Chesapeake section. *Transient*: Common in all sections. *Wintering*: Casual—2 seen at Chestertown, Kent County, on December 27, 1932 (W. Baker); 1 banded at Cambridge, Dorchester County, on December 27, 1952 (J. H. Buckalew); 1 seen at Denton, Caroline County, on December 9, 1953 (Mrs. A. J. Fletcher).

HABITAT.—Various types of deciduous and coniferous forests, usually with partly opened canopy (apparently absent during the breeding season in flood-plain forests).

NESTING SEASON.—Early May to early July. *Extreme egg dates* (9 nests): May 14, 1901, in the District of Columbia (Bartsch, 1901) and June 7, 1886, in the District of Columbia (C. W. Richmond). *Extreme nestling dates* (9 nests): May 17, 1948, in Worcester County (P. F. Springer) and July 4, 1892, in Baltimore County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period*: April 5–15 to May 15–25; peak, April 20 to May 10. *Extreme arrival dates*: March 28, 1929, in Prince Georges County (L. McCormick-Goodhart); March 30, 1908, in the District of Columbia (H. W. Oldys); March 31, 1952, in Montgomery County (E. J. Stivers). *Extreme departure date*: May 30, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 5–15 to October 1–10; peak, August 25 to September 25. *Extreme arrival dates*: July 19, 1951, in Caroline County (A. Knotts); July 24, 1951, in Baltimore County (E. Willis); July 31, 1886, in the District of Columbia (A. K. Fisher). *Extreme departure dates*: November 26, 1953, in Montgomery County (L. Kilham); November 14, 1931, in the District of Columbia (W. L. McAtee); October 30, 1952, in Caroline County (M. W. Hewitt).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 21 (4.5 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 16 (3 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 13 (2 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 11 (4 in 36 acres) in "virgin central hardwood deciduous forest (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).

7 (1.5 in 21 acres) in "immature loblolly-shortleaf pine stand" in Worcester County in 1948 (Springer and Stewart, 1948c).

5 (4 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948, 3 (2 in 80 acres) in 1949, 1 (1 in 80 acres) in 1951 (Trever, 1952); 1 (1 in 80 acres) in 1952 (Clagett, 1952); none in 1953 or 1954.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 46 in the Pocomoke River area on May 5, 1951; 46 at Patuxent Refuge on May 6, 1950. *Fall*: 65 at Greenbelt, Prince Georges County, on August 27, 1954 (L. W. Oring); 50 at Patuxent Refuge on August 28, 1943; 30 near Cabin John, Montgomery County, on September 24, 1947 (I. R. Barnes, E. G. Davis).

PROTHONOTARY WARBLER *Protonotaria citrea* (Boddaert)

STATUS.—*Breeding and transient* (see fig. 47): Abundant in the swamps along the Pocomoke and upper Nanticoke Rivers and their tributaries; fairly common elsewhere in the Eastern Shore section and in the southern part of the Western Shore section (St. Marys, Calvert, and Charles Counties, and southern Prince Georges County); uncommon in the northern part of the Western Shore section, in the Upper Chesapeake section, and along the Potomac and Susquehanna River valleys in the Piedmont section; rare elsewhere in the Piedmont section, and along the Potomac River and larger tributaries in the Ridge and Valley section.

FIGURE 47.—Breeding range of Prothonotary Warbler.

HABITAT.—Most numerous in river or stream swamp forests; also occurs in well-drained flood-plain forests.

NESTING SEASON.—Late April to late June (peak, mid-May to mid-June). Nest-building was recorded as early as April 26, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher). *Extreme egg dates* (12 nests): May 10, 1953, in Caroline County (Mr. and Mrs. A. J. Fletcher) and June 22, 1931, in Dorchester County (F. C. Kirkwood). *Extreme nestling dates* (17 nests): May 24, 1955, in Montgomery County (E. Meyer) and June 30, 1951, in Caroline County (Mr. and Mrs. A. J. Fletcher).

PERIOD OF OCCURRENCE.—*Normal period*: April 15–20 to September 10–20; peak, April 25 to September 10. *Extreme arrival date*: April 8, 1951, in Worcester County (D. A. Cutler). *Extreme departure date*: September 25, 1949, in Montgomery County (I. R. Barnes).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

40 (7.5 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).

A total of 180 singing males was counted during a 20-mile canoe trip on the Pocomoke River, from Poorhouse Branch to Pocomoke City, on June 16, 1946.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 49 along the Pocomoke River on May 5, 1951; 15 near Cabin John, Montgomery County, on May 12, 1956 (H. A. Sutton); 8 near Seneca, Montgomery County, on April 25, 1948 (R. E. Lawrence). *Fall*: 15 along the Pocomoke River on September 10, 1950; 12 near Cabin John, Montgomery County, on September 3, 1947 (T. W. Donnelly).

SWAINSON'S WARBLER *Limnothlypis swainsonii* (Audubon)

STATUS.—*Breeding* (see fig. 48): Uncommon in the swamp along the Pocomoke River and its tributaries; rare in other stream swamps in Worcester County.

HABITAT.—River and stream swamps, being most numerous in the drier portions with partially opened canopy, and with dense understory brush composed of greenbrier, sweet pepperbush, and other shrubs (Meanley, 1950).

NESTING SEASON.—On May 15, 1955, a female that had been captured in a mist net in the Pocomoke swamp, Worcester County, laid an egg in a gathering cage. Newly hatched young were observed in the Pocomoke swamp on June 13, 1948 (Meanley, 1950). Adults were observed feeding young out of the nest near Pocomoke City, on June 20, 1953 (E. Fleisher, L. G. Worley).

FIGURE 48.—Breeding ranges of Swainson's Warbler and Nashville Warbler.

PERIOD OF OCCURRENCE.—*Extreme arrival date:* April 21, 1948, in Worcester County. *Extreme departure date:* August 30, 1948, in Worcester County (M. B. Meanley). Future observations will undoubtedly show that this species remains on the breeding grounds at least until early September. Two migrants, probably from the Pocomoke swamp area, were seen on Tangier Island, Virginia, September 17 to 19, 1939, by A. H. Clark (Murray, 1952).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

- 11 (2 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).

WORM-EATING WARBLER *Helmitheros vermivorus* (Gmelin)

STATUS.—*Breeding* (see fig. 49): Fairly common in the Ridge and Valley section, and locally in the Piedmont section; uncommon in the Western Shore section, and in the swamp along the Pocomoke River and its tributaries; rare elsewhere in the Eastern Shore section, and in the Upper Chesapeake and Allegheny Mountain sections. *Transient:* Uncommon in the Ridge and Valley, Piedmont, and Western Shore sections; rare in the Allegheny Mountain, Upper Chesapeake, and Eastern Shore sections.

FIGURE 49.—Breeding range of Worm-eating Warbler.

HABITAT.—*Breeding:* Well-drained upland deciduous forests, usually with understory of mountain laurel or other shrubs; in the Eastern Shore section, occurs in the drier portions of river or stream swamps that contain an understory of mountain laurel. *Transient:* Various types of deciduous forests.

NESTING SEASON.—Mid-May to mid-July. *Extreme egg dates* (8 nests): May 29, 1892, in Charles County (W. Palmer) and July 4, 1885, in the District of Columbia (USNM). *Extreme nestling dates* (8 nests): May 28, 1930, in St. Marys County (F. C. Kirkwood) and June 25, 1893, in Baltimore County (W. N. Wholey).

SPRING MIGRATION.—*Normal period:* April 25–30 to May 10–15; peak, May 1 to May 10. *Extreme arrival dates:* April 17, 1942, in Harford County (S. Mason, Jr.); April 21, 1948, in Worcester County. *Extreme departure date:* May 18, 1923, in the District of Columbia (J. Kittredge, Jr.).

FALL MIGRATION.—*Normal period:* August 10–20 to September 10–20; peak, August 20 to September 10. *Extreme arrival dates:* July 31, 1886, in the District of Columbia (A. K. Fisher); August 8, 1906, in Montgomery County (A. K. Fisher). *Extreme departure dates:* October 15, 1920, in Baltimore County (F. C. Kirk-

wood); October 1, 1951, in Caroline County (M. W. Hewitt); September 23, 1952, in Prince Georges County.

MAXIMUM COUNTS (nonbreeding).—Spring: 8 in Washington County on May 7, 1949 (R. S. and M. Stauffer); 6 on Warrior Mountain, Allegany County, on April 28, 1907 (F. C. Kirkwood); 6 along the Pocomoke River in Worcester County on April 21, 1948; 6 at Patuxent Refuge on May 10, 1950. **Fall:** 9 at Patuxent Refuge on August 21, 1953; 5 in Dulaney Valley, Baltimore County, on August 13, 1899 (F. C. Kirkwood).

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (Linnaeus)

STATUS.—Breeding (see fig. 50): Fairly common in the Allegheny Mountain section, and in the western part of the Ridge and Valley section (Allegany County); uncommon in western Washington County (west of Hagerstown Valley). **Transient:** Fairly common in all sections except the Eastern Shore section where it is rare.

HABITAT.—Breeding: Brushy cutover oak-chestnut, mixed mesophytic, and bog forests. **Transient:** Various types of forest, although usually most numerous in flood-plain and swamp forests.

NESTING SEASON.—In Garrett County, a nest with eggs was found on June 2, 1925, and a nest with young nearly ready to fly

FIGURE 50.—Breeding ranges of Golden-winged Warbler and Blue-winged Warbler.

on June 16, 1918 (both records by J. M. Sommer). Another nest, containing young, was observed in Garrett County on June 13 and June 17, 1956 (G. Knight).

SPRING MIGRATION.—*Normal period:* April 25–30 to May 10–15; peak, May 1 to May 10. *Extreme arrival dates:* April 23, 1952, in Prince Georges County; April 24, 1924, in the District of Columbia (M. T. Cooke). *Extreme departure dates:* May 29, 1892, in Baltimore County (W. N. Wholey); May 20, 1882, in the District of Columbia (H. W. Henshaw); May 20, 1952, in Caroline County (A. J. Fletcher, M. W. Hewitt).

FALL MIGRATION.—*Normal period:* August 15–20 to September 1–10; peak, August 20 to August 30. *Extreme arrival dates:* August 2, 1896, in Baltimore County (F. C. Kirkwood); August 6, 1953, in Prince Georges County; August 8, 1889 (USNM), in the District of Columbia (H. M. Smith). *Extreme departure dates:* September 24, 1950, in Baltimore County (E. Willis); September 16, 1955, in Worcester County; September 14, 1924, in Montgomery County (A. Wetmore); September 13, 1921, in the District of Columbia (B. H. Swales, A. Wetmore).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

17 (3.5 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 17 at Patuxent Refuge on May 8, 1943; 12 near Seneca, Montgomery County, on May 3, 1952 (J. W. Terborgh); 6 at Port Tobacco, Charles County, on May 5, 1939 (I. N. Gabrielson, A. L. Nelson). *Fall:* 14 at Patuxent Refuge on August 28, 1943; 6 near Seneca, Montgomery County, on August 22, 1951 (R. R. Kerr, J. W. Terborgh).

BLUE-WINGED WARBLER *Vermivora pinus* (Linnaeus)

STATUS.—*Breeding* (see fig. 50): Fairly common locally in the eastern part of the Ridge and Valley section (occurring north of Myersville in the Blue Ridge Mountains of western Frederick County) and in the northeastern part of the Piedmont section (in the Susquehanna River valley of Cecil and Harford Counties); also recorded in 1951 at Chevy Chase, Montgomery County (nest with eggs—C. P. Scheid), and in 1954 in the vicinity of Northeast, Cecil County (J. W. Day); prior to 1900, this species occurred regularly in Baltimore County (Kirkwood, 1895) and Harford County (W. H. Fisher), in the area between Baltimore and Van Bibber; this species was also found nesting in 1880 near the District of Columbia (Richmond, 1888) and in Prince Georges

County, in the vicinity of Laurel (eggs, USNM—G. Marshall). *Transient*: Fairly common in the Piedmont, Upper Chesapeake, Eastern Shore, and Western Shore sections; uncommon in the Ridge and Valley section; rare in the Allegheny Mountain section (Brooks, 1936c).

HABITAT.—*Breeding*: Wet or moist brushy cut-over forests. *Transient*: Most numerous in flood-plain and swamp forests; occasional in other deciduous forest types.

NESTING SEASON.—Mid-May to early July. Nest-building was recorded as early as May 20, 1893, in Baltimore County (G. H. Gray). *Extreme egg dates* (5 nests): May 27, 1893 (G. H. Gray), and June 18, 1896 (F. C. Kirkwood), in Baltimore County. *Extreme nestling dates* (3 nests): June 13, 1892, and July 1, 1893, in Baltimore County (G. H. Gray).

SPRING MIGRATION.—*Normal period*: April 25–30 to May 10–15; peak, May 1 to May 10. *Extreme arrival dates*: April 21, 1954, in Worcester County (P. G. DuMont); April 23, 1925, in the District of Columbia (Mrs. T. M. Knappen); April 23, 1954, in Talbot County (R. L. Kleen). *Extreme departure dates*: May 26, 1905 (Oberholser, 1905), May 26, 1906 (D. C. Aud. Soc.), May 26, 1907 (W. L. McAtee), all in the District of Columbia; May 22, 1948, in Baltimore County (H. Kolb).

FALL MIGRATION.—*Normal period*: August 15–20 to September 10–20; peak, August 20 to September 5. *Extreme arrival dates*: August 5, 1949, in the District of Columbia (A. R. Stickley, Jr.); August 6, 1953, in Prince Georges County; August 8, 1950 and 1951, in Baltimore County (E. Willis). *Extreme departure dates*: October 4, 1947, in Prince Georges County; September 27, 1952, in Montgomery County (M. M. Snow).

MAXIMUM COUNTS.—*Spring*: 23 in the Pocomoke River area on May 5, 1951; 17 at Patuxent Refuge on May 10, 1950; 8 at Port Tobacco, Charles County, on May 5, 1939 (I. N. Gabrielson, A. L. Nelson). *Fall*: 4 at Patuxent Refuge on August 20, 1943, and August 24, 1942.

GOLDEN-WINGED WARBLER X BLUE-WINGED WARBLER HYBRIDS

RECORDS OF BREWSTER'S WARBLER ("*Vermivora leucobronchialis*").—This hybrid form has been recorded as follows: 1 seen at Glen Echo, Montgomery County, on April 26, 1953 (I. R. Barnes, P. A. DuMont); 1 collected at Beltsville, Prince Georges County, on May 1, 1895 (USNM—A. H. Thayer); 1 seen at Middle River, Baltimore County, on May 3, 1950 (E. Willis); 1 seen along the C. and O. Canal, Montgomery County, on May 3.

1953 (I. R. Barnes) ; 1 seen at Port Tobacco, Charles County, on May 4, 1953 (Mrs. J. Cooley, Jr.) ; 1 collected at Loch Raven, Baltimore County, on May 7, 1940 (Seibert, 1941) ; 2 seen at Patuxent Refuge on May 8, 1943 (Stewart, et al., 1952) ; 1 seen in the District of Columbia on May 9, 1947 (I. R. Barnes) ; 1 seen at Patuxent Refuge on May 10, 1950 ; 1 seen in the District of Columbia on May 13, 1950 (T. W. Donnelly) ; 1 banded in the District of Columbia on May 16, 1939 (Fr. E. Stoehr).

RECORDS OF LAWRENCE'S WARBLER ("*Vermivora lawrencei*").—This hybrid form has been recorded as follows: 1 seen in the District of Columbia on May 2, 1905 (T. H. Levering) ; and another on May 5, 1943 (A. Wetmore) ; 1 male collected at Plummers Island, Montgomery County, on May 12, 1907 (Osgood, 1907) ; 1 seen in Garrett County on June 28, 1936 (Brooks, 1936c) ; 1 seen at Patuxent Refuge on September 4, 1942 (Meanley, 1944).

TENNESSEE WARBLER *Vermivora peregrina* (Wilson)

STATUS.—*Transient*: Fairly common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; uncommon in the Upper Chesapeake and Western Shore sections; rare in the Eastern Shore section.

HABITAT.—Various types of deciduous forest.

SPRING MIGRATION.—*Normal period*: May 5–10 to May 20–25; peak, May 10 to May 20. *Extreme arrival dates*: April 28, 1953, in Frederick County (J. W. Richards) ; April 29, 1956, in Prince Georges County; May 1, 1954, in Montgomery County (J. H. Fales, C. N. Mason). *Extreme departure dates*: June 3, 1910, in the District of Columbia (R. W. Williams) ; May 30, 1917, in Prince Georges County (W. L. McAtee, A. Wetmore).

FALL MIGRATION.—*Normal period*: September 1–10 to October 5–15; peak, September 15 to October 5. *Extreme arrival dates*: August 20, 1955, in Baltimore County (C. M. Buchanan) ; August 25, 1951, in Montgomery County (I. R. Barnes) ; August 27, 1891, in Baltimore County (G. H. Gray) ; August 29, 1953, in Talbot County (R. L. Kleen). *Extreme departure dates*: November 30, 1889, in Frederick County (J. D. Figgins) ; November 17, 1951, in Montgomery County (1 banded—S. H. Low, J. H. Buckalew) ; October 22, 1922, in the District of Columbia (J. Kittredge, Jr.).

MAXIMUM COUNTS.—*Spring*: 66 at Patuxent Refuge on May 14, 1950 ; 15 in the Seneca area, Montgomery County, on May 9, 1953 (I. R. Barnes, et al.). *Fall*: 50 at Seneca, Montgomery County, on September 12, 1954 (J. W. Terborgh) ; 36 at Swallow Falls, Garrett County, on September 11, 1954 (L. W. Oring) ; 18 at Middle

River, Baltimore County, on September 25, 1951 (E. Willis); 12 at Patuxent Refuge on October 3, 1947.

ORANGE-CROWNED WARBLER *Vermivora celata* (Say)

STATUS.—*Fall transient*: Rare (15 records)—recorded in Montgomery, Baltimore, Prince Georges, and Worcester Counties. *Wintering*: Casual—recorded in Worcester County in 1952 (S. H. Low), 1953 (A. J. Fletcher, R. R. Kerr), 1954 (I. N. Gabrielson, A. R. Stickley, Jr.), and 1955 (3 seen—J. W. Terborgh); in Baltimore County in 1949-50 (R. D. Cole); and in the District of Columbia in 1928 (E. T. Wherry). *Spring transient*: Casual—1 observed in Baltimore County on May 11, 1892 (P. T. Blogg); and 1 seen on three dates, April 10-26, 1956, at Emmitsburg (J. W. Richards).

HABITAT.—Usually found in hedgerows or wood margins.

FALL MIGRATION.—*Extreme arrival date*: September 30, 1952, in Montgomery County (Cross, 1952). *Extreme departure dates*: November 12, 1950, in Baltimore County (E. Willis); November 8, 1952, in Worcester County (M. Gilbert).

NASHVILLE WARBLER *Vermivora ruficapilla* (Wilson)

STATUS.—*Breeding* (see fig. 48): Uncommon and local in the Allegheny Mountain section—occurring in Garrett County at the following locations: Mountain Lake (near Mt. Lake Park—M. G. Brooks); Cranberry Swamp ($\frac{1}{2}$ mile east of Finzel); Wolf Swamp (about 4 miles southeast of Grantsville); Cunningham Swamp (near Bittering); and the Maryland portion of Cranesville Swamp (just east of Cranesville, West Virginia). *Transient*: Fairly common in the Allegheny Mountain, and Ridge and Valley sections; uncommon in the Piedmont, Upper Chesapeake, and Western Shore sections; rare in the Eastern Shore section.

HABITAT.—*Breeding*: Brushy, cutover spruce bogs. *Transient*: Wood margins or open stands of swamp and flood-plain forests, and rich, moist forests on the upland.

NESTING SEASON.—A nest found in Wolf Swamp contained eggs on May 30, and nearly full-grown young on June 16, 1951. On June 12, 1949, adults were observed carrying food in the Maryland portion of Cranesville Swamp.

SPRING MIGRATION.—*Normal period*: April 25-30 to May 15-20; peak, May 1 to May 15. *Extreme arrival dates*: April 20, 1925, in the District of Columbia (W. H. Ball); April 23, 1946, in Prince Georges County; April 23, 1952, in Frederick County (J. W. Richards). *Extreme departure dates*: May 25, 1949, in Prince Georges County; May 24, 1917, in Montgomery County (A. Wetmore).

FALL MIGRATION.—*Normal period:* September 5–10 to October 5–15; peak, September 10 to October 5. *Extreme arrival date:* September 4, 1898, in Baltimore County (F. C. Kirkwood). *Extreme departure dates:* November 6, 1949, in Worcester County (M. B. Meanley); October 25, 1938, in the District of Columbia (W. B. McIlwaine, Jr.); October 23, 1954, in Baltimore County (C. M. Buchanan); October 19, 1950, in Prince Georges County (J. H. Fales).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 39 (3.5 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).
 21 (2 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 20+ at Waverly, Baltimore County, on May 12, 1892 (W. N. Wholey); 14 in the District of Columbia, and adjacent Prince Georges County, Maryland, on May 11, 1917 (Oberholser, 1917a); 10 at Emmitsburg, Frederick County, on April 27 and 28, 1954 (P. J. O'Brien, J. W. Richards). *Fall:* 3 at Patuxent Refuge on September 9, 1953, and October 3, 1947; 3 at Seneca, Montgomery County, on September 12, 1954 (J. W. Terborgh).

PARULA WARBLER *Parula americana* (Linnaeus)

STATUS.—*Breeding:* Common in the Western Shore section; locally common in the Eastern Shore section (most numerous along the Pocomoke River and its tributaries, uncommon elsewhere); fairly common in the Piedmont section; uncommon in the Ridge and Valley, and Allegheny Mountain sections; rare in the Upper Chesapeake section. *Transient:* Fairly common in all sections.

HABITAT.—Flood-plain and swamp forests, and rich, moist forests on the upland, including both deciduous and coniferous types.

NESTING SEASON.—Late April to late June. Nest-building was recorded as early as April 24, 1946, in Montgomery County (Peterson, 1946). *Extreme egg dates* (6 nests): May 15, 1947, and June 14, 1947, in Prince Georges County (M. B. Meanley). *Extreme nestling dates* (9 nests): May 28, 1930, in St. Marys County (F. C. Kirkwood) and June 25, 1893, in Baltimore County (W. N. Wholey).

SPRING MIGRATION.—*Normal period:* April 15–20 to May 20–25; peak, April 20 to May 10. *Extreme arrival dates:* April 6, 1928,

in the District of Columbia (A. H. Howell); April 7, 1946, in Worcester County; April 7, 1949, in Montgomery County (L. M. Wendt). *Extreme departure dates*: May 30, 1905, in the District of Columbia (H. C. Oberholser); May 30, 1944 and 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 20–30 to October 5–15; peak, September 10 to October 5. *Extreme departure dates*: December 14, 1936 (found dead, in “excellent condition”), in the District of Columbia (Lincoln, 1937); October 29, 1952, in Caroline County (M. W. Hewitt); October 20, 1948, in the District of Columbia (E. G. Davis).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 47 (40.1 in 85 acres) in well-drained, flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946); 22 (7.2 in 32½ acres) in another area of this habitat in 1944.
- 29 (4 in 14¼ acres) in poorly-drained, flood-plain forest (pin oak, sweetgum, red maple, red ash, etc.) in Prince Georges County in 1946.
- 19 (3.5 in 18¼ acres) in “second-growth river swamp” (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 16 (4.5 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 14 (1.5 in 11 acres) in upland seepage swamp forest (red maple, sweetgum, black gum, with dense understory of holly, sweet pepperbush, clammy azalea, maleberry, etc.) in Prince Georges County in 1946.
- 12 (4 in 32½ acres) in pine-oak forest (pitch pine, scrub pine and Spanish oak) in Prince Georges County in 1944.
- 12 (1.5 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 8 (1.5 in 20 acres) in “virgin hemlock stand” in Garrett County in 1949 (Robbins, 1949a).
- 6 (1.5 in 23¼ acres) in “mature northern hardwood forest” (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 4 (1.5 in 36 acres) in “virgin central hardwood deciduous forest” (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 112 at Patuxent Refuge on May 6, 1950; 102 in Montgomery County on May 8, 1954 (K. Stecher); 100 at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, F. M. Uhler); 49 in the Pocomoke River area of Worcester and Wicomico Counties on May 5, 1951. *Fall*: 80 in the District of Columbia on October 1, 1948 (I. R. Barnes, K. H. Weber); 35 near Cabin John, Montgomery County, on September 18, 1954 (P. A. DuMont); 23 found dead at the

Washington Monument, in the District of Columbia, on September 12, 1937 (Overing, 1938) ; 19 at Greenbelt, Prince Georges County, on October 6, 1954 (L. W. Oring).

YELLOW WARBLER *Dendroica petechia* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain, Ridge and Valley, and Upper Chesapeake sections, and in the tide-water areas of the Eastern Shore and Western Shore sections; uncommon elsewhere in the Eastern Shore and Western Shore sections, and in the Piedmont section. *Transient*: Common in the Allegheny Mountain section; uncommon in all other sections.

HABITAT.—Open growth of willow, and other small trees and shrubs on wet ground; also occurs in orchards, and in residential areas that contain an open growth of small ornamental trees.

NESTING SEASON.—Early May to early July (nesting peak, mid-May to mid-June). Nest-building was recorded as early as May 1, 1954, in Baltimore County (E. K. Lubbert). *Extreme egg dates* (99 nests): May 7, 1921, in the District of Columbia (M. J. Pellew) and June 17, 1951, in Baltimore County (E. Willis). *Extreme nestling dates* (27 nests): May 23, 1902 (F. C. Kirkwood), and July 10, 1951 (E. Willis), in Baltimore County. Fledglings out of the nest were recorded as early as May 26, 1935, in Allegany County (L. M. Llewellyn).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 25–30; peak, May 1 to May 20. *Extreme arrival dates*: April 3, 1953, in St. Marys County (R. R. Kerr); April 4, 1862 (USNM), in the District of Columbia (C. E. Schmidt); April 6, 1893, in Dorchester County (R. C. Watters). *Extreme departure dates*: June 11, 1916, in the District of Columbia (Oberholser, 1919); June 7, 1952, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 15–25 to September 20–30; peak, July 25 to September 1. *Extreme arrival dates*: July 9, 1933, in the District of Columbia (E. N. Grinnell); July 12, 1917, in Dorchester County (R. W. Jackson). *Extreme departure dates*: October 12, 1910, in the District of Columbia (E. J. Brown); October 6, 1927, in Montgomery County (W. H. Ball).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

63 (12 in 19.2 acres) in shrubby field with stream-bordered trees in Baltimore County in 1946, 47 (9 in 19.2 acres) in 1947 (Cooley, 1947).

5 (3 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 200 at Port To-

bacco, Charles County, on May 7, 1940 (C. Cottam, I. N. Gabrielson); 60 in the District of Columbia on May 4, 1952 (Mr. and Mrs. T. L. Zapf).

MAGNOLIA WARBLER *Dendroica magnolia* (Wilson)

STATUS.—*Breeding* (see fig. 32): Common in the Allegheny Mountain section at elevations above 2,500 feet (locally down to 2,100 feet). *Transient*: Common in all sections except the Eastern Shore section where it is uncommon.

HABITAT.—*Breeding*: Hemlock, red spruce, and mixed mesophytic forests that contain an understory of conifers. *Transient*: Various types of deciduous and coniferous forests, being most numerous in those that contain an understory shrub layer.

NESTING SEASON.—Probably late May to early July. *Extreme egg dates* (5 nests): June 3, 1925 (F. C. Kirkwood), and June 28, 1899 (Preble, 1900), in Garrett County. *Nestling dates* (3 nests): June 12, 1918 (J. M. Sommer); June 12, 1925 (G. Eifrig); and June 13, 1949, all in Garrett County.

SPRING MIGRATION.—*Normal period*: May 1–10 to May 25–30; peak, May 10 to May 20. *Extreme arrival dates*: April 22, 1891, in the District of Columbia (C. W. Richmond); April 28, 1905, in Baltimore County (F. C. Kirkwood); April 28, 1954, in Anne Arundel County (Mrs. G. Tappan, Mrs. W. L. Henderson). *Extreme departure dates*: June 8, 1954, in Baltimore County (S. W. Simon); June 3, 1945, in Prince Georges County; June 2, 1917, in the District of Columbia (F. Harper).

FALL MIGRATION.—*Normal period*: August 20–30 to October 5–15; peak, September 10 to September 25. *Extreme arrival dates*: August 15, 1886, in the District of Columbia (A. K. Fisher); August 19, 1952, in Baltimore County (E. Willis). *Extreme departure dates*: October 28, 1916, in the District of Columbia (Mr. and Mrs. L. D. Miner); October 27, 1951, in Garrett County (H. E. Slater).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 80 (16 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).
- 63 (6 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 40 (5 in 12½ acres) in "virgin spruce-hemlock bog forest" (red spruce and hemlock with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).
- 33 (3 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).

- 26 (6 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 22 (6 in 27½ acres) in "red pine plantation" (young trees about 20 feet in height) in Garrett County in 1949 (Robbins and Barnes, 1949).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 69 at Patuxent Refuge on May 10, 1950. *Fall*: 48 at Middle River, Baltimore County, on September 24, 1950 (E. Willis); 34 killed at the Washington Monument in the District of Columbia on September 12, 1937 (Overing, 1938); 29 at Patuxent Refuge on September 25, 1943; 25 at Cumberland, Allegany County, on September 21, 1901 (G. Eifrig).

CAPE MAY WARBLER *Dendroica tigrina* (Gmelin)

STATUS.—*Spring transient*: Uncommon in all sections except the Eastern Shore section where it is rare. *Fall transient*: Fairly common in all sections. *Wintering*: Accidental—I recorded in the District of Columbia on December 16, 1888, and another on December 16, 1916 (Richmond, 1917); 1 seen in Frederick County on March 12, 1950 (R. T. Smith).

HABITAT.—Various types of forest, with preference generally shown for young pine stands.

SPRING MIGRATION.—*Normal period*: May 1–5 to May 15–20; peak, May 5 to May 15. *Extreme arrival dates*: April 26, 1950, in the District of Columbia (F. C. Cross); April 27, 1954, in Prince Georges County; April 27, 1954, in Montgomery County (J. H. Fales); April 28, 1954, in Frederick County (J. W. Richards). *Extreme departure dates*: June 1, 1924, in Baltimore County (J. M. Sommer); May 30, 1917, in Prince Georges County (A. Wetmore); May 30, 1921, in the District of Columbia (J. Kittredge, Jr.).

FALL MIGRATION.—*Normal period*: September 1–10 to October 15–25; peak, September 10 to October 10. *Extreme arrival dates*: August 23, 1942 (USNM), in Prince Georges County; August 25, 1890, in Montgomery County (J. D. Figgins); August 25, 1951, in Baltimore County (R. D. Cole, E. Willis); August 25, 1955, in Talbot County (R. L. Kleen). *Extreme departure dates*: November 26, 1915, in the District of Columbia (P. Bartsch); November 10, 1951, in Queen Annes County; October 26, 1944 and 1954, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 36 near Seneca, Montgomery County, on May 12, 1951 (R. F. Deed, C. N. Mason); 21 at Patuxent Refuge on May 13, 1950. *Fall*: "Thousands" at Ocean City on October 2, 1949 (M. B. Meanley); 41 at Patuxent Refuge on Octo-

ber 7, 1944; 15 at South Mountain, along the boundary between Frederick and Washington Counties, on September 25, 1949 (R. J. Beaton).

BANDING.—One banded at Monkton, Baltimore County, on May 5, 1955, was recovered near Chatham, New Brunswick, on June 1, 1955.

BLACK-THROATED BLUE WARBLER *Dendroica caerulescens* (Gmelin)

STATUS.—*Breeding* (see fig. 32): Common in the Allegheny Mountain section at elevations above 2,000 feet. *Transient*: Common in all sections except the Eastern Shore section, where it is uncommon. *Wintering*: Accidental—1 was recorded in the District of Columbia on December 22, 1930 (Booker, 1931), and remained throughout the months of January, February, and March, 1931 (Oberholser, 1931).

HABITAT.—*Breeding*: Mixed mesophytic, oak-chestnut, hemlock, and red spruce forests with understory of great laurel, mountain laurel, or various deciduous shrubs. *Transient*: Various types of deciduous forest.

NESTING SEASON.—Probably late May to early July. *Egg dates* (3 nests): All on June 3, 1925, in Garrett County (F. C. Kirkwood). *Nestling dates* (2 nests): June 11, 1918 (J. M. Sommer), and June 25, 1949, both in Garrett County.

SPRING MIGRATION.—*Normal period*: April 25–30 to May 20–25; peak, May 1 to May 15. *Extreme arrival dates*: April 15, 1928, in Harford County (F. C. Kirkwood); April 19, 1896, in the District of Columbia (J. D. Figgins); April 21, 1929, in Baltimore County (F. C. Kirkwood, J. M. Sommer). *Extreme departure dates*: June 5, 1949, in Prince Georges County (R. C. Simpson); June 5, 1952, in Frederick County (J. W. Richards); May 30, 1897, in Baltimore County (F. C. Kirkwood); May 30, 1888, in the District of Columbia (C. W. Richmond).

FALL MIGRATION.—*Normal period*: August 25–September 5 to October 10–20; peak, September 20 to October 10. *Extreme arrival dates*: August 19, 1951, in Baltimore County (E. Willis); August 21, 1887, in the District of Columbia (A. K. Fisher); August 21, 1944, in Prince Georges County; August 22, 1930, in Dorchester County (H. B. Curry). *Extreme departure dates*: October 31, 1953, in Montgomery County (P. G. DuMont); October 29, 1913, in the District of Columbia (L. D. Miner).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

58 (11.5 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).

- 52 (6.5 in 12½ acres) in "virgin spruce-hemlock bog forest" (red spruce and hemlock with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).
- 48 (3 in 6¼ acres) in "young second-growth resulting from cutting" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 17 (1.5 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 119 at Patuxent Refuge on May 10, 1950; 50 at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, A. L. Nelson); 40 at Unity, Montgomery County, on May 9, 1953 (S. H. Low). *Fall*: 29 at Patuxent Refuge on October 11, 1947; 17 at Greenbelt, Prince Georges County, on October 7, 1954 (L. W. Oring); 9 banded on the barrier beach north of Ocean City on September 13, 1955.

MYRTLE WARBLER *Dendroica coronata* (Linnaeus)

STATUS.—*Breeding*: Accidental—an adult male and female, the latter with a broken wing, and 3 young about one-half grown were reported near Havre de Grace, Harford County, in June 1879 (Kumlien, 1880). *Transient*: Abundant in all sections. *Wintering*: Abundant in the southern part of the Eastern Shore section (Worcester, Somerset, Wicomico, and Dorchester Counties); common elsewhere in the Eastern Shore section, and in St. Marys County; fairly common elsewhere in the Western Shore and Upper Chesapeake sections; uncommon in the Piedmont, and Ridge and Valley sections. *Summer vagrant*: One was collected on August 7, 1859, in the District of Columbia (E. Coues); 1 was seen at Middle River, Baltimore County, on July 4 and July 24, 1951 (E. Willis).

HABITAT.—*Transient*: Various types of forest. *Wintering*: Flood-plain and swamp forests, and brushy areas near tidewater—at this season, usually found where either bayberry or poison ivy is common; also occurs locally in red-cedar thickets.

SPRING MIGRATION.—*Normal period*: March 10–20 to May 15–25; peak, April 15 to May 15. *Extreme arrival dates*: March 8, 1917, in Dorchester County (R. W. Jackson); March 8, 1953, in Caroline County (A. M. Thompson). *Extreme departure dates*: May 31, 1915, in Baltimore County (J. M. Sommer); May 30, 1917, in Prince Georges County (W. L. McAtee, A. Wetmore); May 30, 1954, in Charles County (A. R. Stickley, Jr.).

FALL MIGRATION.—*Normal period*: September 20–30 to November 20–30; peak, October 5 to November 10. *Extreme arrival dates*: August 27, 1954, in Caroline County (M. W. Hewitt); August 30, 1913 (F. C. Kirkwood), and August 31, 1950 (Mr. and Mrs. R. D.

Cole), in Baltimore County; September 4, 1955, in Talbot County (R. L. Kleen). *Extreme departure dates*: December 20, 1944, in Prince Georges County; December 16, 1903, in the District of Columbia (A. K. Fisher).

MAXIMUM COUNTS.—*Spring*: 300 at Port Tobacco, Charles County, on May 5, 1939 (I. N. Gabrielson, F. M. Uhler); 300 along the C. and O. Canal in Montgomery County, on May 13, 1950 (P. A. DuMont); 240 at Greenbelt, Prince Georges County, on May 9, 1953 (L. W. Oring, et al.). *Fall*: 300 in the Ocean City area on October 25, 1949; 196 at Patuxent Refuge on October 26, 1944; 100 at Herring Run, Baltimore County, on October 16, 1930 (J. M. Sommer). *Winter* (Christmas counts): 6,500 in southern Dorchester County on December 28, 1953; 4,001 in the Ocean City area on December 27, 1954; 1,138 in the Wicomico River area, Charles and St. Marys Counties, on January 1, 1954.

BANDING.—One recovered in Dorchester County, on February 12, 1956, had been banded on Nantucket Island, Massachusetts, on October 20, 1955.

BLACK-THROATED GREEN WARBLER *Dendroica virens* (Gmelin)

STATUS.—*Breeding* (see fig. 51): Common in the Allegheny Mountain section; fairly common in the western part of the Ridge and Valley section (Alleghany County); uncommon in the eastern

FIGURE 51.—Breeding range of Black-throated Green Warbler.

part of the Ridge and Valley section (Washington County, and in western Frederick County from Myersville north to the Pennsylvania line; also recorded in summer (July 20, 1947, and June 26, 1948) in the Piedmont section at Cabin John, Montgomery County. *Transient*: Common in all sections except the Eastern Shore section where it is uncommon.

HABITAT.—*Breeding*: Hemlock stands, and mixed mesophytic forest (including deciduous types as well as mixed stands of coniferous and deciduous trees). *Transient*: Various types of deciduous forest.

NESTING SEASON.—Probably mid-May to early July. Although no nests have been located, young birds out of the nest have been recorded several times. The earliest of these observations was made on June 12, 1949, in Garrett County. A pair was observed copulating as early as May 19, 1935, in Allegany County (L. M. Llewellyn).

SPRING MIGRATION.—Normal period: April 20–25 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates*: April 16, 1950 (P. A. DuMont), and April 18, 1920 (B. H. Swales), in Montgomery County; April 19, 1934, in the District of Columbia (C. H. Benjamin); April 19, 1946, and April 19, 1949, in Prince Georges County. *Extreme departure dates*: June 10, 1917, in the District of Columbia (D. C. Mabbott); June 5, 1954, in Baltimore County (S. W. Simon); May 30, 1917 (W. L. McAtee, A. Wetmore), and May 30, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 25–September 5 to October 10–20; peak, September 10 to October 5. *Extreme arrival dates*: August 9, 1952, in the District of Columbia (A. R. Stickley, Jr.); August 10, 1942, in Baltimore County (H. Kolb); August 21, 1949, in Prince Georges County. *Extreme departure dates*: October 31, 1953, in Montgomery County (P. G. DuMont); October 31, 1954, in Anne Arundel County (Mr. and Mrs. H. N. Page); October 27, 1956, in Prince Georges County; October 23, 1954, in Frederick County (J. W. Richards).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 36 (4.5 in 12½ acres) in "mature oak-maple ridge forest" in Garrett County in 1949 (Robbins, 1949b).
- 80 (6 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).
- 21 (2 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 9 (2 in 23¼ acres) in "mature northern hardwood forest" (black cherry,

beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).

7 (2 in 27½ acres) in "red pine plantation" (young trees about 20 feet in height) in Garrett County in 1949 (Robbins and Barnes, 1949).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 37 at Patuxent Refuge on May 10, 1950. *Fall*: 35 at Middle River, Baltimore County, on September 24, 1950 (E. Willis); 30 near Seneca, Montgomery County, on September 25, 1949 (I. R. Barnes, S. A. Briggs); 28 at Patuxent Refuge on September 25, 1943.

CERULEAN WARBLER *Dendroica cerulea* (Wilson)

STATUS.—*Breeding* (see fig. 52): Fairly common in the western part of the Ridge and Valley section (Alleghany and Washington Counties, west of Hagerstown Valley); fairly common locally in the Piedmont section—occurring in the Susquehanna River valley, in the Potomac River valley, along the Patapsco River, and in the vicinity of Dulaney Valley northeast of Baltimore City, in Baltimore County (Kolb, 1943); uncommon in the Savage River valley in Garrett County; rare elsewhere in the Allegheny Mountain section. *Transient*: Uncommon in the Ridge and Valley section; rare in all other sections.

FIGURE 52.—Breeding range of Cerulean Warbler.

HABITAT.—Flood-plain forests, and rich, moist deciduous forests on the upland.

NESTING SEASON.—Probably late May to early July. *Egg dates* (2 nests): June 9, 1901 (F. C. Kirkwood), and June 10, 1900 (Kirkwood, 1901), in Baltimore County. *Nestling dates* (2 nests): June 9, 1901, and June 14, 1903, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Occurrence peak*: May 1 to May 15. *Extreme arrival dates*: April 20, 1954, in Allegany County (L. McCollough, E. Minke); April 25, 1953, in Frederick County (J. W. Richards); April 26, 1953, in Worcester County; April 27, 1902, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: May 31, 1949, in Prince Georges County; May 29, 1902, in Montgomery County (USNM—W. R. Maxon).

FALL MIGRATION.—*Extreme arrival dates*: August 8, 1953, in Prince Georges County; August 18, 1948, in Montgomery County (N. Jenison); August 19, 1948, in Baltimore County (I. E. Hampe). *Extreme departure dates*: September 25, 1955, in Montgomery County (P. A. DuMont); September 23, 1951, in Baltimore County (E. Willis).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 11 near Seneca, Montgomery County, on May 5, 1951 (F. C. Cross); 5 near Emmitsburg, Frederick County, on May 3, 1954 (J. W. Richards); 3 at Patuxent Refuge on May 8, 1948. *Fall*: 7 near Seneca, Montgomery County, on August 25, 1951 (I. R. Barnes).

BLACKBURNIAN WARBLER *Dendroica fusca* (Müller)

STATUS.—*Breeding* (see fig. 53): Common in the Allegheny Mountain section; uncommon in the western part of the Ridge and Valley section (Allegany County); rare and local in the eastern part of the Ridge and Valley section (occurring in Frederick County along Hunting Creek, at elevations above 1,280 feet). *Transient*: Fairly common in all sections except the Eastern Shore section where it is rare.

HABITAT.—*Breeding*: Red spruce, hemlock, and white pine stands, and mixed mesophytic forests. *Transient*: Various types of forest.

NESTING SEASON.—Probably late May to early July. Nest-building was recorded in Garrett County on May 31, 1951, and on June 15, 1918 (Eifrig, 1920a). Adults were observed carrying food in Garrett County on June 25, 1949.

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 20–30; peak, May 5 to May 20. *Extreme arrival date*: April 23,

FIGURE 53.—Breeding ranges of Blackburnian Warbler and Yellow-throated Warbler.

1920, in Montgomery County (A. Wetmore). *Extreme departure dates*: June 4, 1945, in Prince Georges County; June 3, 1907, in the District of Columbia (W. W. Cooke).

FALL MIGRATION.—*Normal period*: August 20–25 to September 25–October 5; peak, September 5 to September 25. *Extreme arrival dates*: August 2, 1872, in the District of Columbia (USNM—E. Coues); August 14, 1886, in the District of Columbia (A. K. Fisher); August 18, 1951, in Baltimore County (Mr. and Mrs. R. D. Cole); August 19, 1942, and August 19, 1949, in Prince Georges County. *Extreme departure dates*: October 17, 1953, in Montgomery County (P. G. DuMont); October 17, 1954, in Anne Arundel County (Mr. and Mrs. H. N. Page); October 16, 1954, in Baltimore County (S. W. Simon).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 110 (22 in 20 acres) in “virgin hemlock forest” in Garrett County in 1949 (Robbins, 1949a).
- 96 (12 in 12½ acres) in “virgin spruce-hemlock bog forest” (red spruce and hemlock, with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).
- 39 (3.5 in 9 acres) in “scrub spruce bog” (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 89 at Patuxent Refuge on May 10, 1950; 30 at Emmitsburg, Frederick County, on May 5, 1956 (J. W. Richards). *Fall*: 12 near Seneca, Montgomery County, on September 25, 1949 (I. R. Barnes, S. A. Briggs); 8 at Patuxent Refuge on September 11, 1943.

YELLOW-THROATED WARBLER *Dendroica dominica* (Linnaeus)

STATUS.—*Breeding and transient* (see fig. 53): Common in the Eastern Shore section and in the southern part of the Western Shore section (St. Marys County and southern portions of Charles and Calvert Counties); uncommon near tidewater in the northern part of the Western Shore section; rare in the interior of the northern part of the Western Shore section and along the Potomac River in the Piedmont section (recorded up to Harrison Island—J. V. Dennis). *Vagrant*: One singing at an elevation of 800 feet near Alesia, Carroll County, June 21, 1951; also several records from the Upper Chesapeake section in spring.

HABITAT.—Stands of loblolly pine, and bald cypress swamps; also occurs sparingly in mature stands of scrub pine and pitch pine.

NESTING SEASON.—Mid-April to early July. Nest-building was recorded as early as April 18, 1949, just across the Maryland boundary at Dyke, Virginia. In Dorchester County, Maryland, nest-building was recorded on May 9, 1920, and a nest with eggs was found on May 16, 1919 (Jackson, 1941). Adults were observed feeding young out of the nest on June 8, 1929, in Dorchester County (F. C. Kirkwood). A nest with young was found in Charles County on June 9, 1951 (J. W. Taylor, Jr.). A pair was observed feeding young on Harrison Island in the Potomac River on June 28, 1953 (J. V. Dennis). An occupied nest was found in Anne Arundel County as late as July 10, 1954 (Mrs. W. L. Henderson, Mrs. G. Tappan).

PERIOD OF OCCURRENCE.—*Normal period*: April 1–10 to September 10–20. *Extreme arrival dates*: March 27, 1948, in Calvert County; March 30, 1927, in the District of Columbia (K. H. Stuart); March 30, 1946, in Anne Arundel County. *Extreme departure dates*: September 27, 1919, in the District of Columbia (M. J. Pellew); September 26, 1953, in Montgomery County (P. G. DuMont, E. Hall).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

29 (6 in 21 acres) in "immature loblolly-shortleaf pine stand" (trees from 45 to 65 feet in height) in Worcester County in 1948 (Springer and Stewart, 1948c).

- 11 (2 in 18¾ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 25 along the Pocomoke River in Worcester County on May 5, 1951; 16 in St. Marys County on May 8, 1954 (J. W. Terborgh).

CHESTNUT-SIDED WARBLER *Dendroica pensylvanica* (Linnaeus)

STATUS.—*Breeding* (see fig. 54): Common in the Allegheny Mountain, and Ridge and Valley sections (chiefly at elevations above 1,200 feet); fairly common locally in the northern part of the Piedmont section, occurring in northern Carroll County, and in the valley of Gunpowder Falls in northern Baltimore County; rare and local in the southern part of Baltimore County, occurring in the vicinity of Reisterstown (first recorded by Brumbaugh, 1915) and once near the north boundary of Baltimore City (Meanley, 1938). *Summer vagrant*: One singing at Fulton, Howard County on June 26, 1951; 10 July specimens (USNM) from Laurel, Maryland, and the District of Columbia taken during the period 1888-1891. *Transient*: Common in all sections except the Eastern Shore section where it is uncommon.

FIGURE 54.—Breeding range of Chestnut-sided Warbler.

HABITAT.—*Breeding*: Brushy, cut-over areas of oak-chestnut, mixed mesophytic, and northern hardwood forests; also in bear-oak barrens. *Transient*: Various types of deciduous forest.

NESTING SEASON.—Late May to mid-July. *Extreme egg dates* (18 nests): May 28, 1919, in Garrett County (J. M. Sommer), and June 26, 1937, in Baltimore County (Meanley, 1938). A nest containing young was observed in Garrett County on June 15, 1955 (L. McCollough, E. Minke). Young out of the nest, but not fully fledged, were recorded on July 17, 1915, in Baltimore County (Brumbaugh, 1915).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: April 19, 1902, in the District of Columbia (H. W. Maynard); April 23, 1893, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: May 30, 1891, in the District of Columbia (C. W. Richmond); May 30, 1917, in Prince Georges County (W. L. McAtee, A. Wetmore); May 30, 1946, in Anne Arundel County.

FALL MIGRATION.—*Normal period*: August 15–20 to September 25–October 5; peak, August 20 to September 10. *Extreme arrival dates*: August 10, 1889 (C. W. Richmond), and August 10, 1894 (J. D. Figgins), in the District of Columbia; August 12, 1889, in Baltimore County (A. H. Jennings); August 12, 1944, in Prince Georges County; August 14, 1951, in Caroline County (M. W. Hewitt). *Extreme departure dates*: October 14, 1906, in Montgomery County (A. K. Fisher); October 11, 1880, in Prince Georges County (W. Palmer); October 11, 1947, in Baltimore County (R. M. Bowen).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

79 (16.5 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

67 (10 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 161 at Patuxent Refuge on May 10, 1950; 36 near Buckeystown, Frederick County, on May 6, 1950. *Fall*: 32 near Baltimore on September 5, 1893 (G. H. Gray); 32 at Patuxent Refuge on August 20, 1943.

BAY-BREASTED WARBLER *Dendroica castanea* (Wilson)

STATUS.—*Transient*: Fairly common in all sections except the Eastern Shore section where it is rare.

HABITAT.—Various types of forest. In spring, a preference is shown for stands of young pine.

SPRING MIGRATION.—*Normal period*: May 5–10 to May 20–25;

peak, May 10 to May 20. *Extreme arrival dates*: May 1, 1932, in Montgomery County (F. C. Lincoln); May 2, 1896, in the District of Columbia (H. W. Oldys). *Extreme departure dates*: June 7, 1950, in Anne Arundel County (M. McLean); June 2, 1917, in Baltimore County (C. H. Grace); June 2, 1917, in the District of Columbia (F. Harper).

FALL MIGRATION.—*Normal period*: August 20–30 to October 1–10; peak, September 5 to September 25. *Extreme arrival dates*: August 17, 1921, in the District of Columbia (B. H. Swales); August 18, 1939, in Garrett County (H. Kolb); August 19, 1942, in Prince Georges County; August 19, 1952, in Frederick County (J. W. Richards). *Extreme departure dates*: November 6, 1887, in the District of Columbia (H. W. Henshaw); November 1, 1896, in Baltimore County (F. C. Kirkwood); October 19, 1888, in the District of Columbia (R. Ridgway).

MAXIMUM COUNTS.—*Spring*: 43 at Greenbelt, Prince Georges County, on May 12, 1956 (L. W. Oring); 30 along the Potomac River in Washington County on May 12, 1952 (Dr. and Mrs. R. S. Stauffer); 24 at Patuxent Refuge on May 13, 1950; 15 near Emmitsburg, Frederick County, on May 17, 1952 (J. W. Richards). *Fall*: 22 at Patuxent Refuge on September 13, 1943; 18 at Seneca, Montgomery County, on September 12, 1954 (J. W. Terborgh).

BLACKPOLL WARBLER *Dendroica striata* (Forster)

STATUS.—*Transient*: Common, occasionally abundant, in all sections except the Eastern Shore section where it is fairly common. *Summer vagrant*: Accidental—1 seen in Montgomery County on June 27, 1951 (J. H. Fales); 1 seen in Calvert County on July 6, 1928 (Ball, 1930a); one collected in the District of Columbia on July 30, 1893 (Brown, 1894).

HABITAT.—Various types of coniferous and deciduous forests. During the latter part of the spring migration they usually concentrate in stands of young pine.

SPRING MIGRATION.—*Normal period*: May 1–5 to June 1–10; peak, May 10 to May 30. *Extreme arrival dates*: April 21, 1916, in the District of Columbia (L. D. Miner, R. W. Moore); April 23, 1954, in Anne Arundel County (Mrs. G. Tappan); April 25, 1953 (L. W. Oring), and April 25, 1948, in Prince Georges County. *Extreme departure dates*: June 16, 1907 (R. W. Williams, Jr.), June 16, 1915 (A. H. Howell), and June 16, 1926 (S. F. Blake), in the District of Columbia; June 14, 1907 in Allegany County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: September 10–20 to October

15-25; peak, September 25 to October 10. *Extreme arrival dates:* September 1, 1889, in the District of Columbia (USNM—C. W. Richmond); September 3, 1872, in the District of Columbia (USNM—D. W. Scott). *Extreme departure dates:* November 12, 1949, in Worcester County; November 9, 1930, in the District of Columbia (H. C. Oberholser).

MAXIMUM COUNTS.—*Spring:* 145 at Patuxent Refuge on May 24, 1949; 100+ at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, A. L. Nelson); 100 at Sycamore Island in Montgomery County on May 28, 1949 (P. A. DuMont). *Fall:* 140 at Patuxent Refuge on October 11, 1947.

PINE WARBLER *Dendroica pinus* (Wilson)

STATUS.—*Breeding and transient* (see fig. 55): Abundant in the Eastern Shore section, and in the southern part of the Western Shore section (St. Marys County, and southern portions of Calvert and Charles Counties); fairly common elsewhere in the Western Shore section; uncommon in the western part of the Ridge and Valley section (Allegany County), and locally in the Allegheny Mountain section (in the vicinity of Deep Creek Lake—M. G. Brooks); rare in the Piedmont and Upper Chesapeake sections, and in the eastern part of the Ridge and Valley section (Washing-

FIGURE 55.—Breeding range of Pine Warbler.

ton and Frederick Counties). *Wintering*: Rare in the Eastern Shore section, and near tidewater in the Western Shore section; casual in the interior of the Western Shore section, and in the Piedmont section—recorded at Darlington, Harford County, during the winter of 1933-34 (S. Mason, Jr.), and at Greenbelt, Prince Georges County, during the winter of 1953-54 (L. W. Oring).

HABITAT.—*Breeding*: Most numerous in stands of loblolly pine and pitch pine; also occurs sparingly in mature stands of scrub pine and white pine. *Transient*: Pine stands; also occurs in marginal habitats in residential and agricultural areas in fall, and to a lesser extent in spring.

NESTING SEASON.—Probably early April to mid-June. Nest-building was recorded as early as April 5, 1921, in Dorchester County (R. W. Jackson). *Extreme egg dates* (7 nests): April 19, 1920, and May 20, 1919, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (3 nests): May 2, 1919, in Dorchester County (R. W. Jackson) and May 26, 1930, in St. Marys County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: March 10-20 to April 20-30; peak, March 20 to April 20. *Extreme arrival dates*: March 3, 1945, in Prince Georges County; March 5, 1922, in the District of Columbia (C. S. Baer). *Extreme departure date*: May 3, 1947, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 15-25 to October 15-25; peak, September 5 to October 5. *Extreme departure dates*: October 31, 1943, in Prince Georges County; October 28, 1952, in Anne Arundel County (Mrs. W. L. Henderson); October 27, 1900, in Allegany County (G. Eifrig).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 76 (16 in 21 acres) in "immature loblolly-shortleaf pine stand" (trees from 45 to 65 feet in height) in Worcester County in 1948 (Springer and Stewart, 1948c).
- 20 (6.4 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, and Spanish oak) in Prince Georges County in 1944.
- 10 (2 in 20 acres) in mature scrub pine stand in Prince Georges County in 1946.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 250 at Point Look-out, St. Marys County, on April 9, 1953 (J. Hailman); 50 in Charles County on March 29, 1953 (J. W. Terborgh); 15 at Patuxent Refuge on April 6, 1947. *Fall*: 20 at Patuxent Refuge on September 27, 1947. *Winter* (Christmas counts): 11 in the Ocean City area on December 27, 1955; 4 in the St. Michaels area, Talbot County, on December 29, 1953.

PRAIRIE WARBLER *Dendroica discolor* (Vieillot)

STATUS.—*Breeding* (see fig. 56) : Common in the Eastern Shore, Western Shore, and Ridge and Valley sections; fairly common (locally) in the Piedmont section; rare in the Upper Chesapeake and Allegheny Mountain sections. *Transient*: Uncommon in the Eastern Shore, Western Shore, Piedmont, and Ridge and Valley sections; rare in the Upper Chesapeake section.

FIGURE 56.—Breeding range of Prairie Warbler.

HABITAT.—Especially characteristic of abandoned fields with open stands of young pine, including scrub pine, pitch pine, and loblolly pine; also occurs locally in abandoned fields with open stands of young sweetgum, in brushy cut-over or burned-over upland forests, and in weedy or abandoned orchards.

NESTING SEASON.—Mid-May to late July (nesting peak, late May to early July). *Extreme egg dates* (30 nests) : May 14, 1891 (W. B. Barrows), and July 19, 1926 (S. F. Blake), in the District of Columbia. *Extreme nestling dates* (20 nests) : May 25, 1949, in Prince Georges County (E. C. Robbins) and July 12, 1947, in Baltimore County (H. Kolb).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 15–25; peak, April 25 to May 15. *Extreme arrival dates*: April 12, 1883,

in the District of Columbia (H. W. Henshaw) ; April 12, 1949, in Anne Arundel County (Mrs. W. L. Henderson).

FALL MIGRATION.—*Normal period:* August 5–15 to September 15–25; peak, August 15 to September 5. *Extreme arrival dates:* July 31, 1951 and 1953, in Prince Georges County. *Extreme departure dates:* November 19, 1954, in Caroline County (Mrs. A. J. Fletcher) ; October 20, 1952, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan) ; October 6, 1910, in the District of Columbia (E. J. Brown).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 85 (22 in 26 acres) in “dry deciduous scrub” (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).
- 57 (4 in 7 acres) in pine field (abandoned field with open growth of young scrub pine) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 50 (15 in 30 acres) in “damp deciduous scrub with standing dead trees” (burned-over, poorly drained upland forest) in Prince Georges County in 1947 (Stewart, et al., 1947).
- 50 (9 in 18 acres) in brushy, well-drained, abandoned farmland in Prince Georges County in 1947.
- 48 (10 in 21 acres) in “immature loblolly-shortleaf pine stand” (trees 45 to 65 feet in height) in Worcester County in 1948 (Springer and Stewart, 1948c).
- 46 (16 in 34½ acres) in pine field (abandoned field with open growth of young scrub pine) in Prince Georges County in 1945.
- 33 (6.5 in 19½ acres) in sweetgum field (abandoned field with open growth of young sweetgum) in Prince Georges County in 1945.
- 18 (4.5 in 25 acres) in “unsprayed apple orchard with unmowed ground cover” in Allegany County in 1948 (Springer and Stewart, 1948b).
- 18 (4 in 22 acres) in “unsprayed apple orchard with infrequently mowed ground cover” in Worcester County in 1948 (Springer and Stewart, 1948b).
- 8 (4 in 47½ acres) in hedgerows in agricultural and abandoned farmland areas (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1945.

MAXIMUM COUNTS (nonbreeding).—*Spring:* 75 at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, F. M. Uhler) ; 43 in Anne Arundel County on May 10, 1952 (J. W. Terborgh, et al.) ; 37 at Patuxent Refuge on May 3, 1947. *Fall:* 7 at Patuxent Refuge on August 17, 1944.

PALM WARBLER *Dendroica palmarum* (Gmelin)

STATUS.—*Transient:* Fairly common in all sections. *Wintering:* Uncommon in Worcester County; rare elsewhere in the Eastern Shore section, and near tidewater in the Western Shore and Upper Chesapeake sections; casual in the Piedmont, and Ridge and Valley sections—recorded in Baltimore County on December 17,

1911 (J. L. Ulman), in Montgomery County during the winter of 1949-50 (S. H. Low) and on December 19, 1954, in Howard County on December 13, 1955 (S. H. Low), and December 26, 1952, and in Allegany County at McCoole (L. M. Llewellyn) on December 28, 1947.

HABITAT.—Wood margins, hedgerows, roadsides and other marginal habitats.

SPRING MIGRATION.—*Normal period:* April 1-10 to May 1-10; peak, April 10 to April 25. *Extreme arrival dates:* March 22, 1952, in Caroline County (M. W. Hewitt); March 26, 1929, in Montgomery County (Mr. and Mrs. W. J. Whiting); March 29, 1947, in Howard County; March 29, 1953, in Baltimore County (H. Kolb). *Extreme departure dates:* May 27, 1897, and May 24, 1931, in Baltimore County (F. C. Kirkwood); May 20, 1917, in the District of Columbia (W. L. McAtee); May 13, 1923, in Montgomery County (F. C. Lincoln); May 12, 1950, in Prince Georges County; May 12, 1951, in Frederick County (J. W. Richards). The extreme dates for the Yellow Palm Warbler (*Dendroica palmarum hypochrysea*) are March 22, 1952 (M. W. Hewitt), and May 24, 1931 (F. C. Kirkwood). The Western Palm Warbler (*Dendroica palmarum palmarum*) has been recorded only 16 times in spring, the extreme dates being April 12, 1947, in the District of Columbia (R. Tousey) and May 27, 1897, in Baltimore (F. C. Kirkwood).

FALL MIGRATION.—*Normal period:* September 10-20 to November 1-10; peak, September 25 to October 25. *Extreme arrival dates:* August 30, 1939, in Montgomery County (J. H. Fales); September 4, 1887 (H. W. Henshaw), and September 4, 1929 (L. D. Miner), in the District of Columbia; September 5, 1942 (USNM), in Prince Georges County. *Extreme departure dates:* November 20, 1943, in Prince Georges County; November 18, 1914, in the District of Columbia (J. H. Riley); November 14, 1948, in Anne Arundel County (E. J. Stivers). The bulk of the Western Palms pass through before October 10; the bulk of the Yellow Palms after that date. Extremes for the Western Palm Warbler are September 5, 1942, and November 14, 1947. Extremes for the Yellow Palm Warbler are September 15, 1946 (J. H. Fales), and November 14, 1948 (E. J. Stivers).

MAXIMUM COUNTS.—*Spring:* 63 (Yellow Palm) at Patuxent Refuge on April 21, 1944. *Fall:* 25 (Western Palm) north of Ocean City, Worcester County, on September 14, 1955; 18 (Western Palm) at Point Lookout, St. Marys County, on September 27, 1953 (J. W. Terborgh); 15 (Yellow Palm) at Patuxent Refuge on October 15, 1942. *Winter:* 41 (39 Western, 2 Yellow) in the Ocean

City area on December 27, 1955 (Christmas count); 30 (20 Yellow, 10 Western) in the Denton area, Caroline County, on December 15, 1954 (Mrs. A. J. Fletcher); 12 (9 Western, 3 Yellow) in southeastern Worcester County on December 23, 1946; 7 (6 Western, 1 Yellow) near Rockville, Montgomery County, on December 19, 1954; 6 in the Chase area in Baltimore and Harford Counties on January 3, 1954 (Christmas count).

OVENBIRD *Seiurus aurocapillus* (Linnaeus)

STATUS.—*Breeding*: Abundant in the Ridge and Valley section; common in the Allegheny Mountain, Piedmont, and Western Shore sections; fairly common locally in the Eastern Shore section; uncommon and local in the Upper Chesapeake section. *Transient*: Fairly common in all sections.

HABITAT.—*Breeding*: Various types of well-drained, deciduous forest on the upland; also in pine stands with deciduous understorey. *Transient*: All types of forest.

NESTING SEASON.—Early May to mid-July (nesting peak, mid-May to late June). *Extreme egg dates* (52 nests): May 10, 1945 (E. G. Cooley), and July 6, 1943 (J. B. Cope), in Prince Georges County. *Extreme nestling dates* (27 nests): May 22, 1939, in the District of Columbia (W. B. Tyrrell) and July 17, 1893, in Baltimore County (G. H. Gray).

SPRING MIGRATION.—*Normal period*: April 15–25 to May 15–25; peak, April 25 to May 10. *Extreme arrival dates*: April 9, 1893, in Baltimore County (F. C. Kirkwood); April 10, 1904, in the District of Columbia (J. H. Riley); April 10, 1919, in Dorchester County (R. W. Jackson).

FALL MIGRATION.—*Normal period*: August 15–25 to October 5–15; peak, September 5 to September 25. *Extreme arrival date*: August 6, 1953, in Prince Georges County. *Extreme departure dates*: November 25, 1955, in Queen Annes County (W. Rittenhouse); November 13, 1887, in the District of Columbia (H. W. Henshaw); November 10, 1954, in Talbot County (R. L. Kleen); November 8, 1949, in Baltimore County (E. Willis); October 21, 1954, in Prince Georges County (L. W. Oring).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

61 (49 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1952 (Clagett, 1952); 59 (47 in 80 acres) in 1951 (Trever, 1952) and 1953 (Clagett, 1953); 55 (43.5 in 80 acres) in 1948, 43 (34 in 80 acres) in 1949 (Trever, 1952); 50 (40 in 80 acres) in 1954 (Wright, 1955).

53 (19 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-

- tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 45 (9.5 in 21 acres) in "immature loblolly-shortleaf pine stand" (trees 45 to 65 feet in height) in Worcester County in 1948 (Springer and Stewart, 1948c).
 - 40 (16 in 40 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1948 (Kolb, et al., 1948); 34 (12.5 in 37 acres) in 1953 (Cole and Kolb, 1953); 31 (12.5 in 40 acres) in 1949 (Kolb, 1949a); 30 (12 in 40 acres) in 1950 (Kolb, 1950); 24 (9 in 37 acres) in 1951 (Kolb and Cole, 1951), and 1952 (Kaufmann, 1952).
 - 32 (4 in 12½ acres) in "mature oak-maple ridge forest" in Garrett County in 1949 (Robbins, 1949b).
 - 26 (5.5 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
 - 25 (6 in 23½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
 - 24 (1.5 in 6¼ acres) in "young second-growth resulting from cutting" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
 - 23 (5.6 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
 - 20 (3 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
 - 17 (5.5 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, and Spanish oak) in Prince Georges County in 1944.
 - 11 (5 in 44½ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County in 1945; 9 (4 in 44½ acres) in 1944 (J. W. Aldrich, A. J. Duvall).
 - 10 (2 in 20 acres) in mature scrub pine stand in Prince Georges County in 1946.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 66 in Baltimore County on May 6, 1950 (D. A. Jones); 63 at Patuxent Refuge on May 6, 1950. *Fall*: About 15 killed at the Friendship International Airport ceilometer, Anne Arundel County, on September 10, 1954; 13 killed at the Washington Monument, Washington, D. C., on September 12, 1937 (Overing, 1938); 10 at Patuxent Refuge on September 16, 1943.

NORTHERN WATERTHRUSH *Seiurus noveboracensis* (Gmelin)

STATUS.—*Breeding* (see fig. 32): Common in the Allegheny Mountain section. *Transient*: Fairly common in all sections. *Wintering*: Accidental—1 was recorded at Solomons Island, Calvert County, on December 12, 1949 (G. Kelly).

HABITAT.—*Breeding*: Occurs at elevations above 2,200 feet in bogs or along streams in brushy, cut-over forests or in swamp forests with a well-developed understory of shrubs. *Transient*: Shrub swamps, and swamp and flood-plain forests.

NESTING SEASON.—A nest containing 1 egg and 3 newly hatched

young was found in Garrett County on May 29, 1949. Young just out of the nest were observed in Garrett County on June 13, 1918 (J. M. Sommer), and on June 25, 1949.

SPRING MIGRATION.—*Normal period:* April 25–30 to May 20–30; peak, May 1 to May 20. *Extreme arrival dates:* April 15, 1951, in Worcester County (J. H. Buckalew); April 16, 1921, in the District of Columbia (M. J. Pellew). *Extreme departure dates:* June 5, 1949, in Frederick County (M. B. Meanley); June 2, 1907, in Montgomery County (A. K. Fisher).

FALL MIGRATION.—*Normal period:* August 1–10 to October 1–10; peak, August 25 to September 20. *Extreme arrival dates:* July 26, 1952, in Baltimore County (E. Willis); July 27, 1907, in Allegany County (F. C. Kirkwood); July 27, 1955, in Caroline County (Mrs. A. J. Fletcher); July 28, 1889, in the District of Columbia (J. D. Figgins). *Extreme departure dates:* October 16, 1892, in Baltimore County (W. N. Wholey); October 16, 1919, in the District of Columbia (M. J. Pellew); October 14, 1955, in Caroline County (Mrs. A. J. Fletcher).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 84 (8 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
64 (8 in 12½ acres) in "virgin spruce-hemlock bog forest" (red spruce and hemlock with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).
33 (3 in 9 acres) in "scrub spruce bog" (brush-meadow stage, with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 19 at Patuxent Refuge on May 12, 1951; 9 at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, A. L. Nelson). *Fall:* 17 at Greenbelt, Prince Georges County, on September 19, 1954 (L. W. Oring); 10 banded on the barrier beach north of Ocean City on September 11, 1955; 9 near Seneca, Montgomery County, on September 8, 1952 (J. W. Terborgh); 8 at Patuxent Refuge on September 9, 1953.

LOUISIANA WATERTHRUSH *Seiurus motacilla* (Vieillot)

STATUS.—*Breeding and transient:* Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; fairly common locally in the Allegheny Mountain section at elevations below 2,300 feet (rare up to 2,560 feet). *Wintering:* Accidental—a female in excellent condition was collected (USNM) along the

Patuxent River, near Bowie, Prince Georges County, on December 29, 1953.

HABITAT.—Flood-plain and swamp forests; also in rocky, wooded ravines along streams.

NESTING SEASON.—Mid-April to mid-June. Nest-building was recorded as early as April 10, 1888, in the District of Columbia (Cooke, 1929). *Extreme egg dates* (24 nests): May 8, 1921, in the District of Columbia (Cooke, 1929) and June 11, 1899, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (11 nests): May 12, 1954, in Prince Georges County (L. W. Oring), and June 16, 1938, in the District of Columbia (W. H. Lawrence).

SPRING MIGRATION.—*Normal period*: April 1–10 to May 1–10; peak, April 15 to April 30. *Extreme arrival dates*: March 25, 1948, in the District of Columbia (E. G. Davis, R. D. Widman); March 26, 1929, in Montgomery County (Mr. and Mrs. W. J. Whiting); March 27, 1948, in Calvert County.

FALL MIGRATION.—*Normal period*: August 1–10 to September 10–20; peak, August 15 to September 5. *Extreme arrival date*: July 31, 1953, in Prince Georges County. *Extreme departure dates*: October 4, 1920, in the District of Columbia (M. J. Pellew); October 2, 1948, in Baltimore County (I. E. Hampe); September 30, 1950, in Montgomery County (C. N. Mason); September 28, 1945, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).

- 16 (3 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 4 (3.5 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 35 along Western Branch, Prince Georges County, on April 19, 1947; 28 along the Potomac River, Montgomery County, on May 9, 1953 (E. J. Stivers, et al.); 25 along the Pocomoke River, Worcester County, on April 1, 1948. *Fall*: 6 at Patuxent Refuge on September 1, 1943.

KENTUCKY WARBLER *Oporornis formosus* (Wilson)

STATUS.—*Breeding and transient* (see fig. 57): Abundant in the Upper Chesapeake section; common in the Eastern Shore and Western Shore sections; fairly common in the Piedmont section, and in the eastern part of the Ridge and Valley section (Blue Ridge Mountains and Hagerstown Valley); uncommon and local

FIGURE 57.—Breeding ranges of Kentucky Warbler and Mourning Warbler.

in the northwestern part of the Allegheny Mountain section (chiefly at elevations below 1,700 feet) ; rare in the western part of the Ridge and Valley section (Allegany and Washington Counties, west of Hagerstown Valley).

HABITAT.—Swamp and flood-plain forests, and rich, moist deciduous forests on the upland.

NESTING SEASON.—Mid-May to mid-August (nesting peak, late May to late June). *Extreme egg dates* (42 nests) : May 16, 1918, in Dorchester County (Jackson, 1941), and July 31, 1933, in Baltimore County (DeGaris, 1936). *Extreme nestling dates* (38 nests) : June 4, 1944, in Prince Georges County and August 11, 1933 (DeGaris, 1936), in Baltimore County.

SPRING MIGRATION.—*Normal period*: April 25–30 to May 20–25; peak, May 10 to May 20. *Extreme arrival dates*: April 19, 1949, in St. Marys County (M. B. Meanley) ; April 24, 1938, in Montgomery County (W. L. McAtee) ; April 24, 1954, in Caroline County (M. W. Hewitt).

FALL MIGRATION.—*Normal period*: August 1–10 to September 1–10. *Extreme arrival dates*: July 25, 1951, in Baltimore County (E. Willis) ; July 26, 1951, in Caroline County (Mrs. A. J. Fletcher). *Extreme departure dates*: September 20, 1954, in Caroline County (M. W. Hewitt) ; September 19, 1954, in Prince

Georges County (L. W. Oring) ; September 18, 1951, in Baltimore County (R. D. Cole).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 32 (3.5 in 11 acres) in upland seepage swamp forest (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, clammy azalea, maleberry, etc.) in Prince Georges County in 1946.
- 31 (4 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 23 (6.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 23 (19.6 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).
- 17 (6 in 36 acres) in "virgin central hardwood forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 14 (1.8 in 12½ acres) in lowland seepage swamp forest (red maple, sweetgum, pin oak, with dense understory of sweet-bay, winterberry, arrow-wood, etc.) in Prince Georges County in 1946.
- 13 (2.5 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 8 (2 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 8 (3 in 37 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks) in Baltimore County in 1953 (Cole and Kolb, 1953) ; 6 (2.5 in 40 acres) in 1948 (Kolb, et al., 1948) ; 5 (2 in 37 acres) in 1952 (Kaufmann, et al., 1952) ; 4 (1.5 in 40 acres) in 1950 (Kolb, 1950) ; 3 (1 in 40 acres) in 1949 (Kolb, 1949a) ; absent in 1951 (Kolb and Cole, 1951).
- 6 (4.5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1951 ; 4 (3 in 80 acres) in 1953 (Clagett, 1953) ; 2.5 (2 in 80 acres) in 1954 (Wright, 1955) ; 1 (1 in 80 acres) in 1948 and 1949 (Trever, 1952) ; 1 (1 in 80 acres) in 1952 (Clagett, 1952).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 40 near Emmitsburg, Frederick County, on May 10, 1952 (J. W. Richards) ; 39 at Patuxent Refuge on May 10, 1950. *Fall*: 5 at Patuxent Refuge on September 3, 1951 (C. H. Mayhood).

CONNECTICUT WARBLER *Oporornis agilis* (Wilson)

STATUS.—*Fall transient*: Uncommon in all sections. *Spring transient*: Rare and irregular (all reliable records from the vicinity of the District of Columbia and Baltimore).

HABITAT.—Wood margins and other brushy areas in moist situations.

SPRING MIGRATION (11 records, including 5 specimens).—*Ex-*

treme dates: May 5, 1901, in Baltimore County (F. C. Kirkwood) and May 30, 1882, in the District of Columbia (USNM—E. W. Nelson). *Occurrence peak* (7 records): May 11 to May 24. Four of the specimens were collected in 1882 on May 22 (D. W. Prentiss), May 24 (H. W. Henshaw), May 28 (W. Palmer), and May 30 (E. W. Nelson), all in the District of Columbia. The other specimen was collected at Plummers Island, Montgomery County, on May 17, 1909 (W. H. Osgood).

FALL MIGRATION.—*Normal period*: September 10–20 to October 10–20; *peak*, September 25 to October 10. *Extreme arrival dates*: August 28, 1886, in the District of Columbia (USNM—A. K. Fisher); September 3, 1950, in Baltimore County (C. M. Buchanan); September 6 and 7, 1939, in the District of Columbia (F. C. Lincoln); September 9, 1943, in Prince Georges County. *Extreme departure dates*: November 7, 1948, in Prince Georges County (M. B. Meanley); October 29, 1947, in Anne Arundel County; October 24, 1889, in the District of Columbia (W. Palmer).

MAXIMUM COUNTS.—*Fall*: 7 in Prince Georges County on October 3, 1947; 4 banded in Worcester County on September 13, 1955.

MOURNING WARBLER *Oporornis philadelphia* (Wilson)

STATUS.—*Breeding* (see fig. 57): Uncommon locally in the Allegheny Mountain section—occurring regularly in Garrett County on Backbone Mountain at elevations above 3,000 feet (rare and local on the east slope of Backbone Mountain, down to 2,640 feet). *Transient*: Uncommon in the Ridge and Valley, Piedmont, Upper Chesapeake, and Western Shore sections (probably also as numerous in the Allegheny Mountain section, although there are no definite transient records from that area); rare in the Eastern Shore section.

HABITAT.—*Breeding*: Brushy, cut-over oak–chestnut and northern hardwood forests—especially those areas that contain blackberry thickets. *Transient*: Wood margins and moist, brushy, cut-over forests.

NESTING SEASON.—No definite nest records; however, adults were observed carrying food on June 26, 1949, in Garrett County.

SPRING MIGRATION.—*Normal period*: May 15–20 to June 1–5; *peak*, May 20 to June 1. *Extreme arrival dates*: May 4, 1928, in the District of Columbia (W. J. Whiting); May 5, 1951, in Montgomery County (S. A. Briggs); May 7, 1932, in Cecil County (J. W. Brown). *Extreme departure dates*: June 11, 1945, in Prince

Georges County; June 7, 1917, in the District of Columbia (F. Harper).

FALL MIGRATION.—*Normal period:* August 20–25 to October 1–5; peak, August 25 to October 1. *Extreme arrival dates:* August 17, 1894, in Prince Georges County (USNM—G. Marshall); August 19, 1877, in the District of Columbia (W. Palmer). *Extreme departure dates:* October 13, 1946, in Prince Georges County; October 9, 1897, along the Patapsco River marsh (F. C. Kirkwood).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

10 (2 in 21 acres) in “dense second-growth” (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 5 at Patuxent Refuge on May 31, 1943.

YELLOWTHROAT *Geothlypis trichas* (Linnaeus)

STATUS.—*Breeding:* Abundant in the Eastern Shore, Western Shore, and Upper Chesapeake sections; common in the Allegheny Mountain section; fairly common in the Piedmont, and Ridge and Valley sections. *Transient:* Common, occasionally abundant, in all sections. *Wintering:* Rare in the Eastern Shore section and in the tidewater areas of the Western Shore and Upper Chesapeake sections; casual in the Piedmont section—recorded at Lake Roland, Baltimore County, on December 22, 1935 (Meanley, 1936b).

HABITAT.—Brushy wet meadows and marshes, and thickets of shrubs and small trees in swampy situations.

NESTING SEASON.—Early May to mid-August (nesting peak, late May to early July). *Extreme egg dates* (41 nests): May 4, 1954, in Dorchester County and August 4, 1895 (F. C. Kirkwood), in Baltimore County. *Extreme nestling dates* (24 nests): May 23, 1954, in Worcester County (J. Travis) and August 13, 1893, in Baltimore County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period:* April 15–25 to May 15–25; peak, May 1 to May 15. *Extreme arrival dates:* April 10, 1954, in Allegany County (L. McCollough, E. Minke) and Caroline County (M. W. Hewitt); April 11, 1929, in the District of Columbia (W. H. Ball); April 11, 1954, in Charles County (M. C. Crone, A. R. Stickley, Jr.); April 12, 1929 in Baltimore County (F. C. Kirkwood); April 12, 1947, in Queen Annes County (E. G. Davis); April 12, 1948, in Prince Georges County.

FALL MIGRATION.—*Normal period:* August 15–25 to October 15–25; peak, September 1 to October 1. *Extreme arrival date:*

August 12, 1943, in Prince Georges County. *Extreme departure dates*: November 13, 1949, in Prince Georges County (M. B. Meanley); November 2, 1919, in the District of Columbia (F. Harper).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 111 (5 in 4½ acres) in hedgerow along brook between agricultural fields (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1948.
- 108 (14 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, young red maple, etc.) in Prince Georges County in 1945.
- 80 (24 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1947 (Stewart, et al., 1947).
- 58 (11 in 19.2 acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 47 (9 in 19.2 acres) in 1946 (Cooley, 1947).
- 55 (9 in 16½ acres) in "cattail marsh" (narrow-leaved cattail stand with scattered swamp rose-mallow) in Calvert County in 1948 (Springer and Stewart, 1948a).
- 46 (12 in 26 acres) in "dry deciduous scrub" (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947b).
- 41 (23 in 58 acres) in brushy, poorly drained, abandoned farmland in Prince Georges County in 1947.
- 29 (10 in 84½ acres) in pine field (abandoned field with open growth of young scrub pine) in Prince Georges County in 1945.
- 22 (2 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).
- 21 (2 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 16 (4 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 14 (9 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).
- 13 (4 in 30 acres) in "switchgrass marsh-meadow" in Somerset County in 1948 (Springer and Stewart, 1948a).
- 13 (2 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 11 (2 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 7 (2 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 2 (2 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 200+ at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, A.

L. Nelson); 135 near Greenbelt, Prince Georges County, on May 8, 1954 (L. W. Oring); 108 in the Middle River area, Baltimore County, on May 5, 1951 (E. Willis, D. A. Jones). *Fall*: 189 found dead at the Washington Monument, Washington, D. C., on September 12, 1937 (Overing, 1938). *Winter*: 5 in the Wicomico River area of Charles and St. Marys Counties on December 30, 1951 (J. W. Terborgh, R. R. Kerr).

YELLOW-BREASTED CHAT *Icteria virens* (Linnaeus)

STATUS.—*Breeding and transient*: Common in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section. *Wintering*: Casual in the Eastern Shore and Western Shore sections—recorded in Worcester, Talbot, Baltimore, Anne Arundel, and St. Marys Counties, and the District of Columbia. This species was not recorded in winter before 1952.

HABITAT.—Hedgerows, wood margins, and other brushy habitats, including cut-over and burned-over upland forests.

NESTING SEASON.—Mid-May to late July (nesting peak, late May to early July). *Extreme egg dates* (102 nests): May 18, 1887, in the District of Columbia (Cooke, 1929) and July 16, 1939, in Prince Georges County (E. G. Cooley). *Extreme nestling dates* (29 nests): June 1, 1946, in Baltimore County (H. Kolb) and July 26, 1891, in Baltimore County (F. C. Kirkwood).

PERIOD OF OCCURRENCE.—*Normal period*: April 25–May 5 to September 15–25; peak, May 10 to August 15. *Extreme arrival dates*: April 3, 1951, at Gibson Island—possibly a wintering bird (Mrs. M. North); April 14, 1917, in Montgomery County (Miss H. P. Childs); April 16, 1952, in Talbot County (Mrs. S. Henderson). *Extreme departure dates*: October 14, 1954, in Prince Georges County (L. W. Oring); October 11, 1954, in Frederick County (J. W. Richards); October 10, 1953, in Baltimore County (C. M. Buchanan). Several November records, possibly representing wintering birds, have been omitted.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 36 (7 in 19.2 acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947; 31 (6 in 19.2 acres) in 1946 (Cooley, 1947).
- 28 (8.5 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in 1948 (Oresman, et al., 1948); 13 (4 in 30 acres) in 1947 (Stewart, et al., 1947).
- 15 (4 in 26 acres) in "dry deciduous scrub" (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).

15 (8.5 in 58 acres) in brushy, poorly drained, abandoned farmland in Prince Georges County in 1947.

8 (5 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).

8 (2 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).

MAXIMUM COUNTS (nonbreeding).—Spring: 100+ at Port Tobacco, Charles County, on May 11, 1953 (I. N. Gabrielson, et al.); 56 in Howard County on May 8, 1954; 34 in the Pocomoke Swamp on May 16, 1954 (J. K. Wright). **Fall:** 13 near Seneca, Montgomery County, on September 5, 1953 (H. A. Sutton); 4 banded on the barrier beach north of Ocean City on September 12, 1955.

HOODED WARBLER *Wilsonia citrina* (Boddaert)

STATUS.—Breeding and transient (see fig. 58): Common in the Western Shore, and Ridge and Valley sections; common locally in the Eastern Shore section (during the breeding season largely restricted to the swamp along the Pocomoke River and its tributaries); fairly common in the Piedmont section and locally in the Allegheny Mountain section (at elevations under 2,000 feet in the northwestern part, and on the higher ridges above 2,800 feet);

FIGURE 58.—Breeding ranges of Hooded Warbler and American Redstart.

uncommon elsewhere in the Allegheny Mountain section; rare in the Upper Chesapeake section.

HABITAT.—Swamp forests or rich, moist forests on the upland that contain a fairly dense understory of shrubs, including such species as sweet pepperbush, southern arrow-wood, spicebush, mountain laurel, and great laurel.

NESTING SEASON.—Mid-May to mid-August (nesting peak, late May to early July). *Extreme egg dates* (12 nests): May 22, 1943, and July 30, 1943, in Prince Georges County. *Extreme nestling dates* (7 nests): June 9, 1933, in Anne Arundel County (M. B. Meanley) and July 11, 1944, in Prince Georges County (J. B. Cope). Young birds out of the nest were recorded as early as June 4, 1949, in Montgomery County (D. M. Thatcher), and partially dependent young were observed being fed by parents as late as August 27, 1955, in Prince Georges County.

SPRING MIGRATION.—*Normal period*: April 20–30 to May 20–30; peak, May 1 to May 15. *Extreme arrival dates*: April 3, 1950, in Anne Arundel County (Mrs. W. L. Henderson); April 13, 1919 (A. Wetmore), and April 13, 1947 (Gunn and Crocker, 1951), in the District of Columbia; April 16, 1949, in Worcester County; April 17, 1945, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 25–August 5 to September 20–30; peak, August 15 to September 10. *Extreme departure dates*: October 16, 1953, in the District of Columbia (C. O. Handley, Jr.); October 8, 1952, in Prince Georges County (L. W. Oring).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 63 (8 in 12½ acres) in lowland seepage swamp forest (red maple, sweetgum, pin oak with brushy understory of sweet-bay, winterberry, arrow-wood, etc.) in Prince Georges County in 1946.
- 48 (11.6 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 36 (4 in 11 acres) in upland seepage swamp forest (red maple, sweetgum, black gum, pitch pine with dense understory of holly, sweet pepperbush, clammy azalea, maleberry, etc.) in Prince Georges County in 1946.
- 32 (6 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 32 (2 in 6¼ acres) in "young second-growth resulting from cutting" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 29 (6 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 18 (8 in 44½ acres) in river-bluff forest (beech, white oak, and scarlet oak) in Prince Georges County in 1944; 14 (6 in 44½ acres) in 1945 (J. W. Aldrich, A. J. Duvall).

- 17 (2.5 in 15 acres) in "open slash area" (cut-over, oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
16 (5.2 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, Spanish oak) in Prince Georges County in 1944.
8 (3 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
8 (2 in 22½ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
6 (5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948, 4 (3.5 in 80 acres) in 1949 (Trever, 1952); 4 (3 in 80 acres) in 1952 and 1953 (Clagett, 1952 and 1953); and in 1954 (Wright, 1955); 2 (2 in 80 acres) in 1951 (Trever, 1952).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 100 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 50 at Patuxent Refuge on May 6, 1950; 40 near Emmitsburg, Frederick County, on May 10, 1952 (J. W. Richards). *Fall*: 16 at Patuxent Refuge on September 5, 1943.

WILSON'S WARBLER *Wilsonia pusilla* (Wilson)

STATUS.—*Transient*: Uncommon, occasionally fairly common, in all sections, except the Eastern Shore section where it is rare. *Wintering*: Accidental—1 was collected (USNM) in Worcester County on December 22, 1947 (Robbins, 1949d).

HABITAT.—Wood margins, hedgerows, and other brushy habitats, usually in moist situations.

SPRING MIGRATION.—*Normal period*: May 5–10 to May 20–30; peak, May 10 to May 20. *Extreme arrival dates*: April 26, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 29, 1932, in the District of Columbia (E. N. Grinnell). *Extreme departure dates*: June 10, 1928, in Harford County (F. C. Kirkwood); June 4, 1910, in the District of Columbia (V. Bailey); May 31, 1943, in Prince Georges County; May 31, 1951, in Montgomery County (S. H. Low).

FALL MIGRATION.—*Normal period*: August 20–25 to September 20–25; peak, August 25 to September 15. *Extreme arrival dates*: August 15, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); August 17, 1945, in Prince Georges County. *Extreme departure dates*: October 13, 1919 (M. J. Pellew), and October 6, 1904 (W. W. Cooke), in the District of Columbia; October 5, 1954, in Prince Georges County (L. W. Oring).

MAXIMUM COUNTS.—*Spring*: 10 along the C. and O. Canal, Montgomery County, on May 12, 1951 (P. A. DuMont); 10 at Greenbelt, Prince Georges County, on May 12, 1956 (L. W.

Oring); 9 at Patuxent Refuge on May 18, 1947. *Fall*: 10 at Seneca, Montgomery County, on September 12, 1954 (J. W. Terborgh).

CANADA WARBLER *Wilsonia canadensis* (Linnaeus)

STATUS.—*Breeding* (see fig. 59): Common in the Allegheny Mountain section at elevations above 2,100 feet. *Transient*: Common in all sections except the Eastern Shore section where it is uncommon.

FIGURE 59.—Breeding ranges of Canada Warbler and Rose-breasted Grosbeak.

HABITAT.—*Breeding*: Swamp and moist forests, in bogs and along streams with understory of great laurel and other shrubs; also occurs in brushy cut-over oak-chestnut and northern hardwood forests on the ridges. *Transient*: Flood-plain and swamp forests, and rich moist forests on the upland.

NESTING SEASON.—Probably late May to mid-July. *Egg dates* (2 nests): May 28, 1935, in Allegany County (L. M. Llewellyn) and June 2, 1919, in Garrett County (J. M. Sommer). Kirkwood (1895) refers to a nest with young, found in Allegany County in 1895, sometime later than June 10. Several observations have been made of adults carrying food in Garrett County, the earliest record occurring on June 11, 1918 (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: May 1-10 to May 25-June

1; peak, May 10 to May 25. *Extreme arrival dates*: April 26, 1925, in Baltimore County (F. C. Kirkwood); April 28, 1954, in Howard County. *Extreme departure dates*: June 4, 1945, in Prince Georges County; June 2, 1907 (A. K. Fisher), and June 2, 1917 (F. Harper), in the District of Columbia.

FALL MIGRATION.—*Normal period*: August 10–15 to September 15–25; peak, August 20 to September 5. *Extreme arrival dates*: July 31, 1887, in the District of Columbia (A. K. Fisher); August 5, 1951, in Baltimore County (E. Willis); August 6, 1953, in Prince Georges County. *Extreme departure dates*: October 23, 1921, in Montgomery County (A. Wetmore); October 12, 1947, in Prince Georges County; October 11, 1908, in the District of Columbia (R. W. Williams).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 45 (9.5 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 44 (5.5 in 12½ acres) in "virgin spruce-hemlock bog forest" (red spruce and hemlock with dense understory of great laurel) in Garrett County in 1951 (Stewart and Robbins, 1951a).
- 32 (2 in 6¼ acres) in "young second-growth resulting from cutting" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 27 (4 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 22 (2 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).
- 21 (2 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 7 (1.5 in 20 acres) in "virgin hemlock stand" in Garrett County in 1949 (Robbins, 1949a).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 100+ along the Choptank River, Caroline County, on May 10–11, 1952 (A. J. Fletcher, M. W. Hewitt); 91 at Greenbelt, Prince Georges County, on May 12, 1956 (L. W. Oring); 72 at Patuxent Refuge on May 11, 1950; 42 in the District of Columbia on May 13, 1950 (P. A. DuMont, et al.). *Fall*: 33 at Patuxent Refuge on August 20, 1943; 14 near Great Falls, Montgomery County, on August 29, 1948 (D. C. Aud. Soc.).

AMERICAN REDSTART *Setophaga ruticilla* (Linnaeus)

STATUS.—*Breeding* (see fig. 58): Common in the Allegheny Mountain, Ridge and Valley, Piedmont, and Western Shore sections; locally common in the Eastern Shore section (largely restricted to the swamps along the Pocomoke and upper Nanticoke Rivers and their tributaries); uncommon and local in the Upper

Chesapeake section. *Transient*: Common in all sections. *Wintering*: Accidental—1 seen at White Marsh, Baltimore County, on December 6, 1950 (C. D. Hackman); 1 seen in the District of Columbia on December 4, 1951 (A. M. Stimson).

HABITAT.—*Breeding*: Second-growth river swamps and flood-plain forests in all sections; also in second-growth mixed mesophytic and northern hardwood forests in the Ridge and Valley, and Allegheny Mountain sections. *Transient*: Various types of deciduous forest.

NESTING SEASON.—Late April to early July (nesting peak, mid-May to mid-June). Nest-building was recorded as early as April 19, 1949, in Worcester County (J. H. Buckalew). *Extreme egg dates* (39 nests): April 25, 1949, in Worcester County (J. H. Buckalew) and June 30, 1890, in the District of Columbia (E. M. Hasbrouck). *Extreme nestling dates* (19 nests): May 23, 1954, in Worcester County (A. A. Brandenburg) and July 9, 1898 (F. C. Kirkwood), in Baltimore County.

SPRING MIGRATION.—*Normal period*: April 15–25 to May 20–30; peak, May 1 to May 15. *Extreme arrival dates*: April 7, 1946, in Worcester County; April 10, 1954, in Prince Georges County (L. W. Oring); April 13, 1952, in Charles County (A. R. Stickley, Jr.); April 14, 1927, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: August 1–10 to October 1–10; peak, August 25 to September 20. *Extreme arrival dates*: July 22, 1918, in the District of Columbia (A. H. Howell); July 22, 1955, in Prince Georges County (W. H. Stickel); July 25, 1951, in Baltimore County (E. Willis). *Extreme departure dates*: November 16, 1948, in the District of Columbia (E. G. Davis); October 18, 1955, in Caroline County (Mrs. A. J. Fletcher); October 17, 1953, in Montgomery County (P. G. DuMont); October 16, 1947, and October 16, 1954 (L. W. Oring), in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 91 (17 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 51 (43.4 in 85 acres) in well-drained flood-plain forest (sweetgum, hornbeam, river birch, tulip-poplar, etc.) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).
- 16 (3 in 19.2 acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, absent in 1946 (Cooley, 1947).
- 12 (3.5 in 28 acres) in partially opened flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 12 (1.6 in 13 acres) in shrub swamp (alder, poison sumac, sweet pepperbush, swamp rose, young red maple, etc.) in Prince Georges County in 1945.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 130+ at Port Tobacco, Charles County, on May 11, 1943 (I. N. Gabrielson, A. L. Nelson); 130 in Baltimore County on May 6, 1950; 115 in Montgomery County on May 8, 1954 (K. Stecher); 91 at Patuxent Refuge on May 6, 1950; 72 in the Pocomoke Swamp on April 21, 1954 (P. G. DuMont). *Fall*: 150 at Tilghman, Talbot County, on September 8, 1955 (R. L. Kleen); 110 on August 27, 1954, and 55 on September 19, 1954, at Greenbelt, Prince Georges County (L. W. Oring); 40 in Baltimore County on August 31, 1893 (F. C. Kirkwood); 27 killed at the Washington Monument in the District of Columbia on September 12, 1937 (Overing, 1938); about 25 killed at the Friendship International Airport ceilometer, Anne Arundel County, on September 10, 1954.

Family PLOCEIDAE

HOUSE SPARROW *Passer domesticus* (Linnaeus)

STATUS.—Permanent resident. Common (locally abundant) in the Upper Chesapeake and Piedmont sections; fairly common (locally abundant) in the Eastern Shore, Western Shore, Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—Most numerous in the vicinity of barnyards in the country; also characteristic of small towns and the business sections of cities. In the rural areas, this species generally concentrates wherever livestock are kept.

NESTING SEASON.—Mid-February to mid-November (nesting peak, early March to mid-August). Nest-building was recorded as early as February 14, 1894, in the District of Columbia (C. W. Richmond) and as late as November 3, 1898, in Baltimore County (F. C. Kirkwood). *Extreme egg dates* (86 nests): March 29, 1930 (M. B. Meanley), and August 6, 1882 (F. C. Kirkwood), in Baltimore County. *Extreme nestling dates* (45 nests): April 15, 1945, in Prince Georges County and September 6, 1917 (W. Marshall), in Baltimore County.

MAXIMUM COUNTS.—*Winter* (Christmas counts): 1,329 in the Ocean City area on December 27, 1955; 1,311 in the Catoctin Mountain area, Frederick County, on December 30, 1951; 793 in the Triadelphia Reservoir area on January 1, 1954; 607 in Caroline County on December 26, 1953.

HISTORY OF INTRODUCTION.—The following description of the early history of the House Sparrow in Maryland is largely derived from data presented by Kirkwood (1895). Beginning in 1851, when this European species was first introduced into the United States at Brooklyn, New York, importations were made at widely

different points during the next 30 years. Its first appearance in Maryland was recorded in 1865 at Hancock in Washington County. After this it soon appeared at other locations, including importations which were made in the District of Columbia in 1871 (Cooke, 1929) and in Baltimore in 1874. The establishment of this species in the various sections of the State may be described as having taken place in the following order: Ridge and Valley section during the period 1865-70; Allegheny Mountain and Piedmont sections during the period 1872-76; Upper Chesapeake, Western Shore, and Eastern Shore sections during the period 1877-80.

Family ICTERIDAE

BOBOLINK *Dolichonyx oryzivorus* (Linnaeus)

STATUS.—*Breeding* (see fig. 60): Fairly common in the Allegheny Mountain section at elevations above 2,500 feet; rare and local in the Piedmont section, occurring in Baltimore County in Worthington Valley (M. B. Meanley) and in Frederick County in the vicinity of Buckeystown. *Spring transient*: Fairly common in all sections. *Fall transient*: Common, occasionally abundant, in the Upper Chesapeake and Western Shore sections; fairly com-

FIGURE 60.—Breeding ranges of Bobolink and Boat-tailed Grackle.

mon in the Eastern Shore section; uncommon in the Piedmont, Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—*Breeding*: Hayfields and over-grown pastures. *Transient*: In spring this species frequents various field and field border habitats; in fall, it concentrates in fresh or brackish tidal marshes, especially those that contain wild rice. Concentration areas, in fall, include the marshes of the Patuxent, Patapsco, Gunpowder, Elk, and (formerly) the Potomac Rivers.

NESTING SEASON.—In 1932, a nest in Garrett County contained eggs on June 20 (Brooks, 1936c) and young birds on June 24 (Brooks, 1934).

SPRING MIGRATION.—*Normal period*: May 1-5 to May 20-30; peak, May 5 to May 20. *Extreme arrival dates*: April 16, 1905, April 25, 1898 and 1904, in Baltimore County (F. C. Kirkwood); April 25, 1931 (Mr. and Mrs. L. D. Miner), in the District of Columbia; April 26, 1911 and 1914, in Dorchester County (R. W. Jackson). *Extreme departure dates*: June 12, 1921, in Anne Arundel County (T. Denmead); June 12, 1931, in Baltimore County (F. C. Kirkwood); June 6, 1909, in the District of Columbia (H. W. Henshaw); June 6, 1914, in Dorchester County (R. W. Jackson); June 5, 1948, in Calvert County.

FALL MIGRATION.—*Normal period*: July 25-August 5 to October 1-10; peak, August 25 to September 15. *Extreme arrival dates*: July 18, 1944, in Prince Georges County; July 21, 1900, in Baltimore County (F. C. Kirkwood); July 24, 1954, in St. Marys County (R. R. Kerr). *Extreme departure dates*: November 8, 1888, on the Patapsco River (A. Resler); November 5, 1901, on the Gunpowder River (F. C. Kirkwood); October 30, 1943, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 5,000 on the Gunpowder River marsh on May 21, 1902 (F. C. Kirkwood); 990 in Howard County on May 8, 1954; 500 near Blackwater Refuge, Dorchester County, on May 10, 1952 (W. S. Webster); 431 in Anne Arundel County on May 8, 1954 (P. A. DuMont). *Fall*: 20,000 at Snows Marsh, Baltimore County, on September 12, 1899 (F. C. Kirkwood); 5,000 at the Gunpowder River marsh on August 26, 1904 (F. C. Kirkwood); 2,000 along the Pocomoke River, Worcester County, on September 16, 1950 (J. H. Buckalew).

EASTERN MEADOWLARK *Sturnella magna* (Linnaeus)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Common in the Eastern Shore section; fairly common in the Western Shore and Upper Chesapeake sections; uncommon

in the Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

HABITAT.—*Breeding*: Hayfields and over-grown pastures in agricultural areas; marsh-meadow types in the tidal marshes, including salt-meadow grass, black grass, and switchgrass, and American three-square meadows on the coastal barrier beaches. *Transient and wintering*: Agricultural fields and field borders, and salt marshes.

NESTING SEASON.—Early May to early August (nesting peak, mid-May to mid-July). Nest-building was recorded as early as May 1, 1926, in Dorchester County (R. W. Jackson). *Extreme egg dates* (68 nests): May 10, 1941, in Montgomery County (E. J. Court) and July 25, 1922, in Dorchester County (Jackson, 1941). *Extreme nestling dates* (16 nests): May 18, 1891, in the District of Columbia (C. W. Richmond) and July 26, 1931, in Garrett County (J. A. Molter).

SPRING MIGRATION.—*Normal period*: March 5–15 to April 25–May 5; peak, March 25 to April 20. *Extreme arrival dates*: February 21, 1908 (H. W. Oldys), and February 22, 1917 (Mr. and Mrs. L. D. Miner), in the District of Columbia; February 28, 1945, in Prince Georges County; March 1, 1902, in Allegany County (G. Eifrig); March 1, 1917, in Washington County (M. A. Murphy); March 12, 1953, in Garrett County (H. E. Slater, K. F. Sanders).

FALL MIGRATION.—*Normal period*: October 1–10 to November 25–December 5; peak, October 15 to November 15. *Extreme arrival date*: September 16, 1943, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 7 (6 in 90 acres) in mixed hayfields and pastures in Prince Georges County in 1951.
- 7 (1.3 in 17 acres) in salt-meadow grass marsh-meadow in Somerset County in 1948 (Springer and Stewart, 1948a).
- 5 (1.5 in 30 acres) in switchgrass marsh-meadow in Somerset County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS (nonbreeding).—*Winter* (Christmas counts): 4,167 in the Ocean City area on December 27, 1955; 671 in Caroline County on December 26, 1953; 633 in southern Dorchester County on December 28, 1954; 387 near the Wicomico River in Charles and St. Marys Counties on December 28, 1952.

YELLOW-HEADED BLACKBIRD

Xanthocephalus xanthocephalus (Bonaparte)

STATUS.—Casual visitor. On September 10, 1891, a male was

collected at Baltimore (Kirkwood, 1895), and on August 29, 1892, a female was collected in the District of Columbia (Hasbrouck, 1893). Two other females were collected in the vicinity of Baltimore, 1 on September 18, 1893 (Md. Acad. Sci.), the other on October 1, 1894 (Kirkwood, 1895). Another male was seen at West Ocean City on May 11, 12, and 13, 1956 (C. M. Buchanan, et al.).

REDWINGED BLACKBIRD *Agelaius phoeniceus* (Linnaeus)

STATUS.—*Breeding*: Common, locally abundant, in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; fairly common in the Ridge and Valley, and Allegheny Mountain sections. *Transient*: Abundant in the Eastern Shore, Western Shore, and Upper Chesapeake sections; common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Abundant in the Upper Chesapeake section; common in the Eastern Shore section; fairly common near tidewater in the Western Shore section; uncommon in the interior of the Western Shore section, and in the Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

HABITAT.—*Breeding*: Various types of marsh and marsh-meadow with or without scattered shrubs and small trees; in the Upper Chesapeake and Piedmont sections and to a lesser extent elsewhere, this species also occurs regularly in hayfields and weedy fallow fields and occasionally in grainfields. *Transient and wintering*: Marshes, agricultural fields, and field borders.

NESTING SEASON.—Late April to early August (nesting peak, mid-May to early July). *Extreme egg dates* (717 nests): April 28, 1951 (E. Willis), and July 27, 1947 (E. G. Cooley), in Baltimore County. *Extreme nestling dates* (350 nests): May 12, 1951, and August 9, 1950, in Baltimore County (E. Willis). Young birds out of the nest were observed in Baltimore County as early as May 12, 1951 (E. Willis).

SPRING MIGRATION.—*Normal period*: February 15-25 to May 5-15; peak, February 25 to March 30. *Extreme arrival dates*: January 23, 1916, in the District of Columbia (W. W. Cooke); February 5, 1941, in Prince Georges County. *Extreme departure dates*: May 18, 1902, in the District of Columbia (H. W. Maynard); May 18, 1947, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 20-30 to December 1-10; peak, October 15 to November 20. *Extreme arrival dates*: July 8, 1933, in the District of Columbia (E. N. Grinnell); July

11, 1919, in Baltimore County (F. C. Kirkwood). *Extreme departure date*: December 15, 1942, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

73 (12 in 16½ acres) in "cattail marsh" (narrow-leaved cattail with scattered swamp rose-mallow) in Calvert County in 1948 (Springer and Stewart, 1948a).

37 (7.2 in 19½ acres) in "saltmarsh bulrush-saltgrass marsh" in Somerset County in 1948 (Springer and Stewart, 1948a).

36 (7 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 26 (5 in 19½ acres) in 1946 (Cooley, 1947).

23 (7 in 30 acres) in "switchgrass marsh-meadow" in Somerset County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS (nonbreeding).—*Spring*: "Millions" at Carroll Island, Baltimore County, on March 15, 1896 (F. C. Kirkwood); 10,000 in Baltimore County on March 8, 1900 (F. C. Kirkwood); 6,000 at Port Tobacco, Charles County, on March 2, 1954 (V. C. Kirtley, H. N. Page). *Fall*: 10,000 in Baltimore County on November 11, 1894 (F. C. Kirkwood); 5,000+ along the Choptank River, Talbot County, on September 9, 1947 (N. Hotchkiss). *Winter* (Christmas counts): 800,000 in the Susquehanna Flats area, Cecil County, on December 26, 1948; 26,825 in the Ocean City area on December 27, 1954; 17,393 in southern Dorchester County on December 28, 1955; 5,000 at Port Tobacco, Charles County, on December 23, 1937, and December 27, 1941.

BANDING.—Three recovered in winter (December 31–February 15) in Somerset County had been banded in spring (April 22–May 15) in the following areas: 2 in southeastern Massachusetts and 1 in southern New Jersey. One banded at Patuxent Refuge on March 18, 1950, was recovered in central Vermont on May 16, 1952, and another banded at Patuxent Refuge on August 14, 1946, was recovered in northeastern North Carolina on April 4, 1947.

ORCHARD ORIOLE *Icterus spurius* (Linnaeus)

STATUS.—*Breeding and transient*: Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake and Piedmont sections; uncommon in the Ridge and Valley section; rare in the Allegheny Mountain section (Brooks, 1936c).

HABITAT.—Orchards and residential areas of farms, towns, and suburbs; also occurs regularly in open stands of loblolly pine along the margins of the tidal marshes in the Eastern Shore section.

NESTING SEASON.—Early May to early August (nesting peak, late May to late June). Nest-building was recorded as early as

May 2, 1953, in Worcester County (P. A. DuMont). *Extreme egg dates* (65 nests): May 20, 1916, in Dorchester County (Jackson, 1941) and July 14, 1953, in Caroline County (E. Bilbrough). *Extreme nestling dates* (48 nests): May 29, 1953, and August 1, 1953, in Caroline County (E. Bilbrough).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: April 7, 1947, in Prince Georges County; April 19, 1952, in Caroline County (Mr. and Mrs. A. J. Fletcher); April 20, 1916, in Dorchester County (R. W. Jackson); April 21, 1917, in Baltimore County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: July 1–10 to August 20–30. *Extreme departure dates*: October 13, 1952, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); September 21, 1952, in Charles County (M. C. Crone, A. R. Stickley, Jr.); September 18, 1954, in Montgomery County (P. A. DuMont); September 13, 1940 (A. V. Davis, Jr.), and September 13, 1948 (W. B. Green), in Washington County. The resident birds usually depart during the last half of July, while during some years, small numbers of transients are of regular occurrence during August.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 29 (3 in 10.5 acres) in farmyards (including small orchards) in Prince Georges County in 1951.
- 15 (3 in 20 acres) in suburban residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1942.
- 10 (2 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1946, 5 (1 in 19½ acres) in 1947 (Cooley, 1947).

MAXIMUM COUNTS.—*Spring*: 50 along the Gunpowder River on May 5, 1904 (J. Thomas); 30 at Port Tobacco, Charles County, on May 6, 1938, and May 11, 1943 (I. N. Gabrielson, F. M. Uhler); 29 in Caroline County on May 10, 1952 (Mr. and Mrs. A. J. Fletcher).

BALTIMORE ORIOLE *Icterus galbula* (Linnaeus)

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; uncommon in the Upper Chesapeake and Eastern Shore sections; rare (or absent—no definite records) in the Western Shore section. *Transient*: Fairly common in all sections. *Wintering*: Rare and irregular in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont Sections.

HABITAT.—*Breeding*: Shade trees in residential areas on farms,

and in towns and suburbs; also in open stands of flood-plain forests and moist forests on the upland. *Transient*: Various types of deciduous forest.

NESTING SEASON.—Early May to early July (nesting peak, mid-May to mid-June). Nest-building was recorded as early as May 2, 1891, in Baltimore County (Kirkwood, 1895) and May 2, 1954, in Caroline County (Mrs. A. J. Fletcher). *Extreme egg dates* (19 nests): May 18, 1880, in Washington County (E. A. Small) and June 12, 1931, in Baltimore County (M. B. Meanley). *Extreme nestling dates* (40 nests): May 26, 1954, in Caroline County (Mrs. A. J. Fletcher) and July 4, 1898, in Baltimore County (F. C. Kirkwood).

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–25; peak, May 5 to May 15. *Extreme arrival dates*: April 9, 1913, in Dorchester County (R. W. Jackson); April 17, 1896, in Wicomico County (A. E. Acworth); April 18, 1917, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: June 12, 1946, in Prince Georges County; June 10, 1899, in the District of Columbia (A. H. Howell).

FALL MIGRATION.—*Normal period*: August 1–10 to September 20–30; peak, August 20 to September 15. *Extreme arrival date*: July 28, 1943, in Prince Georges County. *Extreme departure dates*: October 20, 1945, in Prince Georges County; October 15, 1922, in the District of Columbia (J. Kittredge, Jr.); October 10, 1930, in Kent County (W. Baker).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

10 (2 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 5 (1 in 19½ acres) in 1946 (Cooley, 1947).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 100 along the Gunpowder River marsh on May 8, 1904 (J. Thomas); 40 at Patuxent Refuge on May 10, 1950; 40 in Washington County on May 7, 1949 (Dr. R. S. and M. Stauffer). *Fall*: 11 at Patuxent Refuge on August 29, 1944; 10 (8 banded) on the barrier beach north of Ocean City on September 13, 1955.

[BULLOCK'S ORIOLE] *Icterus bullockii* (Swainson)

STATUS.—Hypothetical. One was banded at Ruxton, Baltimore County, on January 17, 1955 (R. D. Cole). Another was seen at Claiborne, Talbot County, on March 3 and 8, 1955 (R. L. Kleen).

RUSTY BLACKBIRD *Euphagus carolinus* (Müller)

STATUS.—*Transient*: Fairly common in all sections. *Wintering*: Uncommon in the Eastern Shore, Western Shore, and Upper

Chesapeake sections; rare in the Piedmont, Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—Brushy, cut-over swamp and flood-plain forests; also occasional in agricultural fields and field borders.

SPRING MIGRATION.—*Normal period:* February 25–March 5 to April 25–May 5; peak, March 25 to April 15. *Extreme arrival dates:* February 12, 1929 (W. H. Ball), and February 15, 1900 (P. Bartsch), in the District of Columbia; February 21, 1926, in Montgomery County (W. W. Rubey). *Extreme departure dates:* May 24, 1931, in Harford County (F. C. Kirkwood); May 18, 1893, in Baltimore County (G. H. Gray, W. N. Wholey); May 15, 1954, in Worcester County (J. K. Wright); May 12, 1951, in Montgomery County (P. A. DuMont).

FALL MIGRATION.—*Normal period:* October 1–10 to December 1–10; peak, October 20 to November 15. *Extreme arrival dates:* September 11, 1928, in Baltimore County (F. C. Kirkwood); September 16, 1885, in the District of Columbia (H. W. Henshaw); September 18, 1946, in Baltimore County (I. E. Hampe). *Extreme departure date:* December 28, 1945, in Prince Georges County.

MAXIMUM COUNTS.—*Spring:* 500+ in Baltimore County on April 27, 1924 (F. C. Kirkwood); 250 on the Gunpowder River marsh on March 30, 1904 (J. Thomas); 100+ at Port Tobacco, Charles County, on May 5, 1939 (C. Cottam, F. M. Uhler). *Fall:* 1,200 along the Patapsco River, Anne Arundel County, on November 13, 1899 (W. H. Fisher); 1,000 in Dulaney Valley, Baltimore County, on October 24, 1901 (F. C. Kirkwood); 165 at Patuxent Refuge on October 25, 1944. *Winter* (Christmas counts): 242 near Chase, Baltimore County, on December 28, 1952; 223 in the Ocean City area on December 27, 1955; 106 near the Wicomico River in Charles and St. Marys Counties on December 28, 1952; 103 at Port Tobacco, Charles County, on December 26, 1944; 102 at Patuxent Refuge on January 14, 1953.

BREWER'S BLACKBIRD *Euphagus cyanocephalus* (Wagler)

STATUS.—Casual visitor—1 seen repeatedly near Emmitsburg, Frederick County, during the period November 24–December 3, 1951 (Richards, 1953); also recorded in the same area on November 8–9, 1955 (J. W. Richards). Two were seen near Newark, Worcester County, on December 23, 1946 (J. W. Aldrich). Three were seen near Port Tobacco, Charles County, on December 28, 1946 (I. N. Gabrielson). On April 8, 1956, 3 were observed near Easton, Talbot County, and 4 were seen at the

Blackwater National Wildlife Refuge, Dorchester County (P. A. Buckley).

BOAT-TAILED GRACKLE *Cassidix mexicanus* (Gmelin)

STATUS.—*Breeding* (see fig. 60): Fairly common in the coastal area of Worcester County and in the tidewater areas of Somerset County; rare, local, and irregular elsewhere in the tidewater areas of the Eastern Shore and Western Shore sections, occurring as far north as Pomona in Kent County (Small, 1883b) and Gibson Island in Anne Arundel County (Mrs. W. L. Henderson). *Wintering*: Uncommon in the coastal area of Worcester County and in the tidewater areas of Somerset County; casual in the tidewater areas of the Western Shore section—10 seen on Gibson Island, Anne Arundel County, on December 21, 1951, 50 on February 5, 1952, and 100 on March 14, 1952 (Mrs. W. L. Henderson).

HABITAT.—Salt marshes and marsh borders, including patches of loblolly pine and thickets of sea myrtle, marsh elder, and wax-myrtle.

NESTING SEASON.—Mid-April to early July. Nest building and nearly completed nests were recorded in Worcester County on April 21, 1948. Nests with eggs were recorded in one colony in Worcester County on June 3, 1938 (G. A. Ammann). *Extreme nestling dates* (5 colonies): May 13, 1952 (J. H. Buckalew) and July 7, 1892 (W. N. Wholey), in Worcester County.

MAXIMUM COUNTS.—*Spring*: 200 in the Ocean City area on May 12, 1951 (E. G. Baldwin, J. W. Terborgh). *Fall*: 128 in the Ocean City area on November 11, 1951; 70 on Assateague Island on August 30, 1950. *Winter*: 130 in the Ocean City area on December 21, 1952 (Christmas count); 95 near Crisfield, Somerset County, on January 25, 1947.

COMMON GRACKLE *Quiscalus quiscula* (Linnaeus)

STATUS.—*Breeding*: Abundant in the Eastern Shore and Upper Chesapeake sections and in the southern part of the Western Shore section (St. Marys County and southern Charles and Calvert Counties); common in the Piedmont section and in the eastern part of the Ridge and Valley section (Frederick and eastern Washington Counties); fairly common (somewhat local) in the Allegheny Mountain section, in the western part of the Ridge and Valley section (Allegany County and western Washington County), and in the northern part of the Western Shore section (Prince Georges and Anne Arundel Counties, northern Calvert County, and northern Charles County). *Transient*: Common, occasionally abundant, in all sections. *Wintering*: Abundant

in the Upper Chesapeake section; common in the Eastern Shore section; fairly common in the southern part of the Western Shore section (Calvert, Charles, and St. Marys Counties); uncommon in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties) and in the Piedmont section; rare in the Ridge and Valley section.

HABITAT.—*Breeding*: Agricultural fields and field borders, farmyards, orchards, evergreen patches, and residential areas in towns and suburbs. *Transient and wintering*: Chiefly agricultural fields and field borders; occasional in various forest types.

NESTING SEASON.—Late March to late June (nesting peak, mid-April to late May). Nest-building was recorded as early as March 21, 1951, in Baltimore County (E. Willis). *Extreme egg dates* (239 nests): April 6, 1952 (E. Willis), and June 12, 1897 (E. J. Cook), in Baltimore County. *Extreme nestling dates* (184 nests): April 20, 1952 (E. Willis), and June 24, 1891 (F. C. Kirkwood), in Baltimore County.

SPRING MIGRATION.—*Normal period*: February 10–20 to April 1–10; peak, February 25 to March 25. *Extreme arrival dates*: January 17, 1919, in Baltimore County (E. O. Donovan); January 21, 1916, in the District of Columbia (Mrs. F. M. Bailey); January 28, 1944, in Prince Georges County. *Extreme departure dates*: April 20, 1929, in Baltimore County (F. C. Kirkwood); April 17, 1886, in the District of Columbia (USNM—C. W. Richmond); April 14, 1944, in Prince Georges County.

FALL MIGRATION.—*Normal period*: July 10–20 to December 1–10; peak, October 25 to November 20. During occasional years the peak movement is greatly delayed, occurring as late as December 16–21 at the Patuxent Refuge in 1944 (Stewart, et al., 1952).

MAXIMUM COUNTS.—*Spring*: 5,000+ at Dulaney Valley, Baltimore County, on February 27, 1930 (F. C. Kirkwood); 5,000+ at Patuxent Refuge on March 20, 1937 (I. N. Gabrielson). *Fall*: 60,000 at Patuxent Refuge on December 20, 1944 (late flight); 15,000 on Gunpowder River marsh on November 9, 1901 (J. Thomas); 10,000+ in Baltimore County on November 9, 1901, November 4, 1929, November 7, 1929, and November 10, 1928 (F. C. Kirkwood); 10,000 on the Patuxent River marsh near Upper Marlboro on November 14, 1946; 10,000 near Easton, Talbot County, on August 18, 1953. *Winter*: 350,000 over Sassafra River, Cecil County, on December 27, 1952 (Christmas count); 50,000 on December 18, 1902 (W. H. Fisher), and 31,500 on January 25, 1947, in Somerset County.

BANDING.—See figure 61.

FIGURE 61.—Common Grackle banding recoveries. Each symbol with numerals represents the number of records for each State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August; open triangle = September through May.

BROWN-HEADED COWBIRD *Molothrus ater* (Boddaert)

STATUS.—*Breeding*: Fairly common in the Allegheny Mountain, Ridge and Valley, Piedmont, Upper Chesapeake, and Eastern

Shore sections; uncommon in the Western Shore section. *Transient*: Common in all sections. *Wintering*: Common in the Eastern Shore and Upper Chesapeake sections; fairly common in the southern part of the Western Shore section (Calvert, Charles, and St. Marys Counties); uncommon in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties) and in the Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section.

●**HABITAT.**—Agricultural areas and adjacent woodland.

NESTING SEASON.—Late April to early August (nesting peak, early May to early July). *Extreme egg dates* (125 nests): April 24, 1921, in Montgomery County (E. J. Court) and July 28, 1929, in Baltimore County (M. B. Meanley). A young bird out of the nest was recorded as early as May 17, 1919, in Dorchester County (R. W. Jackson).

BREEDING HOST SPECIES.—A total of 223 instances of cowbird parasitism have been recorded in Maryland and the District of Columbia, including 59 on sparrows (Emberizinae), 53 on warblers (Parulidae), 44 on vireos (Vireonidae), 15 on buntings (Richmondeninae), 12 on thrushes (Turdidae), 10 on icterids (Icteridae), 10 on flycatchers (Tyrannidae), 8 on tanagers (Thraupidae), and 12 on miscellaneous species. By species, records of parasitism are as follows: 39, Red-eyed Vireo; 23, Song Sparrow; 18, Chipping Sparrow; 11, Field Sparrow; 9 each for Yellow Warbler, Yellow-throat, and Cardinal; 7, Summer Tanager; 6 each for Wood Thrush and Orchard Oriole; 5 each for Eastern Phoebe, Hooded Warbler, American Redstart, Indigo Bunting, and Henslow's Sparrow; 4 each for Robin, White-eyed Vireo, and Redwinged Blackbird; 3 each for Carolina Wren, Ovenbird, Kentucky Warbler, and Yellow-breasted Chat; 2 each for Great Crested Flycatcher, Mockingbird, Blue-gray Gnatcatcher, Prothonotary Warbler, Parula Warbler, Pine Warbler, Prairie Warbler, Louisiana Waterthrush, and Rufous-sided Towhee; 1 each for Black-billed Cuckoo, Eastern Kingbird, Acadian Flycatcher, Least Flycatcher, Barn Swallow, Carolina Chickadee, Veery, Eastern Bluebird, Starling, Solitary Vireo, Black-and-white Warbler, Worm-eating Warbler, Blue-winged Warbler, Magnolia Warbler, Blackburnian Warbler, Yellow-throated Warbler, Scarlet Tanager, Blue Grosbeak, and American Goldfinch.

SPRING MIGRATION.—*Normal period*: February 5-15 to April 15-25; peak, March 10 to April 10. *Extreme arrival date*: January 25, 1941, in Prince Georges County. *Extreme departure*

dates: May 10, 1910, in the District of Columbia (F. M. Bailey); May 7, 1943, in Prince Georges County.

FALL MIGRATION.—*Normal period:* August 15–25 to December 1–10; peak, September 25 to November 1. *Extreme arrival dates:* August 10, 1917, and August 11, 1927, in Dorchester County (R. W. Jackson). *Extreme departure dates:* December 23, 1944, in Prince Georges County; December 19, 1951, in Anne Arundel County (Mrs. G. Tappan).

MAXIMUM COUNTS.—*Spring:* 3,000 in Anne Arundel County on March 21, 1954 (D. A. Jones, E. Willis); 3,000 at Middle River, Baltimore County, on March 21, 1955 (E. Willis); 2,000 in Cecil County on March 25, 1947; 500 near Emmitsburg, Frederick County, on April 14 and 15, 1953 (J. W. Richards). *Fall:* 1,500 in Dulaney Valley, Baltimore County, on November 11, 1894 (F. C. Kirkwood); “thousands” near Cumberland, Allegany County, on November 3, 1901 (G. Eifrig); 600 on Kent Island, Queen Annes County, on October 17, 1953 (V. B. Daiker, E. Rogers); 500 near Beltsville, Prince Georges County, on August 29, 1952. *Winter:* 200,000 in Cecil County on December 27, 1952 (Christmas count); 15,772 in the Ocean City area on December 27, 1955 (Christmas count); 8,700 on Kent Island, Queen Annes County, on January 26, 1947; 2,095 in southern Dorchester County on December 28, 1953 (Christmas count).

BANDING.—Nine banded in Baltimore, Anne Arundel, Prince Georges, and Montgomery Counties in spring and summer (March 30–August 23) were recovered in fall and winter (November 6–February 10) in the following areas: 7 in eastern South Carolina and 2 in eastern North Carolina. Six recovered in late fall and winter (November 15–February 5) in Kent, Dorchester, Wicomico, and Worcester Counties had been banded in late spring and summer (April 16–September 22) in the following areas: 5 from southeastern Massachusetts and 1 from southeastern Connecticut.

Family THRAUPIDAE

SCARLET TANAGER *Piranga olivacea* (Gmelin)

STATUS.—*Breeding and transient:* Common in the Ridge and Valley, Piedmont, and Western Shore sections; fairly common in Allegheny Mountain, Upper Chesapeake, and Eastern Shore sections. *Wintering:* Accidental—1 seen near Berlin, Worcester County, on December 27, 1953 (C. L. Clagett, E. G. Baldwin), and 1 observed at Annapolis on January 2, 1955 (E. R. Seeders).

HABITAT.—Various types of deciduous forest—usually most

numerous in swamp and flood-plain forests, and in rich, moist forests on the upland.

NESTING SEASON.—Early May to early August (nesting peak, late May to mid-July). Nest-building was recorded as early as May 8, 1945, in Prince Georges County. *Extreme egg dates* (32 nests): May 12, 1953, in Caroline County (M. W. Hewitt) and August 1, 1892, in Howard County (A. Resler). *Extreme nestling dates* (12 nests): June 4, 1953, in Caroline County (M. W. Hewitt) and August 8, 1895, in Baltimore County (H. J. Muller). Stub-tailed young, just out of the nest, were recorded as early as June 10, 1953, in Prince Georges County.

SPRING MIGRATION.—*Normal period*: April 25–30 to May 20–25; peak, May 1 to May 15. *Extreme arrival dates*: April 17, 1896 (P. W. Schufeldt), and April 18, 1930 (L. McCormick-Goodhart), in the District of Columbia; April 20, 1952, in Montgomery County (I. R. Barnes); April 20, 1954, in Prince Georges County (C. G. Webster, L. W. Oring).

FALL MIGRATION.—*Normal period*: August 15–25 to October 1–10; peak, September 10 to September 30. *Extreme departure dates*: November 13, 1896, in the District of Columbia (USNM—R. Ridgway); October 23, 1952, in Baltimore (H. Kolb, E. Willis).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 26 (9.3 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).
- 19 (15.7 in 85 acres) in "well-drained, flood-plain forest" (sweetgum, hornbeam, river birch, tulip-poplar) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).
- 17 (4 in 24½ acres) in river terrace forest (beech-white oak) in Prince Georges County in 1944.
- 15 (3.5 in 23¼ acres) in "mature northern hardwood forest" (black cherry, beech, hemlock, sugar maple, sweet birch, etc.) in Garrett County in 1951 (Robbins and Stewart, 1951a).
- 14 (3 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 13 (6 in 44¾ acres) in river bluff forest (beech, white oak, scarlet oak) in Prince Georges County, in 1944, 7 (3 in 44¾ acres) in 1945 (J. W. Aldrich, A. J. Duvall).
- 13 (1.8 in 14¼ acres) in "poorly drained, flood-plain forest" (pin oak, sweetgum, red maple, red ash, etc.) in Prince Georges County in 1946.
- 12 (1.5 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 10 (8 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scattered pine" in the District of Columbia in 1948, 8 (6.5 in 80 acres) in 1949, 7 (5.5 in 80 acres) in 1951 (Trever, 1952); 5 (4 in 80 acres) in 1952 (Clagett, 1952); 4 (3 in 80 acres) in 1953 (Clagett, 1953).

- 10 (2 in 20 acres) in "virgin hemlock forest" in Garrett County in 1949 (Robbins, 1949a).
- 9 (3 in 32½ acres) in pine-oak forest (pitch pine, scrub pine, Spanish oak) in Prince Georges County in 1944.
- 9 (2.5 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).
- 8 (2.5 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over, poorly drained upland forest) in Prince Georges County in 1948 (Oresman, et al., 1948).
- 6 (1.4 in 23¾ acres) in upland oak forest (white, scarlet, and black oaks) in Prince Georges County in 1944.
- 4 (1.5 in 37 acres) in "mixed oak forest" (white, scarlet, and chestnut oaks, etc.) in Baltimore County in 1952 (Kaufmann, et al., 1952); 3 (1 in 40 acres) in 1950 (Kolb, 1950); 3 (1 in 37 acres) in 1951 and 1953 (Kolb and Cole, 1951; Cole and Kolb, 1953); 1 (0.5 in 40 acres) in 1949 (Kolb, 1949a); absent in 1948 (Kolb, et al., 1948).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 110 at Patuxent Refuge on May 10, 1950; 42 along the C. and O. Canal in Montgomery County on May 9, 1953 (E. J. Stivers, et al.). *Fall*: 11 at Patuxent Refuge on September 25, 1943.

SUMMER TANAGER *Piranga rubra* (Linnaeus)

STATUS.—*Breeding and transient*: Fairly common in the southern half of Worcester County, and near tidewater in the Western Shore section; uncommon elsewhere in the Eastern Shore and Western Shore sections, and along the Potomac River valley and on Sugarloaf Mountain in the Piedmont section; rare elsewhere (formerly more numerous) in the Piedmont, and Ridge and Valley sections, and in northern Caroline County.

HABITAT.—Upland oak-hickory and oak-chestnut forests; also occurs in upland stands of loblolly pine and scrub pine.

NESTING SEASON.—Late May to late July (nesting peak, early June to early July. *Extreme egg dates* (41 nests): May 24, 1912, in St. Marys County (E. J. Court) and July 13, 1902, in Baltimore County (J. M. Sommer). *Extreme nestling dates* (7 nests): June 13, 1899, in Baltimore County (J. M. Sommer) and July 27, 1954, in Caroline County (Mr. and Mrs. A. J. Fletcher).

SPRING MIGRATION.—*Normal period*: April 25–30 to May 20–25; peak, May 1 to May 15. *Extreme date of arrival*: April 21, 1896, in Montgomery County (P. W. Schufeldt). *Extreme date of departure*: May 29, 1954, in Prince Georges County.

FALL MIGRATION.—*Normal period*: August 15–25 to September 20–25. *Extreme departure date*: September 29, 1898, in Baltimore County (W. H. Fisher).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

10 (2 in 21 acres) in "immature loblolly-shortleaf pine stand" (trees 45 to 65 feet in height) in Worcester County in 1948 (Springer and Stewart, 1948c).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 9 in St. Marys County on May 8, 1954 (J. W. Terborgh, J. W. Taylor, Jr.); 8 at Port Tobacco, Charles County, on May 12, 1951 (M. C. Crone); 6 in Seneca area, Montgomery County, on May 9, 1953 (I. R. Barnes, et al.). *Fall*: 7 at Port Tobacco on September 23, 1951 (M. C. Crone, R. L. Farr).

Family FRINGILLIDAE

CARDINAL *Richmondia cardinalis* (Linnaeus)

STATUS.—Permanent resident. Common in the Eastern Shore, Western Shore, Upper Chesapeake, Piedmont, and Ridge and Valley sections. Uncommon and local in the Allegheny Mountain section except along Bear Creek and lower Youghiogheny River where it is fairly common.

HABITAT.—Brushy, cut-over flood-plain and swamp forests, and rich, brushy, moist forests on the upland; also in hedgerows and wood margins, and in residential areas of farms, towns, and suburbs.

NESTING SEASON.—Early April to late August (nesting peak, late April to early July). Nest-building was recorded as early as April 1, 1945, in Baltimore County (H. Brackbill). *Extreme egg dates* (206 nests): April 5, 1931, in the District of Columbia (J. C. Jones) and August 19, 1900, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (104 nests); April 24, 1947 (H. Brackbill), and August 29, 1915 (J. M. Sommer), both in Baltimore County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

23 (3 in 13 acres) in upland oak forest (white, northern red, chestnut, and black oaks) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).

19 (7 in 36 acres) in "virgin central hardwood deciduous forest" (white oak-tulip-poplar) in Prince Georges County in 1947 (Stewart and Robbins, 1947b).

18 (5 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).

13 (11 in 85 acres) in "well-drained flood-plain forest" (sweetgum, hornbeam, river birch, tulip-poplar) along the boundary between Anne Arundel and Prince Georges Counties in 1945 (Stewart, et al., 1946).

9 (7.5 in 80 acres) in "central hardwood forest (oaks-tulip-poplar) with scat-

tered pine" in the District of Columbia in 1951; 3 (2 in 80 acres) in 1953 (Clagett, 1953); 2 (1.5 in 80 acres) in 1949 and 1952 (Clagett, 1952); 1 (1 in 80 acres) in 1948 (Trever, 1952).

- 8 (1.5 in 18½ acres) in "second-growth river swamp" (red maple, sweetgum, black gum, etc., with dense understory of holly, sweet pepperbush, and greenbrier) in Worcester County in 1948 (Springer and Stewart, 1948d).
- 5 (2.4 in 47½ acres) in hedgerows in agricultural areas and abandoned farmlands (including strip 27½ yards wide on each side of hedgerow) in Prince Georges County in 1945.
- 5 (3 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).

MAXIMUM COUNTS (nonbreeding).—*Winter* (Christmas counts): 640 in the Annapolis area on January 1, 1956; 467 in the Ocean City area on December 27, 1953; 436 in the District of Columbia area on January 1, 1955; 310 in Caroline County on December 26, 1953; 284 in the Catoctin Mountain area in Frederick County on December 30, 1951; 266 near Triadelphia Reservoir in Montgomery and Howard Counties on December 26, 1954; 171 in Allegany County on December 31, 1949; 73 in Garrett County on December 31, 1954.

BANDING.—An adult banded in Montgomery County on March 10, 1939, was recovered in western Pennsylvania (New Kensington) on July 20, 1940. An immature bird banded in Montgomery County on August 20, 1943, was recovered in southeastern Pennsylvania on November 2, 1943. Two birds banded in Prince Georges County on March 29, 1946, and September 10, 1946, were recovered on April 23, 1947, and January 17, 1948, respectively, at distances of 13 and 17 miles from the points of banding.

ROSE-BREADED GROSBEAK *Pheucticus ludovicianus* (Linnaeus)

STATUS.—*Breeding* (see fig. 59): Fairly common in the Allegheny Mountain section; rare, irregular, and local in the Western Shore, Piedmont, and Ridge and Valley sections—recorded as follows: in Calvert County (where a pair bred at Governor's Run in 1925 and one was seen at Plum Point on July 25, 1928—Ball, 1930a), in Frederick County (E. J. Court reports that several pairs were found nesting on Sugarloaf Mountain, elevation 1,281 feet, many years ago), and in Allegany County (one was seen at 1,100 feet on Green Ridge on June 8, 1947). *Transient*: Fairly common in all sections except the Eastern Shore section, where it is rare.

HABITAT.—*Breeding*: Brushy, cut-over bog, mixed mesophytic

forests, and northern hardwood forests. *Transient*: Various types of deciduous forests and wood margins.

NESTING SEASON.—Late May to early July (probably). *Extreme egg dates* (10 nests): May 27, 1919, and June 13, 1917, in Garrett County (J. M. Sommer). *Nestling dates* (2 nests): June 8–14, 1895, in Allegany County (Kirkwood, 1895) and June 11, 1918, in Garrett County (J. M. Sommer).

SPRING MIGRATION.—*Normal period*: May 1–5 to May 20–25; peak, May 5 to May 15. *Extreme arrival dates*: April 8, 1929, at Chestnut Grove, Baltimore County (F. C. Kirkwood); April 17, 1902, in the District of Columbia (H. W. Maynard); April 20, 1952, in Charles County (M. C. Crone, A. R. Stickley, Jr.); April 22, 1950, in Montgomery County (F. C. Cross). *Extreme departure dates*: June 3, 1917, in the District of Columbia (A. H. Howell); June 2, 1948, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 5–15 to October 1–10; peak, September 15 to September 30. *Extreme arrival dates*: August 22 1953, in Harford County (D. McIntosh); August 29, 1887, in the District of Columbia (R. Ridgway); August 29, 1954, in Charles County (A. R. Stickley, Jr.); August 30, 1950, in Baltimore County (E. Willis); August 31, 1900, in Prince Georges County (C. W. Richmond). *Extreme departure dates*: November 25, 1901, in Allegany County (G. Eifrig); November 23, 1952, in Montgomery County (J. E. Willoughby); November 15, 1953, in Prince Georges County (L. W. Oring); November 2, 1930, in Kent County (W. Baker).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 31 at Patuxent Refuge on May 13, 1950; 17 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones). *Fall*: 5 at Patuxent Refuge on September 23, 1943.

BLUE GROSBEAK *Guiraca caerulea* (Linnaeus)

STATUS.—*Breeding and transient* (see fig. 62): Fairly common in Kent and Queen Annes Counties, and in northern Caroline County and western Talbot County; uncommon elsewhere in the Upper Chesapeake section, in the Western Shore section, and in the southern part of the Piedmont section (along Potomac River valley and in southern Howard County); rare in the southern part of the Eastern Shore section (south of Talbot and Caroline Counties), in the northern Piedmont section, and along the Potomac River valley of the Ridge and Valley section.

HABITAT.—Wood margins, hedgerows, and orchards in open agricultural areas.

FIGURE 62.—Breeding range of Blue Grosbeak.

NESTING SEASON.—Late May to early August. *Extreme egg dates* (6 nests) : May 28, 1863, in the District of Columbia (H. W. Elliott) and June 24, 1887, in Prince Georges County (Farnham, 1891). *Extreme nestling dates* (4 nests) : June 8, 1956, in Prince Georges County (E. Mashburn) and August 8, 1953, in Montgomery County (Abbott, 1953).

PERIOD OF OCCURRENCE.—*Normal period*: May 1–5 to September 25–30; peak, May 10 to September 15. *Extreme arrival dates*: April 22, 1956, in Prince Georges County (F. C. Schmid); April 23, 1950 (Mrs. F. H. Vinup), in Anne Arundel County; April 25, 1955, in Caroline County (Mrs. A. J. Fletcher); April 30, 1950, in Frederick County (M. B. Meanley). *Extreme departure dates*: October 24, 1953, and October 18, 1953, at different locations in Talbot County (Mrs. W. L. Henderson, R. L. Kleen); October 6, 1955, in Caroline County (Mrs. A. J. Fletcher); October 3, 1947, in Prince Georges County; October 3, 1953, in Montgomery County (A. Wetmore).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

1.7 (8 in 175 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1952.

0.5 (8 in 1,600 acres) in mixed agricultural habitats (including wood margins and hedgerows) in Howard County in 1951.

INDIGO BUNTING *Passerina cyanea* (Linnaeus)

STATUS.—*Breeding and transient:* Abundant in the Ridge and Valley, and Piedmont sections; common in the Allegheny Mountain, Upper Chesapeake, and Western Shore sections; fairly common in the Eastern Shore section. *Wintering:* Accidental—a specimen was collected in the District of Columbia on December 13, 1887 (M. M. Green).

HABITAT.—Hedgerows, wood margins, and orchards; also in brushy cut-over areas of swamp forest and of rich, moist forest on the upland.

NESTING SEASON.—Mid-May to late August (nesting peak, early June to late July). A nest, nearly complete, was found as early as May 17, 1943, in Baltimore County (H. Kolb). *Extreme egg dates* (109 nests): May 24, 1896 (F. C. Kirkwood), May 24, 1948 (H. Kolb), and August 16, 1891 (F. C. Kirkwood), all in Baltimore County. *Extreme nestling dates* (41 nests): June 5, 1942 (H. Kolb), and August 30, 1896 (F. C. Kirkwood), in Baltimore County.

SPRING MIGRATION.—*Normal period:* April 25–May 5 to May 25–June 5; peak, May 10 to May 25. *Extreme arrival dates:* March 13, 1938, in Prince Georges County (L. McCormick-Goodhart); March 22, 1953 (1 bird), and April 8, 1953 (6 birds), at Gibson Island, Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 11, 1953, in Caroline County (A. Knotts); April 15, 1921 (H. D. Wise), and April 18, 1918 (E. A. Chapin), in the District of Columbia.

FALL MIGRATION.—*Normal period:* August 20–30 to October 5–15; peak, September 5 to September 25. *Extreme arrival date:* August 16, 1944, in Prince Georges County. *Extreme departure dates:* November 1, 1955, in Frederick County (J. W. Richards); October 19, 1930, in Kent County (W. Baker); October 19, 1953, in Dorchester County (P. F. Springer); October 18, 1930, in Washington County (W. Middlekauff); October 17, 1945, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 52 (13 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 30 (6.5 in 22 acres) in "unsprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 19 (4 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).

- 18 (4.5 in 25 acres) in "heavily sprayed apple orchard with frequently mowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 17 (3.5 in 20½ acres) in "moderately sprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 16 (3 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 10 (2 in 19½ acres) in 1946 (Cooley, 1947).
- 14 (10.5 in 72½ acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1948; 13 (9.5 in 72½ acres) in 1949.
- 14 (9 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).
- 6 (1.5 in 26 acres) in "dry deciduous scrub" (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).
- 5 (1.5 in 28 acres) in partially opened, flood-plain forest (sycamore, ash, elm, etc.) in Montgomery County in 1943 (J. W. Aldrich, A. J. Duvall).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 200+ at Port Tobacco, Charles County, on May 14, 1936 (C. Cottam, I. N. Gabrielson); 112 near Seneca, Montgomery County, on May 12, 1951 (C. N. Mason, K. Niles); 45 in Howard County on May 8, 1954; 43 at Patuxent Refuge on May 13, 1950. *Fall*: 45 in Dulaney Valley, Baltimore County, on September 6, 1896 (F. C. Kirkwood); 35 near Seneca, Montgomery County, on September 25, 1949 (I. R. Barnes).

DICKCISSEL *Spiza americana* (Gmelin)

STATUS.—*Breeding*: Regular, but variable in abundance (rare to fairly common) locally, in the western part of the Piedmont section and eastern part of the Ridge and Valley section—occurring in Montgomery County in the vicinity of Dickerson (first noted in 1928—Wetmore and Lincoln, 1928b); in Frederick County in the vicinity of Emmitsburg (J. W. Richards), Buckeystown, and Doub, and formerly near Jefferson (1890–92—J. D. Figgins); and in Washington County near Spickler (R. S. Stauffer), and in the vicinity of Ashton. Rare and irregular elsewhere in the Piedmont section—recent records of singing males include 1 seen in the District of Columbia during June 20–28, 1935 (Ball and Wallace, 1936), 1 seen near West Friendship, Howard County, on June 19, 1946 (Stewart and Robbins, 1947a), and 1 seen near Uniontown, Carroll County, about June 10–15, 1953 (D. McIntosh); casual in the Eastern Shore section—1 singing near Wye Mills, Queen Annes County, on June 19, 1953 (N. Hotchkiss, E. Miller). Formerly (about 1860) this species was found breeding commonly in the District of Columbia (Smith,

1891; Coues and Prentiss, 1883) and near Baltimore (Kirkwood, 1895), but it gradually decreased in numbers until 1875, by which time it had become extremely rare. *Transient*: Rare in the Ridge and Valley, Piedmont, Upper Chesapeake, Western Shore, and Eastern Shore sections. *Wintering*: Rare and irregular—recorded during the winter of 1950–51 in Montgomery County (H. E. Slater); in 1953–54 (M. W. Hewitt) and 1954–55 (Mr. and Mrs. A. J. Fletcher) in Caroline County; on March 13, 1954, in Frederick County (J. E. Knudson) and in the winter of 1954–55 in Anne Arundel County (Mrs. W. L. Henderson).

HABITAT.—Agricultural fields and weedy field borders, usually most numerous in the vicinity of alfalfa or clover hayfields.

NESTING SEASON.—A nest with eggs was found near Ashton, Washington County, on June 15, 1951. A young bird, barely grown, was seen near Dickerson, Montgomery County, on July 22, 1928 (Wetmore and Lincoln, 1928b).

SPRING MIGRATION DATES.—April 24, 1938, in Cecil County (Clark); April 26, 1953, in Montgomery County (H. S. Haller); April 27, 1956, in Anne Arundel County (H. Wierenga); May 2, 1950, in Frederick County; May 6, 1950, in Prince Georges County; May 7, 1892, in Baltimore County (W. N. Wholey); May 7, 1939, in Montgomery County (H. C. Oberholser); May 20, 1876, in Baltimore County (A. Resler); May 22, 1953, in Prince Georges County.

FALL MIGRATION DATES.—September 2, 1956, in Prince Georges County; September 4, 1956, in Kent County; September 12–13, 1955, in Worcester County; September 18, 1954 (P. G. DuMont), in Montgomery County; September 21, 1956 (banded) in Worcester County; September 30, 1953, in Anne Arundel County (Prof. and Mrs. D. Howard); October 2, 1880 (collected), in Baltimore County (A. Resler); October 30, 1898, in Baltimore County (F. C. Kirkwood); November 18, 1954, in Frederick County (Mrs. J. W. Richards); November 22, 1951 (banded), in Montgomery County (S. H. Low).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

1.4 (7 in 500 acres) in mixed agricultural land (chiefly wheat and red clover) in Washington County in 1951.

MAXIMUM COUNTS.—*Summer*: 25 were recorded in the Dickerson area of Montgomery County on June 7, 1952 (R. R. Kerr, J. W. Terborgh), and 17 singing males were recorded in the same area on July 21, 1951 (R. J. Beaton).

EVENING GROSBEAK *Hesperiphona vespertina* (Cooper)

STATUS.—Irregular visitor during the fall, winter, and spring in all sections. Although frequently absent, during flight years it is usually rare or uncommon, while during the winters of 1951–52, 1954–55, and 1955–56 it could be considered fairly common locally.

HABITAT.—Deciduous flood-plain forests, and stands of conifers.

PERIOD OF OCCURRENCE.—Noticeable flights occurred during the winters of 1921–22 (Wetmore, 1923), 1945–46, 1949–50, 1951–52, 1954–55, and 1955–56, while 1 or 2 records were reported during the winters of 1941–42, 1946–47, 1948–49, 1950–51, 1952–53, and 1953–54. *Extreme arrival dates:* October 4, 1949, in the District of Columbia (R. W. Peakes); October 22, 1954, in Baltimore County (S. W. Simon); October 23, 1951 and 1954, in Prince Georges County. *Extreme departure dates:* May 18, 1952, in Prince Georges County (Mrs. R. McCeney); May 16, 1952, in Baltimore County (Mrs. R. C. Stewart, Sr.); May 13, 1946, in Baltimore County (Brackbill, 1947a); May 12, 1922, in the District of Columbia (Cooke, 1929).

MAXIMUM COUNTS.—Hundreds migrating over Frederick about May 15, 1952 (Partridge, 1953); 80 in Garrett County on December 31, 1954 (Christmas count); 72 at Laurel, Prince Georges County, on November 6, 1954; 68 at Beltsville, Prince Georges County, on February 25, 1955 (J. H. Fales); 50 at Seneca, Montgomery County, on March 9, 1952 (P. A. DuMont); 40 at Chase, Baltimore County on March 15, 1952 (O. W. Crowder).

BANDING.—The greatest flight on record for our area occurred during the winter of 1951–52. One hundred and fifteen Evening Grosbeaks were banded at Laurel in Prince Georges County between April 6 and May 11, 1952. Four that had been banded elsewhere were trapped or seen at Laurel during this same period: 1 banded at Lexington, Massachusetts, on May 9, 1950, 1 at Alexandria, Virginia, on January 11, 1952, and 2 color-banded in the winter or spring of 1952 at Pine Ridge, Virginia (Robbins, 1953). Two that had been banded in central Connecticut on March 13, 1950, and February 22, 1953, were recovered in Wicomico County, Maryland, on April 16, 1952, and Worcester County about April 18, 1955, respectively. One bird banded at Laurel on April 20, 1952, was trapped and released at a feeding station in central New York on March 5, 1953. Another banded at Laurel on April 26, 1952, was recovered near Alpena, Michigan, on April 1, 1955.

PURPLE FINCH *Carpodacus purpureus* (Gmelin)

STATUS.—*Breeding* (see fig. 32): Uncommon, occasionally fairly common, in the Allegheny Mountain section. *Transient*: Fairly common in the Allegheny Mountain, Ridge and Valley, Piedmont, and Western Shore sections; uncommon in the Upper Chesapeake and Eastern Shore sections. *Wintering*: Uncommon in all sections except the Allegheny Mountain section where it is rare or absent.

HABITAT.—*Breeding*: Occurs at elevations above 2,500 feet in bogs or on the higher ridges in open stands of red spruce or open mixed stands of red spruce and hemlock. *Transient and wintering*: Chiefly flood-plain and swamp forests; occasional in moist, deciduous forests on the upland and in pine stands. In winter, this species is usually most numerous in areas where seed-laden ash or tulip-poplar occur.

NESTING SEASON.—A nest found in the Maryland portion of Cranesville Swamp, Garrett County, contained eggs on May 29, and young birds on June 12, 1949.

SPRING MIGRATION.—*Normal period*: March 10–20 to May 5–15; peak, March 20 to May 5. *Extreme arrival dates*: February 22, 1904 (W. W. Cooke), and February 26, 1905 (T. H. Levering), in the District of Columbia; February 29, 1956, in Prince Georges County; March 4, 1952, in Baltimore County (R. D. Cole). *Extreme departure dates*: June 3, 1907, on Warrior Mountain, Allegany County (F. C. Kirkwood); May 29, 1860, in the District of Columbia (USNM); May 26, 1907, in Montgomery County (A. K. Fisher); May 21, 1892, in Baltimore County (G. H. Gray).

FALL MIGRATION.—*Normal period*: September 20–30 to November 10–20; peak, October 15 to November 5. *Extreme arrival dates*: August 26, 1923, and August 31, 1919, in the District of Columbia (J. Kittredge, Jr.); September 4, 1951, in Howard County; September 4, 1955, in Baltimore County (C. M. Buchanan). *Extreme departure dates*: December 9, 1943, in Prince Georges County; December 6, 1901, in Allegany County (G. Eifrig).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 500 near Cabin John, Montgomery County, on April 17, 1949 (P. A. DuMont); 500 (1 flock) at Glen Echo, Montgomery County, on April 6, 1946 (E. G. Davis); 100 in Baltimore County on April 4, 1891, and April 28, 1905 (F. C. Kirkwood); 100 in Prince Georges County on April 28, 1944. *Fall*: 200 in Baltimore County on November 26, 1893 (F. C. Kirkwood); 104 in Prince Georges County on November 8, 1954; 66 in Baltimore County on Novem-

ber 2, 1930 (F. C. Kirkwood). *Winter* (Christmas counts): 185 in the District of Columbia area on December 31, 1955; 126 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 102 in the Triadelphia Reservoir area on December 24, 1955; 72 in Allegany County on December 31, 1949; 70 at Patuxent Refuge on January 12, 1950.

BANDING.—See figure 63.

PINE GROSBEAK *Pinicola enucleator* (Linnaeus)

STATUS.—Rare and irregular winter visitor. This species has been recorded during the following winters: in 1903–04 near the District of Columbia (Chapman, 1904); in 1945–46—1 collected in Worcester County (Buckalew, 1950); in 1950–51 in Garrett County (J. H. Buckalew); in 1951–52 in Baltimore County (W. P. Braker) and in Frederick County (Richards, 1953); in 1952–53 in Garrett County (K. F. Sanders, H. E. Slater); in 1954–55 in Baltimore County (S. W. Simon), in Washington County (R. J. Beaton), and in Prince Georges, Frederick, and Garrett Counties; and in 1955–56 in Allegany County (Mr. and Mrs. J. Workmeister).

PERIOD OF OCCURRENCE.—*Extreme arrival dates*: November 6, 1954, in Washington County (R. J. Beaton); November 16, 1945, in Garrett County (Buckalew, 1950). *Extreme departure dates*: March 1, 1953, in Garrett County (K. F. Sanders, H. E. Slater); February 17, 1952, in Baltimore County (W. P. Braker).

MAXIMUM COUNTS.—12 in Frederick County on November 25, 1951 (J. W. Richards); 10 in Baltimore County on February 17, 1952 (W. P. Braker); 9 in Garrett County on December 31, 1954.

HOARY REDPOLL *Acanthis hornemanni* (Holboell)

STATUS.—Accidental winter visitor. An adult male was collected (USNM) at South Point, Worcester County, on February 20, 1949 (Buckalew, 1950). This is the only specimen of this species from south of New York City.

COMMON REDPOLL *Acanthis flammea* (Linnaeus)

STATUS.—Rare and irregular winter visitor in all sections.

HABITAT.—Abandoned weedy fields and hedgerows.

PERIOD OF OCCURRENCE.—*Extreme arrival dates*: December 6, 1901, in Allegany County (Eifrig, 1902b); December 21, 1952, in Worcester County (R. B. Bates, E. O. Mellinger). *Occurrence peak*: January 15 to February 25. *Extreme departure dates*: March 12, 1914, in the District of Columbia (M. T. Cooke); March 11, 1934, in Dorchester County (F. R. Smith).

MAXIMUM COUNTS.—40 near Sweet Air, Baltimore County, on February 13, 1914 (F. C. Kirkwood); 12–15 in Dulaney Valley, Baltimore County, on February 8, 1920 (F. C. Kirkwood); 11 near Rockville, Montgomery County, on January 14, 1940 (J. C. Jones); 10 in Baltimore on February 18, 1917 (J. M. Sommer); 9 near Girdletree, Worcester County, on February 10, 1938 (G. A. Ammann); 8 at Cumberland on December 6, 1901 (Eifrig, 1902b); 7 in the District of Columbia on February 12, 1899 (W. Palmer).

PINE SISKIN *Spinus pinus* (Wilson)

STATUS.—*Breeding* (?): ["On July 1, 1937, a number of Pine Siskins. . . , some of them young birds of the season, were noted in Swallow Falls State Forest along the Youghiogheny River in Garrett County, Maryland. The birds were feeding and calling in hemlock trees, and it seems reasonable to suppose that they may have bred locally. Individuals of this species were again noted on July 3, by Mr. M. Graham Netting, of the Carnegie Museum, Pittsburgh." (Brooks, 1937)]. *Transient and wintering*: Irregular, rare or uncommon (absent during some years) in all sections; much more numerous than usual during the fall, winter, and spring of 1952–53, when it could be considered as common.

HABITAT.—*Transient and wintering*: Pine stands and flood-plain and swamp deciduous forests; also in hedgerows and wood margins. This species is usually most numerous in areas, where seed-laden conifers or sweetgum are common.

PERIOD OF OCCURRENCE (nonbreeding).—*Normal period*: October 10–20 to May 1–10. *Extreme arrival dates*: October 3, 1946, in Prince Georges County; October 7, 1918, in Baltimore County (W. Marshall). *Extreme departure dates*: May 29, 1949, in Garrett County; May 22, 1926, in Prince Georges County (R. V. Truitt); May 22, 1950, in Baltimore County (D. A. Jones); May 19, 1888, in the District of Columbia (Cooke, 1908).

MAXIMUM COUNTS.—*Fall, winter, and spring of 1952–53*: 400 near Emmitsburg, Frederick County, on October 18, 1952 (J. W. Richards); 280 near Kent Narrows, Queen Annes County, on February 21, 1953; 250 at Patuxent Refuge on January 14, 1953 (Christmas count); 225 in the Ocean City area on December 21, 1952 (Christmas count); 220 near Greenbelt, Prince Georges County, on January 4, 1953 (L. W. Oring); 200 near Oakland, Garrett County, on March 1, 1953 (K. F. Sanders, H. E. Slater). *Other years*: 225 at Greenbelt, Prince Georges County, on April 8, 1955 (L. W. Oring); 100 on November 2, 1913, and 75 on

November 2, 1919, near Cambridge, Dorchester County (R. W. Jackson); 55 near Ocean City on November 24, 1946.

AMERICAN GOLDFINCH *Spinus tristis* (Linnaeus)

STATUS.—*Breeding*: Common in the Allegheny Mountain, Ridge and Valley, Piedmont, and Upper Chesapeake sections; fairly common in the Western Shore and Eastern Shore sections. *Transient*: Common in all sections. *Wintering*: Common in the Eastern Shore, Western Shore, Upper Chesapeake, and Piedmont sections; fairly common in the Ridge and Valley, and Allegheny Mountain sections.

HABITAT.—*Breeding*: Hedgerows, wood margins, brushy fields, shrub swamps, and orchards. *Transient and wintering*: Chiefly flood-plain and swamp forests; occasional in pine stands and in hedgerows, wood margins, and brushy fields. In winter, this species often concentrates in areas where seed-laden sweetgum is common.

NESTING SEASON.—Early July to early October (nesting peak, late July to early September). Nest-building was recorded as early as July 6, 1952, in Baltimore County (E. Willis). *Extreme egg dates* (55 nests): July 12, 1885, in the District of Columbia (C. W. Richmond) and September 15, 1935, in Baltimore County (Meanley, 1936a). *Extreme nestling dates* (31 nests): August 8, 1912, in Dorchester County (R. W. Jackson) and October 4, 1948, in Baltimore County (H. F. Kuch).

SPRING MIGRATION.—*Normal period*: March 20–30 to June 1–10; peak, April 5 to May 15. *Extreme arrival date*: March 11, 1906, in the District of Columbia (W. W. Cooke). *Extreme departure date*: June 11, 1946, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 20–30 to November 20–30; peak, October 15 to November 15.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 21 (4 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1946 and 1947 (Cooley, 1947).
- 12 (3 in 26 acres) in "dry, deciduous scrub" (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).
- 6 (1.5 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 6 (1.5 in 25 acres) in "heavily sprayed apple orchard with frequently mowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 5 (3 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 2,000 at Port Tobacco, Charles County, on May 7, 1940 (C. Cottam, F. M. Uhler); 2,000 near Cabin John, Montgomery County, on April 17, 1949 (P. A. DuMont); 1,320 at Greenbelt, Prince Georges County, on May 5, 1956 (L. W. Oring); 1,000 on Gibson Island, Anne Arundel County, on April 28 and 29, 1952 (Mrs. W. L. Henderson). *Fall*: About 750 (382 banded) near Berwyn, Prince Georges County, on October 23, 1952 (S. H. Low); 200 at Unity, Montgomery County, on October 28, 1951 (S. H. Low); 150 at Kent Island, Queen Annes County, on November 11, 1951 (Mrs. W. L. Henderson). *Winter*: 1,607 in the Ocean City area on December 22, 1951 (Christmas count); 724 in the Triadelphia Reservoir area on December 24, 1955 (Christmas count); 676 in the Annapolis area on January 1, 1956 (Christmas count); 500 near Emmitsburg, Frederick County, on February 21, 1953 (J. W. Richards); 366 in St. Michaels area, Talbot County, on December 29, 1953 (Christmas count); 300 at Port Tobacco, Charles County, on December 27, 1941, and December 21, 1943 (Christmas counts).

BANDING.—One banded in Montgomery County on October 12, 1952, was recovered in southern South Carolina on February 28, 1953; another banded in Prince Georges County on April 28, 1954, was recovered in Kamouraska County, Quebec, on August 7, 1955.

RED CROSSBILL *Loxia curvirostra* Linnaeus

STATUS.—*Breeding* (?): A female collected near Laurel, Prince Georges County, on May 23, 1884, showed "unmistakable evidence of having lately incubated" (Ridgway, 1884), and several were seen at Laurel on June 30, 1884 (C. W. Richmond); a young bird barely able to fly was seen with an adult near the District of Columbia on May 17, 1885 (Smith, 1885); recorded in Dorchester County near Golden Hill during the periods May 15 to June 24, 1932, and June 4 to August 7, 1933 (F. R. Smith). *Transient and wintering*: Rare and irregular in all sections (recorded during 5 of the past 10 winters, 1944–1955). This species has been recorded from the District of Columbia and from Worcester, Dorchester, Talbot, Caroline, Anne Arundel, Prince Georges, Montgomery, Howard, Baltimore, Harford, Allegany, and Garrett Counties. The records indicate that Red Crossbills were much more regular and numerous in the Piedmont section during the period 1884–1900 than at the present time. Especially large flights were noted in the Piedmont section during

the winters of 1887-88 (numerous specimens—USNM), 1894-95 (Kirkwood, 1895; C. W. Richmond), and 1916-17 (H. C. Oberholser). In Allegany County this species was noted in fair numbers in winter during the period 1902-07 (G. Eifrig). Since 1940, only scattered records of this species have been made.

HABITAT.—Usually in stands of pine or other conifers.

PERIOD OF OCCURRENCE (nonbreeding).—*Extreme arrival dates:* September 12, 1956, in Worcester County (S. W. Simon); October 10, 1886 (H. W. Henshaw), October 17, 1921 (J. Kittredge, Jr.), and October 28, 1906 (A. H. Howell), in the District of Columbia; "late October, 1889" in Talbot County (J. E. Tylor). *Extreme departure dates:* June 5, 1895 (R. Ridgway), and June 2, 1902 (C. W. Richmond), in the District of Columbia.

MAXIMUM COUNTS.—75 in the District of Columbia on November 6, 1887 (H. W. Henshaw); 50 at Long Green Valley, Baltimore County, on December 27, 1899 (F. C. Kirkwood); 50 at Bethesda, Montgomery County, on May 4, 1953 (V. F. Hogan); 40 on Warrior Mountain, Allegany County, on May 24, 1907 (F. C. Kirkwood).

WHITE-WINGED CROSSBILL *Loxia leucoptera* Gmelin

STATUS.—Rare and irregular winter visitor; accidental summer visitor—1 collected at Oxon Hill, Prince Georges County, on August 13, 1907 (Oldys, 1907). Definite records are from Garrett, Frederick, Montgomery, Baltimore, Harford, Anne Arundel, Prince Georges, and Talbot Counties, and the District of Columbia.

HABITAT.—Stands of pine or other conifers.

PERIOD OF OCCURRENCE (wintering).—*Extreme arrival dates:* October 23, 1913, in the District of Columbia (Williams, 1914); November 13, 1954, in Prince Georges County. *Extreme departure dates:* April 7, 1955, in Montgomery County (H. E. Smith); March 1, 1953, in Frederick County (P. J. O'Brien); March 1, 1953, in Garrett County (K. F. Sanders, H. E. Slater); February 25, 1923, in the District of Columbia (E. R. Kalmbach); February 25, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan). Only 2 well-marked flights of this species have been recorded in our area, 1 during the winter of 1916-17 and the other during the winter of 1952-53. During the winter of 1916-17, this species was recorded repeatedly in the District of Columbia and nearby Maryland from December 14 to the latter part of February (W. L. McAtee, A. Wetmore). During the winter of 1952-53 it was recorded from January 4

to March 1 in Garrett (K. F. Sanders, H. E. Slater), Frederick (J. W. Richards, P. J. O'Brien), Harford (R. W. Peakes), Anne Arundel (Mrs. W. L. Henderson, Mrs. G. Tappan), Prince Georges (Mrs. R. McCeney), and Talbot (H. McCullogh) Counties, and the District of Columbia (J. H. Benn, H. Friedmann). Other scattered records of this species were made during the winters of 1863-64, about 1874, 1906-07, 1913-14, 1922-23, and 1954-55.

MAXIMUM COUNTS.—40 on December 24, 1916 (McAtee, et al., 1917), 23 on December 25, 1916 (E. G. Holt, D. C. Mabbott), and 15 on February 25, 1923 (E. R. Kalmbach)—all in the District of Columbia; and 12 at Silver Spring, Montgomery County, on April 17, 1955 (H. E. Smith).

RUFIOUS-SIDED TOWHEE *Pipilo erythrophthalmus* (Linnaeus)

STATUS.—*Breeding and transient:* Common, locally abundant, in all sections. *Wintering:* Fairly common in Worcester County; uncommon elsewhere in the Eastern Shore, Western Shore, and Upper Chesapeake sections; rare in the Piedmont, and Ridge and Valley sections; casual in the Allegheny Mountain section.

HABITAT.—Brushy cut-over upland forests; dry brushy fields and thickets; hedgerows and wood margins.

NESTING SEASON.—Mid-April to late August (nesting peak, mid-May to late July). *Extreme egg dates* (115 nests): April 22, 1945, in Prince Georges County (E. G. Cooley), April 22, 1955, in Caroline County (Mr. and Mrs. A. J. Fletcher), and August 16, 1939, in Prince Georges County (E. G. Cooley). *Extreme nestling dates* (72 nests): April 30, 1945, and August 22, 1939, in Prince Georges County (E. G. Cooley). A nest with eggs (pipped) was also recorded on the extremely late date of August 28, 1891, in Baltimore County (W. H. Fisher).

SPRING MIGRATION.—*Normal period:* March 15-25 to May 5-15; peak, April 15 to May 5. *Extreme arrival dates:* March 8, 1894 (F. C. Kirkwood), and March 11, 1945 (E. A. McGinity), in Baltimore County; March 13, 1952 and 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); March 14, 1943, in Prince Georges County.

FALL MIGRATION.—*Normal period:* September 20-30 to October 25-November 5; peak, October 1 to October 25. *Extreme departure dates:* November 24, 1949, in Baltimore County (E. Willis); November 12, 1931, in the District of Columbia (J. A. Molter).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

57 (17 in 30 acres) in "damp deciduous scrub with standing dead trees"

- (burned-over, poorly drained upland forest) in Prince Georges County in 1947 (Stewart, et al., 1947).
- 50 (13 in 26 acres) in "dry deciduous scrub" (burned-over, upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).
- 45 (9.5 in 21 acres) in "immature loblolly-shortleaf pine stand" (trees 45 to 65 feet in height) in Worcester County in 1949 (Springer and Stewart, 1948c).
- 33 (5 in 15 acres) in "open slash area" (cut-over oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 33 (7 in 21 acres) in "dense second-growth" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 32 (2 in 6½ acres) in "young second-growth resulting from cutting" (oak-maple ridge forest) in Garrett County in 1949 (Robbins, 1949b).
- 23 (13.5 in 58 acres) in brushy, abandoned farmland in Prince Georges County in 1947.
- 22 (2 in 9 acres) in "scrub spruce bog" (brush-meadow stage with young red spruce) in Garrett County in 1951 (Robbins and Stewart, 1951b).
- 17 (6 in 84¾ acres) in pine field (abandoned field with open growth of young scrub pine) in Prince Georges County in 1945.
- 14 (3.5 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 8 (1.6 in 19¾ acres) in sweetgum field (abandoned field with open growth of young sweetgum) in Prince Georges County in 1945.
- 7 (2 in 27¾ acres) in "red pine plantation" (young trees about 20 feet in height) in Garrett County in 1949 (Robbins and Barnes, 1949).
- 6 (1.8 in 32¾ acres) in pine-oak forest (pitch pine, scrub pine, Spanish oak) in Prince Georges County in 1944.

MAXIMUM COUNTS (nonbreeding).—*Spring:* 320 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones); 200 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 135 at Middle River, Baltimore County, on May 5, 1951 (E. Willis, D. A. Jones). *Fall:* 100+ at Baltimore on October 10, 1917 (F. C. Kirkwood). *Winter* (Christmas counts): 487 in the Ocean City area on December 27, 1954; 112 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 94 in southern Dorchester County on December 28, 1954; 91 near Chase, Baltimore County, on December 29, 1951.

BANDING.—Two birds recovered in spring (April 28–May 2) in St. Marys and Baltimore Counties had been banded in eastern Massachusetts and northeastern New Jersey on August 11 and April 25, respectively.

IPSWICH SPARROW *Passerculus princeps* Maynard

STATUS.—*Transient and wintering:* Uncommon along the coast in Worcester County; casual in the Western Shore section—singles recorded in Anne Arundel County along the West River

on March 24, 1920 (Wetmore, 1927), and at Gibson Island on April 15, 1956 (Mrs. W. L. Henderson, Mrs. G. Tappan).

HABITAT.—Sand dune zone of the barrier beaches, usually occurring in areas where beachgrass is common.

PERIOD OF OCCURRENCE.—*Extreme arrival dates:* November 9, 1929 (A. Wetmore), and November 16, 1947 (I. R. Barnes), in Worcester County. *Extreme departure dates:* April 15, 1956, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); April 5, 1938, in Worcester County (G. A. Ammann).

MAXIMUM COUNTS.—About 30 near Ocean City on December 30 and 31, 1927 (Wetmore and Lincoln, 1928a); 25 on Assateague Island on November 28, 1945; 12 on Assateague Island on December 23, 1946 (Christmas count).

SAVANNAH SPARROW *Passerculus sandwichensis* (Gmelin)

STATUS.—*Breeding* (see fig. 64): Common in the Allegheny Mountain section (usually in areas that are over 2,500 feet in elevation); uncommon and local in the Ridge and Valley, and Piedmont sections—occurring in the Hagerstown Valley in Washington County, in the Frederick Valley in Frederick County, and in the Worthington Valley in Baltimore County; rare and local in the Upper Chesapeake, Western Shore, and Eastern Shore sections—occurring near Fort Howard in Baltimore County, near

FIGURE 64.—Breeding range of Savannah Sparrow.

Sandy Point in Anne Arundel County, and on Assateague Island in Worcester County. *Transient*: Abundant (at least locally) in the Eastern Shore section; fairly common elsewhere in all sections. *Wintering*: Common in the Eastern Shore section; fairly common in the southern part of the Western Shore section (Calvert, Charles, and St. Marys Counties); uncommon in the Upper Chesapeake section; rare in the Piedmont section and in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties).

HABITAT.—*Breeding*: Hayfields and over-grown pastures; also occurs in grassy areas on the bay shores and barrier beach. *Transient and wintering*: Especially characteristic of weedy fallow and cultivated fields, and of marsh-meadow types in the tidal marshes; also commonly found on the barrier beaches where beachgrass occurs.

NESTING SEASON.—Fledglings just out of the nest were observed in Garrett County on June 3, 1951.

SPRING MIGRATION.—*Normal period*: March 15–25 to May 5–15; peak, March 25 to April 20. *Extreme arrival dates*: March 6, 1944, in Harford County (S. Mason, Jr.); March 11, 1949, in Prince Georges County; March 12, 1892, in Baltimore County (J. H. Pleasants). *Extreme departure dates*: May 23, 1947, in Prince Georges County; May 18, 1921, in the District of Columbia (W. L. McAtee); May 18, 1948, in Worcester County; May 16, 1931, in Charles County (E. R. Kalmbach, C. C. Sperry).

FALL MIGRATION.—*Normal period*: September 15–25 to November 1–10; peak, October 5 to October 30. *Extreme arrival dates*: September 4, 1898, in Baltimore County (F. C. Kirkwood); September 11, 1948, in Montgomery County (F. R. Bell, R. C. Simpson); September 13, 1945, in Prince Georges County. *Extreme departure dates*: November 22, 1886, in the District of Columbia (H. W. Henshaw); November 16, 1902, in Baltimore County (F. C. Kirkwood).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

50 (12.5 in 25 acres) in "lightly-grazed pasture" in Garrett County in 1951 (Stewart and Robbins, 1951b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 68 in Anne Arundel County on April 18, 1954 (L. W. Oring); 50+ near Emmitsburg, Frederick County, on March 30, 1952, and April 11, 1955 (J. W. Richards); 50 at Port Tobacco, Charles County, on May 5, 1939 (C. Cottam, A. L. Nelson); 30–40 in Baltimore County

on April 8, 1898 (F. C. Kirkwood). *Fall*: 100 in Worcester County on October 5, 1946; 50 in Dulaney Valley, Baltimore County, on November 2, 1902 (F. C. Kirkwood). *Winter*: 471 in the Ocean City area on December 27, 1954 (Christmas count); 145 in southeastern Worcester County on December 23, 1946 (Christmas count); 115 in southern Dorchester County on December 28, 1955 (Christmas count); 85 at Point Lookout, St. Marys County, on January 31, 1954 (J. W. Terborgh).

GRASSHOPPER SPARROW *Ammodramus savannarum* (Gmelin)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Casual occurrence—recorded in Baltimore County on January 2, 1893, and January 16, 1898 (F. C. Kirkwood), and collected on December 10 and 22, 1892 (W. H. Fisher); 1 collected at Marshall Hall, Charles County, on February 21, 1900 (S. D. Judd); recorded at Cambridge, Dorchester County, on February 22, 1913 (R. W. Jackson).

HABITAT.—Chiefly, various types of hayfields; also in overgrown pastures and weedy, fallow fields and occasionally in broomsedge fields.

NESTING SEASON.—Early May to early September (nesting peak, late May to early August). *Extreme egg dates* (83 nests): May 15, 1921, in Baltimore County (W. Marshall) and August 19, 1952, in Harford County (D. McIntosh). *Extreme nestling dates* (24 nests): May 25, 1953, in Prince Georges County (P. F. Springer) and September 2, 1919, in the District of Columbia (F. Harper). Young birds unable to fly were seen in Baltimore County on September 10, 1920 (F. C. Kirkwood).

PERIOD OF OCCURRENCE.—*Normal period*: April 5–15 to October 20–30. *Extreme arrival dates*: March 17, 1912, in Dorchester County (R. W. Jackson); March 18, 1939, in Prince Georges County (M. B. Meanley); March 20, 1898 (F. C. Kirkwood), and March 20, 1927 (J. M. Sommer), in Baltimore County; March 25, 1950, in Frederick County (R. T. Smith). *Extreme departure dates*: November 23, 1892, in Somerset County (collected—W. H. Fisher); November 20, 1899, in the District of Columbia (E. A. Preble).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

77 (4 in 5½ acres) in weedy fallow field in Prince Georges County in 1945.
42 (5 in 12 acres) in orchard grass–Korean lespedeza hayfield in Prince Georges County in 1948.

32 (3 in 9½ acres) in weedy pasture in Prince Georges County in 1945.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 108 near Westminster, Carroll County, on May 9, 1953 (D. A. Jones); 85 in Howard County on May 8, 1954; 50 near Buckeystown, Frederick County, on May 6, 1950. *Fall*: 5 (banded) near Unity, Montgomery County, on October 19, 1952 (S. H. Low).

HENSLOW'S SPARROW *Passerherbulus henslowii* (Audubon)

STATUS.—*Breeding and transient*: Fairly common in the Eastern Shore, Western Shore, and Upper Chesapeake sections (rare in Caroline County); uncommon in the Piedmont and Allegheny Mountain sections; rare in the Ridge and Valley section. *Wintering*: Casual occurrence—1 observed near Newark, Worcester County, on December 23, 1946; another seen at Point Lookout, St. Marys County, on January 26, 1953 (R. R. Kerr).

HABITAT.—Chiefly broomsedge fields and weedy sedge-meadows; also occasional in hayfields.

NESTING SEASON.—Mid-May to mid-July. *Extreme egg dates* (13 nests): May 18, 1944, in Montgomery County (E. J. Court) and June 26, 1924, in Dorchester County (J. M. Sommer). Nestlings were recorded in St. Marys County on June 1, 1930 (E. J. Court).

PERIOD OF OCCURRENCE.—*Normal period*: April 5–15 to November 1–10. *Extreme arrival dates*: March 16, 1947, in Baltimore County (O. W. Crowder); March 24, 1945, in Prince Georges County; March 25, 1917, in the District of Columbia (M. T. Cooke); March 27, 1921, in Dorchester County (R. W. Jackson). *Extreme departure dates*: November 21, 1897, in Baltimore County (F. C. Kirkwood); November 17, 1945 (collected), in Anne Arundel County; November 16, 1930, in the District of Columbia (J. A. Molter).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

16 (2 in 12½ acres) in weedy, unimproved pasture in Prince Georges County in 1950.

15 (3 in 20 acres) in abandoned broomsedge field in Prince Georges County in 1948.

7 (2 in 30 acres) in "switchgrass marsh-meadow" in Somerset County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS (nonbreeding).—23 in Charles and St. Marys Counties on May 9, 1953 (J. W. Terborgh, et al.); 18 in the Ocean City area on May 11, 1952 (D. A. Cutler, et al.).

SHARP-TAILED SPARROW *Ammospiza caudacuta* (Gmelin)

STATUS.—*Breeding and transient* (see fig. 65): Common,

FIGURE 65.—Breeding range of Sharp-tailed Sparrow and Seaside Sparrow.

locally abundant, in the Eastern Shore section, occurring in the coastal area of Worcester County, and in the tidewater areas along Chesapeake Bay north to Kent Narrows in Queen Annes County; uncommon and local in the Western Shore section, occurring in the tidewater areas along Chesapeake Bay, north to Sandy Point in Anne Arundel County, and up the Potomac River to Cobb Island in Charles County; casual elsewhere during migration—recorded in the District of Columbia (Cooke, 1929) and at Strawberry Point, Baltimore County (E. Willis, D. A. Jones). *Wintering*: Uncommon in the coastal area of Worcester County; rare in the tidewater areas of Somerset, Wicomico, Dorchester, and St. Marys (R. R. Kerr, J. W. Terborgh) Counties.

HABITAT.—*Breeding*: Chiefly salt marshes in which salt-meadow grass is predominant; also common locally in salt marshes where black grass is prevalent, and sparingly in marshes of salt-water cordgrass.

NESTING SEASON.—Mid-May to late August. *Extreme egg dates* (6 nests): May 14, 1955, in Worcester County (J. E. M. Wood) and August 21, 1947, in Anne Arundel County. *Nestling dates* (2 nests): June 4, 1944, in Queen Annes County and June 16, 1940 (M. B. Meanley), in Worcester County.

PERIOD OF OCCURRENCE.—Throughout the year. *Population*

peak: May 10 to September 30. *Extreme date of spring departure*: June 3, 1951, at Strawberry Point in Baltimore County (E. Willis, D. A. Jones).

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

100 (approximately 17 in 17 acres) in saltmeadow grass marsh-meadow in Somerset County in 1948 (Springer and Stewart, 1948a).

MAXIMUM COUNTS (nonbreeding).—*Fall*: 47 in Worcester County on September 27, 1949. *Winter*: 61 in the Ocean City area on December 21, 1952 (Christmas count).

SEASIDE SPARROW *Ammospiza maritima* (Wilson)

STATUS.—*Breeding and transient* (see fig. 65): Common in the Eastern Shore section—occurring in the coastal area of Worcester County and in the tidewater areas along Chesapeake Bay, north to Kent Narrows, Queen Annes County (rarely north to Langford Bay, Kent County—Kirkwood, 1895); uncommon and local in the Western Shore section, occurring in the tidewater areas along Chesapeake Bay, north to Idlewilde, Anne Arundel County (rarely north to Gunpowder River area, where recorded by F. C. Kirkwood on April 21, 1897, by W. H. Fisher on June 7, and 10, 1900, and by T. A. Imhof on May 6, 1951). *Wintering*: Rare in the tidewater areas of Somerset, Wicomico, and Dorchester Counties, and in the coastal area of Worcester County; casual in the tidewater areas of the Western Shore section—single birds seen at Point Lookout, St. Marys County, on January 26, 1953 (R. R. Kerr), and January 2, 1956 (J. W. Terborgh).

HABITAT.—Tidal salt marshes, occurring most commonly in salt-water cordgrass and salt-meadow grass types that contain scattered shrubs of marsh elder and sea myrtle; also occurs sparingly in stands of needlerush.

NESTING SEASON.—Early May to early July (probably). *Extreme egg dates* (11 nests): May 20, 1953, in Dorchester County and June 21, 1940 (Kolb, 1941), in Worcester County. *Nestling dates* (2 nests): May 20, 1953, in Dorchester County and June 4, 1944, in Queen Annes County.

POPULATION PEAK.—About April 20 to October 10.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

10 (2 in 19½ acres) in "saltmarsh bulrush-saltgrass marsh" in Somerset County in 1948 (Springer and Stewart, 1948a).

9 (2 in 22¼ acres) in "needlerush marsh" in Somerset County in 1948 (Springer and Stewart, 1948a).

NOTE.—Populations in optimum habitats have not been studied in detail.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 50 in the Elliott Island marsh, Dorchester County, on May 23, 1954. *Fall*: 24 in Worcester County on September 27, 1949. *Winter* (Christmas counts): 13 in the Ocean City area on December 27, 1955; 7 near Elliott, Dorchester County, on December 27, 1949.

VESPER SPARROW *Pooecetes gramineus* (Gmelin)

STATUS.—*Breeding*: Common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; fairly common in the Upper Chesapeake section; uncommon in the Eastern Shore section and in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties); rare in the southern part of the Western Shore section (Calvert, Charles, and St. Marys Counties). *Transient*: Fairly common in all sections. *Wintering*: Uncommon in Worcester County; rare elsewhere in the Eastern Shore section and in the southern part of the Western Shore section (Calvert, Charles, and St. Marys Counties); casual in the northern part of the Western Shore section (Anne Arundel and Prince Georges Counties) and in the Upper Chesapeake and Piedmont sections.

HABITAT.—Short-growth or sparsely vegetated pastures, hayfields, and fallow fields.

NESTING SEASON.—Mid-April to mid-August (nesting peak, early May to early July). Nest-building was recorded in Baltimore County as early as April 14, 1924 (F. C. Kirkwood). *Extreme egg dates* (39 nests): May 5, 1915, in Baltimore County (F. C. Kirkwood) and August 1, 1901, in Garrett County (G. Eifrig). *Extreme nestling dates* (13 nests): May 14, 1949, in Frederick County (M. B. Meanley) and July 2, 1931, in Baltimore County (W. Marshall).

SPRING MIGRATION.—*Normal period*: March 10–20 to May 1–10; peak, March 25 to April 25. *Extreme arrival dates*: March 1, 1951, in Caroline County (M. W. Hewitt); March 4, 1893, in Queen Annes County (F. C. Kirkwood); March 5, 1919, in Baltimore County (F. C. Kirkwood); March 5, 1945, in Prince Georges County. *Extreme departure dates*: May 23, 1893, in Baltimore County (W. N. Wholey); May 16, 1906, in Worcester County (F. C. Kirkwood).

FALL MIGRATION.—*Normal period*: September 10–20 to November 1–10; peak, September 25 to October 30. *Extreme arrival dates*: September 1, 1886, in the District of Columbia (A. K. Fisher); September 2, 1947, in Talbot County (W. M. Davidson); September 9, 1943, in Prince Georges County. *Extreme departure dates*: November 21, 1886, in the District of Columbia (A. K.

Fisher); November 16, 1919, in Prince Georges County (F. Harper).

MAXIMUM COUNTS (nonbreeding).—*Spring*: "Several hundred" at Roland Park, Baltimore County, on April 10, 1897 (W. H. Fisher); 50 in Queen Annes County on March 4, 1893 (F. C. Kirkwood); 30 near Emmitsburg, Frederick County, on March 26, 1953 (J. W. Richards). *Fall*: 25 in Dulaney Valley, Baltimore County, on October 23, 1898 (F. C. Kirkwood). *Winter*: 34 in the Ocean City area on December 27, 1954 (Christmas count); 21 in southeastern Worcester County on December 22, 1947 (Christmas count); 8 near the Wicomico River in Charles and St. Marys Counties on February 8, 1953 (J. W. Terborgh); 7 in southern Dorchester County on December 22, 1952 (Christmas count).

LARK SPARROW *Chondestes grammacus* (Say)

STATUS.—*Breeding*: Formerly occurred in the Allegheny Mountain section—a colony of about 50 birds, including young, was found near Accident, Garrett County, on July 24, 1901, and 1 was seen there on July 29, 1903 (Eifrig, 1902a); also recorded as being common near Red House until about 1926 (Brooks, 1936c). *Spring transient*: Casual—1 seen at West Ocean City on May 13, 1951 (D. A. Cutler). *Late summer and fall transient*: Rare in the coastal area of Worcester County (7 records); casual elsewhere in the Eastern Shore and Western Shore sections—recorded in Somerset County in 1955 (F. McLaughlin), in Calvert County in 1948 (McKnight, 1950), in Anne Arundel County in 1948 (Davis, 1948), in Prince Georges County in 1947 (Stewart, et al., 1952), and in the District of Columbia in 1877 (2 seen—Ridgway, 1878) and 1886 (Henshaw, 1886).

HABITAT.—*Breeding*: Agricultural fields and field borders. *Transient*: Most records were made in brushy, sandy areas on the ocean barrier beach and along the bay shores.

LATE SUMMER AND FALL MIGRATION.—*Extreme arrival dates*: July 17, 1947, in Prince Georges County (Stewart, et al., 1952); July 22, 1948, in Calvert County (McKnight, 1950). *Extreme departure dates*: October 21, 1950, in Worcester County (R. J. Beaton); September 29, 1955, in Somerset County (F. McLaughlin).

MAXIMUM COUNT (nonbreeding).—5 on the barrier beach between Ocean City and the Delaware line on September 4, 1954 (R. L. Kleen).

BACHMAN'S SPARROW *Aimophila aestivalis* (Lichtenstein)

STATUS.—*Breeding and transient*: Rare and local in the Western Shore, Piedmont, and Ridge and Valley sections; formerly occurred in the Allegheny Mountain section. During the period 1896–1954, scattered observations of from 1 to 6 singing males or pairs have been recorded in the District of Columbia and in the area within 12 miles of the District boundary in Prince Georges and Montgomery Counties, at the following locations: Kensington (Figgins, 1897, and R. W. Moore), Congress Heights (P. Bartsch), Lanham (W. R. Maxon), Cabin John (A. Wetmore), District of Columbia (F. Lees), Beltsville Research Center (Stewart and Meanley, 1943), Patuxent Refuge (Stewart, et al., 1952), town of Potomac (R. Tousey), and College Park (Meanley, 1949). One was also recorded near Simpsonville, Howard County, on May 8, 1955. In Allegany County, 3 pairs were found during the summer of 1947 and 2 pairs in 1948 on Green Ridge, about 1 mile north of the Potomac River (Springer and Stewart, 1948b). This species was also found in Garrett County during the period 1900–10, and in June, 1923, a singing male was observed near Oakland (Brooks, 1936c). *Wintering*: Accidental—a specimen recently killed by a car was found on January 25, 1951, in Somerset County between Princess Anne and Deal Island (USNM—Buckalew, 1951b).

HABITAT.—Weedy, abandoned fields with open growth of shrubs and small pine or deciduous trees; also in weedy, abandoned orchards.

NESTING SEASON.—Mid-May to mid-July (probably). *Egg dates* (2 nests): May 20, 1946 (E. J. Court), and May 26, 1942 (Stewart and Meanley, 1943), both on the Beltsville Research Center, Prince Georges County. The nest found in 1942 contained young birds on June 3. During the period June 22–25, 1948, adults were observed feeding fledglings, just out of the nest, on Green Ridge, Allegany County.

PERIOD OF OCCURRENCE (transient and breeding).—*Extreme arrival dates*: April 11, 1956 (P. A. DuMont), and April 19, 1925 (F. Lees), in the District of Columbia; April 29, 1896 (Figgins, 1897), and April 29, 1953 (P. A. DuMont), in Montgomery County. *Extreme departure date*: “middle of August,” 1949, in Prince Georges County (Meanley, 1949).

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

43 (3 in 7 acres) in brushy field (abandoned field with open growth of young

hickory, scrub pine, and shrubs) in Prince Georges County in 1942 (Stewart and Meanley, 1943).

8 (2 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).

SLATE-COLORED JUNCO *Junco hyemalis* (Linnaeus)

STATUS.—*Breeding* (see fig. 32): Fairly common on Backbone Mountain, Garrett County, at elevations above 3,000 feet; uncommon elsewhere in the Allegheny Mountain section at elevations above 2,500 feet. *Transient*: Abundant in all sections. *Wintering*: Abundant in all sections except the Allegheny Mountain section, where it may be considered as fairly common. *Summer vagrant*: Casual occurrence—singles recorded at Old Town in Allegany County on June 7, 1907 (F. C. Kirkwood), at Hampstead in Carroll County on June 18, 1952 (D. H. McIntosh), at Towson in Baltimore County on June 15, 1953 (D. A. Jones), and in the District of Columbia on June 13, 1953 (J. H. Criswell, K. Dale).

HABITAT.—*Breeding*: Brushy, cut-over forests in the boreal bogs and in ravines and on north slopes at elevations above 2,500 feet (1 record as low as 1,850 feet); also occurs in brushy cut-over oak-chestnut and northern hardwood forests on the higher ridges at elevations above 3,000 feet. *Transient and wintering*: Hedgerows, wood margins, thickets, brushy fields, and brushy cut-over or burned-over forests; also in residential areas of farms, towns, and suburbs.

NESTING SEASON.—Mid-May to mid-July (probably). *Extreme egg dates* (5 nests): May 18, 1899 (Preble, 1900), and July 9, 1920 (G. Eifrig), in Garrett County. *Extreme nestling dates* (6 nests): May 31, 1919 (J. M. Sommer), and July 5, 1920 (G. Eifrig), in Garrett County.

SPRING MIGRATION.—*Normal period*: March 1–10 to May 1–10; peak, March 20 to April 15. *Extreme arrival date*: February 25, 1944, in Prince Georges County. *Extreme departure dates*: May 30, 1956, in Baltimore County (S. W. Simon); May 24, 1956, in Montgomery County (S. H. Low); May 17, 1908, in the District of Columbia (A. M. Stimson).

FALL MIGRATION.—*Normal period*: September 25–October 5 to November 20–30; peak, October 20 to November 15. *Extreme arrival dates*: September 5, 1955, in Talbot County (R. L. Kleen); September 13, 1955, in Worcester County (M. Broun); September 14, 1918, in the District of Columbia (Mr. and Mrs. L. D. Miner); September 15, 1953, in Baltimore County (D. A. Jones); September 19, 1950, in Anne Arundel County (Mrs. W. L. Hen-

FIGURE 66.—Slate-colored Junco banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open triangle = banded September through May.

derson) ; September 20, 1914 (J. M. Sommer), and September 20, 1950 (E. Willis), in Baltimore County. *Extreme departure date*: December 5, 1944, in Prince Georges County.

MAXIMUM COUNTS (nonbreeding).—*Spring*: 1,000 at Waverly, Baltimore County, on April 9, 1897 (A. M. Hoen) ; 800 at Emmitsburg, Frederick County, on April 7, 1953 (J. W. Richards). *Fall*: 1,933 at Patuxent Refuge on October 27, 1943. *Winter* (Christmas counts) : 2,508 in the Annapolis area on January 1, 1956; 1,772 in the Ocean City area on December 27, 1955; 1,725 in the Annapolis area on January 2, 1955; 1,616 in the Triadelphia Reservoir area on December 24, 1955; 1,494 in the St. Michaels area on December 29, 1955; 1,283 at Patuxent Refuge on December 29, 1944.

BANDING.—See figure 66.

OREGON JUNCO *Junco oreganus* (Townsend)

STATUS.—Casual visitor. One was collected near Laurel, Prince Georges County, on April 28, 1890 (USNM—Ridgway, 1890). One was seen on Gunpowder Neck, Harford County, on March 2 and March 7, 1952 (T. A. Imhof). One was banded at Denton, Caroline County, on October 31, 1955 (Mr. and Mrs. A. J. Fletcher).

TREE SPARROW *Spizella arborea* (Wilson)

STATUS.—*Transient and wintering*: Common in the Allegheny Mountain, Ridge and Valley, Piedmont, and Upper Chesapeake sections and in the northern part of the Western Shore section (all except St. Marys County) ; fairly common in the coastal area of Worcester County; uncommon, rare, or absent elsewhere in the Eastern Shore section and in the southern part of the Western Shore section (St. Marys County).

HABITAT.—Agricultural and abandoned fields and field borders, including hedgerows and wood margins; also in brushy marshmeadows in the interior and in brushy sandy areas on the barrier beaches.

PERIOD OF OCCURRENCE.—*Normal period*: November 1–10 to March 25–April 5; peak, November 25 to March 15. *Extreme arrival dates*: October 18, 1947, in Allegany County (M. G. Brooks) ; October 20, 1946 (O. W. Crowder), and October 20, 1948 (P. F. Springer), in Frederick County. *Extreme departure dates*: April 14, 1949, in Montgomery County (S. H. Low) ; April 14, 1956, in Prince Georges County (P. F. Springer) ; April 13, 1924, in the District of Columbia (C. H. M. Barrett) ; April 12, 1902, in Allegany County (G. Eifrig).

MAXIMUM COUNTS (Christmas counts).—544 in the Triadelphia Reservoir area on December 24, 1955; 540 in Allegany County on December 31, 1949; 500 at Port Tobacco, Charles County, on December 26, 1936; 401 in the Catoctin Mountain area, Frederick County, on December 31, 1955.

CHIPPING SPARROW *Spizella passerina* (Bechstein)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Fairly common in the southern half of Worcester County; uncommon in the northern half of Worcester County; rare elsewhere in the Eastern Shore section and near tidewater in the Western Shore section.

HABITAT.—*Breeding*: Chiefly residential areas and orchards on farms, and in towns and suburbs, that contain a combination of scattered trees or shrubs and short grass or sparsely vegetated ground cover. *Transient and wintering*: Residential areas, orchards, and agricultural fields and field borders.

NESTING SEASON.—Mid-April to early September (nesting peak, late April to late July. *Extreme egg dates* (331 nests): April 14, 1946, in Prince Georges County (E. G. Cooley) and August 28, 1892, in Baltimore County (Kirkwood, 1895). *Extreme nestling dates* (205 nests); May 7, 1945, in Prince Georges County (E. G. Cooley) and September 4, 1892 (F. C. Kirkwood), in Baltimore County. Young just out of the nest were observed in Baltimore County as late as September 16, 1894 (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period*: March 20–30 to May 1–10; peak, April 10 to April 30. *Extreme arrival dates*: March 2, 1952, in Charles County (A. R. Stickley, Jr., M. C. Crone); March 7, 1954, in Baltimore County (A. S. Kaestner); March 8, 1950, in Prince Georges County (P. F. Springer); March 12, 1890, in the District of Columbia (J. D. Figgins).

FALL MIGRATION.—*Normal period*: September 5–15 to November 5–15; peak, September 20 to October 15. *Extreme departure dates*: December 4, 1892, in Baltimore County (F. C. Kirkwood); December 3, 1950, in Anne Arundel County (R. D. Cole); November 29, 1943, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

90 (18 in 20 acres) in suburban type residential area (including small orchards and large expanses of lawn) in Prince Georges County in 1942.

51 (9 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).

48 (10.5 in 22 acres) in "unsprayed apple orchard with infrequently mowed

- ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 42 (10.5 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 28 (6 in 20½ acres) in "moderately sprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 18 (13 in 72 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1948.
- 14 (3.5 in 25 acres) in "heavily sprayed apple orchard with frequently mowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 44 at Patuxent Refuge on April 9, 1945. *Fall*: "Hundreds" at Cumberland, Allegany County, on October 3, 1901 (G. Eifrig); 129 at Patuxent Refuge on September 28, 1943. *Winter* (Christmas counts): 141 in southeastern Worcester County on December 23, 1946; 70 in the Ocean City area on December 27, 1950; 11 in the District of Columbia area on January 2, 1954.

BANDING.—A Chipping Sparrow banded in Prince Georges County on September 13, 1943, was recovered in northern South Carolina on April 8, 1944. Another recovered in St. Marys County on February 13, 1933, had been banded in southeastern Massachusetts on July 6, 1930. One banded in the District of Columbia on April 15, 1942, was recovered in northern Virginia on June 24, 1944 (18 miles from point of banding).

FIELD SPARROW *Spizella pusilla* (Wilson)

STATUS.—*Breeding and transient*: Common in all sections. *Wintering*: Common in the Eastern Shore section; fairly common in the Western Shore, Upper Chesapeake, and Piedmont sections; uncommon in the Ridge and Valley section; rare and local in the Allegheny Mountain section (occurring along Bear Creek and the Youghiogheny River in Garrett County at elevations under 1,700 feet). This species has been steadily expanding its wintering range northward during the past 10 years (1946–55).

HABITAT.—Weedy, abandoned fields with scattered shrubs or small trees; also in agricultural areas along hedgerows, wood margins, and in weedy orchards.

NESTING SEASON.—Mid-April to early September (nesting peak, early May to late July). *Extreme egg dates* (265 nests): April 21, 1952, in Baltimore County (C. D. Hackman) and August 25, 1919 (R. W. Jackson), in Dorchester County. *Extreme nestling dates* (121 nests): May 10, 1945, in Prince Georges County (E. G. Cooley) and August 23, 1950, in Baltimore County (E. Willis).

SPRING MIGRATION.—*Normal period:* March 10–20 to May 1–10; peak, March 20 to April 25. *Extreme arrival dates:* March 5, 1911, in the District of Columbia (W. W. Cooke); March 8, 1944, in Prince Georges County.

FALL MIGRATION.—*Normal period:* September 20–30 to December 1–10; peak, October 10 to November 1. *Extreme arrival dates:* September 13, 1930, and September 15, 1895, in Baltimore County (F. C. Kirkwood). *Extreme departure date:* December 20, 1944, in Prince Georges County.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 80 (20 in 25 acres) in "unsprayed apple orchard with unmowed ground cover" in Allegany County in 1948 (Springer and Stewart, 1948b).
- 79 (5.5 in 7 acres) in pine field (abandoned field with open growth of young scrub pine) in Montgomery County in 1948 (J. W. Aldrich, A. J. Duvall).
- 50 (11 in 22 acres) in "unsprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 48 (16.7 in 34½ acres) in pine field (abandoned field with open growth of young scrub pine) in Prince Georges County in 1945.
- 36 (7 in 19½ acres) in sweetgum field (abandoned field with open growth of young sweetgum) in Prince Georges County in 1945.
- 23 (13.5 in 58 acres) in brushy, abandoned farmland in Prince Georges County in 1948.
- 22 (4.5 in 20½ acres) in "moderately sprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 18 (13 in 72 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1948.
- 12 (3 in 26 acres) in "dry deciduous scrub" (burned-over upland oak forest) in Prince Georges County in 1947 (Robbins, et al., 1947).
- 11 (2 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 7 (2 in 30 acres) in "damp deciduous scrub with standing dead trees" (burned-over poorly drained upland forest) in Prince Georges County in 1947 (Stewart, et al., 1947).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 350 at Port Tobacco, Charles County, on April 7, 1953 (J. Hailman); 90 at Patuxent Refuge on March 23, 1945. *Fall:* "Hundreds" along Evitts Creek, Allegany County, on October 3, 1901 (G. Eifrig); "hundreds" in the District of Columbia on October 20, 1935 (Overing, 1936); 232 at Patuxent Refuge on October 30, 1950. *Winter* (Christmas counts): 849 in the Ocean City area on December 27, 1950; 302 in the Triadelphia Reservoir area in Montgomery and Howard Counties on January 1, 1954; 272 in Caroline

County on December 26, 1953; 175 in the Catoctin Mountain area of Frederick and Washington Counties on January 2, 1954; 175 near the Susquehanna Flats in Harford and Cecil Counties on January 1, 1951.

BANDING.—One banded in Prince Georges County on October 20, 1943, was recovered in northeastern Massachusetts on May 5, 1944.

[HARRIS' SPARROW] *Zonotrichia querula* (Nuttall)

STATUS.—Hypothetical. At least 2 were closely observed at Elkridge, Howard County, on October 21, 1956 (G. M. Bond, I. E. Hampe, et al.).

WHITE-CROWNED SPARROW *Zonotrichia leucophrys* (Forster)

STATUS.—*Transient*: Fairly common in the Allegheny Mountain, Ridge and Valley, and Piedmont sections; uncommon in the Upper Chesapeake and Western Shore sections; rare in the Eastern Shore section. *Wintering*: Now uncommon in the Ridge and Valley, Piedmont, and Upper Chesapeake sections, and rare in the Western Shore and Eastern Shore sections; prior to 1947, this species was only of casual occurrence in winter anywhere in Maryland.

HABITAT.—Hedgerows and wood margins in agricultural areas, especially where hayfields and pastures are predominant; also in residential areas on farms and in towns and suburbs with abundant ornamental shrubs and small trees.

SPRING MIGRATION.—*Normal period*: April 25–May 5 to May 15–20; peak, May 5 to May 15. *Extreme arrival dates*: April 10, 1952, in Anne Arundel County (Dr. and Mrs. F. H. Vinup); April 11, 1905 (W. W. Cooke), and April 12, 1914 (E. A. Preble), in the District of Columbia; April 20, 1948, in Montgomery County (S. H. Low). *Extreme departure dates*: May 26, 1929, in Baltimore County (W. Marshall); May 22, 1952, in Prince Georges County; May 21, 1892, in Montgomery County (H. B. Stabler); May 21, 1935, in the District of Columbia (M. M. Snow).

FALL MIGRATION.—*Normal period*: October 1–10 to November 10–20; peak, October 10 to October 30. *Extreme arrival date*: September 27, 1896, in Baltimore County (F. C. Kirkwood). *Extreme departure dates*: December 6, 1896, in Baltimore County (F. C. Kirkwood); December 4, 1944, in Prince Georges County; November 28, 1886, in the District of Columbia (H. W. Henshaw).

MAXIMUM COUNTS.—*Spring*: 11 in Caroline County on May 5, 1956 (A. J. Fletcher, et al.); 10 at Cumberland, Allegany County, on May 2, 1902 (G. Eifrig); 10 near Buckeystown, Frederick

County, on May 6, 1950. *Fall*: "Hundreds" in the Frederick Valley, Frederick County, on October 29, 1949 (C. O. Handley, Jr., M. B. Meanley); 12 at Patuxent Refuge on October 9, 1943. *Winter* (Christmas counts): 83 in the Triadelphia Reservoir area on December 24, 1955; 42 in the Catoctin Mountain area on December 31, 1955; 26 in Caroline County on December 24, 1956; 25 at McCoole, Allegany County, on December 27, 1949; 12 near Cecilton, Cecil County, on January 1, 1951.

BANDING.—One banded in Prince Georges County on October 13, 1947, was recovered in southern Texas (letter of January 10, 1950).

WHITE-THROATED SPARROW *Zonotrichia albicollis* (Gmelin)

STATUS.—*Breeding* (?): Probably rare and irregular in the Allegheny Mountain section—2 pairs in the Maryland portion of Cranesville Swamp on June 17, 1952, indicated that they were probably nesting; this belief is supported by the fact that 2 occupied nests were found on June 18 and 19, 1952, only 3½ miles away in West Virginia (Ganier and Buchanan, 1953). *Transient*: Abundant in all sections. *Wintering*: Abundant in the Eastern Shore section; common in the Western Shore and Upper Chesapeake sections; fairly common in the Piedmont, and Ridge and Valley sections; rare in the Allegheny Mountain section. *Summer vagrant*: Casual occurrence—1 seen in the District of Columbia on August 9 and 10, 1907 (Wood, 1907); singles observed in Prince Georges County during June and July 1936 (B. Carow), and on June 26, 1947; and in Calvert County on June 28, 1955 (K. Stecher).

HABITAT.—Wood margins, hedgerows, and brushy cut-over areas of swamp and flood-plain forests and rich moist forests on the upland.

SPRING MIGRATION.—*Normal period*: March 20–30 to May 20–30; peak, April 15 to May 10. *Extreme arrival dates*: March 5, 1949, in Baltimore County (I. E. Hampe); March 11, 1903, in the District of Columbia (W. W. Cooke); March 16, 1945, in Prince Georges County; March 17, 1918, in Anne Arundel County (F. Harper). *Extreme departure dates*: June 15, 1955, in Anne Arundel County (A. L. Varrieur); June 14, 1899, in the District of Columbia (A. H. Howell); June 13, 1933 (R. Overing), and June 10, 1946, in Prince Georges County; June 10, 1952, in Baltimore County (E. Willis).

FALL MIGRATION.—*Normal period*: September 20–30 to December 1–10; peak, October 10 to October 30. *Extreme arrival dates*:

FIGURE 67.—White-throated Sparrow banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open triangle = banded September through May.

September 13, 1955, in Worcester County (S. W. Simon); September 14, 1918 (L. D. Miner, R. W. Moore), and September 15, 1889 (C. W. Richmond), in the District of Columbia. *Extreme departure dates*: December 20, 1944, in Prince Georges County; December 13, 1933, in the District of Columbia (C. H. Benjamin).

MAXIMUM COUNTS.—*Spring*: 355 in Montgomery County on May 10, 1952 (P. A. DuMont, et al.); 336 at Patuxent Refuge on April 29, 1944; 200 near Emmitsburg, Frederick County, on May 7, 1953 (J. W. Richards). *Fall*: "Hundreds" in the Ocean City area on October 2, 1949 (M. B. Meanley); 196 at Patuxent Refuge on October 30, 1943. *Winter* (Christmas counts): 5,154 in the Ocean City area on December 27, 1955; 2,765 in the St. Michaels area on December 29, 1955; 1,983 in the Annapolis area on January 1, 1956; 1,550 in southern Dorchester County on December 28, 1953; 904 in the Wicomico River area of Charles and St. Marys Counties on January 1, 1954; 807 in Talbot County on December 29, 1953; 704 in Caroline County on December 26, 1953.

BANDING.—See figure 67.

FOX SPARROW *Passerella iliaca* (Merrem)

STATUS.—*Transient*: Fairly common (occasionally more numerous) in all sections. *Wintering*: Uncommon in the Eastern Shore and Western Shore sections; rare in all other sections.

HABITAT.—Wood margins, hedgerows, and brushy cut-over areas of swamp, flood-plain, and moist upland forest.

SPRING MIGRATION.—*Normal period*: February 10–20 to April 5–15; peak, February 25 to March 25. *Extreme arrival dates*: January 23, 1950, in Prince Georges County; January 26, 1950, in Baltimore County (E. Willis); January 31, 1954, in St. Marys County (J. W. Terborgh). *Extreme departure dates*: May 11, 1882 (W. Palmer), and May 11, 1917 (M. J. Pellew), in the District of Columbia; May 8, 1956, in Montgomery County (S. H. Low); May 6, 1950, in Frederick County (Md. Ornith. Soc.); May 5, 1956, in Caroline County (A. J. Fletcher, et al.).

FALL MIGRATION.—*Normal period*: October 15–25 to November 20–30; peak, November 1 to November 20. *Extreme arrival dates*: October 3, 1906, in the District of Columbia (A. K. Fisher); October 8, 1943, in Prince Georges County; October 9, 1921, in Montgomery County (A. K. Fisher). *Extreme departure dates*: December 16, 1894 and 1928, in Baltimore County (F. C. Kirkwood); December 8, 1900, in Allegany County (G. Eifrig).

MAXIMUM COUNTS.—*Spring*: 200 near Unity, Montgomery County, on March 14, 1954 (S. H. Low); 145 at Patuxent Refuge

on March 22, 1944; 90 in St. Marys County on January 31, 1954 (J. W. Terborgh). *Fall*: 400-500 in Dulaney Valley, Baltimore County, on November 5, 1893 (F. C. Kirkwood); 25 at Patuxent Refuge on November 17, 1951. *Winter* (Christmas counts): 107 in the Ocean City area on December 27, 1955; 47 in St. Marys County on January 2, 1956; 38 in the District of Columbia area on December 30, 1950; 30 at Port Tobacco, Charles County, on December 23, 1931; 20 in southern Dorchester County on December 21, 1947.

BANDING.—One banded in Baltimore County on March 27, 1947, was recovered on May 1, 1948, in the St. Pierre and Miquelon Islands (about 20 miles offshore from southern Newfoundland); 1 banded in Montgomery County on November 24, 1951, was re-trapped in Harford County on March 21, 1956.

LINCOLN'S SPARROW *Melospiza lincolnii* (Audubon)

STATUS.—*Transient*: Fairly common in the Allegheny Mountain section; uncommon in all other sections except the Eastern Shore section, where it is rare. *Wintering*: Casual in the Eastern Shore section—1 closely observed near Berlin, Worcester County, on December 27, 1948 (J. E. Willoughby).

HABITAT.—Hedgerows, wood margins, and brushy marsh-meadows.

SPRING MIGRATION.—Normal period: May 1-5 to May 20-25; peak, May 5 to May 20. *Extreme arrival dates*: April 21, 1918 (L. Griscom), and April 25, 1923 (J. Kittredge, Jr.), both in the District of Columbia. *Extreme departure dates*: May 30, 1917, in Prince Georges County (W. L. McAtee, A. Wetmore); May 26, 1952, in Baltimore County (Mr. and Mrs. R. D. Cole).

FALL MIGRATION.—*Normal period*: September 15-25 to October 15-25; peak, September 25 to October 15. *Extreme arrival date*: September 12, 1943, in Prince Georges County. *Extreme departure dates*: October 30, 1927, in Baltimore County (F. C. Kirkwood, J. M. Sommer); October 30, 1943, in Prince Georges County.

MAXIMUM COUNTS.—*Spring*: 4 along the C. and O. Canal, Montgomery County, on May 10, 1952 (P. A. DuMont); 3 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones). *Fall*: 9 or 10 in Dulaney Valley, Baltimore County, on October 4, 1896 (F. C. Kirkwood); 6 at College Park, Prince Georges County, on September 26, 1952 (C. L. Clagett); 4 near Emmitsburg, Frederick County, on October 10, 1953 (J. W. Richards).

SWAMP SPARROW *Melospiza georgiana* (Latham)

STATUS.—*Breeding* (see fig. 68): Common in the Allegheny

FIGURE 68.—Breeding range of Swamp Sparrow.

Mountain section at elevations above 2400 feet; fairly common locally in the Eastern Shore section, occurring in the marshes along the Nanticoke River in the vicinity of Vienna (Bond and Stewart, 1951); also occurs in the Elk River marshes near Elkton. *Transient*: Common, locally abundant, in the Eastern Shore, Western Shore, and Upper Chesapeake sections; fairly common in the Piedmont, Ridge and Valley, and Allegheny Mountain sections. *Wintering*: Common, locally abundant, in the Eastern Shore section; fairly common in the Western Shore and Upper Chesapeake sections; uncommon in the Piedmont section; rare in the Ridge and Valley section.

HABITAT.—Marshes and sedge meadows with open growth of shrubs and small trees.

NESTING SEASON.—Probably mid-May to mid-July. *Extreme egg dates* (7 nests): June 5, 1917 (J. M. Sommer), and June 22, 1946, in Garrett County. *Extreme nestling dates* (3 nests): June 10, 1956 (G. H. Cole), and June 14, 1956 (R. Wilson), both in Garrett County.

SPRING MIGRATION.—*Normal period*: March 15–25 to May 15–25; peak, April 15 to May 10. *Extreme arrival dates*: March 9, 1922 (C. H. M. Barrett), and March 10, 1909 (W. W. Cooke), in the District of Columbia. *Extreme departure dates*: May 27, 1917,

in the District of Columbia (A. Wetmore); May 26, 1945, in Prince Georges County.

FALL MIGRATION.—September 15–25 to November 10–20; peak, October 5 to October 30. *Extreme arrival dates:* August 21, 1913, in the District of Columbia (W. D. Appel); August 24, 1954, in Anne Arundel County (Fr. E. Stoehr); September 5, 1901, in Allegany County (G. Eifrig); September 10, 1949, in Prince Georges County (M. B. Meanley). *Extreme departure dates:* December 3, 1922, in the District of Columbia (J. Kittredge, Jr.); November 30, 1943, in Prince Georges County.

BREEDING POPULATION DENSITY (territorial males per 100 acres).—

21 (2 in 9½ acres) in “open hemlock-spruce bog” (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).

MAXIMUM COUNTS (nonbreeding).—*Spring:* 53 at Rosedale, Baltimore County, on May 6, 1950 (D. A. Jones); 40 at Gibson Island, Anne Arundel County, on May 8, 1955 (Mrs. W. L. Henderson, Mrs. G. Tappan); 38 at Patuxent Refuge on April 29, 1944. *Fall:* About 100 at Patuxent Refuge on October 12, 1946; 75 at Seneca, Montgomery County, on October 11, 1953 (J. W. Terborgh). *Winter* (Christmas counts): 1,271 in southern Dorchester County on December 28, 1953; 759 in the Ocean City area on December 27, 1953; 286 near the Wicomico River in Charles and St. Marys Counties on January 1, 1954; 113 at Patuxent Refuge on January 12, 1951.

SONG SPARROW *Melospiza melodia* (Wilson)

STATUS.—*Breeding:* Common in the Allegheny Mountain, Ridge and Valley, Piedmont, and Upper Chesapeake sections and in the tidewater areas of the Western Shore and Eastern Shore sections; uncommon (fairly common, locally) in the interior of the Western Shore and Eastern Shore sections. *Transient:* Abundant in all sections. *Wintering:* Common in the Eastern Shore and Western Shore sections; fairly common in the Upper Chesapeake, Piedmont, and Ridge and Valley sections; uncommon in the Allegheny Mountain section.

HABITAT.—Hedgerows and wood margins in agricultural areas; residential areas (with ornamental shrubs, small trees, and lawns) of farms, towns, and suburbs; brushy pastures; and sedge meadows and marshes with open growth of shrubs or small trees.

NESTING SEASON.—Early April to mid-September (nesting peak, late April to early August). *Extreme egg dates* (306 nests):

FIGURE 69.—Song Sparrow banding recoveries. Each symbol represents the number of records for a State or Province. Banded in Maryland, recovered elsewhere: solid circle = recovered June through August; solid triangle = recovered September through May. Recovered in Maryland, banded elsewhere: open circle = banded June through August.

April 12, 1901, in Allegany County (G. Eifrig) and August 21, 1892, in Baltimore County (F. C. Kirkwood). *Extreme nestling dates* (179 nests): May 1, 1953, in Prince Georges County (E. C. Robbins) and September 11, 1892, in Baltimore County (Kirkwood, 1895).

SPRING MIGRATION.—*Normal period*: February 15-25 to April 15-25; peak, March 1 to March 25. *Extreme arrival date*: January 30, 1949, in Baltimore County (H. Brackbill). *Extreme departure date*: April 29, 1944, in Prince Georges County.

FALL MIGRATION.—*Normal period*: September 20-30 to November 20-30; peak, October 10 to October 30.

BREEDING POPULATION DENSITIES (territorial males per 100 acres).—

- 109 (21 in 19½ acres) in "shrubby field with stream-bordered trees" in Baltimore County in 1947, 67 (13 in 19½ acres) in 1946 (Cooley, 1947).
- 82 (8 in 9½ acres) in "open hemlock-spruce bog" (brush-meadow stage with young hemlock, red spruce, alder, etc.) in Garrett County in 1949 (Robbins, 1949c).
- 22 (4.5 in 20½ acres) in "moderately sprayed apple orchard with infrequently mowed ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 12 (9 in 72 acres) in mixed agricultural habitats (including hedgerows and wood margins) in Prince Georges County in 1951.
- 9 (6 in 66 acres) in field and edge habitat (including strips of flood-plain forest, brushy fields, and hedgerows) in Baltimore County in 1947 (Hampe, et al., 1947).
- 9 (1.5 in 17½ acres) in "lightly sprayed apple orchard with rye planted as ground cover" in Worcester County in 1948 (Springer and Stewart, 1948b).
- 7 (2 in 28 acres) in "partially opened flood-plain forest" (sycamore, ash, elm, etc.) in Montgomery County in 1948 (J. W. Aldrich, A. J. Duvall).

MAXIMUM COUNTS (nonbreeding).—*Spring*: 300 at Emmitsburg, Frederick County, on March 22, 1953 (J. W. Richards); 200 at Patuxent Refuge on March 4, 1945. *Fall*: 127 at Patuxent Refuge on October 27, 1943. *Winter* (Christmas counts): 1,287 in the Ocean City area on December 27, 1953; 771 in southern Dorchester County on December 28, 1953; 508 in the Annapolis area on January 2, 1955; 100 in Allegany County on December 31, 1949.

BANDING.—See figure 69.

LAPLAND LONGSPUR *Calcarius lapponicus* (Linnaeus)

STATUS.—Rare and irregular winter visitor. About half a dozen were recorded in Baltimore City during the period February 4-10, 1895 (A. Resler), and a flock of about 20 was observed at Lake Roland, Baltimore County, on February 10, 1895 (Kirk-

wood, 1895). At Ocean City a small flock was recorded on December 29, 1927 (A. Wetmore), 3 were observed on December 25, 1939 (Stewart, 1947), and 1 was recorded on January 23, 1948 (I. R. Barnes).

CHESTNUT-COLLARED LONGSPUR *Calcarius ornatus* (Townsend)

STATUS.—Accidental visitor. One was collected at Ocean City on August 20, 1906 (USNM—Kirkwood, 1908).

SNOW BUNTING *Plectrophenax nivalis* (Linnaeus)

STATUS.—*Transient and wintering*: Uncommon (occasionally more numerous) in the coastal area of Worcester County; rare elsewhere in all sections (no definite records for Allegheny Mountain section).

HABITAT.—Sand-dune zone of the barrier beaches; also along sandy shores of Chesapeake Bay and in extensive agricultural fields and pastures.

PERIOD OF OCCURRENCE.—*Normal period*: November 10–20 to March 1–10; peak, November 25 to February 20. *Extreme arrival dates*: October 31, 1953, in Anne Arundel County (Mrs. W. L. Henderson, Mrs. G. Tappan); November 2, 1947, in Worcester County (I. R. Barnes). *Extreme departure dates*: April 1, 1906, and March 13, 1907, in Worcester County (F. C. Kirkwood).

MAXIMUM COUNTS.—150 on January 29, 1906 (F. C. Kirkwood), 146 on December 27, 1955 (Christmas count), and 50 on November 28, 1945, in the Ocean City area; about 100 on February 18, 1905, in the District of Columbia (F. M. Finley); 45 at Triadelphia Reservoir, Montgomery County, on December 26, 1954 (Christmas count); 25 at Gibson Island, Anne Arundel County, on November 28, 1952 (Mrs. W. L. Henderson, Mrs. G. Tappan).

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Wimsatt, William A.

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Wood, Nelson R.

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Wright, Albert Hazen.

1912. Early records of the Carolina Paroquet. Auk 29:343-363.

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APPENDIX A—Common and Scientific Names of Plants Referred to in Text

[Names taken from eighth edition of Gray's Manual of Botany (Fernald, 1950)]

Alder (<i>Alnus</i> spp.)	Maleberry (<i>Lyonia ligustrina</i>)
American elm (<i>Ulmus americana</i>)	Marsh elder (<i>Iva frutescens</i>)
American holly (<i>Ilex opaca</i>)	Mockernut (<i>Carya tomentosa</i>)
American three-square (<i>Scirpus americanus</i>)	Mountain laurel (<i>Kalmia latifolia</i>)
Arrow-wood (<i>Viburnum dentatum</i>)	Narrow-leaved cattail (<i>Typha angustifolia</i>)
Ash (<i>Fraxinus</i> spp.)	Needlerush (<i>Juncus roemerianus</i>)
Bald cypress (<i>Taxodium distichum</i>)	Northern red oak (<i>Quercus rubra</i>)
Basswood (<i>Tilia americana</i>)	Olney three-square (<i>Scirpus olneyi</i>)
Bay berry (<i>Myrica pensylvanica</i>)	Orchard grass (<i>Dactylis glomerata</i>)
Beachgrass (<i>Ammophila breviligulata</i>)	Pignut (<i>Carya cordiformis</i>)
Bear oak (<i>Quercus ilicifolia</i>)	Pin oak (<i>Quercus palustris</i>)
Beech (<i>Fagus grandifolia</i>)	Pitch pine (<i>Pinus rigida</i>)
Black cherry (<i>Prunus serotina</i>)	Poison ivy (<i>Rhus radicans</i>)
Black grass (<i>Juncus gerardi</i>)	Poison sumac (<i>Rhus vernix</i>)
Black gum (<i>Nyssa sylvatica</i>)	Red ash (<i>Fraxinus pennsylvanica</i>)
Black oak (<i>Quercus velutina</i>)	Red bay (<i>Persea borbonia</i>)
Broomsedge (<i>Andropogon virginicus</i>)	Red cedar (<i>Juniperus virginiana</i>)
Cattail (<i>Typha</i> spp.)	Red-head pondweed (<i>Potamogeton perfoliatus</i>)
Chestnut (<i>Castanea dentata</i>)	Red maple (<i>Acer rubrum</i>)
Chestnut oak (<i>Quercus prinus</i>)	Red pine (<i>Pinus resinosa</i>)
Clammy azalea (<i>Rhododendron viscosum</i>)	Red spruce (<i>Picea rubens</i>)
Common cattail (<i>Typha latifolia</i>)	Reed (<i>Phragmites communis</i>)
Cross vine (<i>Bignonia capreolata</i>)	River birch (<i>Betula nigra</i>)
Ditch grass (<i>Ruppia maritima</i>)	River bulrush (<i>Scirpus fluviatilis</i>)
Eel grass (<i>Zostera marina</i>)	Sago pondweed (<i>Potamogeton pectinatus</i>)
Elm (<i>Ulmus</i> sp.)	Saltmarsh bulrush (<i>Scirpus robustus</i>)
Flowering dogwood (<i>Cornus florida</i>)	Salt-meadow grass (<i>Spartina patens</i>)
Glasswort (<i>Salicornia</i> spp.)	Salt reed-grass (<i>Spartina cynosuroides</i>)
Great laurel (<i>Rhododendron maximum</i>)	Salt-water cordgrass (<i>Spartina alterniflora</i>)
Greenbrier (<i>Smilax</i> spp.)	Scarlet oak (<i>Quercus coccinea</i>)
Hemlock (<i>Tsuga canadensis</i>)	Scrub pine (<i>Pinus virginiana</i>)
Hickory (<i>Carya</i> spp.)	Sea myrtle (<i>Baccharis halimifolia</i>)
Hornbeam (<i>Carpinus caroliniana</i>)	Shagbark hickory (<i>Carya ovata</i>)
Horse-sugar (<i>Symplocos tinctoria</i>)	Shortleaf pine (<i>Pinus echinata</i>)
Jewelweed (<i>Impatiens capensis</i>)	Southern arrow-wood (<i>Viburnum dentatum</i>)
Laurel-leaved greenbrier (<i>Smilax laurifolia</i>)	Spanish oak (<i>Quercus falcata</i>)
Loblolly pine (<i>Pinus taeda</i>)	

Spicebush (<i>Lindera benzoin</i>)	Tamarack (<i>Larix laricina</i>)
Spike-grass (<i>Distichlis spicata</i>)	Three-square (<i>Scirpus</i> spp.)
Sugar maple (<i>Acer saccharum</i>)	Trumpet creeper (<i>Campsis radicans</i>)
Swamp rose (<i>Rosa palustris</i>)	Tulip-poplar (<i>Liriodendron tulipifera</i>)
Swamp rose-mallow (<i>Hibiscus palustris</i>)	Water oak (<i>Quercus nigra</i>)
Sweet-bay (<i>Magnolia virginiana</i>)	Wax-myrtle (<i>Myrica cerifera</i>)
Sweet birch (<i>Betula lenta</i>)	White ash (<i>Fraxinus americana</i>)
Sweetgum (<i>Liquidambar styraciflua</i>)	White oak (<i>Quercus alba</i>)
Sweet pepperbush (<i>Clethra alnifolia</i>)	White pine (<i>Pinus strobus</i>)
Switchgrass (<i>Panicum virgatum</i>)	Wild celery (<i>Vallisneria americana</i>)
Sycamore (<i>Platanus occidentalis</i>)	Wild rice (<i>Zizania aquatica</i>)
Table Mountain pine (<i>Pinus pungens</i>)	Willow oak (<i>Quercus phellos</i>)
	Winterberry (<i>Ilex verticillata</i>)
	Yellow birch (<i>Betula lutea</i>)

APPENDIX B—List of Species Dropped From Hypothetical List

The following species have been reported as having occurred in Maryland or the District of Columbia, but the records are too indefinite to warrant their inclusion as probable members of the avifauna.

Sooty Shearwater *Puffinus griseus* (Gmelin). Specimen cannot be found (Hampe and Kolb, 1947).

Egyptian Goose *Alopochen aegyptiaca* (Linnaeus). There is no assurance that the specimen recorded by Kirkwood (Auk 17:64-65) had not escaped from captivity.

European Quail *Coturnix coturnix* (Linnaeus). About 1,200 released in Baltimore County, 1879-92; 1 nest record. This introduced species did not become established.

Sandhill Crane *Grus canadensis* (Linnaeus). Specimen said to have been procured in the District of Columbia (Coues and Prentiss, 1862) cannot be located, and may never have been preserved or examined by an ornithologist.

Ivory Gull *Pagophila eburnea* (Phipps). Recorded in 1843 (McAtee, 1918), but there is no assurance it was correctly identified.

Rock Dove *Columba livia* Gmelin. The great majority of observations refer to privately owned or escaped birds. No truly wild population is recognized in this area.

APPENDIX C—Important Records Since October 1956

As stated on page 37, it was the intent of the authors to have the text complete through the calendar year 1955. The more important changes in status, migration and nesting dates, popu-

lation densities, and high counts for the period January through October 1956 were incorporated into the text. The maps and the bibliography, however, have not been amended since 1955.

Several new records of interest occurred while the manuscript was in press and are of sufficient importance to be included here.

White Pelican *Pelecanus erythrorhynchos* Gmelin. One was seen at Gibson Island, Anne Arundel County, on October 4 and 5, 1957 (R. Dwight, Mrs. E. G. Tappan).

Cattle Egret *Bubulcus ibis* Linnaeus. Five birds spent the summer of 1957 in the Mills Island heron colony (N. Hotchkiss), but there was no proof of nesting. One bird was reported seen near Easton, Talbot County, on May 6, 1957.

Knot *Calidris canutus* (Linnaeus). Three seen at Ocean City on December 30, 1957 (D. A. Cutler et al.) constitute the first winter record for Maryland.

Buff-breasted Sandpiper *Tryngites subruficollis* (Vieillot). A sight record near Hurlock, Dorchester County, on September 24, 1957 (S. H. Dyke) places this species on the hypothetical list.

Ruff *Philomachus pugnax* (Linnaeus). One was observed in the District of Columbia on September 22, 1957 (P. A. DuMont). This is the second definite record for our area.

Black-legged Kittiwake *Rissa tridactyla* (Linnaeus). One was seen at Ocean City on December 30, 1957 (D. A. Cutler et al.). Another observed at the mouth of the South River in Anne Arundel County on December 30, 1956, represents the first record for the Chesapeake Bay area.

Common Tern *Sterna hirundo* Linnaeus. One observed at Ocean City on December 30, 1957 (J. W. Terborgh et al.) represents the first winter record for Maryland.

Ash-throated Flycatcher *Myiarchus cinerascens* (Lawrence). One collected (USNM) at Monkton, Baltimore County, on November 26, 1957 (S. W. Simon) represents the second record for Maryland.

Wilson's Warbler *Wilsonia pusilla* (Wilson). One spent the winter of 1956-57 at a feeding station in Easton, Talbot County; it was first noted on November 30, 1956 (J. Offutt). This is the second winter record for Maryland.

Bachman's Sparrow *Aimophila aestivalis* (Lichtenstein). One seen at Elliott, Dorchester County, on December 31, 1957 (K. Stecher) represents the second winter record for Maryland.

Harris' Sparrow *Zonotrichia querula* (Nuttall). This species is transferred from the hypothetical list to the regular list on the basis of a bird found near Darnestown, Montgomery County, on January 1, 1958, and subsequently seen by many observers.

With the above changes, the regular list of birds recorded in Maryland and the District of Columbia stands at 334 species. The revised hypothetical list still contains 19 additional species.

March 1958.

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