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PROGRESS LETTER

CARIBOU INVESTIGATIONS, NORTHWEST ALASKA

September, 1960

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MASTER

Continual field work in support of the caribou studies was carried out between May 1, the last date included in the June Interim Report, and August 25.

Aerial observation during May was greatly hampered by bad weather prevailing throughout much of the area occupied by caribou. A camp was established at the Driftwood Creek airstrip on the Utukok River from May 23 to May 27 to observe the precalving movement and behavior.

The most important phase of the summer's work was concerned with the calving period. This phase is described in some detail in the attached report. More detailed data will be presented in the December report.

After the calving period was over, a camp was again established at Driftwood to observe the movement and behavior of the cows and young calves and to obtain composition counts. Work was done here from June 17 to June 24, as the caribou passed back through to the southwest (see Map 1, Caribou Calving Study).

By the last week of June an extremely large, rather loose congregation of caribou had formed in the high country where the headwaters of the Pitmegea, Kukpuk and Kivalina rivers come together. This congregation apparently included a large majority of all the caribou in arctic Alaska. It was estimated to be well in excess of 200,000 individuals. Unfortunately the aerial camera which I had planned to use to obtain an accurate count of this mass suffered a mechanical breakdown and was not available. No other large-negative camera could be obtained in time to carry on aerial photography to determine exactly the population and calf crop. If this congregation is at all typical of what occurs in other years, it would seem to be the ideal time to use aerial photography as a census technique. The animals still retain their white winter coats at this time and are in very open country. The entire congregation could be seen in less than a half hour of flying.

At about the end of the month, the caribou split into two distinct groups and these groups became much more compact. One group, estimated to

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125,000, moved south then east along the south side of the De Long Mountains, through the Noatak drainage. Tracks indicated that the other group was of similar size, although it was never actually seen after the division. This second group continued east along the north side of the De Long Mountains and was reported to have crossed the Colville River, headed north, later in July.

During early July I followed the caribou moving through the Noatak drainage and established camps as they crossed the Kelly, Kugururok, Nimiuktuk, and Anisak rivers. Much information pertaining to the population composition was obtained during this period and will be compiled during the winter. By the middle of the month these caribou had split up into small bunches and moved into extremely mountainous areas quite distant from the coast and I gave up operations in the Noatak area.

I devoted several days in the last half of July to observation of small bands, composed primarily of bulls, moving through the Lisbourne Hills. In early August caribou returned to the Noatak Valley and I camped at Isiak Lake and on the Cutler River.

In mid-August I camped for four days on the Tungnak River, a branch of the Ipewik River, where approximately 2,000 caribou were seen. It is probable that these are, at least in part, the same caribou reported to have moved down the coast past Ogotoruk Creek and Kivalina during the first part of September.

Numerous observations made by almost all the individuals working at the Project Chariot Site during the summer indicate that a few caribou were present in the Ogotoruk Valley continually all summer. These were noted primarily at the upper end of the valley, although on at least three occasions bull caribou were seen right in the camp. In 1960, no large group passed through the upper end of the valley in late June and early July as was reported in 1958 and 1959. Normal variations in post-calving movements may explain the lack of caribou at this time. At the present time, not enough is known about yearly patterns of movement to say that this year's pattern is "atypical." However, the great number of old summer trails which extend from the Kokolik River to the Lisbourne Hills indicates that a large scale coastal movement has occurred frequently in the past.

From May 1 until the termination of the summer work on August 25, 210 hours of small plane flying time were used in connection with the caribou investigation.

CARIBOU CALVING STUDY, NORTHWESTERN ALASKA

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This report is based upon work carried out during May and June of 1960 as part of an investigation of the population, movements and general ecology of the caribou of northwestern Alaska. I would like to express appreciation for the very capable assistance of Mr. Galen McWilliams during this study.

The northward trend of the caribou wintering in the Noatak and Kobuk river drainages was observed to begin as early as the end of March. On April 19 the small groups of caribou wintering along the north coast in the vicinity of Point Lay were seen to be moving inland to the south up the Utukok and Kokolik rivers. By the first week of May all those which had wintered along the west coast had begun to move inland. Thus, by May 3 the majority of the 70,000 censused during the winter were centered around Iglu and Pogo Mountains. The only exceptions were small bunches of bulls left scattered throughout the winter range.

Flights on May 13 and 17 as far east as Umiat revealed an even larger mass of caribou, estimated at 90,000, moving westward through the De Long Mountains (See Map 1). The animals were stretched out between the Killik River and Desperation Lake on May 13 and extended as far as Driftwood Creek by May 17. Large numbers of bulls and yearlings were present even near the front of this movement, and in this quality the pre-calving movement seemed different from that observed by Olson (1959) when the majority of bulls and yearlings moved west in a separate later movement. Unfortunately, I did not have the opportunity to search from the air for any movement similar to that Olson reported occurring between June 3 and 12 in 1958. In the 1960 movement, bulls began to drop out as the front passed to Noluk Lake vicinity, so that only a small portion of them were present on the calving grounds.

By mid-May the caribou had converged upon a common calving grounds. The coastal wintering groups arrived somewhat earlier and moved down the Utukok from Driftwood Creek, primarily on the westward side. The inland and centrally wintering caribou continued to swing more northward out of the De Long Mountains. They were more scattered so that many crossed the head of the Colville, others continued across the upper Utukok before swinging north along the trail used by the coastal groups, while still others moved into the Carbon Creek area without crossing the Utukok (Map 1).

By the end of May the caribou were centered along both sides of the Utukok from the head of the Kaolak River on the northeast to the upper portions of Disappointment and Carbon creeks on the south. The westward boundary was approximately the divide between the Kokolik and Utukok river drainages. On the north the calving area seemed to be bounded by the beginning of the wet coastal plains below 500 feet elevation. Only a few animals, not accompanied by calves, penetrated this wet area in June. On the southeast the boundary followed roughly a line of rather continual snow cover beginning at the west end of Lookout Ridge and extending up the Ketik River (Map 2).

No caribou calves were seen on an extensive flight made on May 20. Bad weather prevented any further flying until May 27. At this time roughly one-third of the cows were accompanied by calves. A more accurate count was impossible because of the division of the herd by the Utukok River. The cows without calves tended to cross the river, while those with calves tended to remain on the west side.

Flying conditions continued to be poor throughout the rest of the calving season. On several days it was possible to fly, but accurate calf counts could not be obtained because of very dark overcast, preventing counting of the dark calves. A center of calving activity was mapped within the general calving grounds (Map 2).

Good flying conditions were again obtained on June 3, and at this time extensive flying in the central calving area indicated eighty per cent of the cows were accompanied by calves. Ground counts carried out in the middle of June as the caribou passed back through the Driftwood Creek area indicated a cow/calf ratio of 72 per cent based on observation of 1500 cows.

Observations on the ground in the vicinity of Elusive Creek failed to reveal any new births after June 3. Thus, for the central calving area at least, this date marked the end of calving. On the basis of this information, it would seem that the major caribou herds of Alaska are more closely synchronized with regard to calving with one another than with any of the Canadian herds. Study in Canada has indicated a calving peak occurring about 10 days later (Kelsall, 1957; Pruitt, 1960; De Vos, 1960).

Calves were dropped in the Eriophorum tussock community primarily at elevations between 500 and 1,000 feet. Cows with calves were infrequent on ridges, though when chased they often headed up slope towards ridge tops, often separating themselves from the rest of the group when doing so. This

MAP 2
JUNE, 1960

Calving area
 — Central
 - - - Peripheral

Camps ●

Scale
 1 inch = 8 miles

calving terrain differs strikingly from that described in Canada by Kelsall (1957) where all calving occurred on ridges above 1,200 feet elevation.

Caribou were frequently seen feeding on Eriophorum before and during calving, and the northerly movement coincided with the melt of snow off the tussock tops. The end of calving occurred just as most the Eriophorum was turning white. The post-calving movement in mid-June brought the caribou back through the same area the coastal wintering groups had come through before calving, but in contrast animals moved on the ridgetops and were not seen feeding to any extent in the Eriophorum covered valleys. I suspect the feeding on hilltops was devoted to such plants as Geum, Dryas, and Lupinus which were coming into bloom at that time. This post-calving movement was apparently quite different from that which took place in 1958 and 1959. Olson, in 1958, reported a large scale movement down the coast which passed behind Cape Sabine heading west. In 1959, thousands of caribou again came this way and a large movement was observed heading down the Ipewik River and up the Kukpuk River. These two movements are compared on Map 1.

I suggest two occurrences may possibly explain the variation in post-calving movements. First, the unusually early spring thaw in 1960 permitted the caribou to penetrate farther north much earlier than usual, so that the majority crossed the Utukok before calving. Secondly, the Utukok in other years was at a much higher level because of greater snowfall during the winter. In past years, I hypothesize, that instead of crossing the river, the vast majority of caribou drifted towards the coast to the north, either crossing after the calves were older or remaining on the west side. Thus the westward movement began along the coast instead of inland (Map 1). That the Utukok, even this year, discouraged some cows with new-born calves from crossing was observed by McWilliams on May 31. Approximately 50 cows with calves approached the west side of the river about one mile upstream from Elusive Creek. Most of the cows crossed or started to cross but the calves refused to follow, instead milling around on the west side. Finally the cows returned and walked back up the ridge which they had come down. Only one cow-calf pair actually crossed the river at this time. A comparison of the post-calving movement in future years in this area would be of great interest, since workers with caribou have had very little luck to date in attempting to explain major variations in caribou movements by definite events occurring in the environment.

One of the important goals of the calving study was to test methods of capturing and tagging calves and to determine the feasibility of large scale tagging operations. Four types of tags were prepared in advance, but three of these were immediately discarded as being unsuitable and too time consuming in application. An aluminum tag about one inch in diameter was used. Tags were consecutively numbered and in two colors: yellow and red. Yellow was found to be far superior for visibility. These ear tags were self-piercing and self-sealing when used with specially designed applicator pliers.

McWilliams and four eskimo assistants from Point Hope and Noatak were employed in the tagging. They carried out the bulk of the work since my time was spent in ground and aerial observation. At the first camp, at the mouth of Carbon Creek, from May 28 to 30 inclusive, 25 calves were tagged. At the second camp, the mouth of Elusive Creek, 75 were tagged from May 31 to June 3. Thus, five men working one week were able to tag 100 calves. Everyone working on the tagging operation agreed that the rate of tagging per man/day could be greatly increased as a result of this year's experience. The equipping of every man with his own tags and applicators would have helped greatly since the calves were often caught in bunches.

One of the major difficulties which was expected, that of desertion, that is, failure of the cow to reclaim the calf after tagging, did not materialize. The cows proved to be quite perservering in their efforts to relocate and claim their calves after separation. The actual return of the female to the calf was observed in the vast majority of cases, and in other cases a search for possible abandoned calves was made the following day. Only one such calf was found. This individual was found alive on June 3, thirty hours after being tagged. The mother was at this time still looking for it, but at some distance away. We attempted to carry the calf closer to the cow, but she proved too wary. Finally we attempted to hand feed the calf, while we were doing this it died. Its weight when tagged was twelve pounds, at death eleven. In this case the failure of the cow to return to the site where the calf was left was probably due to frequent human activity in the same area during the hours after it was tagged. Certainly one of the lessons learned during the tagging was that it pays to move the location of tagging operation quite frequently. This also minimizes the possibility of wasting effort chasing already tagged individuals.

At the start the females with new born calves were alone or in very small bunches, so individual or pairs of taggers could work efficiently.

The primary goal in capturing a calf is to separate it from the adults, after which it is easily caught, even though not completely exhausted. The flight stimulus for young calves is not provided by the approaching human but by the fleeing adult. Females with very young calves readily abandon them at which time the calf will remain quite motionless, blending in well with the sedges. The behavior of a female with a hidden calf is quite easily recognized. In general, it is a nervous behavior in which the cow darts back and forth towards the calf or runs in circles or semicircles around it. Cows with hidden calves could also be recognized by a very stiff-necked posture with extended nose while running and a peculiar associated gait. Even after the taggers reached the calf the cow would frequently continue darting in and out. The closest approach I observed was fifty feet, but McWilliams recorded one time when a cow came within ten feet. Twice I observed yearlings still with the cow. These also circled, though farther away and without any of the nervous activity of the cows. Calves only a few hours old remained frozen until handled by the taggers, after which they often attempted to follow. In some cases calves followed for up to a quarter of a mile in spite of attempts by the taggers to escape them. There may well be some mechanism by which the cow is able to induce a young calf to remain motionless, since the agility with which many calves followed us after tagging showed that it was not simply physical inability which prevented it from following its mother.

As the average age of the calves increased and the cows continued to form larger bands, our technique was modified. The best results were obtained by using all the workers in one crew. Also the hilly country around Elusive Creek aided; it permitted closer approaches, and the bands invariably stopped fleeing as soon as they were out of sight. By using the terrain to advantage, large bands could be surprised and the resulting confusion separated out many calves. In such operations all the calves were obtained in bunches ranging from five to ten at a time, with one worker often having more than one at a time to keep track of. In particular, bands were herded through such natural hindrances as creeks, mud, soft snow or low willows. For example, a band of twenty cows with calves was herded across a narrow stream. Seven of the calves hesitated at the stream while the adults kept going. Once separated the calves were all easily tagged. On another occasion five calves were captured by running a large group through low willows along the river. In one case a calf was separated and wandering aimlessly as we approached. However, by chance a couple of yearlings came by, and the calf immediately joined up with these and ran off before we

could make a capture. Of course many calves were tagged which were caught simply by running them down to a state of exhaustion; they all recuperated very rapidly after the experience.

Standard measurements were made on 33 calves and 15 were weighed. One individual tagged June 2 weighed 25 pounds and had a total length of 36 inches. This appears to have been an exceptionally early birth. Excluding this calf, the total lengths ranged from 24 to 31 and averaged 26.5 inches, and weights ranged from 9 to 18, averaging 13. Nine to ten pounds seems to be the typical weight range at birth. One dead female was found which weighed seven pounds. Ninety-five calves were sexed of which 54 were males, giving a sex ratio of 132/100.

In spite of the widespread activity of the six men in the calving area, the number of calf mortalities located was certainly negligible. In an area where at least 5,000 calves were born or passed through immediately after birth, only four mortalities were found.

All tags used were stamped, UNIV. OF ALASKA \$5.00 REWARD. An intensive publicity program of posters, letters, and personal contacts will be carried to every inhabited site in northern Alaska and adjacent Canada, and it is expected that this publicity will be renewed every year. A reward of ten dollars will be offered for the return of the tag attached to the complete head except skin.

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