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CARIBOU REPORT

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WORK PLAN SEGMENT REPORT

FEDERAL AID IN WILDLIFE RESTORATION

STATE:	Alaska	TITLE:	Alaska Wildlife Investigations
PROJECT NO:	W- 6-R-6 W-15-R-1	TITLE:	Big Game Investigations
WORK PLANS:	C(6-R) and L(15-R)	TITLE:	Caribou Studies
JOBS:	1, 2, 3, 4, 5, 6 (both projects)		
PERIOD COVERED:	January 1, 1965 to December 31, 1965		

ABSTRACT

Arctic Herd

1. A large segment of the Arctic caribou wintered around the headwaters of the Kobuk River. Another large segment wintered southeast of Bettles between the Koyukuk and Yukon Rivers. The northern movements to the calving grounds commenced in late March and most of the animals were north of the Brooks Range in early May. The main calving grounds in 1965 were north of the Colville River in the rolling hill country which drains into the Meade, Titaluk and Kigalik Rivers. A large number of caribou moved through the northwest Arctic villages in the fall of 1965 and were generally available to hunters during October and November.

2. Forty eight fetal caribou were collected and weighed at Anaktuvuk Pass during the period April 11 through April 16, 1965. The weights ranged from 3.5 pounds to 8.0 pounds with an average of 5.6 pounds. Eight fetuses from the Etivluk River area which were collected and weighed between June 7 and June 10, 1965 averaged 11.9 pounds, and ranged from 7 to 15 pounds. The average weight of caribou calves in the Arctic is 12 pounds at birth. These Anaktuvuk Pass fetuses would have had to gain 46% of their weight during the last 7 weeks of intrauterine growth to reach the average 12 pound birth weight. This 46% weight increase would occur in 22% of the gestation period.

3. One hundred and ninety six cows two years old or older were examined for pregnancy at Anaktuvuk Pass and 162 (83%) were found to be pregnant.

4. Aerial counts made on the Arctic calving grounds on June 5, 7, and 10, 1965, indicated that the peak of calving (when 50% of the

pregnant females have given birth) occurred between June 5 and 7, 1965.

5. The estimated 1965 caribou harvest in the Arctic was 29,000 caribou and was probably the largest kill in recent years. Most of these were taken for subsistence by Arctic inhabitants. Of 1,170 caribou jawbones collected from the Arctic in 1965, all but 284 were from animals of known sex. Slightly more females were taken than males, and the age structure was juvenile (calf to 2 year) 17.8%; prime (3-5 year) 68.1%; mature (6-9 year) 11.6% and old (10+ year) 2.5%.

6. Blood samples from 128 animals taken in the Anaktuvuk Pass area were tested for brucellosis and 16 (12.5%) were found to have positive titers. Generally the Arctic caribou came through the winter of 1964-65 in good condition in contrast to the winter period of 1963-64.

Nelchina Herd

1. The Nelchina herd wintered in three main concentrations; Mentasta Pass area, Yanert Fork area and the Eureka-Glenn Highway area. Movements towards the calving area started in early March and the pregnant females arrived in late May on the calving area south of the Fog Lakes between Tsisi Creek and Stephan Lake. A ground classification count was made May 29, 1965 on the calving area and 205 (57%) of the pregnant cows were accompanied by calves.

2. A hunter checking station was operated on the Denali Highway from August 14 to October 10, 1965 and 3,088 caribou hunters checked through 1,222 caribou. The estimated harvest for the 1965 season was 7,100 or 88% of the estimated 8,000 taken in 1964.

3. Sex and age structure of the animals checked through the checking station were similar to 1964 and of 73 blood samples tested, one was a positive Brucella reactor.

4. All but three of the permanent range exclosures were checked and maintenance was performed where necessary.

Fortymile Herd

1. During late winter, the main portion of the Steese-Fortymile herd concentrated along the Tanana Hills between the Salcha River and Middle Fork of the Fortymile River. The major calving grounds were in the Charley River area.

2. A total of 170 hunters checked through the Steese-Fortymile Checking Station with their kill of 90 caribou (46 males, 35 females, and 9 sex unknown). The total estimated harvest in this herd in 1965 was 800 animals.

Adak Herd

1. Two aerial counts were made in February, 1965 and resulted in counts of 83 and 87 animals. The Adak herd including the 1965 calf crop is estimated at 125 caribou. One four year old male in the velvet weighed 666 pounds less the body fluid and blood lost in cutting up the animal prior to weighing.

2. Six wire exclosures were constructed on Adak in July and August, 1965. Permanent study quadrants and photo plots were established inside and outside 4 of the 6 exclosures. Plant specimens were collected and mounted from the study areas to facilitate identification and to serve as a reference collection.

WORK PLAN SEGMENT REPORT

FEDERAL AID IN WILDLIFE RESTORATION

STATE: Alaska TITLE: Alaska Wildlife Investigations

PROJECT NO: W-6-R-6
W-15-R-1 TITLE: Big Game Investigations

WORK PLANS: C(6-R) and L(15-R) TITLE: Caribou Studies

JOBS: 1, 2, 3, 4, 5, 6 (both projects)

PERIOD COVERED: January 1, 1965 to December 31, 1965

OBJECTIVES

To evaluate annually Alaska's caribou population in terms of numbers, productivity, mortality and general condition of the animals and range. To determine as time permits the relative status of herds not yet inventoried.

To determine the distribution of caribou throughout Alaska according to summering, wintering and calving areas. To work out population shifts, movement patterns, and range use and to provide current information regarding caribou distribution to the public to try to foster increased harvests where such are needed.

To obtain information concerning sexual cycles, fertility and natality rates and factors affecting productivity within and between herds, in relation to population size, body condition and range quality.

To identify and evaluate the various mortality factors affecting caribou populations and to determine the magnitude and composition of the hunter-kill.

To determine what difference may exist in the population structure of caribou herds at different levels of abundance.

To determine caribou utilization of the Nelchina range throughout the year and to measure forage use and vegetation change at Nelchina range stations.

To describe the range and establish permanent range stations in areas used by the recently transplanted caribou on Adak.

METHODS

Annually all data from the various caribou studies and other sources are synthesized into an evaluation of each presently identified herd.

Aerial observations provided most of the information on caribou movements, distribution and location of calving, summering and wintering areas. Aerial observations and counts also provided the basic data for information on calf production and survival. Hunter checking stations provided information on numbers, composition and chronology of the hunter kill. Checking stations were operated in the Steese-Fortymile and Nelchina herd units. Hunters checking through the stations were requested to return to the stations jawbones and blood samples from their kills along with dates and locations of kills.

Information on the caribou harvest from western Arctic was obtained by visiting the northwestern villages and picking up calendars which had been left in the villages the previous fall. Calendars for each hunter were left in the villages in the fall of 1964 and hunters were requested to record their daily caribou kills. Jawbones were collected when the calendars were picked up in the spring of 1965. In the fall of 1965 letters were written to village council presidents describing our objectives and needs in their respective areas and requesting each council to select a suitable person to gather jawbones and hunter kill data for the project. This was done and these persons were paid for their efforts based on the number of jawbones collected.

The cooperative Brucellosis Study to determine the effects and prevalence of brucellosis in Arctic caribou was continued by the cooperating agencies: Arctic Health Research Center, U. S. Department of Agriculture, and Alaska Department of Fish and Game. Hunter killed animals were examined at Anaktuvuk Pass during the spring harvest (April) and again during the fall (October and November) harvest. The carcasses were examined for disease and parasites and blood samples were collected for serological determinations. Antler and body measurements were made as well as observations on general body condition. Weights were taken of the embryonic sack (in some instances fluid was lost) including fetus and fetus alone. The pregnancy rate was determined by comparing pregnant and non-pregnant adult females. Additional information of the same type was gathered from animals collected on the Colville River in June.

Nelchina range use by caribou was determined by aerial reconnaissance and the range exclosures were checked and repaired as required.

Six permanent range stations with exclosures were established on Adak and permanent range stations were established inside and outside of four of the exclosures. Photographic studies were set up in conjunction with the permanent quadrants.

Caribou were collected from the Arctic, Nelchina and Alaska Peninsula herds during four periods of the year and samples of rumen content, bones and meat were sent to the Atomic Energy Commission for radiation analysis. At the time of these collections other pertinent data were gathered, namely: weights, measurements, pregnancy rates, and information on the incidence of disease and parasites.

Status of Jobs

The findings which follow are based on work performed during the period January 1, through December 31, 1965 as outlined in the work plan. Due to limitations of time and because certain activities in different herds and areas took place during the same time period, all jobs outlined were not accomplished. Most of the work outlined under Job No. L-1 was performed and no time was expended on procedure 16 of Job No. L-2. Precedure 1d of Job L-3 was not accomplished nor were the September and October aerial counts provided for in 2a and b. Work was performed on all phases of Job No. L-4. All portions of Job No. L-5 were completed except in the Porcupine herd. Procedures 2 and 3 of Job No. L-6 were postponed until the summer of 1966 when it is hoped the former work plan leader will be available to assist in this activity.

FINDINGS

Arctic Herd

Distribution and Movements

The reports of bush pilots, native hunters and persons in the northwestern villages indicate that a large segment of the Arctic herd wintered around the headwaters of the Kobuk River and concentrated in the area between the Kobuk and Koyukuk Rivers. A portion of this herd reportedly remained south of the Brooks

Range and calved between Walker Lake and the Ambler River. A small segment of the Arctic herd wintered near the mouth of the Kobuk near Kiana and Selawik villages. Large numbers of caribou wintered southeast of Bettles between the Koyukuk and Yukon Rivers as they did in the winter of 1963-64. Hunters in Anaktuvuk Pass reported that small groups of caribou were present in the Pass throughout the winter.

That portion of the herd wintering southeast of Bettles started the northward trek to the calving grounds in late March and hunters in Anaktuvuk Pass reported northward movements in mid-April. A large northward movement occurred through Anaktuvuk Pass and the passes to the west where the Chandler and Okokmilaga Rivers flow north to the Colville River. No actual observations were reported in other areas, but undoubtedly movements took place through the other passes in the Brooks and Delong Mountains west of Chandler Lake. The northward movements east of Anaktuvuk are unknown. Most of the calving segment was north of the Brooks Range in early May except for the herd which calved east of the Ambler River in the Schwatka Mountains. The main calving areas in 1965 were north of the Colville River in the rolling hill country which drains into the Meade, Titaluk and Kigalik Rivers.

The calving grounds were in the Arctic foothills province at altitudes generally between 1500 and 2500 feet elevation. The area is treeless and consists mostly of tussock heath tundra as described by Kessel and Cade (1958:14). The tussock-heath tundra vegetation is from 4 to 20 inches in height and consists of variable amounts of sedge (mostly Eriophorum vaginatum), heath, heath-like shrubs, and lichens.

The 1965 concentrations of calving animals were west of the calving areas recorded in previous years when the main segments calved in the headwaters of the Colville, Utukok, Ketik and Meade Rivers. The calving grounds as reported by Lentfer (1964:3) were 50 to 75 miles south and about 75 miles west of the 1965 calving areas.

In 1965 very few animals calved south of the Colville River. After calving in early June, the caribou which calved north of the Colville moved north and west. Caribou were observed in July and August scattered along the coast of the Arctic Ocean between Point Lay and Barrow. Apparently caribou have summered in this area for at least the past four years. A veteran pilot familiar with caribou and their movements in the Arctic observed large concentrations of caribou in the upper Noatak River drainage in July and August and considered this distribution unusual during the summer.

The first fall movements towards wintering areas were reported from Anaktuvuk Pass in early September. A light movement occurred in September. Then after a lull larger movements took place in late October and November. Heavy caribou trails were observed from the air November 4, 1965 along Wild and Tinayguk Rivers leading south towards the Koyukuk. The herd of 8,000 to 10,000 caribou located in the upper Noatak River area started moving in mid-August in a northwesterly direction across the Noatak River at a point downstream from the confluence of the Nimiuktuk and Noatak Rivers. These animals moved west to the Kelly River, then south across the Noatak again and southeasterly to the hill country of the Salmon River. The second crossing of the Noatak took place in the second week of September.

A herd of 40,000 or more caribou, possibly those animals which summered on the coast between Point Lay and Barrow, moved south through the western part of the Delong Mountains and through the Mulgrave Hills where they were joined by another herd of 10,000 to 15,000 animals which had moved south through Howard Pass. A portion of these animals moved up the Kobuk River and a large segment moved into the Buckland River area west of the Selawik River. In moving through these areas the caribou were joined by about 250 reindeer from a herd at Cape Krusenstern and 500 to 750 more from reindeer herds on the southern part of Baldwin Peninsula.

Fortunately the assistant biologist on this project was in the Northwest Arctic during these movements and was able to develop a chronological record. On October 6, the southward movement was first observed about 10 miles northwest of Cape Thompson. The animals moved by Cape Thompson the next three days at a rapid rate estimated to be 30 to 35 miles per day. The greater portion of the migrating herd passed by Kivalina in four days, October 10 through 13. By October 11, caribou had reached the Mulgrave Hills and by the 15th residents of Kotzebue were harvesting caribou. The caribou continued up the Kobuk and Selawik Rivers with a large segment moving as far south as the Buckland River.

Productivity

The weights of 48 fetal caribou taken during the period April 11 through April 16, 1965 at Anaktuvuk Pass ranged from 3.5 pounds to 8.0 pounds with an average of 5.6 pounds. Eight fetuses from the Etivluk River - Colville River area were weighed between June 7 and June 10, 1965. and averaged 11.9 pounds ranging from 7 to 15 pounds. Since the average weight of a newborn caribou calf in the Arctic is about 12 pounds, these Anaktuvuk Pass fetuses would have had to gain 46% of their weight during the last 7 weeks

of intrauterine growth to reach this 12 pound average. This rapid growth is impressive considering the fact that this last 7 weeks constitutes only about 22% of the gestation period.

In the Anaktuvuk Pass area between April 11 and May 27, 1965, 196 female caribou carcasses, two years old or older, were examined for pregnancy. Of the 196 cows examined, 162 (83%) were found pregnant. In 1964 a sample of 58 females, also 2 years old or older, from Anaktuvuk Pass had a 76% pregnancy rate and in 1963 a rate of 73%. The average Nelchina pregnancy rate has been 82% during the past few years. The sample is probably random, except for yearlings, of the animals in the small segments harvested but the distribution of females moving through Anaktuvuk Pass is not uniform. The pregnant females usually lead the northward migration to the calving areas with the non-pregnant females lagging behind.

Aerial counts were made on the Arctic calving grounds on June 5, 7 and 10 (Table I). On these counts females were classified as with or without hard antlers and with or without calves. Pregnant females retain their hard antlers at least until parturition and usually 3 or 4 days after parturition. Non-pregnant females usually shed their antlers in April and by mid-May practically all have completed shedding. In Table I parturient cows are those animals with calves and/or hard antlers. Several sources of error probably affect these classifications. Under certain lighting situations the antlers are difficult to see against the dark brown tundra background and calves are difficult to discern when standing under the cow or lying between grassy tussocks. The pregnant and non-pregnant females are not uniformly distributed throughout the calving areas. The non-pregnant cows are more often found around the concentration of pregnant cows. The classification data summarized in Table I would indicate the peak of calving occurred in 1965 between June 5 and June 7. The calves to parturient cow ratio, indicating the progression of calving, increased from .23 calf to parturient cow on June 5 to .66 calf to parturient cow on June 7. The peak of calving is the time when 50% of the pregnant females have given birth. The peak in 1965 was close to the June 6 - 11 peak in 1964.

Mortality

The caribou harvest in the Arctic consists almost entirely of subsistence hunting. These animals provide a substantial portion of the protein in the diet of the people of the Arctic and in

Anaktuvuk Pass the residents depend almost entirely on caribou for human and dog food. The annual harvest by the villagers depends upon accessibility of the caribou. In those years when caribou migrate close to the villages on movements to and from the calving grounds, the harvest is large. The most recent large kill occurred in 1963 when an estimated 20,000 caribou were taken. The estimated 1965 harvest was 29,000 caribou and was probably the largest harvest in recent years. Caribou were readily available to most of the northwestern villages and hunters from Barrow and Wainwright were able to take animals during the summer months. The summer and fall harvest information was obtained from Department biologists, pilots and guides. A visit to the northwest villages was made during the first week of November 1965. Prior to this contact, letters were sent to village council presidents requesting their help in selecting one responsible resident to collect harvest information and jawbones from each village. These persons were to be paid $1.00 for each jawbone and the harvest data collected. The visit to the villages was just after the southward migration had occurred so information was obtained shortly after the largest kill of the year took place. The late winter and early spring harvest was only fair in most of the villages. From July 15 through August 10, hunters on the north coast primarily from Wainwright had a good harvest. These hunters were selective in the kill and took large bulls when possible. Hunters from Noatak and Kotzebue used boats to effect a harvest on a herd of caribou moving south across the Noatak River in early September. Caribou were available to Anaktuvuk Pass hunters throughout the winter and good kills were made during both the northward (spring) and southward (fall) migrations through the Pass. On the northwest coast, the largest harvest was during October as the caribou moved close to the villages on the southward movement to wintering areas. Animals in lesser numbers were generally available to these same villages in November and December.

Table 1. Results of aerial cow/calf counts of Alaska's Arctic caribou herd, 1965.

Date	Total Cows Counted	Parturient Cows	Non-Parturient Cows	Calves	Calves/ Par/Cows	Calves/ Total Cows
June 5	966	645	321	149	.23	.15
June 7	3,028	2,240	788	1,947	.66	.64
June 10	4,940	4,028	912	3,431	.85	.69

The extent of mortality from natural causes is extremely difficult to determine. Clues to some causes of natural deaths can be obtained by examination of animals taken by hunters. The collection of animals with obvious defects or unthrifty individuals also provided information on natural mortality. Anaktuvuk Pass hunters reported the general body condition of caribou to have improved from a low in December; and in April , both bulls and cows had moderate amounts of fat. The above report was confirmed by autopsy of 77 caribou collected in Anaktuvuk Pass in mid-April. These animals, including ten amimals with positive Brucella titers, had moderate amounts of fat in the mesenteries, and around the heart and kidneys. Subcutaneous fat was lacking in most animals.

Blood samples suitable for testing from 128 animals were tested for brucellosis by the U. S. Public Health Service, Arctic Health Research Center and the U. S. Department of Agriculture. From the 128 samples, 16 (12.5%) were found to have positive titers. This is only slightly lower than the 14% found positive of 37 animals examined in 1964. An attempt was made to selectively collect limping, weak or unthrifty caribou, or females with retained placentas on the calving ground, but this proved impossible due to the unavailability of landing areas for the aircraft. Generally the Arctic caribou came through the winter of 1964-65 in good condition in contrast to the winter of 1963-64.

Population Structure

Table 2 shows the sex and age structure of the Arctic caribou kill from Anaktuvuk Pass and other villages as determined from examination of 1,170 caribou jawbones collected from the Arctic harvest in 1965. (The other villages were Point Hope, Kivalina, Noatak, Kobuk, Shungnak, Ambler, Kiana and Selawik).

The age structure of the 1965 Arctic harvest (Table 2) shows a low percentage of animals in the younger age classes. In the 1963-64 harvest data, juvenile (calves - 2 years) animals represented 20% of the harvest, prime (3 - 5 years) 55%, mature (6 - 9 years) 19% and old (10+ years) 6%. The 1965 data indicates a greater harvest of 3 - 5 year old animals with a decrease in percentages of juvenile, mature and old animals. Observations at Anaktuvuk Pass suggest that hunters select, at least in the fall, large mature animals when a choice is possible. On two occasions in October, 1965, hunters were observed permitting calves to escape. Whether or not this selection takes place at other times of the year or in other villages is unknown. A bias (Table 2) is

indicated against calves and yearlings, but especially against yearling and two year old males. The 1964 data from the Anaktuvuk Pass shows the same bias, and indicates a selection of large animals by hunters.

Table 2. Sex and Age Structure of the 1965 Harvest of Alaska's Arctic Caribou, as Determined by Tooth Replacement and Wear.

	Anaktuvuk Pass					*Other Villages					Total	
	Sex			Total		Sex			Total			
Age Class	♂	♀	Unk	No.	%	♂	♀	Unk	No.	%	No.	%
Juvenile:												
Calf	2	3	2	7	1.7	6	5	10	21	2.8	28	2.4
1 Yr	6	14	0	20	4.8	1	13	31	45	6.0	65	5.5
2 Yr	11	25	0	36	8.7	13	36	30	79	10.5	115	9.9
Total	19	42	2	63	15.2	20	54	71	145	19.3	208	17.8
Prime:												
3-5 Yrs.	140	136	5	281	67.7	189	160	167	516	68.3	797	68.1
Mature:												
6-9 Yrs.	25	32	0	57	13.7	20	24	35	79	10.4	136	11.6
Old:												
10+ Yrs.	5	9	0	14	3.4	6	5	4	15	2.0	29	2.5
Total	189	219	7	415	100.0	235	243	277	755	100.0	1,170	100.0

*Other Villages - Point Hope, Kivalina, Noatak, Kobuk, Shungnak, Ambler, Kiana and Selawik.

Nelchina Herd

Distribution and Movement

The Nelchina Herd concentrated in three main wintering areas in 1964-65. One of the larger segments was in the Mentasta Pass area. This group consisted of two smaller herds, one ranged from Mentasta Pass north to the Tok River and the other group was in the high hills bordered by the Chistochina River on the west, the Slana River on the north and the Slana - Tok Highway on the south. Another large segment of the Nelchina herd spent the winter in the Eureka area north and south of the Glenn Highway. This segment also occupied the headwaters of the Oshetna and Little Nelchina Rivers and Caribou Creek. The third and smaller segment wintered along and south of Yanert Fork River between Bruskasna Creek and the headwaters of the Nenana River.

Movement from the wintering areas towards the traditional calving areas south of the Susitna started in early March. The animals in the Mentasta Pass segment moved south across the Slana-Tok Highway, across Boulder Creek and down the Copper River. A movement started in late March and continued through April down the Copper River. These animals crossed the Slana - Tok Highway to the west between Chistochina and a point 15 miles to the south. By the second week of May these animals were located northwest of Lake Louise between Tyone River and Tyone Creek. The movements of Yanert Fork and Eureka segments to the calving grounds were not observed.

Calving females concentrated south of the Fog Lakes between Tsisi Creek and Stephan Lake. This area is 35 to 50 miles west of the traditional calving area in the Clarence Lake - upper Tyone River area. The females and calves apparently scattered in small bands after calving. A large number of bulls and yearlings were located during June in the high ranges between Butte and Coal Creeks south of the Denali Highway. In late July thousands of caribou of mixed age and sex were concentrated on the remaining snow patches between Butte Lake and Butte Creek and in the Wickersham and Gold Creek areas. These animals were in bands of 50 to 500 and were at altitudes ranging from 4000 to 5000 feet. The caribou remained in this general area until late September when an easterly movement took place. The animals moved across the Susitna River, along the Maclaren River and through the Alphabet Hills south of the Denali Highway. One segment of this large herd crossed the Richardson Highway near Sourdough in early October and moved east across the Chistochina and Indian Rivers in mid-October. The other segment of this herd moved in a south-westerly direction and moved south of Lake Louise into the Little Nilchina River area. One large herd of caribou spent November and December on the north slope of Mount Sanford and the largest wintering segment moved into an area on the north slope of the Mentasta Mountains between the Nabesna River and Meiklejohn Pass. Caribou were concentrated along the Tetlin River and Tuck Creek. This wintering area was considerably north and east of previous movements by Nelchina caribou. Some animals crossed the Nabesna River and this might possibly be a permanent egress from the Nelchina.

The caribou which had moved into the Little Nelchina River area remained along the Glenn Highway during November and December.

Productivity

Since project personnel were studying the Arctic herd at the time of calving in the Nelchina herd, little information was obtained on calving success. An attempt was made on May 28, 1965 to make an aerial classification count in the Fog Creek area, but the observer had difficulty determining from the air whether or not females were antlered or antlerless. This flight did provide a count of 419 pregnant females and 624 females with new born calves. On May 29, 1965 a classification count from the ground was made in the same area and 358 of 419 (85%) adult females were pregnant or had new born calves. Of these 358 females, 205 (57%) were accompanied by calves. This small sample suggests a peak of calving in 1965 close to the May 25 average date found by Skoog in earlier years. To get accurate information on peak of calving, large and representative samples of the calving population must be obtained since the distribution of pregnant and non-pregnant females is not random.

Mortality

The 1965-66 caribou hunting season in the Nelchina (Unit 13) was set to run from August 10, 1965 through March 31, 1966. The bag limit was reduced from four in 1964-65 to three in 1965-66. This reduction in the bag limit probably did not have a significant effect on the total number of animals harvested.

Caribou were generally available in large numbers in March 1965 along the Copper River on the southern portion of the Slana-Tok Highway. The hunting effort was relatively low but those hunters participating in this late season hunt were very successful. Many of these late season hunters were subsistence hunters living within 100 miles of the harvest area.

A hunter checking station was set up August 14, 1965 on the Denali Highway near Paxson and operated until snow closed the road on October 10, 1965. The caribou were generally not available to road hunters during August and September. During the period the station was in operation, 3,088 caribou hunters took 1,222 caribou. An estimated 200 caribou were taken by hunters who did not check through the station. Three hundred and sixty-two (30%) of the total 1,222 caribou checked through the station were recorded during the last 10 days (October 1 - 10) the station was in operation. The largest portion of the August and September kill was made south of the Denali Highway between Mile 90 and 115. In mid-October

when the movements toward the wintering grounds were in progress, hunters along the Richardson (Mile 120 - 170) and Lake Louise Road took an estimated 2,920 animals. Hunters harvested approximately 800 caribou from October through December in the Mentasta-Chistochina - Nabesna Road area.

Caribou were available to hunters along the Glenn Highway in the Sheep Mountain - Eureka area from late October through December and the estimated kill was 1,550. Guided and fly-in hunters took an additional 400 caribou. The estimated harvest for the 1965 season was 7,100 or 88% of the estimated 8,000 taken in 1964.

The 1,222 carcasses which hunters checked through the checking station were generally in good condition as were a small number of animals examined in late March and early April, 1965. Seventy-three blood sera samples were sent to the U. S. Department of Agriculture Laboratory and one positive Brucella reactor was found. This 1% incidence is approximately the same as found in previous years.

Population Structure

Table 3 shows the sex and age structure of the animals checked through the Nelchina checking station. The sample is smaller than previous years because the caribou were not accessible during the early part of the season when the checking station was in operation. One hundred and eighty-five animals were classified according to sex but were not aged. This sample consisted of 97 (52%) male and 88 (48%) female. The 138 animals sexed and aged consisted of 102 (74%) male, 34 (24.5%) female and 2 (1.5%) unknown.

Table 3. Sex and Age Structure of Hunter Killed Caribou Checked Through the Nelchina Checking Station in 1965.

	Male		Female		Sex Unknown		Total	
Age Class	No.	%	No.	%	No.	%	No.	%
Juvenile: Calf	1	.7	2	1.5	-	-	3	2.2
1 Yr.	3	2.2	1	1.7	-	-	4	2.9
2 Yrs.	3	2.2	6	4.3	1	.7	10	7.2
Total	7	5.1	9	6.5	1	.7	17	12.3
Prime: 3-5 Yrs.	70	50.8	23	16.6	1	.7	94	68.1
Mature: 6-9 Yrs.	22	15.9	2	1.4	-	-	24	17.4
Old: 10+ Yrs.	3	2.2	0	0	-	-	3	2.2
TOTAL:	102	74.0	34	24.5	2	1.5	138	100.0

Analysis of Range

Seven permanent range study plots were scheduled for analysis this past summer. This job was postponed to the next segment when 15 plots are due and it is hoped the previous Study Leader, Ron Skoog, will be available to work on this project. All but three of the exclosures were checked and maintenance performed where necessary. The fenced exclosures were generally in a good state of repair.

Reconnaissance flights were continued on a monthly basis to record the distribution and movements of the main segments of the Nelchina caribou so that the range studies can be evaluated in the light of utilization by major portions of the herd.

STEESE FORTYMILE HERD

Distribution and Movements

During the late winter period from January to late March, 1965, the main segment of the Steese-Fortymile herd was concentrated in the spruce forest along the Tanana Hills between the Salcha River and Middle Fork of the Fortymile River. Scattered small bands of caribou were present as far east as the Lower Ladue River in Canada, and as far west as the Chena River drainage. In late April, the cow segment of the wintering herds moved towards the high ridges along the Middle Fork River. The females calved in late May between the south slopes of Mt. Veta and the headwaters of the Charley River. The largest concentrations of cows were observed on the Charley River. The bull segment of the herd followed the same general movement pattern as the cows but lagged 50 to 70 miles behind the cows.

In early July the bulls joined the cows and large groups of 1,000 or more animals of mixed age and sex started a westerly movement. This movement continued and a concentration was observed in the Big Windy drainage of Birch Creek to headwaters of the Chena. On July 13, the concentrations were observed moving in a southeasterly direction from the ridges between the Chena River and the Salcha River west of the splits on the Salcha. In early August the main segment moved north through the Middle Fork, Charley River and North Fork drainages to the Seventymile River drainage. A group of approximately 5,000 animals separated from the main herd on the North Fork and moved into the Sixtymile River area of Canada. In late August and early September the caribou were generally scattered in small bands. By mid-September, the animals formed again into herds and concentrated from Mt. Ryan through the headwaters of the Chena and Salcha drainages to the Charley River. Several herds of caribou, one of which contained over 1,000 individuals moved north in October across the Steese Highway between Mile 50 and 100. The

larger herd crossed near Mile 77. Several thousand animals had moved into the White Mountains north of the Steese Highway by November and caribou were reported in the Sawtooth Mountains 60 miles north of Fairbanks where they had not been observed for at least 20 years.

Mortality

The caribou harvest by hunters in the Steese-Fortymile herd, as in other Alaska herds, depends upon the availability of caribou along the road system, near centers of habitation or on rivers. The estimated 800 caribou harvested in 1965 was small in numbers but substantially greater than the 235 taken in 1963 and 270 in 1964. A checking station was operated at Fox on the Steese Highway for five days, September 25 and 26 and October 1 through 3, 1965. A total of 190 hunters checked through the station with their kill of 90 caribou (46 males, 35 females and 9 sex unknown). An estimated 200 caribou were taken along the Taylor Highway between Eagle and Boundary when a herd of several thousand crossed from west to east in August. Table 4 shows the sex and age structure of a sample of the Steese hunter kill. The percentage of juvenile animals (calves to two years old) is considerably higher than the 17.8% in the Arctic and 12.3% in the Nelchina. The other age classes are fairly close to those in the Arctic and Nelchina.

Table 4. Sex and Age Structure of a Sample of the Steese-Fortymile Caribou Harvest - 1965.

Age Class	Male	Female	Sex Unknown	Total No.	Total %
Juvenile (calf to 2 yrs)	11	10	10	31	25
Prime 3-5 yrs.	47	14	12	73	58
Mature 6-9 yrs.	5	9	6	20	16
Old 10+ yrs.	1	1	0	2	1
Total	64(51%)	34(27%)	28(22%)	126	10(100%)

ALASKA PENINSULA HERD

The Peninsula herd was estimated by Ron Skoog (unpublished comprehensive report) to number in excess of 11,000 animals and the herd is apparently increasing in numbers. In early April, 1965, a biologist contacted individuals and inquired about their caribou harvest success and recorded their impressions concerning

movements and numbers. Those persons contacted in Egegik, Meshik, Port Moller, Nelson's Lagoon, Naknek, King Salmon, Pilot Point and Chignik all agreed that the Alaska Peninsula herd is growing. The interviews also indicated that calf crops during the past two years were high. During September and October caribou were observed moving north from the areas south of the Meshik River, the northwest slopes of Mount Veniaminof, to the general area north of Pilot Point, west of Ugashik Lake and northwest of Becharof Lake. The estimated harvest on the Alaska Peninsula during the 1964-1965 season was 220.

ADAK HERD

Two aerial counts by Navy personnel using a helicopter were made in February, 1965. The first count was 83 and the second 87 animals. A three hour count by helicopter was made on June 11, 1965 and a total of 42 caribou (7mature bulls, 12 cows with calves and 11 yearlings and other unclassified) was counted. The animals were distributed throughout the southern portion of the Island. The Adak herd including the 1965 calf crop consists of an estimated 125 caribou. The second hunting season was held in 1965 and extended from August 15 through August 31, 1965 with bulls only as legal game. A total of two bulls was harvested in 1965 compared to the three bulls and one cow taken in 1964. One four year old male with antlers in the velvet weighed 666 pounds, less the body fluid and blood lost in cutting up the animal prior to weighing. Skoog (unpublished comprehensive report) found from a sample of 186 caribou that the blood amounted to approximately 6% of the total weight. Using this percentage the live weight of this Adak bull caribou would have been 706 pounds. The heaviest caribou previously recorded was a Nelchina male 6 plus years old weighing 656.7 pounds. This Nelchina animal was weighed in the fall, normally the period of greatest weight. This extremely large bull and the observation of other large animals with large antlers can probably be attributed to the virgin range conditions, lack of natural predators and the mild temperatures and low snow accumulation on Adak.

Six wire exclosures were constructed on Adak in July and August, 1965. Permanent study quadrants and photo plots were established inside and outside of 4 of these exclosures. Plant specimens were collected and mounted from the study areas to facilitate identification and to serve as a reference collection. The permanent study areas on the remaining two sites will be completed during the summer of 1966.

Literature Cited

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