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ANNUAL REPORT OF
SURVEY-INVENTORY ACTIVITIES

PART XI. CARIBOU

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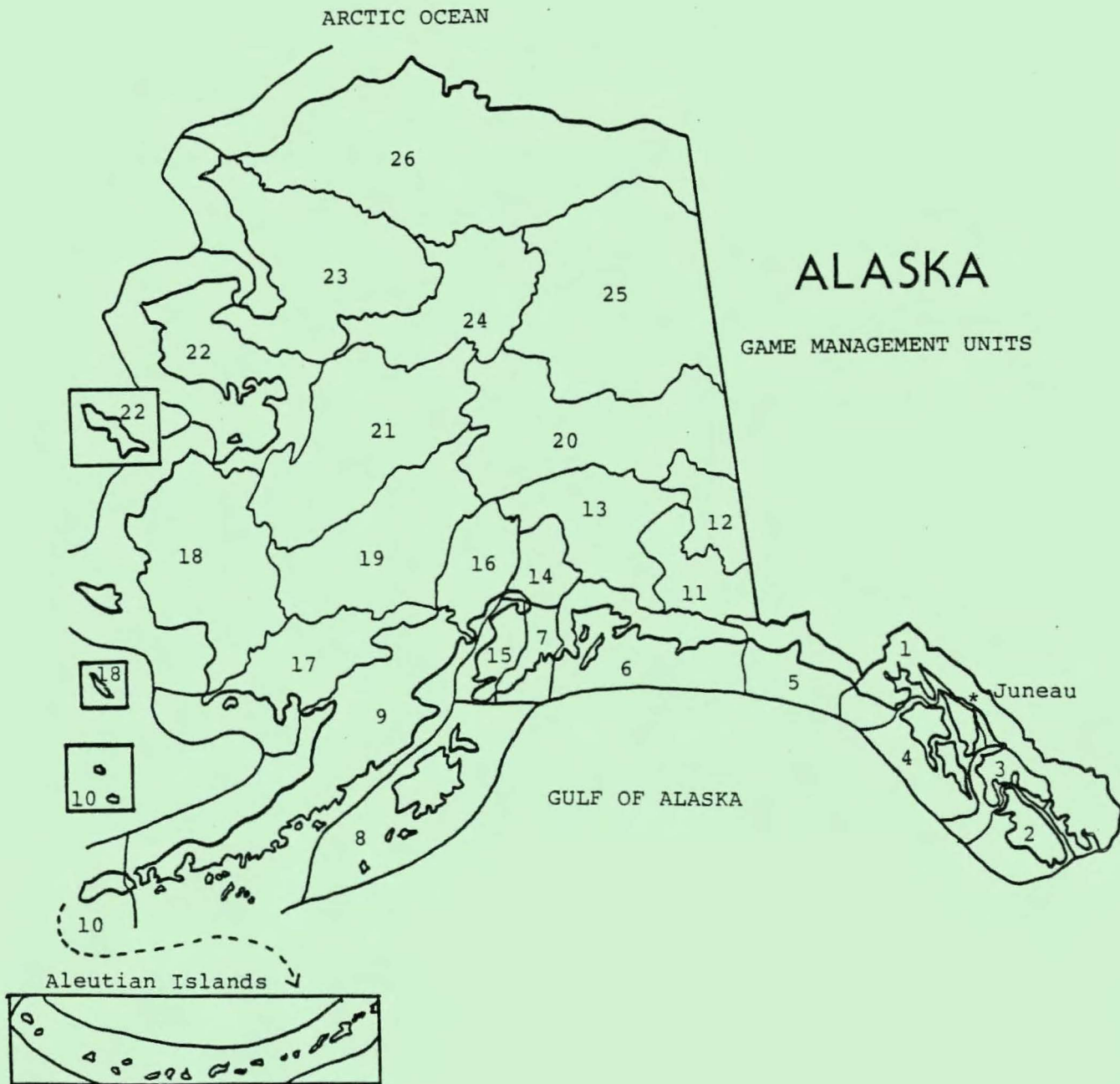
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STATEWIDE HARVEST AND POPULATION STATUS

The statewide status of caribou continues to be highly favorable; all major herds are either increasing or stable at high levels. The 3 arctic herds (Western Arctic, Central Arctic, and Porcupine) total 365,000-400,000 caribou, and all three continue to expand. The Mulchatna Herd in southwestern Alaska now numbers 37,000 and is increasing rapidly. Small remnant herds are generally stable or increasing very slowly, although some groups in Unit 19 and southern Unit 18 may be declining.

Harvest reporting of caribou is generally minimal except in the case of permit hunts. Reported harvests are often only a small fraction of the actual take by hunters. Reported harvests may, however, serve to illustrate harvest trends, as well as to provide a valid sampling procedure reflecting age and sex composition of the harvest. Herd status and reported harvest in 1984-85 are summarized on the following page.

Robert A. Hinman
Deputy Director

Herd	GMU	Reported harvest	Population trend	Estimated population
Kenai Mountains	7	52	Stable	400
Mulchatna	9A, 9B, 16, 17, 19B, 19C	661	Increasing	37,000
Northern Alaska Peninsula	9C, 9E	743	Stable-high	20,000
Southern Alaska Peninsula	9D, 10 (Unimak)	388	Stable	10,200
Adak	10 (Adak Island)	144	Increasing	360
Mentasta	11	146	Stable	2,700
Nelchina	13, 14A, 14B	1,064	Stable?	24,095
Chisana	12	31	Stable or increasing	1,100
Denali	13E, 20C	0	Stable or increasing	2,500
Beaver Mountains	19, 21	10-15	Decline	1,200
Sunshine Mountains	19	?	Decline	500
Big River	19	13	?	?
Rainy Pass	19, 16	28	?	?
Tonzona	19	7	?	?
Kuskokwim Mountains	19	2	?	?
Delta	20A	413	Increasing	7,700
Yanert	20A	99	Increasing	700
Macomb	20D	20	Stable	700
Fortymile	20F	245	Slow increase	13,000
Porcupine	25A, 25B, 25C, 25D, 26C	54 ^a	Increasing	150,000
Central Arctic	26B	368	Increasing	13,000
Kilbuck-Andreafsky	18	?	Decreasing	?
Western Arctic	22A, 22B, 23, 24, 26A	2,513 ^b	Increasing	200,000

^a Estimated harvest 500-700 in Alaska, 4,000 in Canada.

^b Estimated harvest 10,750.

CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7

HERD: Kenai Peninsula Mountains

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The Kenai Mountains Caribou Herd was established through transplants from the Nelchina caribou herd in 1965 and 1966. Composition surveys conducted since 1977 indicate that this herd has steadily increased in size. The current population is estimated at 400 animals.

Population Composition

Three attempts were made during the fall to survey the caribou herd, but were unsuccessful due to poor weather. On 19 February 1985, an aerial survey was completed and 343 caribou were observed. Although sex and age data were not obtained, the herd's composition appeared normal for a growing population.

Mortality

One hundred fourteen of 200 permit holders reported hunting during the fall, and 52 caribou were reported killed. The harvest comprised 35 (67%) males and 17 (33%) females. Thirty-four (65%) of the successful hunters walked into the area they hunted, 16 (31%) used horses and the remaining 2 (4%) used aircraft as their primary method of access. Fifty caribou were harvested by Alaskan residents, 1 by a nonresident and 1 by a hunter of unspecified residency.

Management Summary and Recommendations

The Kenai Mountain Herd contains about 400 caribou and exceeds the recommended range carrying capacity of 250-300 animals. Therefore, an increase in harvest is recommended to reduce population size. I recommend 400 permits be issued to achieve this objective, assuming a minimum population growth of 10%. No changes in season or bag limit are recommended.

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SUBMITTED BY:

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9A, 9B, 16, 17, 19B, and 19C

HERD: Mulchatna

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

No population estimates for the Mulchatna Herd were made during this reporting period. Estimates of population size since 1981 have steadily increased at a rate approaching 20% per year. Preliminary results of a photocensus conducted 12 July 1985 indicate herd size is approximately 37,000 caribou. Rapid growth of this herd has been attributed to a succession of mild winters, moderately low hunting pressure, and low predation levels. Radiotelemetry data have increased the Department's knowledge of this herd's range and intensive use areas during the post-calving period. The telemetry technique has also increased the probability of locating the majority of caribou during census efforts.

Population Composition

No sex and age composition counts were conducted during this reporting period. The most recent counts were conducted on 26 June 1984 and yielded the following percentages in a sample of 2,543 caribou: 29% calves, 20% bulls, and 51% cows.

The Mulchatna Herd traditionally calves between Twin Lakes at the head of the Chilikadrotna River and Telaquana Lake at the head of the Stony River, in the Bonanza Hills, or in the Koksetna Hills in the Caribou Lakes region. The herd was unable to migrate to any of these areas in the spring of 1985 due to exceptionally deep snow conditions at elevations above 300 meters. Snow persisted through mid-June in the Mulchatna drainage. Calving took place throughout the lower drainages of the Mulchatna River downstream to its confluence with the Nushagak River, in the vicinity of Keefer Creek and the Nikabuna Lakes, and to a lesser extent along the Koktuli River. No large concentrations of adult females were observed in any specific area.

Mortality

Six hundred sixty-one caribou were killed by 655 hunters during the season. Of these caribou, 171 (137 males, 31 females, and 3 sex unknown) were killed in Subunits 9A and 9B; 259 (218 males, 38 females and 3 sex unknown) were killed in Unit 17, and 231 caribou (224 males and 7 females) were killed in Subunits 19B and 19C. About 85% of the hunters were successful in taking a caribou.

As in previous years, harvest report data are biased by disproportionately high returns from nonlocal hunters who hunt primarily during the fall season and concentrate on the male segment of the herd. Local hunters from 14 different villages killed about 1,355 caribou during 1984-85. Estimates of the take, by village, are as follows: Aleknagik - 35; Clarks Point - 40; Dillingham - 250; Ekwok - 135; Manokotak - 50; New Stuyahok - 325; Nondalton - 70; Port Alsworth - 40; Goodnews Bay - 20; Iliamna - 60; Koliganek - 165; Lime Village - 30; Portage Creek - 45; and Togiak - 90. The total estimated harvest for the Mulchatna herd was approximately 2,000 caribou.

Winter conditions were moderate to severe during this reporting period. Several instances of wolf predation on caribou were reported during February through April. Snow conditions for wolf predation were ideal, with 10-20 inches of crusted snow covering most of the winter range through March and April.

Management Summary and Recommendations

Census estimates since 1981, when radio collars were initially used to locate post-calving aggregations, have indicated a high growth rate for the Mulchatna Herd. During the past 4 years, calf production and survival have been excellent and winter mortality and predation minimal. However, these factors alone cannot account for the rapid rate of population increase. It is probable that additional post-calving aggregations were missed during the census, and therefore, not included in the estimates. A review of photocensus information revealed that several areas of post-calving aggregations have been located since the 1st photocensus in 1974, including the Sharp Mountain group (2,500 in 1985), the Mosquito Creek group (approx. 11,000 in 1985), and the Sparvon Hills group, located for the 1st time in 1985 and estimated to be approximately 2,000 animals.

Length of hunting seasons and bag limits have increased annually for this herd since 1981, yet harvest levels have never exceeded 10% of the population. The Alaska Peninsula Herd is smaller than the Mulchatna Herd yet sustains almost equal harvest levels with more liberal seasons and bag limits. Confusion among Bristol Bay hunters would be avoided if seasons and bag limits were identical for both herds.

The Mulchatna Herd continued to expand its range to the west and north during this reporting period. Excessive harvests in the westernmost portions of Unit 18 and Subunit 19B virtually annihilated the small groups of caribou that had moved into this territory. Successful expansion of the Mulchatna Herd into this range will be contingent upon the cooperation of the villagers that hunt this area.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9C and 9E

HERD: Northern Alaska Peninsula

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

A photocensus of the Northern Peninsula Caribou Herd was conducted on 5 July 1985 and a minimum of 18,978 animals was counted. Poor weather prevented coverage of drainages on the Pacific side of the Aleutian Mountains. Consequently, the total size of the herd was estimated at 20,000 caribou. Twelve female caribou were radio-collared during April. There are now 20 functioning transmitters on caribou; these collared animals will be used to locate the herd and monitor population status.

Population Composition

Samples of caribou ($n = 2,186$) from all major segments of the herd were taken during the July census and contained a composite percentage of 27% calves. With 1 exception (1983), this herd has had consistently good calf production and survival through October.

On 20 October 1984, a sample of 1,087 caribou was classified as follows: small bulls with cow-like antlers 11.2%; medium bulls 5.1%; large, fully mature bulls 5.7%; cows, including yearling cows, 56%; and calves 22%. The calf:cow and bull:cow ratios were both 39:100.

Mortality

The total reported harvest was 743 animals, including 569 males (77%), 166 females (23%), and 8 of unspecified sex. As in past years, few local residents reported killing caribou. The total harvest was estimated at approximately 1,300-1,400 caribou.

Despite liberal hunting seasons over the past 20 years, the Northern Alaska Peninsula Caribou Herd has grown and now is at

a density of 2-3 caribou/mi². The Board of Game raised the bag limit during August 1984 to 4 caribou. This liberalization was aimed at allowing more subsistence harvest when caribou are easily accessible by boat and are in excellent physical condition. Bulls, still in velvet in August, would not be as attractive to sport hunters. Even though this increased bag limit received very little publicity, the reported harvest for August increased from 61 in 1983 to 167 in 1984. The numbers of hunters who took 1, 2, 3, or 4 caribou during the August season were 59, 26, 12, and 5, respectively. Had more urban Alaskan hunters known about the 4 caribou bag limit, the August harvest undoubtedly would have been larger.

Management Summary and Recommendations

With approximately 77% of the harvest being bulls, and with the bull:cow ratio at 39:100, I believe keeping the bag limit at 4 caribou for August 1985 would result in an overharvest of bulls. Consequently, for the 1985 season, I recommend the bag limit be reduced to 2 caribou.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9D and Unimak Island

HERD: Southern Alaska Peninsula

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

No current data are available. The most recent population estimate was 10,200 caribou counted by U. S. Fish and Wildlife Service personnel during a November 1983 census.

Population Composition

On 13 October, 1,567 caribou were classified near Cold Bay by U. S. Fish and Wildlife personnel. Calves made up 15% and mature bulls made up 7% of the sample.

Mortality

Three hundred eighty-eight caribou, including 279 males and 109 females, were reported killed in Subunit 9D. This was a 53% increase over the 1983-84 harvest, but was still below that of the 2 previous years. Hunters took 89% of the 1984-85 harvest after 31 October when the bag limit increased to 4 and caribou were available along the Cold Bay road system. Of the successful hunters, 40%, 21%, 17%, and 22% took 1, 2, 3, and 4, caribou, respectively. Although the August 1984 bag limit in Subunit 9D was also 4 caribou, only 5 caribou were reported harvested. The lack of hunting effort during August was attributed to difficult and expensive access when the herd was north of Cold Bay. Harvest tickets are not required in Unit 10; consequently, no harvest data are available for Unimak Island.

Management Summary and Recommendations

Post-calving surveys have consistently shown poor calf production in this herd. However, the herd continued to meet all demands for consumptive uses without an apparent decline in

herd size. Hunting regulations have less influence on the caribou harvest than do herd movements and the high cost of air fare to Cold Bay.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 10

HERD: Adak Island

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

No caribou surveys were conducted during this report period.

Population Composition

No data were available.

Mortality

The reported harvest was 144 caribou, including 82 males and 62 females. Thirty-one caribou (22.1%) were killed by nonresidents, 109 (77.9%) by residents, and 4 by hunters of unknown residency. Three hundred fifty-three individuals (180 nonresidents and 173 residents) participated in the registration hunt.

Management Summary and Recommendations

During this report period, no information was available to indicate either an increase or decrease in the size of the caribou population. The last survey was conducted on 6 June 1984. During that post-calving count, 360 caribou were observed. That count was the highest ever made on Adak and compares to other high counts made in 1981 (316) and 1972 (347). According to U. S. Fish and Wildlife Service personnel stationed on Adak, approximately 300 post-calving caribou were on the island during late June 1985. One hundred forty-four caribou were reported killed during the 1984-85 hunting season. This year's kill was the largest reported harvest since caribou hunting began on the island in 1964.

Future management of the Adak Caribou Herd will require cooperation between the U. S. Navy, USFWS, and the Department, to ensure that caribou numbers do not increase beyond a controllable level.

No changes in seasons or bag limits are recommended.

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SUBMITTED BY:

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

HERD: Mentasta

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The size of the Mentasta Caribou Herd is estimated at 2,700 animals. There has been little change in the size of this herd since 1981.

Population Composition

A calf:cow ratio of 29:100 and a bull:cow ratio of 36:100 were obtained from composition data collected during a fall composition count on 9 October. The calf:cow ratio was approximately the same as the 1983 ratio of 28:100. The bull:cow ratio suggests a moderate decrease from the 44:100 reported last year.

Mortality

Hunters killed 119 caribou, including 84 bulls, 34 cows, and 1 of unspecified sex. This harvest was similar to the 4-year average (1980-83) of 128. Two hundred and six permittees reported hunting, compared with 179 in 1983 and 215 in 1982. Information obtained from permit reports indicates that 58% of those who hunted were successful.

Aircraft was the most popular method (89%) of transportation used by successful hunters, followed by off-road vehicles (8%), and highway vehicles/horses (3%).

Management Summary and Recommendations

During the spring, summer, and fall, the Mentasta Caribou Herd usually ranges within the boundaries of the Wrangell-St. Elias National Park/Preserve. Aircraft continue to be the most popular method of access for hunters; most caribou are taken near the few legal airstrips within the preserve. The number of

hunters, the success rate, and the total harvest have remained approximately the same over the past 4 years. During the winter, a large portion of the Mentasta herd moved out of Unit 11 by crossing the Mentasta Mountains into the Tetlin region (Unit 12) and remained there until early spring. The number of Mentasta caribou killed by hunters in this area was unknown.

The size of the Mentasta caribou herd has remained fairly constant since the mid-1970's. Calf recruitment for 1984 was low; therefore, an increase in herd size is not expected.

No changes in season dates or number of permits issued are recommended.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12

HERD: Chisana

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

No standardized surveys of the Chisana Herd were conducted during this reporting period, but the herd is believed to be stable or increasing slowly. The Chisana Herd is estimated to contain 1,000-1,100 caribou. With only 900-1,000 mi² of available range in Alaska, little expansion of this herd within the state is expected. Suitable range does exist to the east in the Yukon Territory.

Mortality

Predation by wolves, grizzly bears, coyotes, and golden eagles is believed to be the primary mortality factor affecting this herd.

Hunters reported taking 31 bulls during September 1984, an increase of 3 more caribou than in 1983. The harvest occurred in the Chisana, Beaver Creek, and White River drainages. This is believed to be a conservative harvest representing approximately 3% of the herd.

Twenty-eight additional bull caribou were taken elsewhere in Unit 12. Of these, 1 bull was taken from the Nelchina Herd and the remainder from the Mentasta Herd. Twenty bull caribou were taken in the Nabesna Road area during September (Mentasta Herd) compared with 9 in 1983 and 18 in 1982. An additional 7 bull caribou were taken by 10 Northway residents during a winter permit hunt. At least 20 Mentasta caribou were taken illegally during winter in the vicinity of Northway. Several hundred Mentasta Herd caribou spent most of the winter in the Northway area before migrating south in spring.

Management Summary and Recommendations

The reported harvest of 31 bull caribou is modest and only slightly larger than recent harvests of 28 in 1983 and 21 in 1982. Access to the Chisana Herd is difficult and most hunters used aircraft and horses for access to Chisana caribou. The current season and bag limit are appropriate for this herd.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13 and 14, (except 14C)

HERD: Nelchina

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The estimated fall population size for the Nelchina Caribou Herd was 24,095. The herd has been increasing in size since the mid-1970's, but appears to have stabilized this year. However, possible counting errors of $\pm 10\%$ make comparison of trends in this year's population growth questionable.

Population Composition

A post-calving survey was conducted on 25 June and resulted in a calf:cow ratio of 53:100. A fall composition survey conducted on 10 October yielded a calf:cow ratio of 34:100. The fall bull:cow ratio was 40:100. No spring count to determine overwinter survival of calves was conducted; however, survival into the fall was not as high as in recent years (47 calves:100 cows).

Mortality

One thousand sixty-three caribou were killed by 1,504 permittees during the hunting season. Of these caribou, 891 were males, 166 were females, and 6 were of unknown sex. Hunter success was 71%. Included in this harvest were 286 caribou killed by 409 hunters with subsistence permits.

The most popular method of transportation used by sport hunters was off-road vehicles (40%), followed by highway vehicles (22%), aircraft (21%), boat (15%) and horse (2%). Use of off-road vehicles has increased annually (from 28% in 1981 to 40% in 1984), while use of aircraft declined (from 31% in 1981 to 21% in 1984). The most popular method of transportation used by subsistence hunters continued to be highway vehicles (65%), followed by snowmachine (16%), off-road vehicles (10%), aircraft (7%), and boat (2%).

Management Summary and Recommendations

This year's population estimate for the Nelchina caribou herd indicates the herd has remained stable. However, with a possible counting error $\pm 10\%$, this count does not warrant any firm conclusions regarding an increase or decrease in herd growth.

The number of hunting permits issued, and caribou killed, increased in 1984. The current harvest is the largest reported since 1974, before the permit hunt system was established. It is recommended that the number of permits continue to be adjusted annually in response to the estimated herd size. In accordance with the management plan, we should allow the Nelchina Caribou Herd to continue to increase to 30,000 adults.

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[Editor's note: See Appendix A for a summary of a report entitled "Analysis of Nelchina Caribou Range" by J. Lieb, et al.]

CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 13E and 20C

HERD: Denali

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

No open season.

Population Status and Trend

A rangewide survey of the herd was conducted 26-28 September 1984 and 2,102 caribou were observed. Approximately 200 of these were thought to be from the "Tonzona Herd" which appears to be a separate calving group. Based on these counts, it appears the Denali Herd now numbers between 2,000 and 2,500. The apparent increase in numbers may only reflect more thorough coverage during the recent survey.

Population Composition

Two composition surveys were completed during the reporting period. In a fall survey (26-28 September), 2,102 caribou were seen and 1,608 were classified: 881 cows, 316 calves, and 411 bulls. The calf:cow ratio was 36:100.

On 22 and 23 April 1985, a Jet Ranger helicopter was used to classify 1,651 caribou. Seven hundred ninety-two cows, 272 calves, 456 bulls, and 131 caribou of unknown sex were observed. The calf:cow ratio was 34:100.

Mortality

In May 1985, 58 caribou calves were radio-collared to determine the magnitude and causes of mortality. Of the 58 collared, 33 died of natural causes by the end of June. Grizzly bears were implicated in 42% of the deaths, wolves in 30%, and golden eagles in 18%. Wolverines were suspected as the cause of death in 2 additional deaths. In 1984, 43 calves were collared, and bears were suspected of killing 12 of the 13 calves that had died by late June.

Management Summary and Recommendations

The Denali Herd is presently so small that natural mortality from predation by bears and wolves severely restricts herd growth. However, the herd serves as a valuable comparison with adjacent herds where predators have been reduced. There is no harvestable surplus and the season should remain closed.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 18

HERD: Kilbuck Mountains and Andreafsky Mountain

PERIOD COVERED: 1 July 1984-30 June 1985

Seasons and Bag Limits:

See Hunting Regulations No. 25.

Population Status and Trend

Heavy harvests from the small herd of caribou (approximately 200 animals) in the Kilbuck Mountains of Unit 18 during winter and early spring 1985 resulted in closure of the season by the Board of Game in June 1985. The Board determined that sustained yield limits had been exceeded, and that there will be no open season for caribou during the 1985-86 regulatory year in Unit 18 south of the Yukon River.

The precise status of the Andreafsky Herd remains uncertain. Two feral reindeer taken by hunters from Kotlik in early 1985 were reported to have red ear tags. Reindeer herders from the nearby village of Stebbins use grey ear tags on their animals. An investigation confirmed that the reindeer with red ear tags originated in the NANA region (Unit 23). In recent years, several thousand reindeer from the NANA herd have been lost when they joined migrating bands of Western Arctic Herd (WAH) caribou. Presumably the NANA reindeer killed in Unit 18 were still associated with caribou, suggesting that the WAH ranged as far south as Unit 18 in winter 1984-85. WAH caribou are known to have ranged as far south as Unalakleet in recent years. It has been suggested that the Andreafsky Herd is composed of feral reindeer, reindeer-caribou crosses, and caribou. Recent public reports of as many as several thousand caribou in northern Unit 18 also suggest immigration from the WAH.

Aerial surveys were flown in the Kilbuck Mountains southeast of Bethel during August 1984 and monthly from February through June 1985. Small, widely dispersed groups of caribou were observed during 3 aerial surveys in August 1984. As in the previous spring, caribou were located in the upper Kisaralik and Kwethluk drainages, especially near Kisaralik Lake, Gold Lake, North Fork Creek, and in the Crooked Creek and Heart Lake

drainages. Similar small groups of caribou were observed near Nishlik and Chikuminuk Lakes in adjacent Unit 17B in August. These observations indicate that caribou were present at low densities on both sides of the crest of the Kilbuck range in late summer. Some Rangifer were reported near a guide camp on the Goodnews River in 1984, but K. Taylor (pers. commun.) believed these were escaped reindeer from Hagemeister Island in Unit 17.

Caribou were also reported in low numbers in the upper Kisaralik drainage and in the headwaters of the Eek River in February 1985. Tracks indicated that approximately 30 caribou moved along Crooked Creek between the Kisaralik and Kwethluk Rivers in late February. No caribou were observed in Units 18 or 19A during an aerial survey flown in mid-March from Bethel to Stony River through the Chuilnuk Mountains south of the Kuskokwim River. The flight included Whitefish Lake, and the Holitna and Stony River areas.

Mortality

Compliance with the caribou harvest ticket reporting system is noticeably absent in Unit 18, so we attempt to gain harvest information by other methods.

Observations of entrails and hides indicated that a minimum of 7 caribou were harvested along Crooked Creek during the February 1985 season. Reports from the public, however, alluded to 3 separate instances of excessive and illegal harvests of 30-40 caribou. In each case these animals were taken by groups of 9-15 hunters on snowmachines during January, February, and March 1985. A documented and marginally legal harvest of approximately 44 caribou occurred in late March in the Kipchuk drainage of Unit 19B immediately adjacent to Unit 18. A group of 11-14 hunters on snowmachines, camped near North Fork Lake in Unit 18, pursued a herd of caribou for many miles in Unit 19B. These snowmachiners effectively eliminated the entire herd by running it down and dispatching caribou on steep hillsides. A pilot report led within 12 hours to an investigation by the Departments of Fish and Game and Public Safety, but the snowmachiners departed the area after being observed by the private pilot. Subsequent survey flights in early April documented the extent of the harvest by aerial observations of 44 separate kill sites.

No calving caribou were observed in the upper Kisaralik-Gold Lake drainages in May 1985, in contrast to May 1984. I believe that few caribou remained in the northern Kilbuck Mountains by April 1985. U.S. Fish and Wildlife Service (USFWS) helicopter surveys of the northern and central Kilbuck Mountains revealed no caribou in June 1985. However, a private pilot observed 30 caribou near Kisaralik Lake in late July 1985.

Management Summary and Recommendations

The Mulchatna caribou herd in Units 17 and 19 is rapidly increasing in size and is expanding westward toward Unit 18. The Kilbuck Mountain range contains good caribou habitat, and the area has historically been occupied by both caribou and reindeer. The Kilbuck range is currently occupied by very few caribou subject to intense hunting pressure. Harvest in 1984-85 exceeded sustained yield, unless immigration from the Mulchatna Herd is occurring. Consequently, the Board of Game closed the season south of the Yukon River in June 1985. The advisability of having any open season for caribou in Unit 18 has long been questioned by Division staff. The USFWS reviewed biological data on caribou in Unit 18 in April 1985 and recommended a closure. Lower Kuskokwim village leaders have voiced concern about overharvest and wanton waste of caribou in the Kilbuck Mountains. Local leaders held a series of inter-village meetings to discuss the issue in December 1984 and in January and February 1985 and urged respect for the resource. Game Division participated in advisory committee discussions of the caribou issue in February, March, April, and May 1985. The Association of Village Council Presidents is also concerned about the status of caribou in the Kilbuck Mountains and supports conservation measures that will foster and protect a resident population capable of sustaining a greater harvest. The Division of Fish and Wildlife Protection will enforce the caribou closure in Unit 18 with aerial patrols in the Kilbuck Mountains throughout winter 1985-86. With strong local support for conservation, it is hoped that more caribou will occupy the Kilbuck Mountains and other parts of Unit 18.

PREPARED BY:

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David A. Anderson
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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 19 and 21

HERD: Beaver Mountains, Kuskokwim Mountains, Sunshine Mountain, Big River, Rainy Pass, and Tonzona

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

Most caribou in Unit 19 are part of the expanding Mulchatna Herd which now ranges from near the upper Swift River in Subunit 19C south and west through Subunit 19A and 19B to near the Kilbuck Mountains. Other herds in Units 19 and 21 are small, mostly less than 1,000 caribou, and occupy their own established ranges.

The Beaver Mountains Herd may have declined considerably during the last 2 years. This observation is based on an 18 June 1985 census that entailed counts from the ground and from aerial photos. Although most of the radio-collared caribou were in the groups counted, it is possible that a large segment of the herd was missed, since only 879 caribou were observed. Based on previous surveys, the herd was estimated to number at least 1,000-1,200. Calf production was low, and although hunting has been light, predation is relatively heavy. Consequently, a herd increase is not expected in the near future. The Sunshine Mountain Herd has declined during the last 2 years. We base this conclusion on a 19 June 1985 census that consisted of counts from the ground and from aerial photos. During the survey, 460 caribou were counted in the Sunshine Mountains, and a limited number of caribou were observed to be widely dispersed in the adjacent timbered lowlands. The herd probably numbers between 500 and 600 caribou. Because of very low calf production and survival (5 calves:100 cows), continued decline of the herd is expected.

The Big River Herd was widely dispersed during calving and no population counts were obtained during this reporting period. The segment that moved into the upper Swift River drainage last year apparently did not rejoin the main Big River Herd, and the population remains much lower than it was 2 years ago.

Population Composition

Thirty calves:100 cows and 4 yearlings:100 cows were observed in the Beaver Mountains Herd in mid-June 1985. In the Sunshine Mountain Herd only 5 calves:100 cows were observed in mid-June. Approximately half of 66 cows observed in mid-June 1985 had distended udders. Using udder condition in mid-June as an indicator of birth rate may lead to gross underestimates of the actual number of births. Cows that give birth but lose calves during the 1st few days of life do not have distended udders at the time of surveying; as a result, they are indistinguishable from cows that did not give birth. Deep snow on the winter range from mid-December to mid-May had a very adverse effect on overwinter calf survival and possibly on production in spring 1985.

Seasonal Concentrations and Movements

Until early winter, distribution of the Big River Herd was similar to that described in previous Survey-Inventory reports. An exception was a group that moved to the upper Swift River and did not rejoin the main herd. Snow depth often exceeded 36 inches in late December and much of January on the principal wintering grounds used by most of the herd through February.

In mid-January, at least 110 caribou moved to the Farewell area where snow was rarely deeper than 12 inches. Most of the remaining caribou moved to the Farewell area by early March. However, at least 140 caribou remained in the lower Middle Fork area where snow depth often exceeded 40 inches through mid-April. Caribou appeared to be feeding mainly on arboreal lichens in this area. These caribou moved to the Farewell area in late April.

Nearly all the caribou had left the Farewell area by May 10. Approximately half of the caribou went to the traditional calving grounds on the upper Big River and the rest dispersed into the Bear Creek burn, which was mostly under water during the calving season. Why the animals moved to a wet area to calve rather than remain in the Farewell area is unknown. By mid-June, most of the caribou were either in the foothills of the upper Big River or in the black spruce forest near Lone Mountain.

The Beaver Mountains Herd remained widely dispersed through the summer and fall, contrary to their usual pattern. In early winter most caribou were near the Iditarod Lakes where snow depth averaged less than 1 foot prior to the heavy snows of mid-December. Following the December snows, the caribou moved to the foothills on the northwest end of the Beaver Mountains; these foothills were windblown most of the winter and spring. Calving and postcalving movements were traditional.

Most of the Sunshine Mountain Herd calved on the Nixon Fork flats in 1984 and remained there through early winter. The heavy snow in December apparently caused most of the herd to move northeast of the Sunshine Mountains where they remained until early May. Nearly all of the herd calved on snow-free ridges of the Sunshine Mountains in 1985.

Mortality

Caribou harvest reports have been of limited value for assessing harvest because many hunters do not comply with reporting requirements. Reminder letters were not sent to hunters who failed to return harvest reports so the reported take for all herds underestimates actual harvest.

The Beaver Mountains Herd was widely dispersed during the hunting season and few caribou were accessible to hunters. Six hunters reported taking 2 caribou. Discussions with hunters and guides in the area reveal that the estimated take was probably 10-15 caribou, approximately half the normal annual harvest. Predation by bears and wolves was probably the greatest source of mortality for this herd.

Thirteen bulls were reported taken during the fall from the area normally occupied by the Big River Herd. An additional 13 bulls were taken along the upper Swift River. Caribou taken in the Swift River drainage were assumed to be from a segment of the Big River Herd that moved to this area in 1983, but Mulchatna Herd caribou also occur in this area.

No caribou were reported taken near McGrath or Nikolai during the winter season. Both the fall and winter take were down considerably from those of previous years. The reduced fall harvest was due to fewer caribou being present in the northern foothills of the Alaska Range during fall. Most caribou wintered near Farewell in Subunit 19C where the season was closed. Although most of the herd wintered near Farewell where snow accumulation was light, some caribou wintered on the flats and winter mortality was probably greater than in prior years. A radio-collared cow that wintered in deep snow on the flats died between mid-January and early March.

Forty-two hunters reported taking 28 caribou from the Rainy Pass Herd, and the estimated harvest of 40-50 caribou was similar to harvests of recent years. This herd was widely dispersed in the upper drainages of the South Fork of the Kuskokwim, Post, and Happy River areas during fall 1984. Rainy Pass caribou were most frequently taken by sheep and moose hunters.

Seven caribou were reported taken from the Tonzona Herd; 2 were taken from the Kuskokwim Mountains. The actual kill in both areas probably totaled less than 15 caribou.

Management Summary and Recommendations

Most of the small caribou herds in Units 19 and 21 have declined in recent years. The Sunshine Mountain Herd has essentially been unhunted since 1976 when the winter hunting season was eliminated. Nevertheless, this herd has continued to decline. Because of very low calf survival, it is expected to continue declining. Predation on this herd was particularly heavy during this report period.

The Big River and Rainy Pass Herds are the most heavily utilized by hunters.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20A

HERD: Delta

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

A population estimate conducted during July 1985 indicated the Delta Caribou Herd continued to grow; the herd now numbers approximately 7,700 animals. The June 1984 population estimate was approximately 6,500 caribou.

The Yanert Herd is believed to contain a postcalving population of 500-700 caribou. A population estimate was not made in 1985 because the caribou were not sufficiently aggregated the day of the attempted census.

Population Composition

During sex and age composition surveys conducted on 17 October 1984, 36 calves per 100 cows (20% of herd) and 42 bulls per 100 cows (24% of herd) were classified ($n = 1,093$). No attempt was made to classify yearlings in the herd. The bull:cow ratio declined from 54 bulls:100 cows observed in 1983. Similarly, the calf:cow ratio declined from the 1983 level of 46 calves:100 cows. Composition surveys were not conducted in the Yanert drainage.

To obtain an index of yearling recruitment, a fixed-wing aerial count was conducted in early May as caribou migrated to the calving area. The survey revealed that short yearlings composed 34% of the herd, about the same as in 1983. The apparent increase in the proportion of calves between October and May was probably caused by sampling error and segregation rather than by errors in the fall composition surveys. Over-winter survival of the herd's calf component was excellent.

Mortality

A registration permit hunt was held for the Delta Caribou Herd in 1984 with the season scheduled for 20 August-20 September

and 1 February-31 March. A harvest quota of 300 caribou for each season was established by the Board of Game. The season was closed by emergency regulation on 24 August when over 400 animals had been taken. Because of the potential for an overharvest, the season was not reopened for the winter season. The number of permits issued was 1,665.

Harvest reports revealed the take of 413 caribou comprised 258 males (63%), 153 females (37%), and 2 of unknown sex. Residents composed 95% of successful hunters. Hunters using 3-wheeler type vehicles took the most caribou (215). Hunters using aircraft and off-road vehicles other than 3-wheelers took 134 and 33 caribou, respectively. Boats and horses were also used, but hunters using these modes of access only took 20 caribou.

Most of the harvest came from the Totatlanika, Wood, and Nenana River drainages where 228, 67, and 53 caribou were taken, respectively.

The Yanert drainage, which is not part of the registration permit area, was scheduled for a general hunting season from 10 August through 31 March. The emergency closure of the Delta Caribou Herd shifted some hunting pressure to the Yanert drainage, and by 8 February, after 99 caribou had been taken, the Yanert drainage was closed to caribou hunting by emergency regulation. The Yanert caribou harvest consisted of 77 males and 22 females. Tables 1 and 2 summarize harvest information for the Yanert River drainage.

Because of its controlled use status, the Yanert River drainage is becoming an increasingly popular hunting area for hunters using horses for transportation. To a lesser extent the same is true of hunters traveling by dog team.

Management Summary and Recommendations

The accessibility of the Delta Caribou Herd, combined with high hunter interest in caribou hunting, forced an early closure of the scheduled hunting season. Despite the short, 5-day season, the fall harvest quota of 300 that was established by the Board was exceeded by 113 caribou. It is apparent that other restrictions must be applied to the Delta Caribou Herd to retain hunting seasons of reasonable length and quality.

Because of access restrictions governing the Yanert drainage and the relative inaccessibility of caribou in the area, liberal seasons can be continued without fear of an overharvest. Harvests in the Yanert should be maintained at 50 or fewer animals.

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Table 1. Yanert River drainage caribou harvest, 1984-85.

Transportation	Males	Females	Total
Aircraft	16	4	20
Horse	32	2	34
Boat	1	1	2
Highway vehicle (includes dog team and foot)	28	15	43
Total	77	22	99

Table 2. Caribou harvest by month, Yanert River drainage, 1984-85.

Month	Harvest
August	41
September	34
October	6
November	4
December	2
January	9
February	3
Total	99

CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20D

HERD: Macomb

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The Macomb Herd was estimated to contain approximately 700 caribou in fall 1983. No refinement of the estimate was made during this report period. Composition data suggest that the herd may be increasing.

Population Composition

The herd was surveyed on 1 December 1984 to determine population composition. Late snowfall and poor weather conditions precluded a survey during the rut in early October. Three hundred fifty-one caribou were classified in the Knob Ridge area. We observed 23 bulls per 100 cows, including 12 small bulls per 100 cows, and 40 calves per 100 cows. This is the largest proportion of calves ever observed in the herd at this time of year. The observed bull:cow ratio probably underestimated the true bull:cow ratio because older bulls are normally segregated from the main body of the herd at this time of the year.

A calving ground survey was conducted on 11 June 1985. A fixed-wing aircraft was used to locate groups of caribou associated with radio-collared caribou. Groups were visually counted and then photographed for later analysis. Photo analysis revealed 142 calves and 374 caribou older than calves, or 38 calves per 100 caribou older than calves.

Mortality

A permit drawing hunt composed the only quantified mortality affecting the Macomb Herd. Three hundred fifty-nine applications were received for 140 permits. Among permittees, 83 hunters reported harvesting 20 bull caribou. Most hunters

walked to hunting areas, but most successful hunters used horses for transportation. Both successful and unsuccessful hunters spent an average of 4 days in the field. Residents of Subunit 20D composed 35% of all hunters and 50% of the successful hunters. No caribou were harvested west of the Johnson River.

Movements

Two cow caribou were fitted with radio collars in December 1984; this brought the number of collared Macomb caribou to 10. Radio-collared caribou were relocated during August, October, December, and June of this reporting period. One collared caribou was relocated east of the Robertson River, approximately 12 miles southeast of Knob Ridge, which indicates an expansion of the known range of the herd.

Management Summary and Recommendations

Data obtained recently suggest that the number of caribou in the Macomb Herd may be increasing. Initial calf mortality appears to be reduced from previous years, as indicated by the high number of calves seen during the December survey. Wolf control efforts and grizzly bear harvest in recent years may have combined to allow an increase in calf survival. Although dissimilar survey methods in spring 1984 and spring 1985 preclude precise comparison, it appears that neonatal calf survival continued to be relatively high in 1985.

Priority work on this herd for the next report period should be to: 1) obtain a reliable population estimate; 2) obtain early October composition data; 3) maintain the present number of radio-collared caribou; 4) continue investigation of the causes of summer calf mortality; and 5) determine the annual distribution of the herd.

Current regulations pertaining to hunting are appropriate, but if calf survival continues to be relatively high, it may be possible to liberalize regulations in the future.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20E

HERD: Fortymile

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The Fortymile Caribou Herd was last photo-censused in June 1984; at that time the herd contained a known minimum of 12,356 caribou. The herd was likely in excess of 13,000 animals. No census was conducted during spring 1985, but a higher calf:100 cow ratio was observed in June 1985 than in 1984. This suggests the herd may have been larger in June 1985.

Population Composition

No fall surveys of the Fortymile Caribou Herd were conducted in 1984; however, late winter and spring surveys were accomplished in 1985.

A short yearling survey was conducted with a Hughes 500C helicopter on 27 April 1985, and 876 caribou were classified. The observed yearling:cow ratio was 32:100 compared with 27:100 in 1984 which indicated good overwinter survival of the 1984 cohort.

A composition survey was conducted in June 1985, during which 3,803 caribou were classified. The observed calf:cow ratio was 48:100; the ratio in 1984 was 45:100. This is the best calf production and survival observed in this herd in over 10 years.

Seasonal Concentrations and Movements

The herd was widely distributed throughout the mountainous portion of its range in western and northern Subunit 20E during summer 1984. However, an unseasonably early snowstorm in late August precipitated an early fall migration eastward to the Taylor Highway near Mount Fairplay. The herd then

turned north and crossed the highway toward Prindle Volcano. The herd wintered throughout the Fortymile River drainage, and some caribou ventured as far east as western Yukon Territory.

Mortality

Predation by wolves, grizzly bears, and golden eagles is believed to be the primary mortality factor limiting growth of the Fortymile Herd. This herd has shown much higher calf survival and yearling recruitment since the Department conducted wolf control during 1981-82. Even though wolf control was stopped in 1983, wolves had not reached precontrol numbers by March 1985. The caribou:wolf ratio is presently estimated to be 100:1. This is a result of lower wolf numbers and higher caribou numbers compared with the situation prior to wolf control.

During the reporting period, snow depth exceeded 40 inches over much of the winter range, and deep snow may have caused increased overwinter mortality. However, extensive aerial reconnaissance in spring 1985 and monitoring radio-collared caribou did not indicate high mortality.

Hunters reported taking 245 bull caribou during August and early September 1984. Of these, 119 were reported by hunters using aircraft, and the remainder were killed by hunters using the road system for access. A local transporter reported carrying 193 caribou. Comparing this number with the 119 reported on harvest tickets indicates that a maximum of 62% of hunters using aircraft complied with reporting requirements. Hunter contacts along the Taylor Highway on 31 August indicated approximately 120 caribou were taken, whereas harvest ticket returns report only 76 taken; again, only a 63% reporting rate. If the 63% rate of reporting is accurate, approximately 388 caribou were actually taken.

Accidental take of cow caribou and wounding loss along the Taylor Highway during the crossing on 31 August 1984 may have resulted in an additional 40-60 animals killed but not reported. Numerous citations were written by Fish and Wildlife Protection personnel along the Taylor Highway. Two emergency orders were issued to ensure that the maximum harvest of 500 bull caribou was not exceeded. One emergency order stopped the road system hunt on 31 August, and a second stopped hunting throughout the area on 10 September.

Management Summary and Recommendations

At last count, the Fortymile Herd numbered at least 12,356, up from an estimated 4,000 to 6,000 in 1974 and 8,000 in 1981. The herd very likely contained more than 14,000 in June 1985

as a result of good yearling recruitment of the 1984 cohort and a strong calf crop in 1985. A significant reduction in wolf numbers from a successful wolf control program during 1981-82 contributed significantly to the increased rate of herd growth in recent years. Because the herd is presently far smaller than the herd objective of 50,000, resumption of wolf control is strongly recommended.

Unseasonably early snowfall caused an early fall migration which resulted in an unexpectedly high harvest by early September 1984. Overharvest was prevented by closing the hunting season by emergency order. The take was thus limited to approximately 450 caribou (3% of the herd). A bag limit reduction from 2 to 1 bull during the early season should reduce the probability of further emergency closures. In June 1985, the Board of Game designated a late season hunt for Alaska residents only (Tier I). If the present subsistence hunting regime for road system caribou continues, it may become necessary to further restrict hunting pressure on the Fortymile Herd, as significant hunter displacement from Tier II caribou hunts to the Fortymile Herd is anticipated. Annual harvests above 3% could slow or stop growth of the Fortymile Herd before the population objective of 50,000 is achieved.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 22A, 22B, 23, 24, and 26A

HERD: Western Arctic

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The most recent photocensus of the Western Arctic Herd (WAH) was conducted in 1982 and accounted for 171,699 caribou. Census efforts were unsuccessful in 1984 and 1985 because of poor weather and failure of caribou to aggregate suitably. On 2 July 1984, most of the herd was loosely aggregated near Windy Lake and on the coast west of the Pitmegea River. However, large numbers of caribou were scattered in the Kukpuk and Ipewik River drainages to the south. On 3 July weather was warm and calm, and an enormous aggregation (probably in excess of 100,000 caribou) began forming on the coastal uplands between Cape Lisburne and the mouth of the Pitmegea River. Caribou were rapidly converging on this aggregation from all directions, particularly from the south. We anticipated ideal circumstances for aerial photography on 4 July. However, an occluded weather front centered west of Cape Lisburne brought rapidly falling temperatures, rain, and strong southwesterly winds. The large aggregation dispersed, and many caribou drifted northeast across the Pitmegea River, past Cape Sabine, and up the coast toward Pt. Lay. Much of the herd remained in the Pitmegea River area until 8 July when rapid easterly migration began. Wind, rain, and snow prevailed through 9 July when photocensus efforts were abandoned. However, we continued to fly reconnaissance through 17 July. By 12 July most of the herd was in the mountains between the headwaters of the Utukok River and Driftwood Creek. By 17 July, large numbers of caribou had migrated into the Noatak River valley between the Nimiuktuk and Anisak Rivers.

In 1985, telemetry-assisted aerial reconnaissance and satellite location of 2 caribou (D. Craighead, pers. commun.) indicated that the WAH executed a typical counterclockwise migration from the calving grounds to the Lisburne Hills and then east along the northern foothills of the DeLong Mountains to

Liberator Lake and beyond. The herd moved from core calving areas in the Utukok uplands and foothills east of Pt. Lay toward the Lisburne Hills in mid- to late June. Many caribou reached the Lisburne Hills and began moving east during the last week of June. Between 1 July and 9 July the herd moved steadily east from Windy Lake to the foothills southwest of Liberator Lake.

On 1 July, J. Trent observed a large column of caribou extending from Windy Lake to 5 miles east of Eagle Creek, with the major concentration at the front of the easterly-moving column. By 5 July this column had crossed the Utukok River and was in the Driftwood Creek drainage. Until 5 July, weather had been cool and overcast. On 5 July weather improved, and we assembled personnel and aircraft at Eagle Creek on the afternoon of 6 July. On the evening of 6 July the herd was aggregated in numerous dense bands scattered from Tupikchak Mountain to the upper Colville River. (One aggregation of about 10,000 animals was found as far west as Cape Sabine.) On 7 July a photocensus was attempted. Aggregations were dense but numerous and widely scattered from Tupikchak Mountain to Noluck Lake. We believe that about 50% of the herd was photographed before heavy cumulus buildup and rain caused the largest aggregation at Noluck Lake to disperse.

Caribou were very reactive to overflight with the Beaver at 1,500 feet above ground level, despite the fact that mosquitoes were not numerous. The afternoon of 6 July was clear, calm, and about 70 F at Eagle Creek, but the use of insect repellent was unnecessary. By comparison, mosquitoes were extremely troublesome in July 1982, yet caribou often remained recumbent during overflights by the photo aircraft. These observations contradict the hypothesis that reactivity of caribou to aircraft is positively correlated with mosquito harassment.

On 8 July, cool, windy weather returned and the entire herd moved southeast of Noluck Lake and migrated rapidly east. By 9 July most caribou had crossed the Nuka River, and large concentrations were observed on Rampart Creek (a tributary of Jubilee Creek).

The apparent annual rate of increase of the WAH from 1980 to 1982 was 11%. Assuming a continuation of this trend, the WAH would have numbered 235,000 by July 1985. However, short yearlings composed a smaller proportion of the herd in spring 1985 than in any year since 1978, suggesting that herd growth from 1984 to 1985 may have been less than 11%. In any case, we believe that the WAH is now in excess of 200,000 animals because of low to moderate predation rates, modest harvests, and high recruitment in recent years. Another photocensus effort is scheduled for July 1986.

During 1982-84 increasing numbers of caribou wintered on the eastern Seward Peninsula. This trend did not continue in 1984-85. No more than 10,000 caribou were ever observed west of the Buckland River in 1984-85, and the number of animals wintering in the Buckland River lowlands, Selawik Hills, and eastern Seward Peninsula probably did not exceed 15,000. The Selawik Hills received the lightest use in many years, and caribou were not observed there in substantial numbers until late winter. By 6 November 1984, only 1 radio-collared caribou was located south of the Selawik River. Four radio-collared animals were found on the Selawik River, and the remaining 25 radio-collared caribou were in or north of the Brooks Range. Of these, 1 was in the Baird Mountains, 3 were on the upper Noatak River, 3 were in the DeLong Mountains, 2 were in the Central Brooks Range, 3 were in the northern foothills of Subunit 26B, 3 were on the Lisburne Peninsula, and 10 were in Unit 26A north of the Colville River. The relatively low number of caribou on southern winter ranges in 1984-85 probably resulted from the late arrival of snow and freeze-up on the North Slope in fall 1984.

Some caribou wintered in the Nulato Hills of eastern Norton Sound; residents of Unalakleet, Shaktoolik, and St. Michael reported harvesting 208. Also, 2 reindeer with NANA ear-tags were killed near Kotlik (Unit 18) in early 1985, suggesting that reindeer accompanied WAH caribou to that area.

The relatively few caribou that crossed the Kobuk River in fall 1984 did so by early September. As a result, a mid-September effort to radio-collar swimming caribou was largely unsuccessful. We instrumented 2 cows in mid-September rather than the expected 10. We intend to instrument 27 cows in August and September 1985 in a continuing effort to maintain 30-40 functioning transmitters in the WAH. Radiotelemetry is indispensable for efficiently conducting many phases of the Survey-Inventory program.

Population Composition

On 8-9 July 1984, we conducted ground composition counts of caribou dispersing through Eagle Creek from the postcalving aggregation. Of 4,624 caribou sampled, only 735 (16%) were calves. This result is comparable to, or below, the poorest calf production for caribou herds in the Canadian arctic but similar to some years prior to 1970 for the WAH. Because this sample was drawn from among 20,000-30,000 caribou dispersing from the main postcalving aggregation, we believe it was representative of, or even overestimated, calf percent in the entire herd.

Of 7,207 caribou counted during April 1985 composition surveys, 1,275 (18%) were short yearlings (Table 1). This value was not markedly different from July 1984 counts (16%) and suggests either sampling error or comparable mortality rates among calves and adults from July through April. The latter possibility is consistent with the findings of Davis and Valkenburg (in press) in at least 1 year of their study and may result partly from hunter selectivity for adults. For example, July 1978 counts tallied 29% calves while April 1979 counts tallied 26% short yearlings (an insignificant difference), indicating that the overwinter calf mortality rate was similar to that of adults. The decline in short yearlings observed in 1984-85 (18% compared with 23% in 1983-84) is probably not a cause for concern. For example, April 1978 counts indicated 17% short yearlings, and the herd was growing rapidly at that time. Data presented in Table 1 and similar data for other years indicate a high degree of herd segregation in spring. Sampling error is undoubtedly very large, and fewer than 20,000 caribou are probably inadequate for determining short yearling percentages without stratification.

In April 1985 we used 35 mm aerial photography to classify 1,093 caribou in the Selawik Hills. This method proved satisfactory for distinguishing short yearlings from adults. Useful identification criteria included size, relative length of face, absence of neck mane, and presence of short spike antlers. Many workers assume short yearlings can be easily distinguished from older animals in spring on the basis of body size. However, Skoog (1968) found that total body length of some short yearlings exceeded total body length of some 22-month-old animals. Therefore, substantial observer bias in making short yearling counts may occur. We believe aerial photography may help increase sample sizes, as well as provide a means for measuring observer bias.

On 4-6 June, we conducted aerial surveys of the calving grounds and attempted to radio-locate all instrumented caribou. Flight paths included the northern Brooks Range from the west coast to the Killik River and the entire North Slope south and west of the upper Ketik River. Bad weather prevailed over the remainder of the North Slope. Weather in the Utukok uplands was warm, snow cover was nonexistent, and the tundra was very dry. Calving caribou were observed virtually everywhere on the flight paths north of the mountains, but major concentrations were observed in the Eskimo Hill/middle Utukok River area, on Carbon Creek, on the upper Colville River, and in the low hills directly east of Point Lay. Peak calving appeared to have occurred prior to 6 June. Of 16 radio-collared cows observed directly, 8 had calves by 4-6

June. Of those without a calf, 6 still retained hard antlers, and 1 cow without hard antlers was obviously pregnant. The remaining cow had no calf or antlers and did not appear pregnant. Overall, reproductive success appeared high, and distribution of caribou on the traditional calving ground was normal.

Mortality

We have made no attempt to estimate natural mortality in the WAH but defer to Davis and Valkenburg (in press). Wolf predation appeared to be low throughout most the range of the herd, although moderate predation probably occurred in some areas. Wolf density is lowest on the North Slope and highest on southern winter ranges, particularly those south of the Unit 23 boundary (where few caribou wintered in 1984-85). However, several observers reported a substantial increase in wolf abundance in the Delong Mountains and adjacent areas of the Noatak River valley. The same observers also believed, and we concur, that the number of overwintering caribou in this area was much larger in 1984-85 than normal. Therefore, the apparent increase in wolves may have resulted from immigration rather than from an increase in absolute numbers. Nevertheless, a significant increase in wolves within the range of the WAH is clearly possible, and is expected as a result of herd growth.

In 1984-85 the reported harvest was 2,513 caribou (Tables 2, 3, and 4) compared with 1,249 in 1983-84. The increase in reported harvest resulted from implementation of a simplified reporting system and not from an increase in the kill. In fact, fewer caribou were available to hunters south of the Brooks Range in 1984-85 than in 1983-84, and the actual harvest in that area is more likely to have declined as a result.

Despite a 100% improvement in reported harvest, actual harvest by local residents remains largely conjectural. Nevertheless, greatly improved harvest data make it possible to construct the following estimate. Two basic assumptions are made: 1) The number of hunters is equal to the number of housing units as determined by the 1980 census, and 2) Each caribou hunter killed the mean number of caribou reported taken by hunters from his game management unit (GMU) or village. The crudest estimate was obtained by performing the calculation at the GMU level. The numbers of housing units in GMU's 22, 23, and 26A are 1,579, 1,486, and 1,202, respectively, excluding villages that do not harvest caribou (e.g., Savoonga). Reported kill for GMU's 22, 23, and 26A was 1.3, 3.6, and 4.6 caribou per hunter, respectively (Table 2). The total harvest by this method is $1,579 \times 1.3 + 1,486 \times 3.6 + 1,202 \times 4.6 = 12,932$

caribou. When the calculation is carried out on a village-by-village basis the result is 11,404 caribou. Both of these techniques overestimate harvest near regional population centers because these population centers contain a disproportionately large share of housing units but are less reliant on caribou than rural villages. For example, multiplying the number of housing units in Nome by the mean number of caribou reported killed by hunters from Nome results in an estimated harvest of 811 caribou. However, Nome hunters reported killing only 120 caribou, and we believe reporting accuracy was very high. Consequently, we have revised the total estimate downward from 11,404 to 10,750.

Overestimation may also result from the fact that not all households contain caribou hunters; in many villages a few individuals hunt for many families. Also, housing units were included in the 1980 census result if they were vacant but intended for occupancy. On the other hand, underestimation may result from the fact that some households contain more than 1 caribou hunter. We believe an unknown, but perhaps significant, number of hunters under-reported their actual harvest in the belief that higher reporting would result in more restrictive regulations.

In the absence of more complete information, further refinement of this estimate is not productive. The actual harvest may have been significantly higher or lower than 10,750 caribou.

Management Summary and Recommendations

Maintaining a postcalving herd of at least 200,000 caribou remains the highest management priority for the WAH. Results of the 1982 photocensus and current composition data suggest that the WAH is above the desired minimum.

The highest Survey-Inventory priority is to complete a photocensus in July 1986. No census was undertaken in 1984 because of poor weather, and the 1985 census was incomplete because of poor weather and failure of caribou to aggregate suitably. The 2nd Survey-Inventory priority is to obtain representative short yearling counts in spring 1986. We intend to continue investigating the feasibility of using aerial photography to increase sample size and control observer bias.

Because all aspects of WAH population assessment depend on radiotelemetry, replacement of lost and expired collars is essential. Because of the large size of the herd, it may no longer be possible or practical to locate most postcalving aggregations during photocensus reconnaissance without the use

of a large number of radio collars. Our attempt to census the herd in 1985 confirmed the need for more radios. Many relatively small aggregations were scattered over an enormous area; 1 aggregation of about 10,000 caribou would never have been found had it not contained a radio-collared animal. We will attempt to radio-collar 27 additional caribou during the 1985 fall migration by capturing swimming caribou near Onion Portage.

A statistical theory of the telemetry-assisted photocensus needs to be developed. The number of radio collars necessary for locating most (all but an arbitrarily small proportion) of the herd should be determined. Adequate sample size will depend upon the number and sizes of aggregations, as well as confidence level and error magnitude. A statistical model incorporating these variables should be developed and tested by computer simulation.

In March 1984 the Board of Game, at the recommendation of Game Division staff, adopted a simplified reporting system for harvesting WAH caribou. The previous system allowed the taking of 5 caribou on a harvest ticket, and the taking of additional caribou by registration permit (5 per permit, the number of permits unlimited). The new system allows the taking of an unlimited number of caribou on a single harvest report. Hunters are required by regulation to register (fill out an overlay) and are then mailed a report card at the end of the season. Card return is not mandatory. This system was adopted after extensive staff, advisory committee, and public review of several alternatives. The public had frequently pointed out that the previous system was so complex that compliance was difficult, and we believed that a greatly simplified system would significantly enhance reporting. As an interim goal we strove to double the reported harvest of 1982-83 and 1983-84.

The following is the timetable we followed in administering the new harvest reporting system:

Late July	Distribute overlays to vendors.
August and September	Distribute letters to all boxholders in the range of the WAH explaining the new system. Distribute posters to license vendors and village stores.
July-November	Prepare news releases (radio and newspaper) explaining new reporting requirements.

September-March	Pay vendors (\$1 per overlay). Enter overlays on "WAH84" (dBase III file for tracking harvest data).
24 April	Mail report cards to all registered hunters, including letter of explanation.
14 May	Mail 1st reminder letter (2nd card) to all nonrespondents.
5 June	Mail 2nd reminder letter (3rd card) to all nonrespondents.
April-May	Enter harvest data on "WAH84".

Overlays and report cards were entered on "WAH84" which enabled sorting and summing by residency, vendor, and GMU. Several dBase III procedures (programs) were written to automate data summary and analysis.

During this reporting period, 2 other harvest reporting systems were used to some extent for the WAH: 1) a standard harvest ticket intended only for Subunit 21D but mistakenly issued elsewhere, and 2) an arctic caribou harvest report issued in Fairbanks for the Western Arctic, Central Arctic, and Porcupine Herds. In 1984-85, 1,063 WAH overlays were issued, as well as an unknown number of harvest tickets and arctic caribou overlays (Fairbanks). Most local residents were issued the WAH overlay, and so comparison with 1983-84 harvest ticket issuance by local vendors can be made. In 1983-84, vendors within the range of the WAH issued 1,101 harvest tickets compared with 1,063 overlays in 1984-85. Therefore, the new system did not significantly improve issuance.

In 1983-84, hunters returned 503 harvest reports or reminder letter reports and 4 permit reports, i.e., the return rate for harvest tickets with reminders was less than 47% (503/1,101). Some harvest tickets were issued outside the region, so 1,101 is an underestimate of total harvest ticket issuance for the WAH. In 1984-85, hunters returned 539 report cards (52%) on the initial mailing, 771 (74%) with 1 reminder, and 864 (83%) with 2 reminders. These return rates were calculated from 1,037 overlays because 26 cards could not be delivered by the post office.

In 1983-84 the total reported harvest from the WAH was 1,249 caribou. In 1984-85 the reported harvest was 2,513 caribou. Of these, 2,336 were reported on WAH cards, 73 on harvest tickets, and 104 on arctic harvest reports (Fairbanks).

Returns and harvest by residency and unit of issuance are summarized in Tables 2-6. Issuance by vendor is presented in Table 7. Local residents took 2,197 caribou (87%), and Alaska residents took 2,408 caribou (96%). Fall harvest (before 1 Jan) reported on WAH cards was 1,260; spring harvest was 1,076.

Mean harvest by hunters reporting on WAH cards was 2.7 caribou. Those reporting without reminder letters killed 2.6; those responding to the 1st reminder letter killed 3.1; and those responding to the 2nd letter killed 2.5. These data do not contain a significant nonresponse bias. Among reporting hunters ($N = 864$), 439 were successful (51%), and mean kill per successful hunter was 5.3 caribou. Lack of response bias suggests that 100% return of report cards would have produced an estimated harvest of 3,047 caribou.

The relative success of the new WAH reporting system appears to be due both to higher rate of return and higher reported harvest per hunter. Higher rate of return is partially due to the fact that report cards were distributed at the end of the season, so people had less chance to forget or lose the report card during the season. Also, follow-up included 2 reminder letters rather than one. Finally, the card was very simple to fill out, requiring only 2 numbers (fall kill and spring kill).

In 1983-84 only 4 people reported taking more than 5 caribou, and no one reported taking more than 10. In 1984-85, 1 hunter reported taking 60 caribou; 1 hunter reported taking 45; 4 hunters reported taking 30-40 caribou each; 8 hunters reported taking 20-30 each; 38 hunters took 10-20 each; and 68 hunters took 5-10 each. In all, 120 hunters reported taking more than 5 caribou each. Clearly, the simplified system has encouraged more complete and accurate reporting.

Report issuance and return are separate problems associated with harvest reporting. Our system has made progress toward solving the return problem but not the issuance problem. Issuance by area and vendor was extremely variable, ranging from a high of 174 overlays in Unalakleet to a low of 0 in Stebbins, Kivalina, Buckland, and Nuiqsut (Table 7). As in past years, issuance and reported harvest were highest in Unit 23 and lowest in Unit 26A. This discrepancy was not a reflection of caribou availability because most of the WAH wintered on the North Slope in 1984-85. Future improvements in reporting will depend in part upon increased effort to issue overlays in Barrow and in villages where the license vendor system is inoperable.

Continuing to improve harvest estimation is a high management priority. We achieved an interim goal of doubling reported harvest during the 1st year of the simplified reporting system. We believe greater effort at overlay distribution could easily result in a 2nd doubling of reported harvest. Several villages where overlay issuance was very low (Table 7) typically harvest large numbers of caribou. These villages need to be assimilated into the reporting system.

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Table 1. WAH spring short yearling counts, 1985.

Survey area	Date	Total sample	Short yearlings	
			No.	% Total
Selawik Hills ^a	3/22/85	1,093	142	13
Waring Mts.	4/19/85	222	5	2
Squirrel R.	4/12/85	479	2	0
Noatak R.	4/11/85	492	62	13
Noatak Village - Kelly R. ^b	4/05/85	2,287	560	24
Lisburne Peninsula	4/19/85	1,438	219	15
Anaktuvuk R.	4/23-26/85	554	105	19
Howard Pass-Chandler R.	4/23-26/85	572	175	31
Admiralty Bay	4/23-26/85	70	5	7
Totals		7,207	1,275	18

^a Determined by aerial photography (35 mm).

^b Conducted by J. Hemming of Dames and Moore Consulting Engineers (unpubl. data).

Table 2. Summary of Western Arctic Herd harvest reporting system, by Game Management Unit, 1984-85.

Unit ^a	Overlays issued	Reports returned	Kill	Kill per hunter
22	351	303	404	1.3
23	517	406	1,455	3.6
26A	118	89	410	4.6
Anchorage, ADF&G	77	66	67	1.0
Totals	1,063	864	2,336	2.7

^a Indicates location of overlay issuance.

Table 3. Characteristics of Western Arctic Herd harvest reported on arctic caribou harvest reports^a, 1984-85.

Residency	Reports returned	Kill	Kill/hunter
Alaska resident	48	84	1.8
Local resident	5	16	3.2
Nonresident	17	20	1.2
Totals	65	104	1.6

^a Available in Fairbanks and applicable to all arctic herds.

Table 4. Summary of Western Arctic Herd harvest reporting on standard harvest ticket by Game Management Unit, 1984-85.

Unit	Reports returned	Kill	Kill/hunter
22	4	1	0.3
23	58	72	1.2
26A	0	0	- -
Totals	62	73	1.2

Table 5. Summary of Western Arctic Herd reporting on standard harvest ticket by residency, 1984-85.

Residency	Reports returned	Kill	Kill/hunter
Alaska resident	46	56	1.2
Local resident	0	0	- -
Nonresident	16	17	1.1

Table 6. Summary of Western Arctic Herd harvest reporting system by hunter residency, 1984-85.

Residency	Overlays issued	Reports returned	Kill	Kill per hunter
Alaska resident	991	794	2,268	2.9
Local resident ^a	844	674	2,181	3.2
Nonresident	72	70	68	1.0

^a Resides within range of WAH.

Table 7. WAH overlay issuance by vendor location, 1984-85^a.

Location	Overlays	Location	Overlays
Unit 22	351		
Nome, ADFG	72	Unalakleet	195
Nome, other	62	Golovin	5
Elim	3	White Mt.	0
Koyuk	5	St. Michael	4
Shaktoolik	5	Stebbins	0
Shishmaref	0		
Unit 23	517		
Ambler, ADFG	4	Kotzebue, ADFG	139
Ambler, other	29	Kotzebue, other	255
Buckland	0	Noorvik	8
Deering	33	Pt. Hope	1
Kiana	16	Selawik	22
Kivalina ^b	0	Shungnak	4
Noatak	1	Kobuk	5
Unit 26A	118		
Barrow, ADFG	15	Anaktuvuk	44
Barrow, other	59	Nuiqsut ^b	0
Wainwright	0		
Other	77		

^a Villages without a license vendor in 1984-85 are not listed.

^b License vendor not available after November 1984.

CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 25A, 25B, 25C, 25D, and 26C

GEOGRAPHICAL DESCRIPTION: Porcupine Herd

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The Porcupine Herd apparently remained stable at approximately 100,000 caribou during the 1960's and early 1970's. Since 1979, the Porcupine Herd has been increasing, and 135,284 caribou were counted during an aerial photocensus in July 1983. Adjusting for caribou missed on photos, the herd probably numbered between 145,000 and 148,000 caribou. No census was conducted during 1984. However, productivity and survival of calves from the 1983 cohort were high, and the Porcupine Herd probably continued to increase. Assuming continued herd growth of 6-8% per year, the Porcupine Herd was conservatively estimated at 150,000 caribou in July 1984.

Population Composition

No composition counts were conducted during this reporting period. Among 3-year-old or older radio-collared females, 23 of 31 (75%) gave birth to calves in June 1984, and all but 1 calf survived until 1 July. Only 4 of 60 radio-collared neonatal calves died during June 1984. Thus, initial productivity of calves appeared to be good, and early survival was excellent.

Mortality

Calf mortality was monitored by a radio-collaring study. Sixty newborn calves were fitted with mortality mode transmitters on 3 and 5 June 1984. Twenty-three (38%) died before their 1st birthday, and 2 (3%) were never located after September 1984, leaving at least 35 (58%) surviving. Most mortality occurred during 3 distinct periods: shortly after birth (17% of all mortality), fall migration (52%), and spring migration (17%).

Initial productivity was approximately 70 calves:100 cows. Assuming 60 bulls:100 cows and 40 yearlings:100 cows in 1984, and overwinter adult mortality of 10%, there would have been approximately 46 yearlings:100 cows in June 1985. The Porcupine Herd may have increased by approximately 13%.

Forty-eight people reported hunting Porcupine Herd caribou in Alaska during the 1984-85 season. In Unit 25, 33 of 43 hunters were successful and took 39 bulls, 3 cows, and 1 caribou of unknown sex. In Subunit 26C, all 5 hunters were successful and took 10 bulls and 1 cow. Only 9 hunters took more than 1 Porcupine Herd caribou.

As in past years, harvest by local residents was unreported. Caribou were widely available during July and from October through May. Deep, soft snow hampered snowmachine travel during late winter and spring, but most local residents had already filled their caches with caribou. Total subsistence harvest in Alaska was probably approximately 500-700.

Harvest in Canada may have been as high as 4,000, because Porcupine caribou were available near all traditional hunting villages and in the MacKenzie River delta area.

Management Summary and Recommendations

Despite relatively high overall harvest during this reporting period, the Porcupine Herd is probably still increasing in size. Census attempts in 1984 and 1985 failed. Completing a census in 1986 should be a high priority to confirm herd status.

Current seasons and bag limits are adequate to meet sport hunting demands. However, local residents will probably continue to take caribou opportunistically during the closed season, and hunters providing for large or extended families will take more than their individual bag limits. The Porcupine Herd can readily provide for all these uses. Much additional education effort is necessary before hunting regulations will be acceptable and enforceable for all parties involved.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT SUBUNIT: 26B

HERD: Central Arctic

PERIOD COVERED: 1 July 1984-30 June 1985

Season and Bag Limit

See Hunting Regulations No. 25.

Population Status and Trend

The Central Arctic Herd (CAH) has grown from approximately 5,000 caribou in 1975 to 13,000 (estimated by photocensus) in July 1983. Calf production and yearling recruitment have remained high and mortality has remained relatively low during this reporting period, an indication that the herd is still increasing.

Industrial development near Prudhoe Bay and the Trans-Alaska Pipeline continue to affect the local distribution of caribou, but there has been no detectable effect on herd productivity.

Population Composition

Surveys of the CAH calving concentration near the Kuparuk Development Area revealed excellent initial calf production in 1984 (Table 1). Counts in April 1985 of 48 short yearlings:100 cows suggested good overwinter calf survival. The ratio of 50 bulls:100 cows in April 1985 is lower than expected because areas typically used by segregated mature bulls were undersampled.

Mortality

One hundred eighty hunters reported harvesting 368 caribou, which is double the previous year's total. Because the harvest report card for Arctic caribou did not require listing Game Management Unit or area hunted for unsuccessful hunters, neither the total number of hunters nor the hunter success rate could be determined. Cows composed 15% of the harvest which was up from 4% in the previous year. Eighty hunters (44%) took 1 caribou each, while each of 10 hunters (6%) killed the maximum bag limit of 5 caribou.

Forty successful hunters used aircraft as their primary means of transportation and harvested an average of 1.4 caribou per hunter. The remaining 140 hunters used the Dalton Highway for access to the area and took an average of 2.2 caribou per hunter. Both figures for the mean number of caribou taken per hunter were the same as for the previous year.

As in previous years, most of the local subsistence harvest by Nuiqsut, Kaktovik, and Anaktuvuk villagers was unreported. However, total mortality was probably below the recruitment level and the herd has apparently continued to grow.

Management Summary and Recommendations

Extending the season and allowing the take of cows after 1 October has greatly increased the harvest. In previous years, virtually all caribou were taken during August and September. During this past year, however, only 14% of the total harvest occurred during this season, and the number of cows harvested increased from 6 to 50.

Although access to the Dalton Highway north of Disaster Creek is officially restricted to commercial traffic, sporadic staffing of the traffic check station and overall minimal enforcement of access restrictions have resulted in an increasing number of hunters using the Dalton Highway. However, the restriction on discharge of firearms within 5 miles of the highway is enforced. This has lessened the potential for a greatly increased take near the Dalton Highway during the early fall hunting season. An increasing number of hunters use snowmachines during winter and spring to take CAH caribou.

Subsistence hunting by local residents has apparently had little effect on CAH productivity. This has been the basis for liberalizing the regulations in GMU 26B. It was assumed that restricting the Dalton Highway to commercial traffic would minimize take by highway hunters. However, with hunting restricted on most other herds accessible from the highway system, we can expect more hunters will drive to the North Slope, especially if sporadic enforcement of the highway closure continues.

Although the combined mortality of the CAH remains below annual recruitment, harvests have doubled in each of the past 2 years. This trend is likely to increase. To accommodate both local subsistence users and increasing numbers of hunters using the Dalton Highway, I recommend that the number of caribou that may be transported out of Subunit 26B be restricted to 1 or 2.

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Table 1. Sex and age composition counts of the Central Arctic Herd, 1984-85.

Season	Cows		Calves			Yearlings			Bulls			Total
	No.	%	No.	%	Per 100 cows	No.	%	Per 100 cows	No.	%	Per 100 cows	
Calving (June 1984)	1,207	45	1,071	40	89	303	11	25	111	4	9	2,692
Spring (April 1985)	340	50	164	24	48	- ^a	-	-	179	26	50	683

^a Yearling classified as adult cows or bulls (yearlings are 12 months old during June counts and 23 months old during April counts).

APPENDIX A.

This summary is for a report that has been published as an ADF&G Caribou S&I supplement. Anyone wishing a copy of this report, contact Steve R. Peterson, ADF&G, P.O. Box 3-2000, Juneau, AK 99802.

Analysis of Nelchina Caribou Range

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SUMMARY

As a continuation of the Nelchina caribou (Rangifer tarandus) range relationships study, initiated in 1955 and last reported on in 1972, 38 range stations were examined during the summers of 1977 and 1983. Evaluations of plant species composition, height, percent cover, condition, and use were made for each site. Photos of sample plots were taken during all evaluations and compared for trend. Little use by caribou was apparent on other than primary lichen species. Lichen availability and condition varied greatly among portions of the Nelchina range. Much of the northern portion of the range plus the southwest corner, approximately one-third of the total area examined, provides good to very good lichen range but shows little utilization by caribou. A second one-third, encompassing the east-central and southern portions of the range, received moderate winter use and exhibits poor to fair lichen production. The last one-third, encompassing much of the western uplands, with history of near continuous heavy caribou use for over 30 years, supports a poor lichen standing crop. Examination of exclosures, on the other hand, indicated that this last area is potentially one of the best producers of lichens within the overall Nelchina range. Analysis of range condition over the past 25-30 years shows widespread lichen deterioration occurring throughout the 1960s. During the same period herd size increased, peaked, and began declining in apparent response to increased mortality from hunting and possibly also predation and winter severity. Lichen standing crop began increasing in the early 1970s as the population decline ceased and a herd increase was initiated. By 1983, with the herd continuing to slowly grow, increases in lichen standing crop in areas of substantial caribou use had in general come to a halt. Lichen standing crop today substantially exceeds that available in 1970, and is about the same as seen in 1977, in all areas of the Nelchina range except in the western calving and summering grounds. While prior investigators have estimated that 25 years or more would be required for lichens to recover from the serious deterioration observed in the 1960s, in many areas we found substantial lichen recovery after approximately 10 years of relatively light use. With a fair to very good

lichen standing crop throughout nearly two-thirds of the Nelchina range examined, and with good calf production and survival within the Nelchina herd, the range presently is capable of supporting current caribou numbers. How various vascular plants, particularly sedges in winter and sedges, grasses, forbs and shrubs in spring and summer, are utilized by Nelchina caribou, has yet to be documented. We believe that ample quantities of various vascular plant types provide adequate forage during the calving and summering period in the heavily utilized western mountains. We recommend that most range stations be maintained and periodically examined and additional range evaluation sites be established in key calving, summering and wintering areas. In addition, the relative use of various plants and the nutritional status of Nelchina caribou should be examined through analysis of collected rumen and/or fecal pellet samples and body condition measurements.