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CARIBOU SURVEY-INVENTORY PROGRESS REPORT

Edited and Compiled by
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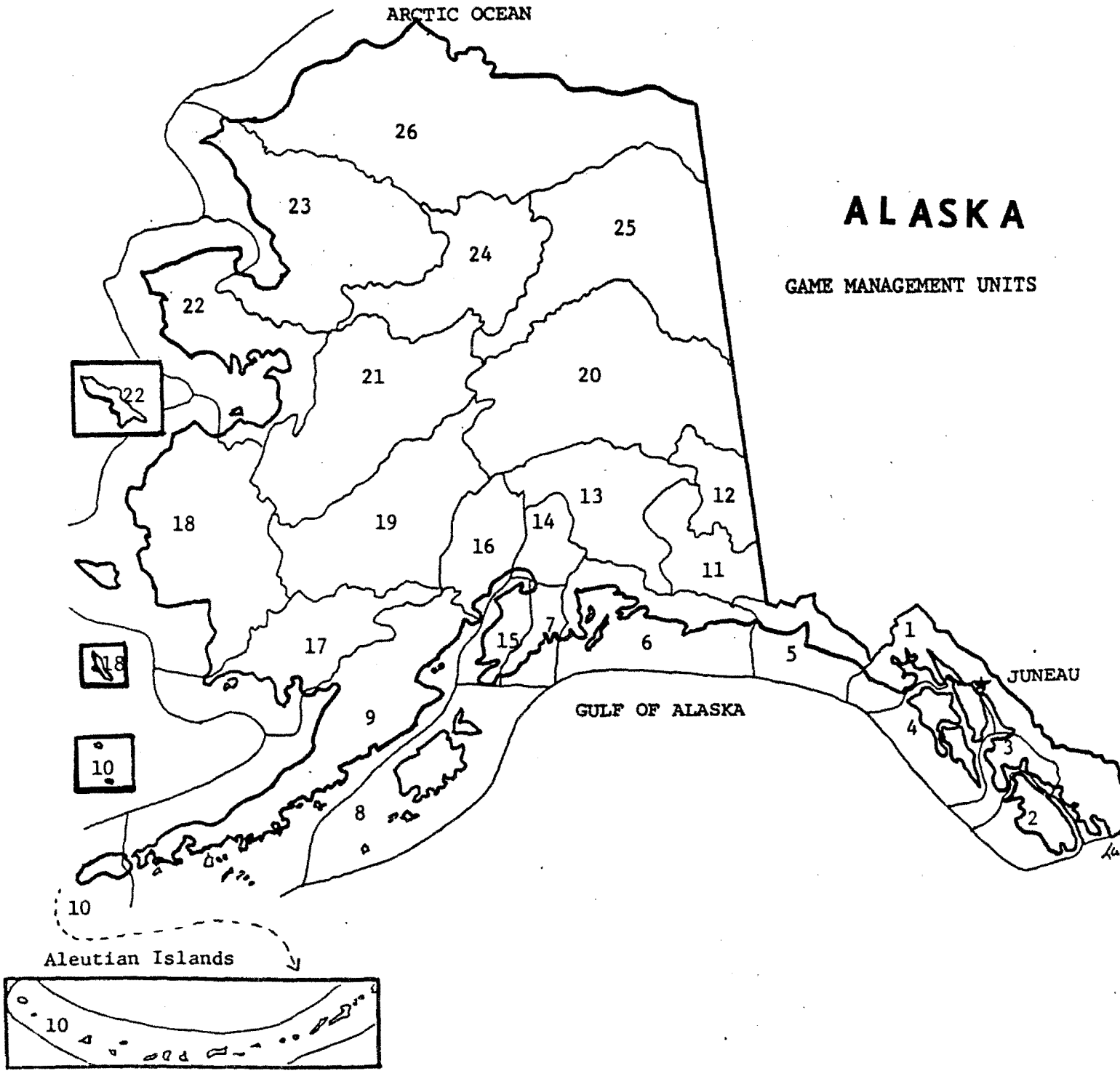
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Statewide Harvest and Population Status

In 1983-84, the recent trend of increasing populations in all major caribou herds continued; only some of the small or remnant herds were stable. Statewide, the caribou population is at its highest point for at least a decade.

Hunter harvest and herd status are summarized in the following table. Harvest figures are relatively accurate for those herds for which a hunting permit is required. The unreported harvest of other herds often far exceeds the reported harvest.

Herd	Unit(s)	Harvest		Population	Trend
		Rep.	Est.	Est.	
Kenai Mts.	7	29	--	250-300	stable
Mulchatna	9A,9B,16 17,18,19B 19C	415	1,000-1,500	33,214	increasing
No. Alaska Peninsula	9C, 9E	639	1,200	20,000	increasing
So. Alaska Peninsula	9D,10	254	--	10,203	increasing
Adak	10	0	--	360	increasing
Mentasta	11	90	--	2,766	stable
Chisana	12	37	--	1,000	stable
Nelchina	13,14	969	--	24,850	increasing
Denali	13E,20C	0	--	1,700	stable
Kenai Lowlands	15	0	--	80	stable
Kilbuck-Andreafski	18	--	--	400	--
Beaver Mts.	19,21	8	25	1,200-1,500	--
Sunshine Mts.	19,21	0		--	--
Big River	19	32	42-47	325-375	--
Rainy Pass	19	40	45-50	--	--
Tonzona	19	9	15	--	--
Kuskokwim Mts.	19,21	6	--	--	--
Delta	20A	694	--	6,300	increasing
Macomb	20D	11	--	700	stable
Fortymile	20E	200	--	12,356	increasing
W. Arctic	22A,22D 23	1,249	5,000-12,000	171,699-212,000	increasing
Porcupine	25,26C	71	(plus few hundred)	145,500-148,000	increasing
Central Arctic	26B	170	--	13,000	increasing

Robert A. Hinman
Deputy Director

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7

HERD: Kenai Peninsula Mountains

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Kenai Mountains Caribou Herd was established through transplants of 44 animals from the Nelchina Caribou Herd in 1965 and 1966. Composition surveys completed in recent years indicate the post-season population has stabilized at the desired management level of 250-300 caribou.

Population Composition

On 3 November, 276 caribou were classified (by helicopter) and the count included 154 cows, 62 calves, and 60 bulls. The calf:cow and bull:cow ratios were 40:100 and 39:100, respectively. Calves comprised 22% of the total herd. These ratios indicate a modest decline in calf recruitment, and a modest increase in the proportion of bulls compared to the previous year.

Mortality

Hunters reported killing 29 caribou during the season: 19 males and 10 females. Hunter success was 42%; all caribou except 1 were taken by an Alaska resident. Twenty-one (73%) of the successful hunters walked into the area they hunted, 5 (17%) used horses, and 3 (10%) used aircraft.

Management Summary and Recommendations

It appears that the Kenai Mountains Herd has stabilized at the desired size of 250-300 caribou. About 30 caribou can be taken each year by issuing 150 hunting permits. Annual surveys to monitor herd size and composition should continue and surplus animals

be removed in order to maintain the population at the size desired.

No changes in season or bag limit were recommended.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9A, 9B, 16, 17, 18, 19B, and 19C

HERD: Mulchatna

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

A photocensus of the Mulchatna Caribou Herd was completed on 19 June; herd size was estimated at 33,214. Considerable population growth has occurred since 1981, when 18,600 caribou were observed. This herd has experienced low winter and hunting mortality and high recruitment for the past several years. Although predation levels appear to be increasing, they have not yet reached a point of significant impact on this rapidly expanding population.

The herd has expanded its range, particularly to the northwest. Large portions of the herd are now summering in the Nushagak Hills in the vicinity of Weasel Creek, a tributary to the Hoholitna River. Caribou have also been observed to the southwest as far as the Muklung Hills and Iowithla River and as far west as the headwaters of the Kisaralik River (Unit 18). Small bands of <10 cows were observed calving in the upper Kisaralik drainages in May (S. Patton, pers. commun.).

Population Composition

In June, 2,543 caribou were counted and classified as follows: calves, 29%; cows, 51%; and bulls, 20%. The calf:cow ratio was 58:100. As in previous years, a high percentage of yearlings was observed during the composition count.

Mortality

A total of 459 hunters reported taking 415 caribou. The harvest included 342 males (85%), 61 females (15%) and 12 of unknown sex. The actual harvest was estimated to be 1,000-1,500 caribou. The large difference between reported harvest and actual harvest was due to poor reporting by local residents. This year, an attempt was made to improve reporting by sending a reminder letter to all caribou harvest reportholders residing in Game Management Units 9B, 17 and 19B who failed to return their reports. The few reports received after reminder letters added little to the reported harvest, and the effort was considered unsuccessful in

documenting the extent of caribou killed by local residents. The Mulchatna River drainage in Unit 17 sustains the heaviest hunting pressure, primarily from urban Alaskan hunters. Most of the non-resident hunting pressure was concentrated in Unit 19 during the September season.

About 88% of the reported harvest occurred prior to December; the harvest peaked during the week ending 3 September. This peak was less noticeable in GMU 16 and 19B, where harvest levels were fairly constant through September.

Most of the unreported harvest occurred during December-March when the bag limit was 3 caribou. The number of caribou reported taken per successful hunter was as follows: 331 hunters killed 1 each, 13 hunters killed 2 each, 12 hunters killed 3 each, 3 hunters killed 4 each, and 2 killed 5 each. The actual number of multiple kills was estimated to be much higher.

Weather conditions during the winter were mild, and no winter mortality was observed. Wolf predation appears to be increasing as several wolf-killed caribou were observed during caribou reconnaissance flights. Three radio-collared caribou died during this reporting period: 2 were apparently killed by brown bears in late fall and the 3rd may have broken through the ice and drowned while crossing the Mulchatna River.

Management Summary and Recommendations

Population estimates for the Mulchatna Herd since 1981 indicate an average annual growth of about 20%. Management guidelines for an optimum population size have not been established, since there are large areas of unused habitat to the west and north of the herd's historical range. Range conditions in areas presently utilized appear to be good but have never been thoroughly studied. As long as the herd can continue to expand its range, there is no reason to slow the rate of population growth.

Caribou hunting seasons have been lengthened and bag limits liberalized almost annually since 1980. During this reporting period, the season was lengthened 72 days and several bag limit restrictions were removed in GMU 9B, 17, and 19B. Annual harvest levels have remained below 5% of the estimated population size, and the herd continues to grow.

More complete information on herd movements and range expansion is needed to effectively comment on land use proposals such as oil and gas leases, land disposals and hardrock mining activities in the vicinity of this herd. Caribou fitted with radio transmitters are currently being monitored and battery life will begin

to fail during 1984-85. These batteries should be replaced during the winter of 1985-86.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9C and 9E

HERD: Northern Alaska Peninsula

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

A photocensus of the Northern Alaska Peninsula Herd conducted 27-28 June revealed a minimum of 19,000 caribou. Poor weather prevented coverage on the Pacific side of the peninsula from Aniakchak River to Wide Bay. Consequently, the total herd size was estimated at approximately 20,000 caribou. Since 1981, this herd has grown at an average annual rate of 6%.

Population Composition

Samples of caribou from all major segments of the herd were photographed during June and contained a composite percentage of 28.5% calves. Sex and age composition counts conducted on 23 October showed ratios of 27 calves:100 cows (16% of herd), and 39 bulls:100 cows (24% of herd). This was the 1st evidence of a significant decline in the calf segment between June and October. It was also the 1st time since 1970 that calves have represented less than 22% of the herd.

Mortality

The total reported harvest of caribou from the Northern Peninsula herd was 639 animals, including 493 males, 128 females and 18 of unspecified sex. The fall kill (10 Aug-31 Oct) increased by 16% over the previous year, and the winter kill declined slightly. Some of the increase in the fall kill was due to the concurrent brown bear season, which attracts more nonresident hunters on combination bear/caribou hunts. Efforts to increase harvest reporting compliance by local residents have been unsuccessful. Only 9 residents of Subunit 9E reported taking caribou. The unreported take is estimated to approximate the report harvest. Consequently, the total 1983-84 caribou harvest was estimated at 1,200.

Management Summary and Recommendations

Despite liberal hunting seasons over the past 20 years, the Northern Peninsula Herd has grown and now is at a density of 2-3

caribou/mi². In a 1984 report to the Board of Game, further liberalization of the caribou hunting regulations were recommended, with the caution that additional hunting pressure should not be focused on the bull segment. The Board, subsequently, raised the bag limit to 4 caribou for the 1984-85 season with the stipulation that only 1 caribou be taken from 1 September-31 October. If a decline in the bull:cow ratio continues, the caribou season should be adjusted to reduce the harvest of bulls.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 9D and 10

HERD: Southern Alaska Peninsula and Unimak

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

On 15-16 November 1983, personnel from the U. S. Fish and Wildlife Service photographed and counted 10,203 caribou between Port Moller and False Pass. Prior to this survey, the herd had been estimated to number approximately 6,000-7,000 caribou. The disparity between previous counts and the latest census cannot be explained by immigration from the Northern Peninsula Herd or from Unimak Island where only a few hundred caribou have resided over the past several years. Most likely the Southern Peninsula Herd has grown during recent years, but portions of the herd had not been located during previous surveys.

Population Composition

On 24 July 1984, U. S. Fish and Wildlife Service personnel conducted a post-calving survey of 7,500 caribou. A total of 2,389 caribou were classified from the ground, and 17% were calves. The results of a June 1983 survey showed 18% calves.

Mortality

There were 254 caribou, including 168 males, 81 females, and 5 of unspecified sex, reported killed in Subunit 9D by 127 hunters. Only 18 hunters reported hunting unsuccessfully. Harvest tickets are not required in Unit 10 and, consequently, no kill data are available for Unimak Island. However, I believe the harvest is negligible.

Of the successful hunters, 23%, 20%, 17% and 40% took 1, 2, 3, or 4 caribou, respectively. Sixty-one percent of these caribou were taken in November when the bag limit increased from 1 to 4, and the caribou were accessible by the Cold Bay road system.

Management Summary and Recommendations

The finding that the Southern Alaska Peninsula Herd now numbers over 10,200 animals alleviates previous concern about a possible

overharvest. The 1983-84 kill declined by 40% from the average kill of the past 2 years. Despite relatively low productivity, it is likely that this herd will continue to grow. Because harvest levels are affected more by the high cost of travel to the area and the proximity of the herd to the Cold Bay road system, liberalization of hunting regulations is unlikely to influence the size of the harvest. This may be especially true if caribou hunting regulations are relaxed for herds more accessible to Alaska's population centers. However, it is anticipated that more people will be traveling to Cold Bay to participate in oil and gas exploration activities taking place in the Bering Sea; for this reason, the caribou harvest can be expected to increase.

The mainland segment of the herd is now at a density of approximately 4 caribou/mi^2 and further growth is not desirable. Some liberalization of hunting seasons could be allowed, but should be approached carefully in anticipation of increased demand from transitory workers associated with oil and gas exploration.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 10

HERD: Adak Island

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

Approximately 200 caribou were present on Adak Island following the 1982-83 hunting season. On 22 August 1983, U. S. Fish and Wildlife Service (USFWS) personnel observed 177 post-calving caribou on the Island during a survey via helicopter. It was thought the population was reduced by natural mortality associated with deep snow (over 100 inches) during the winter of 1982-83.

However, on 6 June 1984, a post-calving count of 360 caribou was completed by USFWS personnel in a twin-engine aircraft. This count was the highest ever made on Adak and compares to other high counts made in 1981 (316) and 1972 (347). The June count suggests a winter die-off did not occur and indicates a continued trend of increasing caribou numbers.

Mortality

No known caribou mortality occurred on Adak during this reporting period. The caribou hunting season was closed by emergency order, and no evidence of natural mortality was found.

Management Summary and Recommendations

The management goal for the Adak Island Caribou Herd is to maintain a pre-calving population of approximately 150 adults. Since fewer than 150 adults were observed on 22 August 1983, it was assumed that the severe winter of 1982-83 had caused high natural mortality. An emergency order to close the caribou season was issued to prevent overharvest.

In June of 1984, a post-calving count of 360 caribou was obtained. This increase followed a mild winter with no caribou hunting season. However, this increase (103%) was too large to be accounted for by 1 year's calf production. In all probability, less winter mortality occurred than thought in 1982-83, and the low August count was probably the result of an incomplete survey.

It is recommended that the registration permit hunt resume.

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

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

HERD: Mentasta

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The fall population estimate for the Mentasta Caribou Herd was 2,766 animals. This herd has remained constant in size since 1972, with small annual fluctuations attributed to minor differences in census techniques.

Population Composition

A calf:cow ratio of 27.9:100 and a bull:cow ratio of 43.5:100 were obtained from data collected during a fall composition count on 4 October. This calf:cow ratio was considerably lower than the 1982 ratio of 38.8 calves:100 cows. The bull:cow ratio was unchanged.

Mortality

Hunters killed 90 caribou, including 66 bulls and 24 cows. This harvest was less than the previous 3-year average of 140 caribou. Only 179 permittees reported hunting, compared to 215 in 1982. Additionally, the success rate dropped from 66% in 1982 to 50% in 1983. The nonresident harvest of 10 caribou (5.5%) remained the same as the previous year.

Aircraft was the most popular method (59%) of transportation used by successful hunters, followed by off-road vehicles (20%), highway vehicles (14%), and horses (7%).

Management Summary and Recommendations

The number of permittees hunting, the success rate and the total harvest declined in 1983. During the hunting season, the Mentasta Caribou Herd normally ranges within the boundaries of the Wrangell-St. Elias National Park/Preserve. Most hunter access to these caribou is by aircraft. Park regulations restrict hunter access by aircraft to a few designated landing areas within the preserve. The harvest declines when caribou are not located near these few legal airstrips, as was the case in 1983.

The size of the Mentasta Caribou Herd has remained constant since the mid-1970's. Calf recruitment for 1983 was also low and will not provide for an increase in the herd size.

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 1983-30 June 1984

Seasons and Bag Limits

See Hunting Regulations No. 24.

Populations Status and Trend

The Chisana Caribou Herd is believed to be stable in size and to contain 1,000 caribou. According to local residents of Chisana, the herd was perhaps twice as large in the 1960's.

Population Composition

A survey to assess caribou production was conducted in late June 1984. A total of 317 caribou were classified in the Chisana area, 49 (16%) of which were calves. This compares to 16% calves in spring 1983. No fall composition survey was conducted this reporting period, but bulls appeared to be relatively abundant during spring.

Mortality

A total of 37 bull caribou was reported taken during September 1983 in Unit 12. Thirty-nine bulls were taken during the 1982 season. Of the 37 caribou taken, 28 were from the Chisana Herd compared to 21 in 1982. Most of the increased harvest may be attributed to the 5-day season extension in 1983. Nine caribou were reported taken in the range of the Mentasta Caribou Herd during 1983, compared to 18 the previous fall.

While no caribou were reported taken in the range of the Nelchina Caribou Herd in southwestern Unit 12, a few hundred caribou from either the Nelchina or Mentasta Herds wintered in the Northway-Tetlin Flats during winter 1983-84. No subsistence permits were issued, but it is likely that some caribou were taken in that area during the winter.

Natural mortality factors such as predation are responsible for most caribou mortality in Unit 12 and are limiting growth of the Chisana Caribou Herd.

Management Summary and Recommendations

The Chisana Herd is believed to be stable in size and no increase in early calf survival was detected during spring 1984.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

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

HERD: Nelchina

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Nelchina Herd has been expanding in size since the mid-1970's. The fall 1983 population estimate was 24,850 caribou, up from the 1982 estimate of 21,150.

Population Composition

Calf production and/or survival declined in 1983. A post-calving composition count flown on 27 June showed a calf:cow ratio of 39:100, down considerably from the 57:100 observed in 1982. A fall composition count was conducted on 4 October and the resulting calf:cow ratio was 27:100, also considerably below the fall 1982 ratio of 54:100. The high bull:cow ratio of 61:100 was maintained.

Mortality

There were 969 caribou taken by 1,750 permittees during the hunting season. Of these caribou, 827 were males, 137 were females, and 5 were of unknown sex. This harvest exceeded the 1982 kill of 861 caribou and was the highest reported since the initiation of the permit system in 1977. A summary of the 1983-84 harvest for each of the permit hunts is presented in Table 1.

For the 2nd year in a row, off-road vehicles (36%) exceeded aircraft (25%) in popularity as a means of transportation for successful sport hunters. Highway vehicles (44%) were the most popular method of transportation for successful subsistence hunters, followed by off-road vehicles (22%).

Management Summary and Recommendations

The steady growth of the Nelchina Caribou Herd continued in 1983.

Calf production and/or survival declined. However, a slight reduction in the calf:cow ratio was expected because of the

high survival of young in 1981 and 1982, which results in a higher than average proportion of 1-½- and 2-½-year-old cows in the herd. These young cows usually do not have calves; thus a decrease in the calf:cow ratio was expected. Composition data indicate the proportion of bulls in the herd is high.

The numbers of hunting permits issued and caribou killed each year have increased as the herd expanded. The current harvest was the largest reported since 1974, before the permit hunt system was established. I recommend the number of permits be adjusted each year in accordance with herd size.

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Table 1. Nelchina Caribou Herd harvest summary, 1983-84.

Hunt No.	Permits issued	Total harvest	No. hunters	Percent success	Males in Harvest N	Males in Harvest %
515 [a]	1,300	762	1,059	72	636	83.7
516W [b]	433	198	350	57	183	93.3
562W [b]	17	9	15	60	8	88.8
516W and 562W	450	207	365	57	191	93.1
Totals	1,750	969	1,424	68	827	85.7

[a] Drawing hunt.
[b] Registration hunt.

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13E and 20C

HERD: Denali

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

Surveys conducted on the Denali Caribou Herd calving grounds yielded a sample of 1,210 caribou, with an estimated minimum 1984 postcalving population of 1,700 animals. Estimates of herd size between 1972 and 1983 ranged from 900 to 1,500.

Population Composition

All data collected during this report period were obtained during April-June 1984, as part of a cooperative study to assess productivity and survival.

Surveys conducted from a helicopter in late April revealed excellent survival of calves born in 1983, as indicated by 46 short yearlings:100 cows (N = 600).

Helicopter surveys were conducted on 7 calving areas in late May. Four of these areas had sample sizes large enough to provide an indication of calving success, which varied from 40 to 76 calves:100 cows. Another indicator of the herd's productivity was revealed by counts of cows with distended udders, which indicated a pregnancy rate of 83%.

Mortality

Mortality collars were placed on 43 calves shortly after calving to monitor the chronology of calf loss. Bear or wolf predation is suspected as the source of mortality for 12 of the 13 known losses; the remaining loss is attributed to predation by golden eagles.

Unfortunately, there is a lack of data regarding wolf and bear densities within Denali National Park.

Management Summary and Recommendations

Previous studies by National Park Service personnel had failed to adequately assess the status of the Denali Caribou Herd in terms of calf production and survival and population size. The lack of standardized survey procedures and changes in personnel may have contributed to this inadequacy. Continuation of the research program initiated in 1984 should provide some insight into calf production, survival, and distribution and movements of the herd. Additional data may be obtained on the impact of predation by bears and wolves.

The present herd size of 1,700 caribou is probably adequate to satisfy the nonconsumptive goals of the Park Service. However, a larger herd may range outside the Park boundary and be available to sport and subsistence hunting.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 15

HERD: Kenai Peninsula Lowlands

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Kenai Lowlands Caribou Herd was established through transplants from the Nelchina Herd by the Alaska Department of Fish and Game in 1965 and 1966. The herd currently numbers about 80 animals and ranges over portions of Subunits 15A and 15B. Population growth since the mid-1970's has been slow. Predation of young calves (less than 30 days old) by domestic dogs and wild carnivores is strongly suspected of limiting population growth.

Population Composition

A composition survey was flown on 3 November, and 65 caribou were observed. The caribou were widely distributed in dense timber, which hampered collection of composition information. On 30 May, a 2nd survey was flown, and 61 caribou were observed, including 36 cows, 8 bulls, and 17 calves.

Mortality

Sport hunting was not allowed on this herd during 1983. It is suspected that predation by free-ranging dogs and wolves are the major cause of mortality.

Management Summary and Recommendations

Low recruitment was the primary management concern for the Kenai Lowlands Herd prior to 1978. High recruitment since 1982 may have reversed the trend. The numbers of animals observed have increased steadily from the 1978 count of less than 40 animals.

The local advisory committee recommended opening the season to sport hunting by drawing permit for fall 1984. Permits for 3 bulls only were proposed. The department recommended approval

of this hunt based on current survey data. The Board of Game, however, denied the request. Management plans call for maintaining a minimum spring population of 50 adult caribou with a sex ratio of at least 25 bulls:100 cows. Since the primary purpose of establishing caribou on the Kenai Peninsula was for sport hunting, the department should encourage a limited harvest as long as caribou numbers are adequate to justify a hunt.

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CARIBOU
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 18

HERD: Kilbuck Mountain and Andreafsky Mountain

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Mulchatna Caribou Herd is rapidly expanding in numbers and range in Units 17 and 19. Mountain passes through the Kilbuck Range allow movement of Mulchatna caribou into Unit 18. A small herd of caribou is now calving in the Upper Kiseralik drainage of Unit 18. If excessive harvests can be curtailed, caribou in this part of Unit 18 are expected to increase in numbers and range, primarily because of immigration from the Mulchatna Herd.

It is uncertain whether the animals of the Andreafsky Mountains Herd are caribou, reindeer, wild reindeer, or reindeer/caribou crosses. Current estimates suggest a population of approximately 400 animals. Future movement of the Western Arctic Herd into the Andreafsky Mountains would alleviate concern over the status of Rangifer in this area. Any remaining reindeer/caribou would probably become part of the Western Arctic Herd. Whether the WAH will winter this far south is still conjectural.

Population Composition

Aerial surveys were flown in the Kilbuck Mountains southeast of Bethel during February, May, and June 1984 with the specific intention of obtaining information on the "Kiseralik Caribou Herd". Small, widely dispersed groups of caribou of variable sex and age were observed in the upper Kiseralik and Kwethluk River drainages on the west side of the Kilbuck Mountains.

On 1 June 1984 an aerial survey of the Kilbuck Range was flown along the drainage of the Kiseraslik River to its headwaters at Kiseralik Lake. The survey continued over the crest of the Range into Subunit 17B and around Chikuminuk Lake. The intent of the survey was to examine the range and distribution of caribou calving in the upper Kiseralik drainage, and to establish whether Mulchatna caribou were present at the northeast

end of Chikuminum Lake as suggested by K. Taylor's range maps. We were able to verify that caribou, probably from the Mulchatna Herd, were present near Chikuminuk Lake precisely as indicated on the range maps.

The Mulchatna Herd in Units 17 and 19 has expanded from approximately 5,000 (a minimum estimate, K. Taylor, pers. commun.) to 30,000 animals within the last 15 years. The Kiseralik Herd in Unit 18 probably numbers less than 200 animals. Repeated sightings of animals and tracks during aerial surveys confirm previous population estimates. Caribou from the Mulchatna Herd are able to move into Unit 18 via Aniak Lake pass around Nishlik Lake and Aniak Lake through the crest of the Kilbuck Range, a distance of less than 100 mi.

Newborn calves were observed in a band of 10 caribou along Gold Creek near Kiseralik Lake on 18 May 1984. Observed calving dates add credence to the belief that these caribou are of wild Mulchatna stock and not feral reindeer or reindeer/caribou crosses decended from domestic stock that escaped from the Yukon-Kuskokwim Delta in the late 1930's (Table 1).

Large areas of potential caribou habitat exist in the Kilbuck Mountains. In late summer, caribou in the central Kilbuck Range are found in small, widely dispersed groups in alpine tundra and cirques. The caribou occur at low densities in the Nishlik, Chikuminuk, upper Kiseralik, North Fork, and Quicksilver drainages, and near Kiseralik Lake, Gold Creek, and Gold Lake. At this time, caribou appear equally common both west and east of the crest of the Kilbuck Range. We view the expansion of Mulchatna caribou into the Kilbuck Range as a positive natural occurrence and would like to see this population trend continue.

S. Machida (1984 Unit 18 Caribou Survey-Inventory Report) found little information available on the Kiseralik-Mulchatna Herd. No surveys of this population were flown in 1982-83, but Machida believed hunting pressure was lighter than in previous years because of poor weather. He recommended increasing efforts to survey this herd.

B. Dinneford (1983 Unit 18 Caribou Survey-Inventory Report) observed small herds of caribou in the Kilbuck Mountains. In late February 1982, tracks of a lone animal were observed east of Three Step Mountain; on a flight over the Kiseralik River watershed on 14 May 1984, 32 animals were located. Dinneford's minimum estimate for the Kiseralik watershed was 50 animals.

B. Dinneford located tracks of approximately 10 caribou 5 mi below the mouth of the Kiseralik River in late June 1981. A

local fisherman observed 7 caribou along the Kiseralik River about 20 mi below the lake's outlet in late June 1981.

D. Jonrowe (1978-79 Unit 18 Caribou Survey-Inventory Report) stated that the Kiseralik Herd is probably an extension of the herd in Unit 17. Caribou were believed to use "numerous passes between Aniak Lake Pass and the Kiseralik and Kagati Lake area." No surveys were specifically flown for caribou, but reports from pilots indicated caribou trails in the snow through these passes. Local residents reported steady growth of the Kiseralik Herd over the previous 4-5 years.

P. Shepherd (1979-80 Units 19 and 21 Caribou Survey-Inventory Report) stated that some caribou from the Mulchatna Herd appeared to be summering in the upper drainages of the Aniak and Kiseralik Rivers. He mentioned that the Mulchatna Herd had been ranging further west, but data were lacking on size and trend of the herd.

K. Taylor (1975-81 Mulchatna Caribou Herd status report) stated that the Mulchatna Herd ranges through parts of Units 9, 16, 17, and 19. Historically the Mulchatna Herd appears to be subject to great fluctuations in size, reaching a peak about every 30-50 years. In 1981, Unit 17 biologists began using radio transmitters to locate post-calving aggregations. This improved population estimates for the herd (6,370 in 1978 and 19,599 in 1981).

K. Taylor (pers. commun.) stated that the Mulchatna Caribou Herd has been rapidly expanding. The herd has experienced low levels of winter and hunting mortality coupled with high recruitment for the past several years. Since 1981 the mean annual increase has been about 20%. The annual harvest remains at or below 5% and is too low to affect herd expansion. Recent population estimates for the Mulchatna Herd are 32,214 in June 1984 and 25,416 in June 1983.

The Andreafsky Mountains have historically been used both for hunting caribou and herding reindeer. Caribou in the Andreafsky Mountains probably derive both from wild caribou in the Norton Sound region and domestic reindeer introduced around the turn of the century. Caribou are hunted primarily in January and February by snowmachine. Villagers, primarily from Mt. Village, Pitkas Point, Pilot Station, Marshall, Russian Mission, and St. Mary's, hunt caribou while on multi-purpose hunting and trapping expeditions. Caribou are usually taken in the uplands near the headwaters of the Andreafsky and the East Fork of the Andreafsky and Otter Creek. Stebbins residents believe that some of the animals taken by Lower Yukon villagers are reindeer from their herd. Apparently, an occasional ear-tagged animal is killed. This has led to spirited discussion in several Lower Yukon Advisory Committee meetings.

Hunters from the Lower Yukon have varying opinions on whether the animals in the Andreafksy region are reindeer, caribou, wild reindeer, or reindeer/caribou crosses. Hunting effort depends upon weather and snow conditions and on the success or failure of previous moose hunts. Other observers have concluded that few parties from the Yukon Delta villages proper hunt the Andreafskys for caribou, and many that do so are unsuccessful.

Changes in game regulations for the Andreafsky Herd have been suspended pending resolution of the status of this population. However, the potential southward expansion of the Western Arctic Herd, (now wintering less than 100 mi to the north) may make the status of the few Rangifer in the Andreafsky Mountains a moot point.

Mortality

Annual harvest of the Mulchatna Herd remains at or below 5% of the population and is too low to greatly affect herd growth. However, excessive harvests of caribou dispering into Unit 18 are believed to limit or prevent herd growth on the west side of the Kilbuck Range. The westward expansion of the Mulchatna Herd into Unit 18 will effectively be limited by these excessive harvest practices if they continue. Cooperation of lower Kuskokwim villages and the Association of Village Council Presidents is essential. Villages need to prevent their hunters from harvesting caribou until the herd has increased to some minimum acceptable level.

Current annual harvest from the Andreafsky Herd is believed to be excessive. If herd increase is a desirable management goal, then the harvest should be reduced.

Management Summary and Recommendations

The Mulchatna Herd is rapidly expanding in numbers and range. Mountain passes through the Kilbuck Range allow movement of Mulchatna caribou into Unit 18. A small herd of caribou is now calving in the Upper Kiseralik drainage. Small bands of caribou have been observed in the upper Kwethluk drainage near Heart Lake, as well as near Canyon, Quicksilver, and Gold Creeks, and North Fork (of the Kiseralik) Creek in Unit 18. Caribou have also been observed around Chikuminuk Lake in nearby Unit 17 and Nishlik Lake in Unit 19. Caribou are thus present on both sides of the Kilbuck Range in low densities, with large areas of habitat unoccupied. Caribou in this part of Unit 18 are expected to increase their numbers and range, primarily because of immigration from the Mulchatna Herd. Excessive and illegal harvest of these caribou must be curtailed if the Unit 18 population is to expand.

The Andreafsky Herd is estimated at 400 animals. Local residents have varying opinions as to whether these animals are reindeer, caribou, feral reindeer, or reindeer/caribou crosses. The matter is currently under discussion by the Lower Yukon Advisory Committee, with participation of representatives from the reindeer herding village of Stebbins. Proposals to shorten or close the hunting season for Andreafsky caribou have been tabled prior to the resolution of the status of these animals. The potential southward expansion of the Western Arctic Herd into the Andreafsky Mountains may render further discussion of this remnant herd pointless.

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Table 1. Observed calving dates of selected Rangifer populations.

Herd	Range	Peak	Authority
Forty-Mile and Nelchina	9 May-12 June	25 May	Skoog, 1968
McKinley	12 May-22 June	--	Skoog, 1968
Arctic	22 May-4 July	26 May-5 June June 5	Skoog, 1968 Lent, 1966
NW Territories	1 June-4 July	8-14 June	Skoog, 1968 Kelsall, 1968
Mulchatna		16-19 May	Hemming, 1971
Kiseralik	prior to 18 May	--	ADF&G Survey
Reindeer	mid-April to mid-June	late April	T . Smith (pers. commun.)

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 19 and 21

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

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

All caribou in Subunit 19B and south of the Kuskokwim River in 19A, except those inhabiting the Kilbuck Mountains, are part of the Mulchatna Herd (reported elsewhere). Adult cows have been radio-collared in the Beaver Mountains, Sunshine Mountain, and Big River Herds, which enabled us to more closely monitor the status of these small herds.

The Beaver Mountains Herd is estimated to contain 1,200-1,500 caribou. In late June 1983, 1,164 caribou were counted using aerial photographs. Five of 6 radio-collared cows were with a group of caribou on the ridges between Moose and Fourth of July Creeks. Almost all the Beaver Mountains Herd was judged to be in this group, although a few widely-scattered, small bands probably were not located, as evidenced by a radio-collared cow with a group of 34 caribou on Mt. Hurst, approximately 35 mi to the northwest.

At least 2 groups of caribou dispersed from the main Big River Herd during summer 1983 and apparently did not return to the traditional calving grounds in 1984. One of these contained 200-250 caribou; the other group was composed of approximately 125 caribou. There was 1 radio-collared cow in each of the groups.

The larger group moved south to the upper Swift drainage and remained in the foothills of the Revelation Mountains through early summer 1984. In early June 1984 some of this group dispersed. Twelve caribou, including a radio-collared cow, appeared to be returning to the traditional calving grounds, but they stopped at the upper reaches of Big River. Some of the group that had wintered in the foothills of the Revelation Mountains did not move. These animals probably calved in the foothills where they had wintered.

The smaller group of about 125 caribou moved into the Lyman Hills and wintered near the Tatlawiksuk River. This group broke into several smaller groups and the radio-collared cow moved near the mouth of the Cheeneetuk River to calve.

The remainder of the radio-collared caribou in the Big River Herd were located in their "normal" range; however, there appeared to be considerably fewer animals than in the prior 2 years.

Population Composition

Composition data were obtained only from the Big River Herd. Composition counts were conducted on 16 June 1984 on the traditional calving grounds and only 208 adult caribou were located. There were 111 calves (60 calves:100 cows); the yearling:cow ratio was 11:100.

Seasonal Concentration and Movements

Herd distribution and movement patterns for the Beaver Mountains, Sunshine Mountain, and Big River Herds were described in the 1982-83 Survey and Inventory Report; however, during the 1983-84 period movement patterns differed.

Most of the Beaver Mountains Herd wintered in the foothills west of the Beaver Mountains and apparently did not move to their "normal" winter range, the Iditarod Lakes, until March. By April and early May most were along the northwest side of the Beaver Mountains, similar to previous years; but rather than calving in this area, they dispersed widely, and calved from the Iditarod Lakes to the lower Dishna. As a result, they remained widely dispersed in late June 1984.

Most of the small Sunshine Mountain Herd was located in the Nixon Fork flats from October through calving in mid-May. They did not travel to the Sunshine Mountain area as in previous years. Following calving, they dispersed to the Cripple, Cloudy, and Page Mountain areas, often to the same drainages they had occupied in previous summers.

Mortality

The reported harvest of the Beaver Mountains Herd was 8 bulls by 13 hunters. Based on my observations of hunting in fall 1983, the caribou harvest from the Beaver Mountains Herd probably was closer to 25 caribou. One of 6 radio-collared cows in this herd was apparently killed by a bear in fall 1983.

No caribou were reported taken from the Sunshine Mountain Herd. Although the herd remained close to McGrath most of the year,

there was little evidence to indicate that caribou were taker and not reported.

Forty-five hunters reported taking 32 caribou from the Big River Herd, all except 1 during fall. An additional 10-15 caribou were taken but not reported during the winter season in the area between McGrath and Nikolai.

Fifty-one hunters reported taking 40 caribou from the Rainy Pass Herd, 13 of which came from Subunit 16B. The estimated harvest was 45-50 caribou.

Nine caribou were reported taken from the small Tonzona Herd, and the estimated harvest was less than 15 animals.

Six caribou from the Kilbuck Mountains (Kuskokwim Mountains Herd) were reported taken. No caribou were reported taken from the small groups north of the Kuskokwim River in Subunit 19A.

Management Summary and Recommendations

Abnormal movements and wide dispersal characterized the small caribou herds in Units 19 and 21 during this report period. Because all of these herds number less than 1,500, dispersal of groups of 100-200 caribou has significant impact on a given herd's overall status. Radio telemetry has provided a tool to follow some of these small groups. The dispersal of at least 2 groups from the Big River Herd had a significant impact on the herd. This herd will be monitored closely, because it currently contains half as many caribou as in 1982-83. Only the Big River and Rainy Pass Herds are subjected to significant hunting pressure.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20A

HERD: Delta

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Populations Status and Trend

The Delta Caribou Herd has experienced a growth rate of about 15% since 1979, and according to the June 1984 photocensus, the herd now numbers about 6,300 animals. This includes caribou occupying the Yanert River drainage.

Population Composition

During sex and age composition surveys conducted on 4 October 1983, 46 calves:100 cows (23% of herd) and 54 bulls:100 cows (27% of herd) were classified (N = 1,333). The sex ratio showed a slight decline compared to the previous 2 years. The sex ratio was 58 bulls:100 cows in 1981 and 54 bulls:100 cows in 1982. This decline was not as great as expected, considering the magnitude of the reported bull harvest during 1983. No attempt was made to classify the yearling component of the herd.

Sex and age composition surveys conducted on 10 April 1984 revealed 49 calves:100 cows. The apparent increase in the proportion of calves between October and April was probably caused by segregation and sampling error. Nevertheless, the data indicate excellent overwinter survival of the calf component of the herd.

Mortality

For the first time since 1973, a general hunting season (no permits required) was held for the Delta Herd. Although the season was scheduled for 10 August-31 March, it was closed by emergency order on 28 October after available information indicated the allowable harvest had been attained.

Hunter reports indicated 694 caribou were harvested from the Delta Herd. The take consisted of 576 males, 98 females, and

20 caribou of unspecified sex. An additional 54 caribou were taken from the Yanert River drainage (40 males, 12 females, and 2 of unspecified sex).

Residents comprised 86% of successful Delta Herd hunters and 74% of successful Yanert Herd hunters. Resident hunters seeking Delta Herd caribou were 66% successful, and nonresidents experienced a success rate of 87%. For Yanert Herd hunters, the resident success rate was 53% and the nonresident rate was 92%.

Transportation means reported by successful hunters are as follows: aircraft, 330; off-road vehicles, 225; highway vehicles, 54; horse, 34; snowmobile, 10; and boat, 5.

Because the Delta Herd generally remained west of the Wood River between August and October, the majority of the harvest occurred in this area.

Because the Yanert River drainage is a controlled use area where motorized ground transportation is prohibited, transportation modes were somewhat different between people hunting the Yanert and Delta Herds. In the Yanert drainage, horses were the most popular means of access (24). Although 24 individuals reported using highway vehicles as the primary access means (many of whom hunted on foot), a portion of this group used dog teams. Because dog teams are not listed on the hunter report as an access mode, the actual number of hunters using dog teams cannot be determined. Thirty-eight hunters did not list access means.

Management Summary and Recommendations

A tremendous and unsatisfied interest in hunting caribou exists in the Fairbanks area. Hunting pressure and success exceeded expectations for the Delta Herd by a considerable margin. This forced an early closure of the hunting season. In the future, permit-only hunts or very short, general open seasons of 1-2 weeks should be scheduled to avoid overharvest. Alternatively, other restrictions could be imposed to maintain reasonable season length.

The Yanert caribou are better protected because of restrictions governing motorized ground transportation and their relative inaccessibility. Therefore, seasons there can continue to be relatively long.

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CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20D

HERD: Macomb

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Macomb Herd was estimated to contain approximately 700 caribou in fall 1983, based on observation of nearly 500 caribou during an extensive aerial census in October. Composition data suggest that the herd is stable in size.

Population Composition

Sex and age composition of the herd was sampled on 14 October 1983. Nine groups containing 238 caribou were classified, using standard helicopter and ground survey observation methods. The sample contained 50 bulls, 18 small bulls, and 26 calves:100 cows.

Caribou were also classified on 17-20 May 1984 by 8 observers stationed in the main calving area south of Fish Lake. No effort was made to prevent duplicate observations. In the aggregate of all observations, 48 calves:100 cows were recorded ($N = 517$). The proportion of calves observed increased daily throughout the period. Of the 222 cows classified, 85% had hard antlers, indicating pregnancy. Only 2 cows without hard antlers and without calves had distended udders, an indication of parturition and subsequent calf loss.

Movements

Macomb caribou were radio-collared for the 1st time in October 1982 and 1983. Eight radio collars were functional through June 1984. The collared caribou have been relocated 9 times since October 1982. Most relocations have been on the main plateau between the Robertson and the Johnson Rivers. This confirms information gathered since at least 1969, which has suggested that the core range of this herd is the Macomb Plateau. However, 5 of the 8 collared caribou have been located outside this core range on at least 1 occasion each.

This suggests that portions of the herd may spend parts of the year away from the core range (Fig. 1).

Mortality

A total of 341 applications was received for 140 drawing permits available for hunting Macomb caribou. Of the permittees, 63 reported hunting and 11 took caribou. The success rate (17%) was the lowest reported since permits were first issued in 1978. About half (45%) of the successful hunters were residents of Subunit 20D, although only 32% of the total permittees who hunted were local residents. Most hunters (51%) reported walking in, and 30% used horses for transportation. The Macomb Plateau Controlled Use Area regulation restricts access to nonmotorized means during the caribou hunting season. Most (64%) successful hunters used horses for transportation. The length of the average hunt was just under 3 days; successful hunters averaged just over 2 days for their hunts. Most of the harvest (73%) occurred before the end of August. Since 1980, approximately half or more of the harvest has occurred during August.

Natural mortality has not been quantified. Observers stationed on the eastern portion of the range in mid-May 1984 where calving occurs saw little evidence of predators. Only 1 set of grizzly bear tracks and 2 golden eagles were observed. However, a pack of wolves is known to range within 5 mi of the main calving area, and grizzly bears are known to be relatively abundant elsewhere on the Macomb Plateau.

Efforts were started to correlate calving success with weather. Temperature, precipitation, and wind speed were monitored daily at Dry Creek, about 2 mi from the Alaska Highway. At the monitoring location, which is approximately 3,700 ft lower than most of the calving area, temperatures dipped below freezing on 10 of the 20 days. Light precipitation fell on 7 days, and wind speeds were low or medium on all of the days. Precipitation exceeded 0.1 inch on only 1 day, when it was recorded at 0.12 inches. Weather history for this area prior to 1983 has not been recorded; however, in terms of colder temperatures, more wind, and more precipitation, conditions were more severe in 1984 than 1983.

Management Summary and Recommendations

The failure of the Macomb Herd to increase is probably due to low recruitment. An increase in calves and yearlings the 1st year after wolf control in the portion of Subunit 20D inhabited by the herd suggests that wolf predation on juveniles is an important mortality factor. Data collected in 1983 and 1984

support the following conclusions: (1) summer calf mortality in some years may exceed 50%; (2) pregnancy rate was high (85% of cows with hard antlers); (3) initial calf survival was moderate (minimum of 48 calves:100 cows); and (4) survival of calves to October was low (25 calves:100 cows average 1980-83).

Failure of the 17-20 May 1984 ground observations to find evidence of predation suggests predation was not heavy at the time of calving. Data are lacking to determine if this is typical or if predator populations were depressed in 1984 because of hunting and trapping the previous season, or if predation typically occurs later in the summer.

Priority work for the next reporting period includes:

1. Obtaining a reliable population estimate in early October when the herd is aggregated for the rut. The entire known range of the herd should be searched during the census.

2. Obtaining composition data on a substantial fraction of the herd in early October.

3. Maintaining or increasing the number of radio-collared caribou to facilitate censusing efforts, and to improve information on range occupancy, seasonal movements, and herd composition and mortality.

4. Continuing investigation of the causes of summer calf mortality.

5. Determining the annual distribution of the herd (particularly in the Jarvis Creek Plateau-Granite Mountains area).

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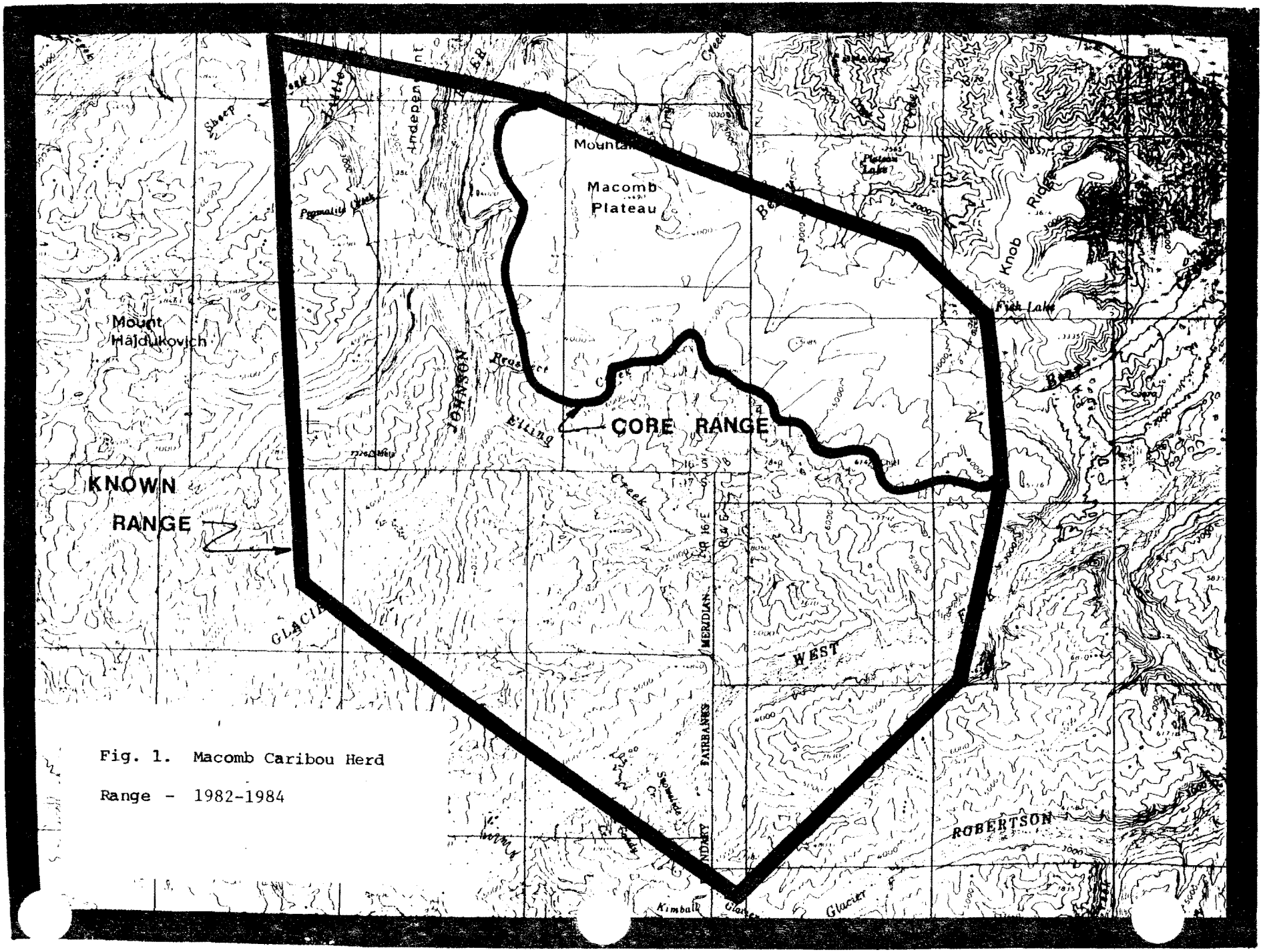

Fig. 1. Macomb Caribou Herd

Range - 1982-1984

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20E

HERD: Fortymile

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

The Fortymile Caribou Herd was photocensused in June 1984. A known minimum of 12,356 caribou were counted in 1984, compared to a known minimum of 12,500 in June 1983. This herd has increased from an estimated 4,000-6,000 in 1974. The herd may contain more than 12,500 caribou, but management decisions will continue to be based on known minimum herd size recorded for 1984.

Reduction in the number of wolves during winters 1981-84 in the southern portion of the herd's range appears to have reduced overwinter adult mortality and increased calf survival and recruitment rates.

Population Composition

On 7 October 1983, a sample of 980 caribou was classified as small bulls with cow-like antlers 8% (N = 81); medium bulls with recognizable bull-like antlers 11% (N = 104); large, fully mature bulls 12% (N = 117); cows, including yearling cows, 51% (N = 498); and calves 18% (N = 180). An additional 39 adults could not be classified.

The calf:cow ratio during fall was 36:100 and the bull:cow ratio was 61:100. Such ratios indicate that calf survival to 5 months of age is fair to good, and that limited bulls-only harvests of recent years have not had a significant effect on the sex ratio, which is normally skewed in caribou populations.

On 22 March 1984, a spring composition survey was conducted. A sample of 1,083 caribou was classified, including 754 cows, 206 calves, and 123 bulls. The calf:cow ratio was 27:100, indicating some differential loss of calves from late October until late March.

On 19 June 1984, a spring composition survey was conducted in the postcalving aggregation area on Mt. Harper. A sample of 3,940 caribou was classified as cows 53% (N = 2,098), calves, 24% (N = 954) and bulls, 23% (N = 888. The calf:cow ratio was 45:100, indicating good initial calf production and survival in 1984, the best in nearly 10 years.

Seasonal Concentrations and Movements

The Fortymile Herd wintered in the central and eastern portions of Subunit 20E and was available to caribou hunters in the Kechumstuk area during February 1984.

Unlike recent years, the herd calved closer to the traditional pre-1977 calving area in the upper Birch Creek drainage. For approximately the past 6 years, the herd has calved in the upper Charley and Seventymile River drainages.

Mortality

Natural mortality factors such as predation by wolves, grizzly bears, and perhaps golden eagles are believed to be the greatest sources of caribou mortality in the Fortymile Herd. Legal reported harvests have taken less than 2% of the herd annually in recent years.

A total of 200 caribou were reported taken during the 1983-84 season compared to 110 in 1982-83, an increase of 82%. Of the 200 bulls reported taken legally, 101 were taken during the early season (10 August-20 September) and 99 were taken during the 1 December-28 February hunt. Additionally, 19 cow caribou were found killed and abandoned along the Kechumstuk Trail in February. An estimated 50-100 cows may have been taken illegally and either reported as bulls or not reported at all.

Management Summary and Recommendations

A temporary cessation of wolf control during winter 1983-84 undoubtedly resulted in reduced caribou survival. Photocensuses in 1983 and 1984 revealed no significant difference in herd size. Initial calf production and survival were good during spring 1984. Harvests are modest and will provide for continued herd growth if wolf numbers are controlled.

The illegal taking of antlered cows, mistaken for bulls, should be reduced during the 1984-85 season, with restoration of the

season for antlerless bulls only after 10 December.

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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 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

A photocensus conducted in 1982 accounted for 171,699 caribou in the Western Arctic Herd (WAH). The apparent annual rate of increase from 1980 to 1982 was 11%. Assuming a continuation of this trend, we predicted that the WAH would number at least 212,000 by July 1984 (Anderson and James 1984). However, census efforts were unsuccessful in 1984 because of poor weather and failure of caribou to suitably aggregate. A photocensus is now planned for July 1985.

Expansion and increasingly heavy use of southern winter ranges continued in 1983-84. At least 20,000 caribou wintered near Talik Ridge at the headwaters of the West Fork of the Buckland River and the East Fork of the Koyuk River. Several thousand caribou wintered in the headwaters of the Kateel, Ungalik, Inglutalik, and Buckland Rivers. Additional but undetermined numbers were associated with radio-collared caribou in the upper Shaktoolik River drainage. As many as 10,000 caribou were observed in the upper Koyuk River drainage and east of Imuruk Lake on the Seward Peninsula. A hunting guide reported seeing 1,000-2,000 caribou near the headwaters of the Andreafsky River; however, this observation was unsubstantiated by survey flights. Caribou apparently did not use the middle Koyukuk River drainage where they were abundant during several winters immediately preceding the 1975-76 decline.

Ten female caribou were radio-collared near Ambler in September 1983. The tagging of these animals was part of a continuing effort to maintain 30-40 functioning transmitters in the WAH. Radio-telemetry is indispensable for efficiently conducting many phases of the survey-inventory program.

Population Composition

Spring short yearling counts were flown in 5 areas in April and May 1984, and an additional composition survey was flown by J. Hemming of Dames and Moore Consulting Engineers on 20 March 1984 (Table 1). Of 4,047 caribou tallied, 936 (23%) were short yearlings. This value is comparable to those of 1982 (23%) and 1983 (24%), is a continuation of a trend observed since 1977, and is indicative of good calf production and recruitment.

Calving ground surveys were flown on 4-7 June 1984. Survey weather was excellent but cool. Snow cover was fairly extensive across the western North Slope, ranging from 25% to 90% depending on slope and aspect. Radio-collared females were widely scattered rather than concentrated in the traditional calving area of the Utukok uplands. Radio-collared females were found from the Kukpowruk River to the mouth of the Colville River, and from the middle Meade River to the mountains south of Feniak Lake. Prior to 1984, the most complete radio-telemetry survey of the calving grounds was conducted in 1982. During the 1st week of June 1982, mean location of 28 female caribou was the headwaters of the Ketik River. At the same time in 1984, mean location of 29 female caribou was 35 mi farther southeast. Mean distance of all locations from their distribution center was 42 mi in 1982 but 63 mi in 1984, indicating greater dispersal in 1984.

By 7 June 1984 no large nursery bands were observed anywhere on the calving grounds. In 1982 and 1983 large nursery bands were observed near Omicron Hill and on Carbon Creek as early as 4 June. In 1984 the highest density of calving caribou was observed on upper Carbon Creek; however, caribou were conspicuously less abundant there than in 1982 and 1983. In 1984 mean group size associated with radio-collared animals was only about 7.

Because of wide dispersal over the range, accurate calf counts were not obtained in 1984. However, of 19 collared cows visually located, only 5 (26%) were accompanied by a calf on 5-7 June 1984. The 95% confidence interval for this value as a population estimate is (6%, 46%). Additionally, only 5 cows without calves still retained antlers, suggesting a maximum potential of 10 calves among 19 cows (53%).

Low productivity among radio-collared cows was consistent with results of postcalving ground counts. On 8-9 July a sample of 4,624 caribou from among 20,000-30,000 caribou moving through Eagle Creek included only 735 (16%) calves. This result is comparable to or below the poorest years in

the Canadian arctic but similar to some years prior to 1970 for the WAH. However, high recruitment to short yearlings in 1983 and 1984 should have produced large 1- and 2-year-old cohorts, thereby reducing potential recruitment of calves in 1984, but not to the extent observed.

The cause of apparently poor reproductive success in 1984 is conjectural. However, unseasonably cold weather and locally heavy snow cover persisted over much of northwestern Alaska into May 1984. On 15 May snow cover was continuous and unusually deep over the foothills and coastal plain of eastern Subunit 26A.

During survey flights conducted from Umiat in mid-May, we observed caribou cratering in up to 18 inches of snow. Caribou observed in April in the Chandler and Anaktuvuk River drainages had drifted west by mid-May, but most caribou observed appeared to be randomly wandering and foraging. No consistent westward movements were observed. On the other hand, several radio-collared females located in southern and eastern Subunit 26A during early June were relocated with postcalving aggregations on the Pitmegea River in early July. These observations suggest that many postparturient cows travelled great distances during June. We suspect that the failure of many cows to calve in the traditional area, followed by extensive movements to postcalving aggregations, may have substantially reduced neonatal survival.

Mortality

The reported harvest from the WAH during 1983-84 was 1,249 caribou. Hunters returned 503 harvest reports or reminder letter reports and 4 permit reports. Sex composition of the reported harvest was 1,017 males, 196 females, and 20 undesignated (Table 2).

Reported harvest was undoubtedly far lower than the actual harvest. Observations by Game Division personnel, reports by researchers from other agencies, and conversations with knowledgeable village residents suggested an actual harvest of 5,000-12,000 caribou. Available information also suggested that sex composition of the reported harvest was strongly biased towards male caribou. The actual sex composition was probably closer to equal numbers of males and females.

Wolf predation on caribou appeared to be very low north of the Brooks Range. Few signs of wolves south and none north of the Colville River were observed during spring

caribou and moose surveys. Wolf predation on caribou south of the Brooks Range was undoubtedly higher, judging from periodic observations of wolf signs along the south-central boundary of Unit 23. However, on 19 March, D. Anderson and T. Smith observed no evidence of wolves or wolf kills associated with a dense aggregation of about 20,000 caribou on Talik Ridge. On 6 April D. James observed 2 apparent wolf kills in the same area. By comparison, wolf signs were frequently observed in the mid-1970's when wolves were last known to be abundant on WAH winter range (P. Valkenburg, pers. commun.). Many caribou wintered south of Unit 23 where wolf numbers are normally higher. It is reasonable to assume a higher level of wolf predation there than on other parts of the WAH winter range.

Management Summary and Recommendations

Management priorities have not changed since the 1982-83 reporting period. In April 1984 the Board of Game approved a strategic management plan for the WAH that identifies maintaining a postcalving herd of at least 200,000 animals as the highest management priority. Results of the 1982 photocensus and recent composition information suggest that the WAH has now reached the desired minimum.

Our highest survey-inventory priority is conducting a biennial photocensus. No census was undertaken in 1984 because of poor weather and the failure of caribou to form adequately dense aggregations. Another photocensus will be undertaken in July 1985.

Spring short yearling counts to obtain an index of recruitment and overwinter calf survival are also a high priority. Rangewide radio-tracking surveys will be conducted annually in early and late winter (to determine distribution patterns), during calving and postcalving reconnaissance, throughout winter on the eastern Seward Peninsula in conjunction with efforts to minimize caribou/reindeer conflicts, and whenever unusual circumstances require additional information. A sample of at least 30 radio-collared animals will be maintained in the herd by annually replacing lost radios during fall migration by capturing caribou swimming across the Kobuk River, or by chemical immobilization on land when necessary.

In April 1984 the Board of Game adopted staff proposals to simplify harvest reporting requirements. The previous harvest ticket/registration permit system has now been replaced with a simple report card with mandatory issuance

and voluntary return. Major public relations programs will be geared to administering the new reporting system. The degree to which this system is successful will be analyzed and reported next year. Supplementary approaches to obtaining harvest information, such as infrequent questionnaire samples, will be considered. Enforcement efforts during major hunting periods should be increased to improve compliance with licensing and harvest report issuance and to minimize wasteful practices.

Apparent low calf productivity in June 1984 underscores the importance of calving-ground reconnaissance and estimation of annual recruitment, and makes a 1985 photo-census imperative.

Literature Cited

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Table 1. Western Arctic Caribou Herd spring short yearling counts, 1984.

Survey area	Date	Total sample	Short yearlings N	Short yearlings %
Mulgrave Hills[a]	20 Mar	1,106	302	27
Tagagawik River	1 Apr	638	109	17
Talik Ridge	6 Apr	946	265	28
Selawik Hills	6 Apr	123	41	33
Fli River	13 Apr	442	88	20
North Slope[b]	15 May	792	131	17
Totals		4,047	936	23

[a] Conducted by J. Hemming of Dames and Moore Consulting Engineers (unpubl. data).

[b] Includes numerous areas of the foothills and coastal plain near Umiat.

Table 2. Harvest from the Western Arctic Herd by GMU, sex, and reporting system, 1983-84.

GMU	Reported harvest	Sex			Harvest tickets returned		Registration permits returned (all successful)
		Male	Female	Unknown	Success.	Unsuccess.	
22	64	45	19	0	20	10	0
23	1,028	850	160	18	342	38	4
24	10	7	3	0	4	7	0
26	147	130	15	2	67	15	0
Totals	1,249	1,032	197	20	433	70	4

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 25 and 26C

HERD: Porcupine

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

Size of the Porcupine Herd was stable at about 100,000 caribou during the 1960's and early 1970's. The herd increased to about 110,000 animals in 1979 and to about 137,000 in 1982 (extrapolated from 125,174 actually counted). In July 1983, 135,284 caribou were counted in an aerial photocensus. No extrapolation was made, primarily because composition data were inadequate. However, productivity data and comparison with the actual photo counts from previous years indicate that the herd continued to increase. Applying the 1979-1982 growth rate of 6-8% per year to the extrapolated total from 1982 indicates 145,500-148,000 caribou in the Porcupine Herd during July 1983.

Population Composition

Surveys of a high-density calving area on 6 June indicated good initial productivity (74 calves:100 cows) (Table 1). Eighteen of 23 radio-collared cows (78%) produced calves, further suggesting good productivity. Midsummer composition counts were inadequate to estimate overall herd composition, but indicated high early survival of calves (Table 1).

Mortality

Calf mortality was documented by a radio-collaring study. Sixty-three newborn calves were fitted with mortality-mode transmitters on 4-7 June 1983; 11 of the calves (18%) had died by 5 August 1983. Predation by golden eagles and brown bears caused about 50% of this early mortality, natural abandonment caused about 25%, and the remainder was of undetermined cause. Mortality among the calves of radio-collared cows was 28%. These mortality rates are relatively low, but they still do not agree closely with the minimal mortality indicated by composition counts (Table 1). A count of initial productivity on 6 June was probably taken before all calves had been born

and is thus a minimal estimate. Furthermore, the midsummer composition sample was small relative to herd size and could well be biased. Nevertheless, data indicate early calf mortality substantially below the levels of 40-60% commonly reported in the literature.

Four calf collars were shed during the winter, and 5 more apparently ceased operating and were never heard after midsummer. This reduced the total sample for which 1st year mortality could be determined from 63 to 54 calves. Twenty collared calves died during their 1st year and 3 more were heard on mortality mode (indicates stationary position, not necessarily mortality), but the collars could not be retrieved to verify if the calf had died or the collar was shed. Eight calves lived through at least part of the winter, until their collars apparently failed, and 23 survived until spring.

Maximum 1st year calf mortality was 57%, assuming all but 23 of 54 calves starting the winter with active collars died. Minimum mortality was 39%, assuming the 3 unverified mortality signals were actually shed collars and that the 8 calves tracked part way through the winter survived to spring. In this case, 20 of 51 calves with active collars would have died. A more probable minimum mortality of 43% assumes the unverified mortality signals were from dead calves, in which case 23 of 54 collared calves died. Assuming 74 calves:100 cows were born in 1983, overwinter calf mortality was 43-57%, and 90% of the cows survived the winter, there should have been 36-47 yearlings:100 cows surviving in 1984. This indicates a very productive and growing population.

Only 83 people reported hunting Porcupine Herd caribou in Alaska during the 1983-84 season. In Unit 25, 45 of 76 hunters were successful and took 71 caribou. Four of 7 hunters in Subunit 26C were successful and harvested 10 caribou. Most of the reported hunting was by fly-in sport hunters. Only a few local residents from Kaktovik and Ft. Yukon reported hunting. As in the past, the majority of the harvest of the Porcupine Herd caribou in Alaska was by residents of Arctic Village, Venetie, and Kaktovik, who did not obtain and use harvest tickets. The harvest in Kaktovik was recorded by Subsistence Division personnel; about 100 caribou were taken, but that includes some from the Central Arctic Herd. Porcupine Herd caribou were not available near Venetie, but were common near Arctic Village from October through mid-May. However, unusually deep, soft snow during late winter and spring severely hampered snowmachine travel. Thus, the harvest in the Arctic Village area by local residents and residents from other villages was probably lower than in the past few years. No estimates are available, but the total subsistence take in Unit 25 was probably only a few hundred caribou.

Increasing the season length (closing date extended from 31 March to 30 April) and increasing the number of caribou that could be transported out of the Unit from 2 to 3 had minimal effect on harvest. Only 5 caribou were reported shot during April, all by 1 Kaktovik resident. Only 8 hunters, 3 of whom were local residents, shot more than 2 caribou. Four out-of-Unit hunters shot 3 caribou each, and one shot 4.

Management Summary and Recommendations

Although the season dates for the 1984-85 season were not changed, the bag limit for Porcupine Herd caribou was increased to 10, and 5 caribou rather than 3 may be transported out of the Unit. These liberalizations should have no significant effect on harvest. Opportunistic take of caribou by local residents during May and June will undoubtedly continue. Paradoxically, local residents claim they do not want an open season in May and June, apparently for fear of attracting hunters from other areas. It is very doubtful, however, that sport hunters would take advantage of a year-round season. Even with the current 10-month season, nearly all sport hunting occurs during August and September. Strict enforcement of the May-June hunting closure is not necessary biologically and will inevitably cause resentment among any local users. Perhaps all parties could be accommodated by a year-round season, with transportation by aircraft prohibited during May and June.

The new Arctic Caribou Harvest Report Cards required for the 1984-85 season will not likely work any better for recording local harvest than the old reporting system. Substantial efforts at education or enforcement will be necessary to assure compliance with any harvest reporting scheme.

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Table 1. Sex and age composition counts of the Porcupine Herd, 1983.

Date	Cows		Calves			Yearlings			Bulls			Total
	N	%	N	%	:100 cows	N	%	:100 cows	N	%	:100 cows	
6 June	895	51	664	37	74	212	12	24	0	0	0	1,771
5 July	991	52	711	37	72	118	6	12	98	5	10	1,918
9 July	352	53	268	40	76	21	3	6	25	4	7	666

CARIBOU

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 26B

HERD: Central Arctic

PERIOD COVERED: 1 July 1983-30 June 1984

Season and Bag Limit

See Hunting Regulations No. 24.

Population Status and Trend

A photocensus of the Central Arctic Caribou Herd was made on 21 July 1983; composition counts were done the following day. During excellent weather conditions, we photographed most groups with a Fairchild T-11, 9 x 9" aerial camera mounted in a DeHavilland Beaver. A group of caribou in the Sagavanirktok River drainage was photographed with 35mm color film, and groups in the Colville Delta, Pt. Hopson, and Brownlow Point areas were counted visually from a Super Cub (PA-18).

We counted 12,905 caribou in the Central Arctic Herd (Table 1). Forty-six percent of the herd was counted on the coast west of the pipeline corridor, 53% on the coast east of the corridor, and 1% scattered inland. We estimated a post-calving total of 13,000 caribou.

The Central Arctic Herd has grown from an estimated 9,000 in 1981 to an estimated 13,000 (Table 1) in July 1983, an increase of about 20% per year. This rate of growth is approaching the maximum recorded in Alaska and is attributed to excellent calf production and survival and very low adult mortality.

Industrial development near Prudhoe Bay and the Trans-Alaska Pipeline continue to affect the local distribution of caribou but have not decreased herd productivity.

Population Composition

Calving ground surveys indicated excellent initial calf production (Table 2), and short-yearling survival counts indicated excellent survival through April.

Mortality

A total of 108 hunters reported hunting Central Arctic Herd caribou and 91 were successful. They harvested 170 caribou, more than double the previous year's harvest. Although regulations allowed caribou of either sex to be taken during most of the season, more than 96% of the take were bulls. Forty-eight hunters took 1 caribou each, while 4 killed the maximum bag limit of 5.

Because of increased access provided by the Dalton Highway, fewer than one-third of the hunters flew into the area. Although success rates were similar (85% vs. 83%), fly-in hunters took fewer caribou per hunter (1.4 vs. 2.2) than hunters using the highway for access.

As in previous years, local subsistence harvest by Nuiqsut, Kaktovik, and Anaktuvuk villagers was mostly unreported. Kaktovik residents took up to 50 Central Arctic Herd caribou, but the harvest by residents of the other villages is unknown. The subsistence take was still far below current herd production.

Total mortality of the Central Arctic Herd remained far below recruitment levels, and the herd continued to grow.

Management Summary and Recommendations

Increasing the length of the season to 1 July-30 April, raising the bag limit from 3 to 5, and allowing the taking of cows after 1 October have had little effect on hunter-induced mortality. Even though the reported harvest doubled, only 3 hunters took advantage of the extended season, only 6 killed more than the previous limit of 3 caribou, and only 6 cows were harvested. The increased hunting pressure came from hunters along the Dalton Highway during the traditional August-September season. Although the northern section of the highway (above Disaster Creek) is restricted to commercial traffic, removal of the traffic check station and minimal enforcement of the restriction to only commercial traffic have increased the number of hunters gaining access to the herd via the Dalton Highway. However, the discharge of firearms within 5 mi of the highway is enforced, which makes the potential for a greatly increased take improbable. Furthermore, local avoidance of the Dalton Highway by caribou limits their availability along the road.

The liberalized regulations have had little effect on subsistence harvest because local residents had largely ignored former, more restrictive regulations. Currently, subsistence caribou hunting by local residents has little effect on the

herd's productivity. The more liberal regulations should enable local residents to continue traditional hunting practices in compliance with game laws.

Subsistence Division conducted household surveys at Kaktovik during the past year, and data should be available soon regarding the number and location of caribou harvested. Subsistence Division is also beginning similar surveys in Nuiqsut and Anaktuvuk. These surveys should be a good opportunity to establish a dialogue with local hunters to encourage compliance with regulations.

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Table 1. Total count of caribou from a photocensus of the Central Arctic Herd, 21 July 1983.

Area	No. of caribou (% total caribou counted)	
Colville Delta	68	
Kuparuk Delta	4,929	
Pt. McIntyre	980	
Subtotal west of pipeline	5,977	(46)
Sagavanirktok Delta	418	
Kadleroshilik Delta	72	
Shaviovik Delta	3,618	
Pt. Hopson	13	
Canning Delta	1,711	
Brownlow Point	41	
Tamayariak Delta	955	
Subtotal east of pipeline	6,828	(53)
Counted in peripheral areas	100	(1)
Total count	12,905	(100)

Table 2. Sex and age composition counts of the Central Arctic Herd, 1983-84.

Season	Cows		Calves			Yearlings			Bulls			Total
	N	%	N	%	:100 cows	N	%	:100 cows	N	%	:100 cows	
Calving (June 1983)	867	46	798	42	92	131	7	15	84	5	10	1,880
Post-calving (July 1983)	1,687	46	756	21	45	-[a]	-	-	1224	33	73	3,667
Spring (April 1984)	326	25	224	18	69	-[a]	-	-	736	57	226	1,286

[a] Yearlings classified as adult cows or bulls (yearlings are 13 months old during July counts and 23 months old during April counts).