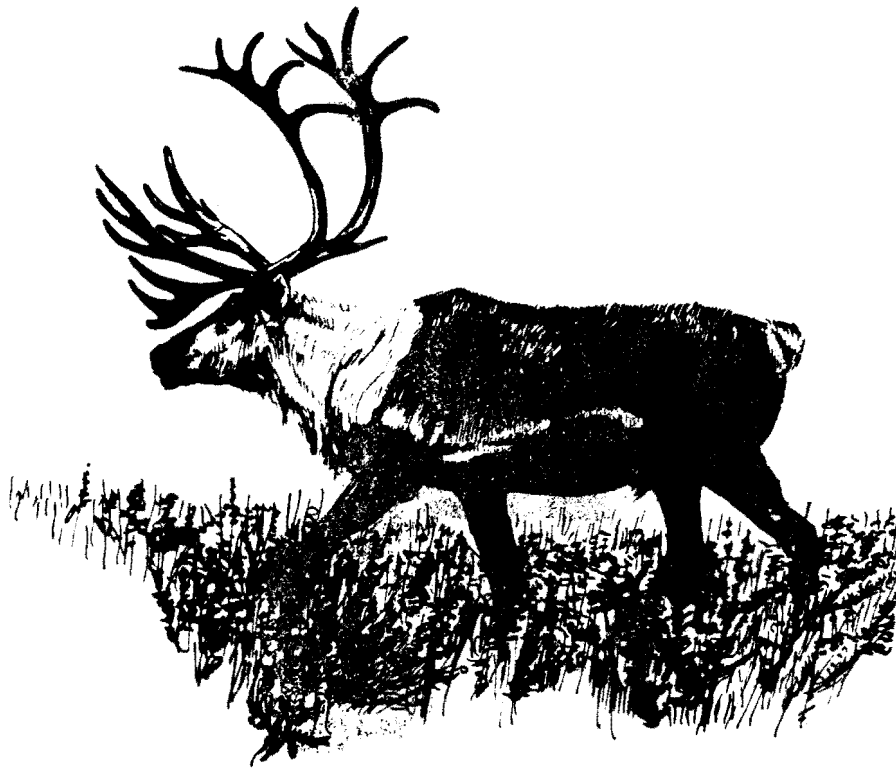


Alaska Department of Fish and Game
Division of Wildlife Conservation
Federal Aid in Wildlife Restoration
Annual Report of Survey-Inventory Activities
1 July 1988-30 June 1989

CARIBOU



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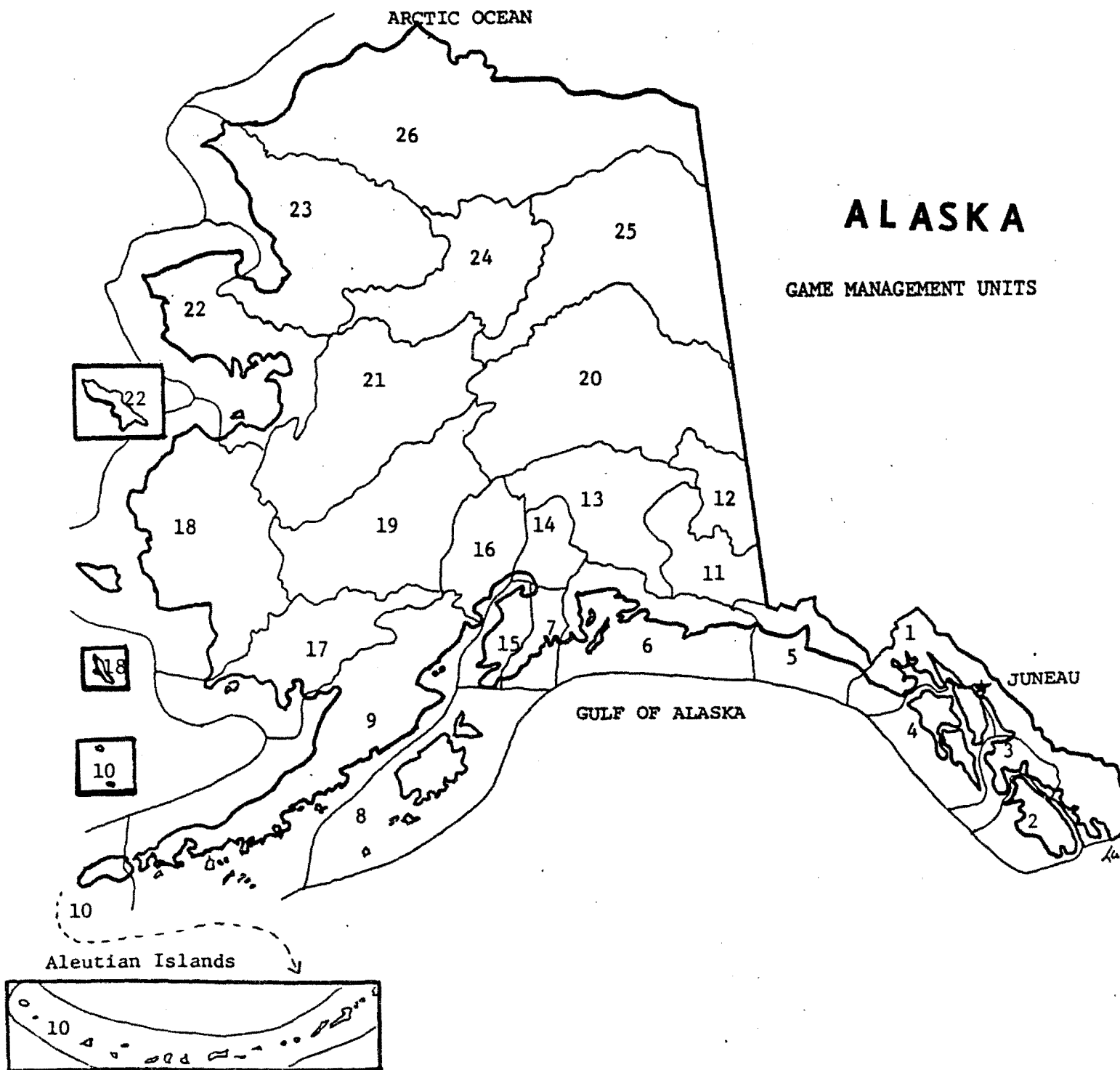
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STATEWIDE HARVEST AND POPULATION STATUS

Twenty-nine groups of caribou are identified in Alaska as "herds," but the size of these groups varies from a few hundred to over 300,000. The total number of caribou in the state is approximately 720,000, and almost three-fourths (71%) of these are found in two herds: the Western Arctic and the Porcupine. Status of the smaller herds (e.g., less than 1,500) is difficult to ascertain, and we really don't know whether these populations are stable, increasing, or declining. Statewide caribou populations are relatively high and increasing, a decidedly more optimistic outlook than the one existing a decade ago.

The harvest of caribou (both reported and estimated) during the 1988-89 reporting period was 23,579. The reported harvest, which is derived largely from hunter report cards, is far below the actual harvest. Compliance with reporting requirements is still a significant problem, particularly in rural areas. Herd status and estimated harvest in 1988-89 are summarized on the following page.

Steven R. Peterson
Senior Staff Biologist

Herd Name	Game Management Unit	Population estimate	Population trend	Total Harvest (Reported & estimated)
Kenai Mountains	7	305	Declining	25
Mulchatna	9A & B, 17B & C, 19B	70,000	Increasing	3,000
N. AK Peninsula	9C & 9E	20,000	Stable	2,300
S. AK Peninsula	9D & 10			
	(Unimak Island)	4,000	Decreasing	125
Adak	10 (Adak Island)	500	Stable	147
Mentasta	11	2,484	Decreasing	49
Chisana	12	1,660	Increasing	64 ^a
Nelchina	13, 14B	40,000	Increasing	1,656
Kenai Lowlands	15A	125	Stable	3
Denali	13E, 20C	2,700	Increasing	0
Kilbuck Mountains	18	950	Increasing	30
Andreafsky	18	--	--	--
Beaver Mountains	19, 21	1,600	--	17
Kuskokwim Mtns.	19, 21	300	--	--
Sunshine Mtns.	19	550	--	2
Big River	19	750	--	43
Rainy Pass				

STUDY AREA

GAME MANAGEMENT UNIT: 7 (4,423 mi²)

HERD: Kenai Lowland, Kenai Mountain, Tustumena Bench, Fox River

GEOGRAPHICAL DESCRIPTION: Kenai Mountains

BACKGROUND

As a result of reintroductions of caribou in 1965-66 and 1985-86 (Spraker 1989) there are now 4 small herds on the Kenai Peninsula. The Kenai Lowland Caribou Herd (KLCH) summers in the area north of the Kenai Airport to the Swanson River and winters on the Moose River Flats near Bear Lake; the Kenai Mountains Caribou Herd (KMCH) occupies the area drained by the Chickaloon River, Big Indian Creek, and Resurrection Creek in Unit 7; the Tustumena Bench Caribou Herd (TBCH) is found in the upper drainages of Funny and Killey Rivers in Subunit 15B; and the Fox River Herd (FRCH) occupies the area between upper Fox River and Truuli Glacier in Subunit 15C. The population sizes of the KLCH, KMCH, TBCH, and FRCH are 115, 300, 90, and 30 caribou, respectively.

Recently transplanted caribou in the TBCH and FRCH, where hunting is prohibited, have shown a steady growth. Annual status reports for the Tustumena Bench and Fox River groups have not yet been initiated. The KMCH has been hunted annually since 1972. As hunters became aware of the KMCH, the number of issued permits and harvest sharply increased. In 1974 a harvest quota of 50 caribou was recommended to stabilize the herd at approximately 250 animals, because little was known concerning the carrying capacity of their range. An unlimited number of permits and extended seasons were allowed, and the season was closed by Emergency Order when necessary. In 1977 a limited permit system was begun, resulting in an annual success rate ranging from 17% to 33% for all permit holders. The KMCH began declining after 1985 for unknown reasons; harvest have been reduced there since 1987.

POPULATION OBJECTIVES</

data were collected through the mandatory reporting requirements of the drawing permit process.

RESULTS AND DISCUSSION

Population Status and Trend

The KMCH has had 2 population peaks in its 25-year history. The original introduction of 15 caribou in 1965-66 grew to a minimum of 339 in 1975. The population was reduced to 194 by 1977, reaching the 2nd peak of 434 in 1985. For the last 3 years KMCH has shown a declining trend to a minimum of 305 caribou in the fall of 1988. Production appears to have also declined in recent years. The 1979-83 mean was 22.8% calves, with a peak of 29% recorded in 1982; the 1986-88 mean was 14.8% calves.

Population Size:

In October 1988 a total of 280 caribou were counted in the KMCH. Hunters killed an additional 25. The total fall 1988 minimum population estimate was 305 caribou. Fall estimates were 434 and 347 in 1985 and 1987, respectively.

Population Composition:

There were 23 calves:100 cows and 32 bulls:100 cows; calves composed 15% of the herd. Sex ratios declined from 1979 to 1982, but they showed no discernable trend between 1983 and 1988 (Table 1). Calf production in the early 1980's was higher than those for the last 3 years.

Mortality

Season and Bag Limits:

The open season for resident and nonresident hunters in Unit 7 north of the Sterling Highway and west of the Seward Highway is 10 August to 30 September;

Hunter Residency and Success. Primarily Alaska residents hunted the Kenai Mountains herd. A total of 80 individuals reported hunting, and there was a 17% success rate.

Permit Hunts. Hunting of this small introduced population is regulated by drawing permit. The number of permits issued were unlimited between 1972 and 1976. Between 100 and 250 permits have been issued each year since. One hundred fifty permits were issued during the reporting period, a decrease from 250 issued in 1986 and in 1987. A record number of 949 people applied for the 150 available permits, and 80 (53%) of the permit holders reported hunting. The reduced number of permits in 1988-89 reflects management concerns about decreasing population size and productivity.

Harvest Chronology. Twelve (48%) of the 25 reported caribou were killed during the first 2 weeks of the season.

Transport Methods. Nineteen (76%) of the successful hunters walked into the area they hunted, two (8%) used horses, and two (8%) used aircraft. Unsuccessful hunters followed a similar pattern of reliance on foot travel.

Game Board Actions and Emergency Orders

In the spring of 1988 a Department proposal was adopted by the Board of Game to reduce the number of permits from 250 to 150 for the fall 1988 season. No further Board action was taken during the 1988-89 reporting period.

CONCLUSIONS AND RECOMMENDATIONS

Data from 1988 suggests the KMCH is currently about 120 below the Department's population size objective of 400 caribou. Limited habitat, harsh environmental conditions, predation, and human harvests are all possible explanations for the recent lack of growth of this herd. An approved recommendation to the Board of Game to reduce the number of permits issued resulted in a harvest of 25 animals, compared with 44 reported in 1987. This harvest level will allow the herd to increase gradually, if controlling factors other than human harvest do not change significantly. If neonate mortality continues to be high, as witnessed in 1987, and fall recruitment low during the 1989 fall surveys, I suggest we read

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Table 1. Kenai Mountains herd composition, harvest, and estimated population size 1979-88.

Year	Total caribou counted	Calves (%)	Calves: 100 females	Males: 100 females	Harvest	Estimated population size
1979	201	15	24	44	33	234
1980	227	20	35	36	21	248
1981	256	27	47	30	21	277
1982	266	29	51	27	28	294
1983	276	23	40	39	20	305
1984 ^a	343	--	--	--	52	395
1985	401	15	25	44	33	434
1986 ^b	---	--	--	--	50	---
1987	303	12	20	44	44	347
1988	280	15	23	37	25	305

^a No composition information.

^b No survey.

Table 2. Kenai Mountains herd annual harvest by permit (drawing) hunt, 1984-85 to 1988-89.

Year	Season dates	Participation			Harvest				Percent success
		Applicants	Permits	Hunters	Male	Female	Unknown	Total	
1984-85	8/10-10/31	648	200	114	34	17	1	52	26
1985-86	9/10-11/15	236	200	134	21	12	0	33	17
1986-87	9/06-10/31	826	250	134	36	14	0	50	20
1987-88	8/10-9/30	^a	250	157	21	23	0	44	18
1988-89	8/10-9/30	949	150	180	15	10	0	25	17

^a Missing data.

STUDY AREA

GAME MANAGEMENT UNIT: 9A, 9B, 17B, 17C, nd 19B (40,000 mi²)

HERD: Mulchatna

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay and the Nushagak Hills

BACKGROUND

There is little information available on the Mulchatna Caribou Herd (MCH) before 1973. According to Skoog (1968), the area presently occupied by the MCH was probably used seasonally during the 1800's by segments of 2 large migratory herds as well as by a resident herd. Caribou apparently migrated between the Alaska Peninsula and the Mulchatna range. Additionally, a large herd occupying the Bering Sea coast from Norton Sound to Bristol Bay probably utilized the current Mulchatna range. Presently, the range of this former herd is nearly devoid of caribou, except for the tiny Kilbuck Mountains and Andreafsky herds, and it is probably the largest area of unoccupied caribou habitat in the state.

The MCH was first surveyed in 1949, when the population was estimated at 1,000 caribou (ADF&G files). Skoog (1968) estimated the MCH at 5,000 animals in 1964. An estimated 6,030 caribou were observed on a survey in June 1973, but it was not until June 1974 that a major effort was made to accurately census this herd. A total of 13,079 caribou were counted at that time, providing a basis for an October estimate of 14,231 caribou.

Photocensusing surveys during the 1970's indicated a declining trend in population size (Table 1). Both seasons and bag limits were reduced continuously during this period; however, poor counting conditions and inconsistent survey efforts may have contributed to this apparent decline.

In 1981, 20 radio transmitters were attached to caribou, greatly assisting our ability in locating postcalving aggregations. The 1981 photoc

METHODS

A photocensus estimate of the herd was conducted during the postcalving aggregation by ADF&G and Lake Clark National Park staff. A fall sex-age composition survey was conducted in October; 8 additional radio collars were placed on caribou. Most of the 20 radio collars placed in 1981 had ceased to operate by 1988-89. Monthly radio-tracking flights were conducted by the National Park Service to continue the demographics study that began in 1981. A spring productivity survey was conducted on the calving grounds in the Snipe and Twin Lakes area. Harvest monitoring by ADF&G staff was maintained along the Mulchatna and upper Nushagak Rivers during the first half of September when hunting pressure was most intense. Harvest data were collected from statewide harvest reports. Data was of limited value, because no reminder letters were sent to hunters failing to report.

RESULTS AND DISCUSSION

Population Status and Trend

The increasing size of the Mulchatna herd since 1981 (17% per year) has been attributed to a succession of mild winters since the late 1970's, low predation rates, and an annual harvest rate of less than 5% since 1976. Radiotelemetry data indicated that summer and fall range use has expanded northwest to the Taylor Mountains and the Aniak River drainage and north throughout the Stony River drainage. Winter range use has expanded southeast across the Kvichak River to the Naknek River drainage and northeast as far as Kokhanok. Significant numbers of caribou (300+) have been wintering on the west side of the Nushagak River between Kemuk Mountain and the Muklung Hills since 1986.

Several peripheral groups appeared to be autonomous from the Mulchatna herd. A group of 100 to 300 caribou were located near Etolin Point. Rainy Pass had an estimated 200 to 400 that may have remained in that vicinity throughout the year. A group of approximately 600 to 800 caribou inhabited the Kilbuck Mountains to the west of the Mulchatna range.

A radiotelemetry study to determine population size and demographics of this group was initiated

Population Size:

A photocensus of the Mulchatna herd was conducted on 30 June 1988; 60,328 caribou were observed, representing a 32% increase over the 45,742 observed in 1987 (i.e., extrapolated population estimate of 52,527). The increased effort to photograph all groups of males during the 1988 survey may have partially accounted for an increase of this magnitude. During the photocensus conducted on 28 June 1989, the population of the Mulchatna herd was estimated at 70,000 caribou. Again, we attempted to photograph all male groups, because no sex-age composition count was planned for the fall of 1989.

Population Composition:

Sex-age composition surveys were conducted on 6 October 1988 and 29 June 1989 (Table 2). Ratios of both males:100 females and calves:100 females during fall composition counts have remained consistently high during the 1980's. The percentage of males in postcalving aggregations has steadily declined as this herd has increased in number. The increase noted in the fall ratio of males:100 females indicated that the current level of hunting pressure had a negligible effect on the male segment of the population.

Distribution and Movements:

The cooperative effort between ADF&G and the Lake Clark National Park continued during this reporting period. The additional 8 radio transmitters placed on caribou in October were monitored monthly by NPS personnel. Range use patterns were similar to those in 1987-88, except that deep snows in late October and November forced caribou from their traditional winter range west of Iliamna Lake between the Kaktuli Hills and the Nushagak River to cross the Kvichak River and winter between Kokhanok and the Naknek Rivers. A major portion of the northern Alaska Peninsula herd moved north across the Naknek River and intermingled throughout the winter with the Mulchatna herd. Radiotelemetry data throughout the winter and spring indicated the herds separated during the spring migration and all radio-collared animals returned to their traditional calving grounds in May.

resident hunters not more than one may be taken from 10 August to 30 November. The bag limit for nonresident hunters is 1 caribou.

Human-induced Mortality:

The reported harvest from the Mulchatna herd during the 1988-89 regulatory year was 1,471, which is the highest recorded for this herd; of these, 1,153 were males, 280 were females, and 38 were unknown. Most females were taken during the winter season. Weather conditions were ideal for hunting in March, and nearly all of the harvest from December to March occurred then. As in previous years, the majority of harvest by local residents was not reported. Most of the unreported harvest is attributed to the Nushagak River villages in Unit 17, although efforts to distribute harvest tickets and establish license vendors in those villages have met with some success. The total estimated unreported harvest during this regulatory year was 1,500 caribou, bringing the total estimated harvest to slightly less than 3,000 caribou.

General field observations indicated that the density of hunters in these units has increased steadily since the early 1980's during the fall season. Harvest levels remaining at less than 5% of the total population do not appear to be limiting herd growth.

Natural Mortality:

A ground survey of the calving grounds in the Snipe and Twin Lakes area conducted 3 to 6 June 1989 indicated that the major cause of calf mortality on the calving grounds was predation by brown bears. Remains of 11 calves were found; one died shortly after birth from an unknown illness, and one appeared to have been killed by wolves. The others had been killed by brown bears.

Snow depths were abnormally high in the Wood-Tikchik Mountains and in all drainages of the Nushagak and Mulchatna Rivers. Atypical of most years, snow accumulated to depths approaching 1 meter by mid-November over most of the traditional wintering area west of Iliamna Lake between the Kvichak River and the Stuyahok and Koktuli Hills. Most of the herd was forced to winter east of the Kvichak River in areas not traditionally used between Kokhanok and King Salmon; however, reports from hunters in March indicated that the harvested females all had some fat reserves

indicated a general deterioration of range quality on the calving grounds since 1980.

CONCLUSIONS AND RECOMMENDATIONS

The MCH has experienced exceptionally rapid growth since 1980. The postcalving population estimates have increased from 20,618 in 1981 to 70,000+ in 1989. While hunting pressure has grown in recent years, annual harvests have remained at less than 5% of the population.

Concurrent with this population growth, the MCH has expanded into new range to the north and west in the summer and fall and to the south and east during the winter months. While the area west of the Nushagak River in Subunit 17C has been closed to caribou hunting for the past 3 years, this herd continues to have difficulty establishing significant use of this habitat because of illegal harvests by some area residents.

Radiotelemetry has been a valuable tool for managing this herd. Comparatively few dollars have been spent annually on MCH management, and population estimates would be impossible without the use of radio transmitters to locate the postcalving aggregations. The 20 radio collars placed on caribou in this herd in 1981 and most of the 10 placed in 1982 are no longer functional. Ten, 10, and 8 transmitters were placed on caribou in 1986, 1987, and 1988, respectively. A minimum of 30 radio transmitters are required to maintain a high probability of finding all of the major postcalving aggregations during the annual photocensus estimate in a herd of this size. Because cooperative efforts with the Clark National Park Service to conduct annual photocensus estimates and monitor herd movements have been highly successful and cost effective for both agencies; they should be continued. While it is impossible to predict how long this herd may continue to increase, it is very likely that rate of increase may occur during the next few years. A potential advantage of continued herd growth is the possible colonization of vacant historical caribou habitat along the Bering Sea coast to the northwest. This would be a substantial benefit to local residents because ungulate density is extremely low in the area.

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Table 1. Mulchatna caribou photocensus estimates, 1949 to present.

1949	First survey of Mulchatna Herd. Est. 1,000 caribou.		
1965	Skoog estimated 5,000 caribou (Skoog, 1968).		
1973	Estimate 6,030 (ADF&G Files).		
<u>Date</u>	<u>Preliminary Estimate</u>	<u>Actual Count</u>	<u>Extrap. Estimate</u>
1949	--	--	1,000 ^a
1965	--	--	5,000 ^b
1973	--	--	6,030 ^c
1974	--	13,079	14,231
1975 ^d	--	--	--
1976	--	9,097	--
1977 ^d	--	--	--
1978	--	6,340	7,503
1979 ^d	--	--	--
1980	10,000+ caribou observed.	--	--
1981	--	18,599	20,618
1982 ^d	--	--	Increase noted
1983	--	25,416	--
1984	24,221	33,214	--
1985	36,706	42,9	

Table 2. Sex and age composition counts of the Mulchatna caribou herd conducted in the summer and fall, 1974-1989.

Date	Males:100 females	Calves:100 females	Calf % ^a in herd	Female % ^a in herd	Male % ^a in herd	Sample size
SUMMER COUNTS						
6/19 & 20/74	36.0	38.3	22.0	57.3	20.7	3,130
6/18/78	32.1	49.5	27.2	55.1	17.1	1,006
6/5 & 6/79	--	45.9	31.5	--	--	531
7/1/81	26.4	51.9	29.1	56.1	14.8	3,324
6/16/82	14.7	59.3	34.1	57.5	8.4	5,097
6/16 & 17/83	52.2	51.4	25.2	49.1	25.6	1,926
6/16 & 17/83	44.5	49.7	26.0	51.2	22.9	1,926
6/26/84	39.2	57.8	29.3	50.8	19.3	2,731

STUDY AREA

GAME MANAGEMENT UNIT: 9C and 9E (24,000 mi²)

HERD: Northern Alaska Peninsula

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

BACKGROUND

The Northern Alaska Peninsula Caribou Herd (NAPCH) ranges from Port Moller to the Naknek River drainage. Historically, the size of this population has fluctuated widely, peaking at the turn of the century and again in the early 1940's (i.e., 20,000 caribou). The last population low occurred during the late 1940's (i.e., 2,000 caribou); since that time the herd has experienced steady growth until 1984, stabilizing at approximately 20,000.

POPULATION OBJECTIVES

To maintain the midsummer population between 15,000 and 20,000 and an October sex ratio of 40 bulls:100 cows.

METHODS

Radiotelemetry-aided aerial photocensus were conducted in late June on postcalving concentrations. Fall sex and age composition surveys were conducted in October during the rut, and reconnaissance flights (i.e., using radiotelemetry) were conducted throughout the year to monitor herd movement. The harvest was monitored by harvest tickets and supplemented by hunter checks.

RESULTS AND DISCUSSION

Population Status and Trend

The NAPCH has grown since the early 1950's. Photocensuses in 1984 and 1985 showed the population numbered at least 19,000. In 1986 census results were unreliable, because several

however, in recent years several small groups (predominantly bulls) have been seen. For the first time in 1989, calving was documented occurring in the hills between King Salmon Creek and the Alagnak River. It is not known if these caribou were originally from the NAPCH or Mulchatna herd.

Mortality

Season and Bag Limits:

The open season for all hunters in Subunits 9C and 9E is 10 August to 31 March. The bag limit for subsistence and resident hunters is 4 caribou; however, for subsistence hunters not more than two may be taken from 10-31 August and not more than one may be taken from 1 September to 30 November; for resident hunters not more than one may be taken from 10 August to 30 November. The bag limit for nonresident hunters is one caribou.

Human-induced Mortality:

The 1988-89 reported harvest from the NAPCH was 939 (Table 2), including 841 males (85%) and 147 females (15%). Most local and some nonlocal hunters did not report killing caribou. In an effort to estimate the percentage of the nonsubsistence harvest that was not reported during the fall of 1987, a total of 106 successful hunters were checked as they departed King Salmon. Harvest ticket numbers, hunter residency, and harvest were discretely recorded so that later reporting would not be seriously biased. These hunters had taken a total of 116 caribou. After harvest reports had been returned, a comparison was made between the field interviews and reported harvest. Of the 106 hunters previously interviewed, 65 submitted the required harvest report, indicating a harvest of 70 caribou; thus just over 60% of the known harvest was reported. McNay (1988) used a similar procedure in Unit 20, estimating the reporting rate at 56%. Although this is a crude procedure for estimating the unreported harvest, the results suggest that the nonsubsistence harvest may be as much as 40% higher than that reported. Applying a 40% correction factor to the 989 caribou reported, the total nonsubsistence harvest is estimated at 1,400 caribou.

Based on surveys of all villages

corresponded with the best weather conditions, best chance for success at taking a trophy bull, and relatively easy access by boat and aircraft from King Salmon and Naknek (Table 3). The reported caribou harvest on the Alaska Peninsula increased during odd-numbered years having concurrent October brown bear seasons (Table 3). During the past 3 winters (1986-87 to 1988-89), caribou have crossed the Naknek River in unprecedented numbers, allowing easier access by hunters in vehicles. This easy access combined with low air fares from Anchorage and a liberal bag limit (i.e., 4 caribou) attracted a heavier winter hunting effort than usual. The subsistence harvest is primarily opportunistic, and some of the villages in Subunit 9E traditionally hunt caribou in March as they migrate south.

Natural Mortality:

Although specific data on natural mortality is lacking, it is believed to be much lower than that for the Southern Alaska Peninsula herd. A comparison of the percentage of calves observed during the postcalving census (30%) with the percentage classified in October (25%) suggested good calf survivals. The 1988-89 winter was extremely cold; however, snow cover south of Lake Iliamna was light, and no evidence of an abnormally high winter mortality was noted.

Habitat

No quantitative data is available to assess range conditions; however, preliminary analysis of data (i.e., body weights, blood parameters, body size) from the caribou transplanted in 1988 and consistently high calf production indicate that the caribou are in relatively good condition. Nevertheless, the expansion of the winter range north of the Naknek River may be an indication that this herd's winter range is being heavily used.

Game Board Actions and Emergency Orders

Because the 1987 photocensus suggested a decline in the herd and a record harvest was taken during 1987-88, reductions in bag limits and alignment of regulations with those for the Mulchatna herd were recommended and adopted for the

specific recommendations for changes in regulations will be made to the Board before it deliberates on caribou seasons. The NAPCH showed no signs of stress; i.e., low reproductive success or poor body condition. Although we have recommended range analysis or a comprehensive analysis of animal condition to determine if the population objectives are appropriate for several years, funding and personnel limitations have prevented ADF&G or Becharof National Wildlife Refuge staff from undertaking this project. It still remains a high priority.

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Table 1. Summary of caribou population statistics for the Northern Alaska Peninsula Herd.

Year	Population count	Population estimate	Summer %calves	Fall %calves	Ratio bulls:100 cows	Ratio calves:100 cows
1981	16,600	18,000	28	23	34	39
1982	16,800	18,000	27	26	52	52
1983	18,000	19,000	29	16	39	27
1984	19,000	20,000	25	22	39	39
1985	18,978	20,000	27	--	--	--
1986	15,274	15,300+	28	18	51	34
1987	15,629	17,000	30	25	54	52
1988	19,000	20,000	30	25	49	49
1989	19,180	20,000	33	--	--	--

Table 2. Northern Alaska Peninsula Caribou Herd annual reported harvest and estimated harvest 1983-89.

Year	Reported			Unreported estimate		Grand total
	Male	Female	Total ^a	Sport ^b	Subsistence	
1983-84	493	128	639	256	900	1,795
1984-85	569	166	743	297	900	1,940
1985-86	612	133	751	300	900	1,951
1986-87	602	118	720	288	900	1,908
1987-88	841	158	1,003	400	900	2,303
1988-89	841	147	989	400	900	2,300

^a Includes unknown sex.

^b Computed using the number 0.40, which represents the percentage of 106 sampled sport hunters who didn't return their harvest tickets during the 1987-88 hunting season and assumes the same for other years.

Table 3. Harvest chronology for Northern Alaska Peninsula Caribou Herd 1984-85 to 1988-89.

Month	<u>1984-85</u>		<u>1985-86</u>		<u>1986-87</u>		<u>1987-88</u>		<u>1988-89</u>	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
August	116	51	82	11	145	41	106	25	88	17
September	271	25	256	29	245	12	293	15	339	26
October	95	16	150	13	81	15	223	8	173	10
November	65	34	71	26	58	16	129	63	48	16
December	7	6	7	1	25	12	43	14	54	18
January	2	0	4	9	9	1	6	2	21	7
February	7	18								

Table 1. Caribou composition counts, total counts, and population estimates in Subunit 9D, 1983-89.

Date	Males:100 females	Med. & Large male %	Calf: 100 females	Calf %	Sample size	Total count	Estimated population size
1/83	--	--	--	--	--	5,641 ^a	5,641+
5/83	--	--	--	18	Unknown	5,264 ^a	5,264+
10/83	--	5	--	15	1,596	--	--
11/83	--	--	--	--	--	10,203 ^a	10,203+
7/84	--	4	--	17	2,389	7,500 ^b	7,500+
10/84	--	7	--	15	1,566	--	--
7/85	--	--	--	6	2,333	4,044 ^b	4,044+
10/85	--	12	--	9	1,460	--	--
1/86	--	--	--	--	--	3,333 ^c	--
7/86	--	4	--	17	2,594	--	--
11/86	32	9	20	12			

Table 2. Annual reported harvest and estimated harvest in Subunit 9D, 1983-89.

Year	Male	Reported female	Total ^a	Unreported estimate subsistence and sport	Grand total
1983-84	168	81	254	500-700	800-1000
1984-85	279	109	388	500-700	900-1100
1985-86	180	162	345	500-700	850-1050
1986-87	36	18	56	300-500	400-600
1987-88	41	40	81	50-100	130-180
1988-89	35	13	48	50-100	100-150

^a Includes unknown sex.

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Table 1. Population size of the Adak Island caribou herd, Unit 10, 1984-1988.

Survey date	Caribou observed	Estimated herd size
09 Jul 1984	360	--
22 Aug 1985	313	420-500
1986	NO SURVEY	--
1987	NO SURVEY	--
28 & 30 Aug 1988	335	--

Table 2. Annual harvest of Adak Island caribou, Unit 10, 1984-1989^a.

Regulatory year	Caribou harvested		
	Male	Female	Total
1984-85	82 (57)	62 (43)	144
1985-86	74 (50)	75 (50)	149
1986-87	58 (43)	76 (57)	134
1987-88	65 (54)	56 (46)	121
1987-88	85 (58)	62 (42)	147

^apercentage in parentheses

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Table 1. Mentasta Caribou Herd composition counts and population estimates, 1984-85 to 1988-89.

Year	Calves:100 cows-summer	Calves:100 cows-fall	Calf % fall	Bulls:100 cows-summer	Bulls:100 cows-fall	Postcalving aggregation count	Extrapolated aggregation estimate
1984-85	44	29	18	20	36	3,032	2,722
1985-86	51	46	25	17	41	3,108	3,140
1986-87	--	--	--	--	--	3,032 ^a	-----
1987-88	18	12	8	6	41	2,583	3,159 ^b
1988-89	34	18	11	14	43	2,520	2,484

^a No postcalving or fall composition surveys were flown in 1986. Thus no population estimate was made; 3,032 represents a total herd count made in late June 1986.

^b High estimate.

Table 2. Mentasta Caribou Herd harvest by permit hunt, 1984-85 to 1988-89.

Hunt no.	Year	Permits issued	Did not hunt	Unsuccessful hunters	Successful hunters	Bulls	Cows	Total
510	1984-85	350	142	87	119	84	34	118
	1985 ^a -86	170	53	50	67	51	16	67
	1986-87	275	127	78	63	54	9	63
	1987-88	300	122	76	95	77	18	95
	1988-89	100	35	34	23	23	0	23
511	1986-87	154	44	56	29	23	6	29
	1987-88	64	20	24	17	14	2	16
	1988-89	68	20	21	26	22	4	26
Total all hunts:	1986-87	429	171	134	92	77	15	

Table 3. Mentasta Caribou Herd hunter residency and success, 1983-84 to 1988-89.

Year	Successful				Unsuccessful			
	Local res.	Nonlocal res.	Non-res. ^a	Total ^b	Local res.	Nonlocal res.	Non-res. ^a	Total ^b
1983-84	28	49	10	90	24	59	6	89
1984-85	26	89	3	119	15	68	3	87
1985 ^b -86	23	44	--	67	16	34	--	50
1986-87	29	63	--	92	56	78	--	134
1987-88	17	95	--	112	24	76	--	100
1988-89	29	20	--	49	21	34	--	55

^a Beginning in 1985 nonresidents were no longer permitted to hunt the Mentasta herd in Unit 11.

^b Includes unknown residency.

Table 4. Mentasta Caribou Herd harvest chronology percent by time period, 1984-85 to 1988-89.

Hunt no.	Year	Week Ending						
		8/19	8/27	9/03	9/10	9/17	9/24	10/01
510	1984	--	22.9	5.9	21.2	17.8	13.6	18.6
510	1985 ^a	--	--	--	--	32.8	28.4	38.8
510	1986 ^b	--	--	--	14.5	21.0	25.8	38.7
510	1987	7.4	8.4	10.5	22.1	23.2	20.0	8.4
511	1986	--	28.6	14.3	7.1	7.1	21.4	21.4
511	1987	23.5	17.6	17.6	17.6	17.6	--	5.9
510 & 511	1986	--	8.9	4.4	12.2	16.7	24.4	33.3
510 &								

the occurrence of wildfires under terms of the Alaska Interagency Fire Management Plan.

Prescribed burning could improve production and quality of grasses and sedges in the Chisana area, but the entire area is managed by the National Park Service, which is generally opposed to habitat manipulation, even though previous federal policies resulted in several decades of attempted exclusion of wildfires from the area.

CONCLUSIONS AND RECOMMENDATIONS

The Chisana Caribou Herd appears to be growing slowly. While the maximum allowable harvest of this herd has occurred over the reporting period, the herd has met the suggested population objectives. There may be some room for herd growth if the herd should expand its range into Canada. I recommend no changes in season or bag limit for the Chisana Herd.

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Table 1. Summary of fall sex-age composition surveys of the Chisana Caribou Herd, Unit 12, 1977-88.

Date	Bulls: 100 cows	Sm bulls: 100 cows	Calves: 100 cows	% Yrlgs (n)	% Calves (n)	% Cows (n)	% Bulls (n)	Bulls			Total caribou
								% Sm (n)	% Med (n)	% Lg (n)	
09/29/77	41		44	6 (15)	22 (61)	51 (139)	21 (58)				273
10/20/78	34		18	6 (6)	11 (11)	62 (62)	21 (21)				100
09/31/80-											
10/02/80	18		21	4 (23)	15 (84) ^a	69 (401)			12 (71)		579
10/13/82	36	12	21	16 (64) ^b	13 (54						

Table 2. Summary of June sex-age composition surveys of the Chisana Caribou Herd, Unit 12, 1976-88.

Date	% Yrlgs (n)	% Calves (n)	% Cows older than calves (n)	Unidentified	Total caribou
6/16/76	--	20 (41)	80 (167)	--	208
6/19/78	--	9 (30)	91 (286)	--	316
6/19/80	--	12 (16)	88 (121)	--	137
6/21/81	--	15 (66)	85 (360)	--	426
6/21/83	--	16 (26)	74 (136)	100	263
6/25/84	--	15 (49)	85 (268)	--	317
6/20/87	--	17 (88)	83 (436)	--	524
5/24/88	27 (84)	15 (46)	85 (267)	--	313
6/21-22/89	--	10 (160)	90 (1,380)	120	1,660
Mean		14	86		

^a Calving not yet completed (105 of 157 cows older than yearlings had distended udders).

Table 3. Reported caribou harvests from the Ch

Table 4. Caribou harvests from all herds in Unit 12, 1988.

Herd	Reported harvest	Total hunters	% Success	Estimated harvest		
				Unreported	Illegal	Total
Chisana	49	58	84	5-10	5	59-64
Mentasta	21	51	41	5-20	10-30	36-71
Macomb	4	8	50	3-4	2-3	9-11
Nelchina	1	6	17	0	0	2
Fortymile	0	0	0	0	0	0
Unknown	0	11				
Total	75	134	56	13-34	17-38	106-148

