

STUDY AREA

BROOKS

GAME MANAGEMENT UNITS: 9A, 9B, 16, 17, and 19 (40,000 mi²)

Herd: Mulchatna

ARO-KAIM / N142760 (1)

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay and the
Nushagak Hills

BACKGROUND

There is little information available on the Mulchatna Caribou Herd (MCH) prior to 1973. Skoog (1968) hypothesized that in the 1830's "A large caribou population occurred along the Bering Sea coast from Bristol Bay to Norton Sound." Records indicate that this herd ranged from the Yukon and Kuskokwim Rivers north to the Innoko River and the Taylor Mountains and that caribou calf hides were a major trading item with the Russians in Togiak during the 1800's. This herd reached peak numbers in the 1860's and began declining in the 1870's. Migrations of large numbers of caribou across the Lower Kuskokwim and Yukon Rivers ceased in the 1880's, and except for the relatively small migrations recorded in 1966 and 1972 across the Kvichak River, no major movements of this herd were observed until recently. Caribou numbers began increasing again in the Mulchatna area in the early 1930's (Ak. Game Comm. Repts. 1930-39), remaining relatively stable throughout that decade. There were indications that the herd began declining in the late 1930's (Skoog 1968); however, no substantive information was collected between 1940 and 1950 to support this.

Aerial surveys of the Mulchatna area were first conducted in 1949, when the population was estimated at 1,000 caribou (ADF&G files 1974). The population increased to approximately 5,000 by 1965 (Skoog 1968). 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 was counted at that time, providing a basis for an October estimate of 14,231 caribou (Table 1).

Photocensusing efforts continued through the 1970's, suggesting a declining trend in the population. Both seasons and bag limits were reduced continuously during this period. Poor counting conditions and reduced effort during census attempts may have contributed to this apparent decline.

Twenty radio transmitters were attached to caribou in this herd in 1981, providing assistance in locating postcalving aggregations. The 1981 photocensus was conducted on 30 June, and 18,599 caribou were counted. Photocensus estimates since

then have documented a rate of increase of approximately 17% annually for the MCH.

POPULATION OBJECTIVES

To maintain a minimum population of 25,000 adults with a minimum bull:cow ratio of 35:100.

METHODS

A photocensus of the MCH was conducted during the postcalving aggregation period in cooperation with personnel from Lake Clark National Park. An aerial survey to determine fall sex and age composition was conducted in October, when an additional 10 radio collars were placed on caribou. Most of the 20 radio collars placed in 1981 had ceased to operate by this reporting period. Monthly radio-tracking flights were made by the National Park Service to continue the demographics study that began in 1981. Harvest monitoring and enforcement presence was maintained along the Mulchatna and upper Nushagak Rivers during the first half of September when hunting pressure is most intense. Harvest data were collected from statewide harvest reports. Data are of limited value because no reminder letters were sent to hunters who failed to report. Hunter "overlay" information was not computerized.

RESULTS AND DISCUSSION

Population Status and Trend

Since 1981 the MCH has been increasing at an annual rate of approximately 17%. This increase is 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.

Population Size:

A photocensus of the MCH was conducted on 30 June 1988; 60,328 caribou were observed, representing a 32% increase over the 45,742 observed in 1987 extrapolated to a population estimate of 52,527. In 1988 more effort was made to photograph all groups of males which may partially account for an increase of this magnitude.

Population Composition:

Sex and age composition surveys were conducted 13 October 1987 on caribou groups found along the Koktuli River drainage and in the Nikabuna Lakes region (Table 2). Groups ranging from less than 10 to 150 caribou were scattered along the Koktuli River and in the Nikabuna Lakes area. While some single bulls were observed, it appeared that the rutting season was not quite over. An unusually high proportion of males per 100 females (68:100) was observed during this survey. Survey conditions were poor, and it is possible that some adult females were misclassified as males; however, since 1981 the proportion of males in the herd has remained consistently high, despite the steady increase in hunting pressure.

Distribution and Movements:

The cooperative effort between ADF&G and Lake Clark National Park staff continued during this reporting period. The additional 10 radio transmitters placed on caribou in October were monitored monthly by NPS personnel. Range use patterns were similar to those in 1986-87, except caribou that crossed the Kvichak River during the winter went as far south as Big Creek. A portion of the Northern Alaska Peninsula Caribou Herd wintered as far north as Big Creek; therefore, some intermingling of herds may have occurred.

Summer and fall range use has been expanded primarily to the northwest as far as the Taylor Mountains and the Stony River drainage. Winter range use has expanded to the southeast across the Kvichak River as far south as the Alagnak River drainage and to the east as far as Kokhanak. Since 1986 significant numbers of caribou (300+) have been wintering on the west side of the Nushagak River between Kemuk Mountain and the Muklung Hills.

Several peripheral groups appear to be autonomous from the MCH. A group of 100-300 caribou is located near Etolin Point, and Rainy Pass has an estimated 200-400 that may remain in that vicinity all year. Approximately 600-800 caribou inhabit the Kilbuck Mountains to the west of the MCH range. A radiotelemetry study to determine population size and demographics of this group was conducted in 1986 by the Game Division and the Yukon Delta National Wildlife Refuge. This group has never been observed intermixing with the Mulchatna herd. The largest group peripheral to the main herd exists in the upper Koktuli and upper Stuyanok River drainages. This group appears to spend the spring, fall, and summer in this area, joining the main herd on the wintering grounds west of Iliamna Lake in late November or early December.

Mortality

Season and Bag Limit:

Hunting is prohibited in that portion of Subunit 17C west of the Nushagak River. The open season for subsistence and resident hunters in Subunits 9A, 9B, 17B, and the remainder of 17C is 10 August to 31 March; the open season for nonresident hunters there is 10 August to 31 October. The bag limit for subsistence and resident hunters is 3 caribou; however, not more than one may be taken before 1 November. The bag limit for nonresident hunters is 1 caribou. The open season for all hunters in Subunit 19B is 10 August to 31 March. The bag limit for subsistence hunters residing in Lime Village is 5 caribou and for other subsistence and resident hunters, 3 caribou; however, not more than 1 caribou may be taken before 1 November. The bag limit for nonresident hunters is 1 caribou.

Human-induced Mortality:

The reported harvest from the MCH during the reporting period was 985 caribou (Table 3). Of these, 334, 243, and 408 were taken in Subunits 9B and 19B and Unit 17, respectively. The estimated harvest during this period was 2050 caribou. Most of the unreported harvest is attributed to the Nushagak River villages in Unit 17. Without more comprehensive harvest information, it is impossible to accurately portray trends in the annual harvests.

Field observations indicate that the density of hunters in these units has increased steadily since the early 1980's during the fall season. Harvest levels have remained less than 5% of the total population, however, and do not appear to be limiting herd growth or range expansion.

Natural Mortality:

No natural mortality was documented during this reporting period. Snow depths were abnormally high in the Wood-Tikchik Mountains and along the King Salmon River drainage. Caribou avoided these areas and concentrated along the upper drainages of the Koktuli and Stuyahok Rivers and along the north and west shores of Iliamna Lake where snowdepths were generally minimal. Wolf populations were high throughout most of Subunits 17B and 19B, but trappers reported seeing evidence of predation only on moose.

Habitat Assessment

No effort to assess the condition of winter range utilized by the MCH was made during this reporting period. For the past years this herd has expanded its winter range annually to the east across the Kvichak River. I believe the carrying

capacity of the traditional wintering areas has been surpassed and that it will be necessary for this herd to continue to utilize new areas of winter range as it continues to grow.

Game Board Actions and Emergency Orders

During this reporting period, the Board of Game adopted a staff proposal that increased the length of the nonresident season, increased the bag limit in August from 1 to 2 caribou for subsistence hunters, and increased the total bag limit from 3 to 4 caribou for subsistence and resident hunters. Similar change were made to the seasons and bag limits for the Northern Alaska Peninsula Caribou Herd, making seasons and bag limits uniform for these herds.

CONCLUSIONS AND RECOMMENDATIONS

The MCH has experienced exceptionally rapid growth since 1980. The postcalving population estimates have increased from 20,618 in 1981 to 60,328 in 1988. While hunting pressure has grown at a rate exceeding that of herd growth in recent years, annual harvests remain at less than 5% of the population.

Concurrent with this population growth, the MCH has expanded into new ranges to the north and west in the summer and fall and to the south and east during the winter months. This herd has had difficulty establishing long-term use of habitat west of the Nushagak River because of hunting pressure from residents of the area during fall and winter seasons. The Board of Game closed most of the habitat west of the Nushagak River to caribou hunting prior to this reporting period, and more caribou have been using this area as a result.

Radiotelemetry has been a very valuable tool for managing this herd. Comparatively, few dollars have been spent annually on MCH management, and accurate 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 new transmitters were placed on caribou in 1986, 10 more were added in 1987, and another 10 are scheduled for October 1988. 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. Cooperative efforts with the Lake Clark National Park Service in conducting annual photocensus surveys and monitoring herd movements have been highly successful and cost-effective for both agencies; they should be continued.

LITERATURE CITED

Alaska Game Commission. 1925-1939. Annual reports of the Alaska Game Commission to the Secretary of the Interior. U.S. Fish and Wildlife Service, Juneau, Alaska.

Skoog, R.O. 1968. Ecology of the Caribou (Rangifer tarandus granti) in Alaska. Ph.D Thesis. Univ. of California, Berkley. 699 pp.

PREPARED BY:

SUBMITTED BY:

Kenton P. Taylor
Game Biologist III

Larry Van Daele
Survey-Inventory Coordinator

Table 1. Mulchatna caribou photocensus estimates, 1949-1988.

Date	Prelim. Estimate	Actual Count	Extrap. Estimate
1949	1,000	--	--
1965	5,000 ^a	--	--
1973	6,030	--	--
1974	--	13,079	14,231
1975	--	--	--
1976	--	9,097	--
1977	--	--	--
1978	--	6,340	7,503
1979	--	--	--
1980 ^b	10,000+	--	--
1981	--	18,599	20,618
1982	--	--	--
1983	--	25,416	--
1984	24,221	33,214	--
1985	36,706	42,945	--
1986 ^c	--	--	--
1987	37,262	45,742	52,527
1988	45,456	60,328	--

^a Skoog (1968)

^b observation only, no photocensusing surveys conducted.

^c photocensus discontinued because of bad weather.

Table 2. Sex and age composition counts of the Mulchatna Caribou Herd in the spring and fall, 1974 to 1988.

DATE	Males:100 Females	Calves:100 Cows	Calves (%)	Females (%)	Males (%)	Sample size
<u>SPRING</u>						
6/19/ & 6/20/74	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/ & 6/6/79	--	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/ & 6/17/83	52.2	51.4	25.2	49.1	25.6	1,926
6/16/ & 6/17/83	44.5	49.7	26.0	51.2	22.9	1,926
6/26/84	39.2	57.8	29.3	50.8	19.9	2,543
7/2/87	38.3	60.6	30.5	50.3	19.3	2,731
<u>FALL</u>						
10/16/ & 10/17/74	55.0	34.9	18.4	52.7	29.0	1,846
10/27/78	50.3	64.5	27.6	42.7	21.5	758
10/29/80	31.3	57.1	30.0	52.4	17.6	2,250
9/30/81	52.5	45.1	22.8	50.6	26.6	1,235
10/19/86	55.9	36.9	19.2	51.9	29.0	2,171
10/13/87	68.2	60.1	26.3	43.8	29.9	1,858

Table 3. Annual reported and estimated unreported harvests of the Mulchatna Caribou Herd 1977 to 1987.

Year	<u>Harvest Report Data</u>				<u>Estimated Unreported Harvest</u>	
	No. males	No. female	No. unknown	Total	Both Sexes	Total Harvest
1977	286	168	19	473	--	473
1978	177	43	3	223	--	223
1979	190	43	3	236	--	236
1980	210	30	5	245	--	245
1981	239	34	4	277	--	277
1982	236	71	4	311	1019	1330
1983	342	61	12	415	--	415
1984	620	66	4	690	1370	2060
1985	763	189	10	962	1020	1982
1986	840	177	9	1026	1470	2496
1987	869	112	4	985	1270	2255