

Mulchatna Caribou Herd Management Report and Plan, Game Management Units 9A, 9B, 9C, 17A, 17B, 17C, 18, 19A, and 19B:

Report Period 1 July 2017–30 June 2022, and
Plan Period 1 July 2022–30 June 2027

John H. Landsiedel and Evelyn M. Lichwa



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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Todd Rinaldi, Management Coordinator for Region IV for the Division of Wildlife Conservation.

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Cover Photo: Mulchatna caribou in the western calving grounds of Unit 18. ©2025 ADF&G. Photo by John Landsiedel.

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Purpose of this Report

This report provides a record of survey and inventory management activities for the Mulchatna caribou (*Rangifer tarandus granti*) herd (MCH) whose range includes Units 9A, 9B, 17B, 18, 19A, 19B, and a major portion of Units 17A, 17C, and 9C during the 5 regulatory years 2017–2021, along with plans for the next 5 regulatory years 2022–2026. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY17 = 1 July 2017–30 June 2018). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency efforts. It is also made available to the public to inform them of wildlife management activities. The Alaska Department of Fish and Game’s (ADF&G, the department) Division of Wildlife Conservation (DWC, the division) publishes these reports on a 5-year cycle to document trends and describe potential changes in data collection activities for caribou.

I. RY17–RY21 Management Report

Management Area

The range of the MCH includes Units 9A, 9B, 17B, 18, 19A, 19B, and a major portion of Units 17A, 17C, and 9C (approximately 60,000 mi²; Fig. 1).¹ The MCH range includes the Yukon, Kuskokwim, Goodnews, Togiak, Nushagak, Mulchatna, Kvichak, and Naknek rivers, which drain into Bristol Bay and Kuskokwim Bay. It also includes portions of the Alaska Range, Aleutian Range, Kilbuck Mountains, Kuskokwim Mountains, Ahklun Mountains, Wood River Mountains, and the Nushagak Hills. Vegetation ranges from willow (*Salix* spp.), alder (*Alnus* spp.), and cottonwood or aspen (*Populus* spp.) along the stream corridors to spruce and birch forests and open tundra habitats. Mountain peaks on the eastern end of the MCH range near Lake Clark can reach greater than 7,000 ft. The MCH range includes large tracts of federal land, including the Yukon Delta National Wildlife Refuge, Togiak National Wildlife Refuge, Katmai National Park and Preserve, Lake Clark National Park and Preserve, and land belonging to the Bureau of Land Management. Land belonging to the State of Alaska, Native corporations, and private inholdings along the river systems are present in the central portion of the MCH range. Major human population centers include Bethel and Dillingham (Fig. 1), but many other communities of varying sizes exist within the MCH range.

The MCH range and its associated units and communities are not connected to the state road system and can be difficult to access. Local community members access caribou via boats, snow machines, all-terrain vehicles (ATVs), and aircraft.

Predators of caribou include brown bears (*Ursus arctos*), black bears (*U. americanus*), coyotes (*Canis latrans*), golden eagles (*Aquila chrysaetos*), wolverines (*Gulo gulo*), and wolves (*C. lupus*), all of which occur throughout the Bristol Bay area in varying densities.

¹ Additional maps for units within the Mulchatna caribou herd range can be found at: <http://www.adfg.alaska.gov/index.cfm?adfg=maps.main>.



Figure 1. Extent of the RC503 registration permit hunt area specific to the Mulchatna caribou herd, regulatory years 2017–2021, Southwestern Alaska.

Summary of Status, Trend, Management Activities, and History of the Mulchatna Caribou Herd

Journals belonging to agents of the Russian-American Company contain the first accounts of caribou in the Bristol Bay area (VanStone 1988). In 1818, while traveling through areas now included in Units 17A and 17C, Petr Korsakovskiy noted that caribou were “plentiful” along Nushagak Bay, and there were “considerable” numbers of caribou in the Togiak Valley. Another agent, Ivan Vasilev, wrote that his hunters brought “plenty of caribou” throughout his journey up the Nushagak River and into the Tikchik Lakes in 1829. Skoog (1968) hypothesized that the caribou population at that time extended from Bristol Bay to Norton Sound, including the lower Yukon and Kuskokwim river drainages as far inland as the Innoko River and the Taylor Mountains. Caribou in these areas are thought to have peaked in the 1860s and to have begun declining in the 1870s, remaining at reduced population numbers for the next 60 years.

Reindeer were brought into the northern Bristol Bay area early in the twentieth century to supplement the local economy and food resources due to low caribou availability.

Documentation of the numbers and fate of these reindeer is scarce, but local residents relay stories of reindeer joining groups of wild caribou herds. These residents recall a thriving, widespread reindeer industry before the 1940s. Reindeer herds ranged from the Togiak to the Mulchatna river drainages, with individual herders following small groups throughout the year. However, the local reindeer population eventually died out when the expansion of the commercial fishing industry increased.

What we now call the Mulchatna caribou herd (MCH) is named after its traditional calving ground in the upper Mulchatna River region in Unit 17B. Aerial surveys of the MCH range were first conducted in 1949, when the population was estimated at 1,000 caribou. For approximately 10 years between 1965 and 1974, the population is thought to have been between 6,000 and 13,000 caribou (Van Lanen et al. 2018). In 1966 and 1972, some migrations across the Kvichak River were recorded; however, no major movements of this herd were observed until the mid-1990s.

By 1974, the MCH was counted at 13,079 caribou, and in 1981, biologists deployed 20 VHF (very high frequency) transmitters on MCH individuals to aid in locating postcalving aggregations. During the 1981 photo survey, ADF&G biologists counted 18,599 caribou, providing an extrapolated estimate of 20,618. The use of radio collars and photography greatly enhanced department confidence in the accuracy of population estimates. Throughout the 1980s, caribou population estimates continued to increase, and by 1996, the MCH reached approximately 200,000 animals. Following this peak, the population experienced a precipitous decline to approximately 85,000 caribou by 2004 and 30,000 by 2008.

In 2012, we began using the Rivest method (Rivest et al. 1998) to estimate the population, which involves radiotracking collared caribou via fixed-wing aircraft to photograph and count aggregations. ADF&G coordinates surveys out of the Dillingham area office in cooperation with staff from the Bethel, McGrath, Palmer, and Fairbanks offices. These survey efforts are assisted by personnel from the Togiak National Wildlife Refuge, Yukon Delta National Wildlife Refuge, Lake Clark National Park and Preserve, and the Bureau of Land Management.

Overgrazing of available forage initiated the MCH population decline, which resulted in malnutrition, decreased productivity, susceptibility to disease, and an increase in disease prevalence in the population. Taken together, these factors also likely increased adult and calf caribou susceptibility to predation by wolves, bears, eagles, and other predators. Taylor (1989) reported that the carrying capacity of traditional wintering areas had been surpassed as early as 1986 or 1987, prompting the MCH to expand its winter range and providing some evidence that density-dependent effects were beginning to plague this herd even before the population irruption. Although hunting pressure was intense during periods of high abundance, this is not thought to be responsible for the decline of the MCH population.

Since the decline, the MCH population has segregated into multiple spatially distinct groups throughout its historic range, but ADF&G primarily monitors 2 groups. These are referred to as the east MCH (formerly north) and the west MCH (formerly south) segments (Fig. 2).

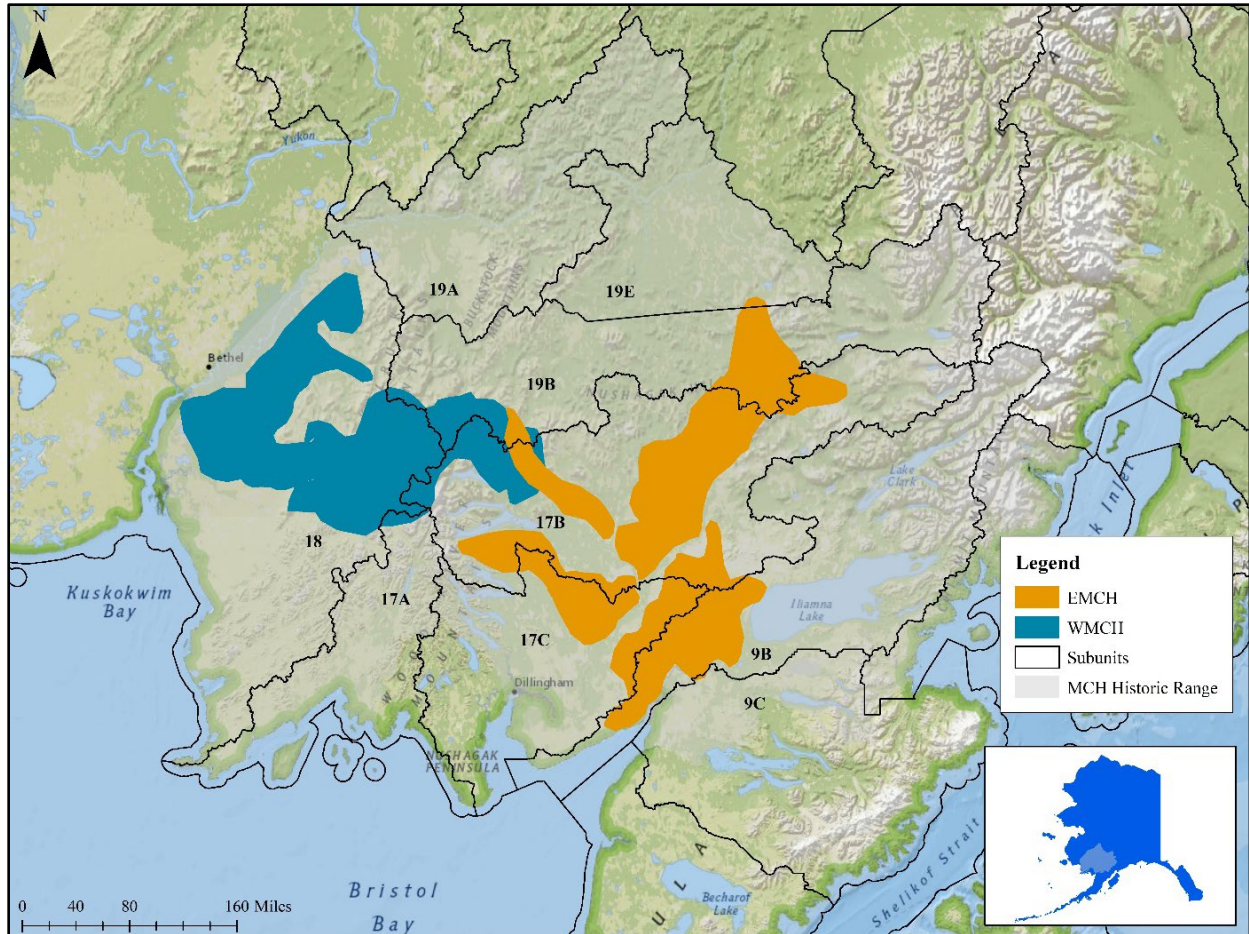


Figure 2. Range map of the Mulchatna caribou herd (MCH) depicting the east (EMCH) and west (WMCH) segments, regulatory years 2017–2021, Southwestern Alaska.

Management Direction

EXISTING WILDLIFE MANAGEMENT PLANS

The MCH is currently managed by the following plans:

- *Alaska Wildlife Management Plans: A Public Proposal for The Management of Alaska’s Wildlife: Southwestern Alaska* (ADF&G 1976).
- *Operational Plan for Intensive Management of Caribou (*Rangifer tarandus*) in Game Management Units 9B, 17, 18, 19A, and 19B During Regulatory Years 2022–2028* (ADF&G 2023).

GOALS

- Improve caribou harvest reporting rates and compliance with hunting regulations.
- Continue survey and inventory (S&I) activities to monitor population status and trend.
- Maintain healthy sex and age structures within the MCH for the benefit of all users.
- Use intensive management (IM) activities to enhance caribou calf survival and meet abundance and demographic objectives.
- Provide for maximum opportunity to participate in the hunting of caribou.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

The MCH has a positive customary and traditional use determination. The amount reasonably necessary for subsistence value is 2,100–2,400 caribou (5 AAC 99.025(4)).

Intensive Management

In 2001, the Alaska Board of Game (board) adopted a positive finding for IM of caribou for the MCH, with the following objectives:

- Population objective: 30,000–80,000 caribou.
- Harvest objective: 2,400–8,000 caribou.

Due to continued population decline and the MCH's importance as a food source, the board enacted the Mulchatna Caribou Herd Predation Management Area (MCHPMA; 5 AAC 92.111(c)) in 2011 as a designated area corresponding with the range of the MCH in Units 9B, 17B, 17C, 19A, and 19B (39,683 mi²) in which predator control activities could occur for 6 years. The objective of the MCHPMA is to enhance recovery of the MCH and achieve a population that will sustain human harvest by reducing wolf numbers both within and adjacent to the designated area. This was facilitated by authorizing the department to issue permits to public pilot and gunner teams to take wolves on same-day-airborne (SDA) flights. These permits allow both land-and-shoot taking of wolves and aerial shooting from 1 December to 30 April annually. The MCHPMA was modified in March 2012 to include Units 19A and 19B and was not to exceed 10,000 mi². When the plan was reviewed in 2017, IM objectives had not been met, and the board reauthorized the plan for an additional 6 years.

MANAGEMENT OBJECTIVES

- To maintain a population of 30,000–80,000 caribou.
- To maintain a minimum calf-to-cow ratio of 30:100 observed during October surveys.
- To maintain a minimum bull-to-cow ratio of 35:100 observed during October surveys.
- To maintain an annual harvest of 2,400–8,000 caribou.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Maintain a sample of radiocollared caribou.

Data Needs

Efficiently locating caribou within the MCH range requires a large sample size of radiocollared caribou for department S&I activities such as parturition, population estimates, and fall composition. Age-specific data are collected by marking known-age animals (10-month-old calves) to determine survival rate and first age of reproduction. At the time of collar deployment, reproductive success can be assessed through aging and intermittent checks on health and body condition. Body mass data from 10-month-old females (hereafter referred to as short-yearlings) collected during collar deployment also provide an indirect measure of habitat quality, which is helpful in assessing abundance and harvest objectives.

Methods

In March or April of each year, department biologists capture short-yearling female caribou, obtain various samples (e.g., blood, body condition), and affix VHF collars. We treat a smaller sample of adult female caribou in a similar manner, but place satellite (GPS) collars with VHF capabilities. The short-yearlings provide age-specific survival and productivity data for each annual cohort, while adult cows with satellite collars provide easily accessible location data to guide S&I activities and survival trends.

During RY17–RY21, we deployed radio collars on 114 female caribou. We divided captures evenly between the western (Unit 18) and eastern (Units 9B and 17B) ranges of the MCH. We used a dart rifle fired from an R-44 helicopter to immobilize all caribou, using standard techniques approved by the department’s Institutional Animal Care and Use Committee (0102-2020-61). During the reporting period, we also collared a sample of bull caribou to help us understand their movements and survival, and to incorporate bull caribou into our sample of animals used in the photo survey.

Results and Discussion

Average short-yearling body weights were collected twice during RY17–RY21. Staff recorded body weights for all short-yearling female caribou that we captured and radiocollared. The weights of short-yearling females captured in 2017 and 2018 averaged 121.0 lb (120.0–122.0 lb);

$n = 33$), which is lower than the previous 5-year average of 125.2 lb (119.0–133.0 lb; $n = 77$). Even though there was a slight decrease in the average weight, the data show a positive trend in recent years (Table 1). These data are indicative of caribou in healthy condition, which is an indirect measure of habitat quality. During the reporting period, we annually maintained roughly 100 active collars on MCH caribou to assist in our S&I activities, and increased this number toward the end of the reporting period to well over 100 active radio collars.

Table 1. Mulchatna caribou female short-yearling weights (10 months of age) in March or April of each regulatory year from 2000 to 2017, Southwestern Alaska.

Regulatory year	Average weight (lb)	<i>n</i>
2000	104	11
2001	109	13
2002	109	22
2003	107	19
2005	116	19
2006	119	21
2007	122	15
2008	120	15
2009	96	6
2010	124	20
2011	119	13
2012	127	14
2013	128	14
2014	133	13
2015	119	23
2016	120	18
2017	122	15

Note: No captures were conducted during RY18–RY21 due to weather, funding, and personnel constraints.

Recommendations for Activity 1.1

Continue.

ACTIVITY 1.2. Conduct parturition surveys each spring using radiocollared female caribou of known age to determine age-specific pregnancy rates.

Data Needs

Determining age-specific productivity is an important component of monitoring the MCH. During spring parturition surveys, these data provide insight into the condition of these animals based on their pregnancy rates as well as the reproductive potential of the herd. These metrics also help department biologists determine if the landscape can support more caribou, which is critical for making management decisions that include abundance and harvest objectives. The present IM program uses this information to determine the efficacy of the current management regime and how we might modify our protocol to meet the IM objectives.

Methods

In May 2000, ADF&G initiated parturition surveys to determine the proportion of adult females calving and age-specific productivity. Department staff used fixed-wing aircraft to visually observe as many of the radiocollared females as possible and record if they were pregnant (e.g., presence of a calf at heel). Additional evidence that a cow was pregnant included the presence of hard antlers prior to calving (Whitten 1995).

Results and Discussion

To obtain a parturition rate, the department classified an average of 118 radiocollared cows per year (range 66–159), more than double what we obtained during RY12–RY16 ($n = 52$; range 36–68). We classified collared cows into 4 age categories: 2-year-old, 3-year-old, 4-year-old, and ≥ 5 -year-old (Table 2). Sample sizes increased throughout RY17–RY21 due to many research collars being deployed from 2019 to 2022, but this included few short-yearlings of known age. This provides the ability to compare data year to year and useful insights into the overall productivity of this population.

Most notable is that, on average, 21% of the 2-year-olds (range 19–23%) and 74% of the 3-year-olds (range 63–92%) were classified as pregnant during the 5-year reporting period, a decrease from the previous reporting period.

Recommendations for Activity 1.2

Continue.

ACTIVITY 1.3. Conduct annual photo survey of the MCH to obtain a population estimate.

Data Needs

Surveys to estimate abundance each year, as conditions allow, are needed because both management and IM objectives include abundance thresholds, which are managed for and used to set seasons and bag limits and to guide IM actions.

Methods

ADF&G coordinates the photo survey population estimate out of the Dillingham area office in cooperation with staff from the Bethel, McGrath, Palmer, and Fairbanks offices. Personnel from the Togiak National Wildlife Refuge, Yukon Delta National Wildlife Refuge, and Lake Clark National Park and Preserve provide additional support, with further funding provided by the Bureau of Land Management as necessary. Department biologists use fixed-wing aircraft to radiotrack caribou, survey the herd's range, estimate the number of caribou observed, and photograph groups.

Starting in 1994, we photographed large aggregations with an aerial mapping camera mounted in De Havilland Beaver (DH-2) or Cessna C-206 aircraft flown by ADF&G staff. However, as the MCH population declined, we began using handheld cameras in each aircraft. In 2012, as we began estimating the herd size using the methods of Rivest et al. (1998), we used radio collars to locate, photograph, and count caribou groups and individuals. While all caribou counted

Table 2. Mulchatna caribou herd spring parturition rates, regulatory years 2017–2021, Southwestern Alaska.

Regulatory year	Age 2			Age 3			Age 4			Age ≥ 5		
	Sample size	Number pregnant	Percent pregnant	Sample size	Number pregnant	Percent pregnant	Sample size	Number pregnant	Percent pregnant	Sample size	Number pregnant	Percent pregnant
2017	16	3	19	8	5	63	32	24	75	20	14	70
2018	9	2	22	16	12	75	25	19	76	20	14	70
2019	13	3	23	12	11	92	45	33	73	29	21	72
2020	–	–	–	12	8	67	53	41	77	41	31	76
2021	–	–	–	–	–	–	94	86	91	48	40	83

Note: En dashes indicate no data due to absence of collars on age group.

contribute to a minimum count for ADF&G, only groups with collared caribou are included for the population estimate using the Rivest method.

Results and Discussion

Department biologists were able to obtain Rivest population estimates in 3 of the 5 years during RY17–RY21; the other 2 years, only a minimum count could be obtained due to poor weather, lack of aggregation, or both (Fig. 3). The trend in abundance has continued downward from the RY12–RY16 reporting period into the RY17–RY21 reporting period, with 13,448 caribou in both RY19 and RY20, and a further decline to 12,837 in RY21. The population estimates during RY17–RY21 remain below the IM objective of 30,000–80,000 caribou, but these objectives are likely too high as they have not been evaluated since 2008.

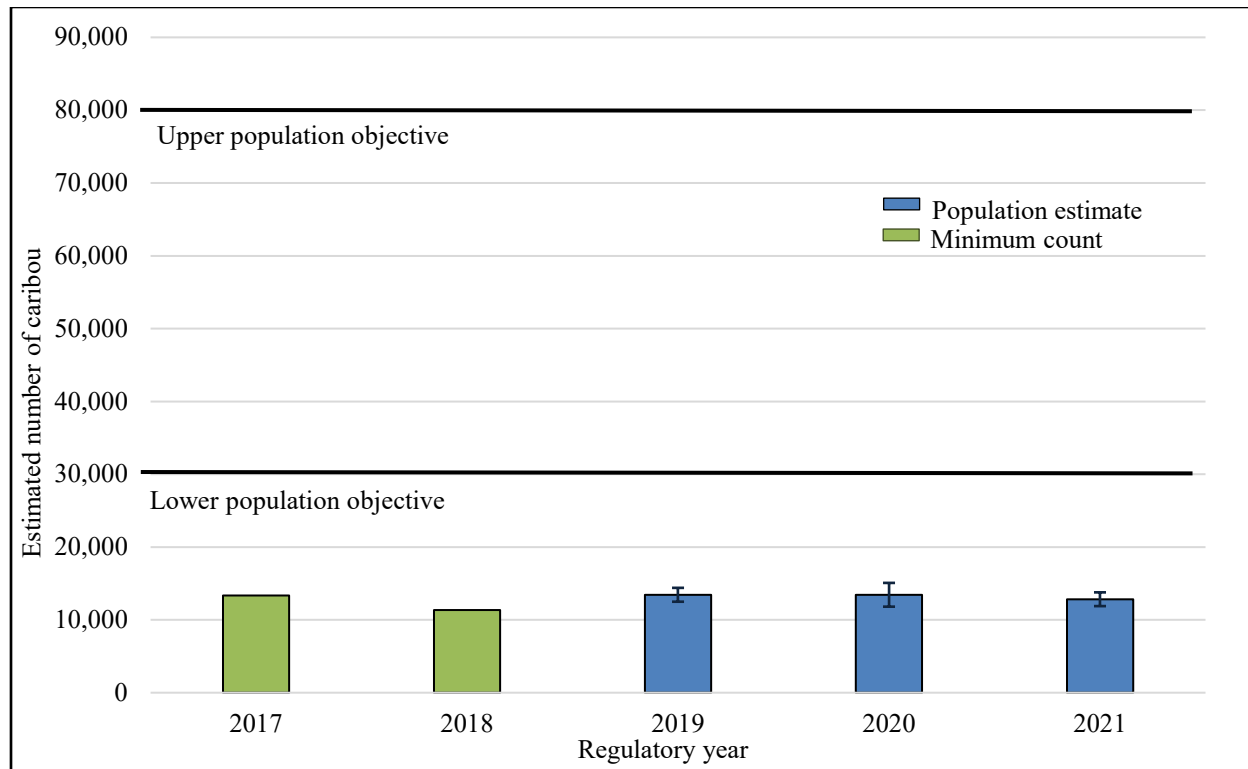


Figure 3. Mulchatna caribou herd population estimate (Rivest et al. 1998), regulatory years 2017–2021, Southwestern Alaska.

Recommendations for Activity 1.3

Continue.

ACTIVITY 1.4. Conduct fall composition surveys to estimate sex ratio, age ratios, and recruitment of calves to fall.

Data Needs

Demographic data provides insights into herd productivity. The percentage and number of calves surviving to 5 months of age is an important metric to measure, as an increased number of calves

may be an indication that population growth is likely to occur as long as adult survival maintains itself above the number of calves surviving. When the proportion of bulls to cows exceeds 35:100, it is a good indication that conditions may be right to provide additional harvest opportunity. Composition surveys should be conducted each October to assess sex and age structures of a portion of the population.

Methods

Composition surveys during RY17–RY21 were conducted over a 2-day period; The first day was designated for the portion of the MCH wintering in Unit 18, and the second day focused on caribou wintering in Units 17B and 17C. Department staff tried to obtain a representative sample of the MCH by splitting a sample evenly between these 2 groups, with the goal of surveying 5,000 caribou total. We made an effort to include not just the main groups of animals but satellite groups as well.

We used fixed-wing aircraft to locate radiocollared animals. Once found, we used a helicopter to separate out a workable group size of 50–100 animals, although sometimes group sizes were too large to facilitate sampling smaller groups. We used aircraft to keep the counted and uncounted groups separate. Animals were classified by sex and as calves or adults. Bulls were further classified based on antler size (i.e., small, medium, or large) through visual observation while flying directly behind the group of animals. While classifying bulls by antler size is often subjective, this additional metric may provide insight into bull recruitment and age distribution.

Results and Discussion

Department staff conducted composition surveys of the MCH each October during RY17–RY21, except RY21. The bull-to-cow ratio varied annually throughout the reporting period, averaging 35.0 bulls (range 32–42; Table 3), meeting the IM objective of 35:100. The calf-to-cow ratio varied a bit more, averaging 30.0 calves (range 23–36), meeting the IM objective of 30:100.

Table 3. Mulchatna caribou herd fall composition survey data and population estimates, regulatory years 2017–2021, Southwestern Alaska.

Regulatory year	Bull-to-cow ^a	Calf-to-cow ^a	Calves (%)	Cows (%)	Bulls (%)	% Small	% Medium	% Large	Composition sample size	Estimate of herd size
2017	32	23	15	64	21	43	28	28	5,160	13,350 ^b
2018	32	34	20	60	20	51	23	26	4,798	11,353 ^b
2019	42	25	15	60	25	62	20	18	3,496	13,448
2020	34	36	21	60	19	59	20	20	5,357	13,448
2021 ^c	–	–	–	–	–	–	–	–	–	12,837

Note: En dashes indicate no data.

^a Ratio is 1:100.

^b Unable to extrapolate minimum count due to poor aggregation and cool weather; minimum count reported.

^c Unable to complete fall composition survey due to poor weather.

Although the average ratios observed meet IM objectives, it may be appropriate to increase the calf-to-cow objective as population growth is the priority rather than population stability. For example, the calf-to-cow ratio averaged 46:100 when the MCH population was growing from the late 1980s through the late 1990s, whereas the average objective we have observed in the reporting period has been 30:100, during which we have seen a relatively stable population

estimate. A management objective bull-to-cow ratio of 35:100 may provide for increased hunter satisfaction even as the herd could biologically sustain a lower ratio while providing harvest opportunity.

Recommendations for Activity 1.4

Continue.

ACTIVITY 1.5. Investigate and monitor calf survival to determine factors responsible for calf mortalities.

Data Needs

Understanding factors that are limiting the survival of caribou neonates is an important component to consider when designing an IM program for this herd. Increasing yearling weights and the high pregnancy rate of 2- and 3-year-olds suggests that MCH caribou are healthy and highly productive, but the population abundance and harvest are still below objectives. The low calf-to-cow ratios seen in the department's October composition surveys indicate that too few calves are recruited into the population to cause positive growth in the herd. Obtaining cause-specific mortality data on MCH calves is a priority.

Methods

From 2012 through 2014, the department conducted calf mortality studies on the MCH's east and west calving grounds. The east is located from the upper Mulchatna River to Tundra Lake. The western calving ground ranges from southwest of Koliganek to the upper Tikchik Lakes system near Upnuk and Nishlik lakes.

As part of an IM program adopted in 2011, a calf mortality study was initiated in both the east and west calving grounds. Since the program was adopted, caribou neonates have been captured and radiocollared in mid-May of each year. An R-44 helicopter is used to approach adult females that have calves less than 3 days old. A biologist then captures the calf, deploys an expandable VHF collar, and records its sex and weight. During the 2 weeks following these captures, calves are monitored daily from a fixed-wing aircraft to determine survival. When we identify that an animal is deceased, we use the helicopter to land at the mortality site and attempt to determine cause of mortality. If predation is the suspected cause of mortality, we use clues such as carcass disposition, the presence and pattern of bites, tracks, scat, hair, feathers, and the presence of predators themselves to determine the predator species responsible.

Results and Discussion

Although predation appeared to be the most common cause of calf mortality, other sources included drowning, starvation, abandonment, and trauma due to stomping by adult caribou. Department biologists were frequently unable to determine cause of mortality as the collar was found lying by itself without any evidence of predation. Predators identified as having killed and consumed calves include brown and black bears, wolves, coyotes, wolverine, and eagles (Tables 4 and 5).

Recommendations for Activity 1.5

Continue.

Table 4. Causes of mortality of Mulchatna caribou neonates by percentage in the eastern calving ground, calendar years 2017–2021, Southwestern Alaska.

Cause of mortality	2017 (%; <i>n</i> = 19)	2018 (%; <i>n</i> = 14)	2019 (%; <i>n</i> = 9)	2020 (%; <i>n</i> = 6)	2021 (%; <i>n</i> = 8)
Brown and black bear	37	71	33	17	50
Wolf	42	21	0	33	0
Wolverine	0	0	0	0	12
Unknown predator	11	0	67	17	25
Eagle	11	0	0	33	13
Drowned	0	0	0	0	0
Trauma	0	0	0	0	0
Unknown cause	0	8	0	0	0

Note: The eastern calving ground ranges from the upper Mulchatna River to Tundra Lake, and was previously described as the northern calving grounds.

Table 5. Causes of mortality of Mulchatna caribou herd neonates by percentage in the western calving ground, calendar years 2017–2021, Southwestern Alaska.

Cause of mortality	2017 (%; <i>n</i> = 13)	2018 (%; <i>n</i> = 16)	2019 (%; <i>n</i> = 25)	2020 ^a (%; <i>n</i> = 0)	2021 (%; <i>n</i> = 8)
Brown and black bear	31	63	36	–	75
Wolf	38	13	16	–	13
Wolverine	0	0	0	–	0
Unknown predator	23	13	32	–	13
Eagle	8	0	12	–	0
Drowned	0	6	0	–	0
Trauma	0	0	0	–	0
Unknown cause	0	6	4	–	0

Note: The western calving ground ranges from southwest of Koliganek to the upper Tikchik Lakes system near Upnuk and Nishlik Lakes, and was previously described as the southern calving grounds.

^a No calves were collared in the western grounds in 2020.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor the caribou harvest through registration permit harvest reports and contact with hunters.

Data Needs

Harvest data allow managers to assess harvest levels in relation to overall abundance and thus ensure that the population remains viable at the current harvest limit. Harvest and survey data can be used together to determine the population's trajectory (e.g., increasing, decreasing, or stable) and guide management decisions (e.g., adjust seasons and bag limits). In some cases, it is

necessary to adjust bag limits by sex to ensure we meet demographic objectives. Additionally, an important component of the IM decision framework is documenting whether we are meeting harvest objectives.

Methods

Beginning in RY13, management of hunter harvest and effort across the MCH range changed from the GC000 harvest ticket hunt to registration permit RC503. The board adopted this change to acquire a higher level of hunt reporting needed to manage this herd. Under this system, hunters who successfully harvest caribou must report within 5 days of harvest. Those who are not successful must report their hunting effort within 15 days of the close of the season. If hunters fail to comply with these permit conditions, they are cited and lose their hunting privileges for permit hunts for the following regulatory year.

Season and Bag Limit

When the MCH hunt shifted from a GC000 general season harvest ticket to registration permit RC503, the bag limit was 2 caribou; however, no more than 1 could be a bull and no more than 1 could be taken during 1 August–31 January. This was a carryover to protect bull caribou during the fall period when they are at their peak trophy value.

Since this shift, the seasons across the MCH range have changed through board action, with portions of the range allowing a harvest of 2 caribou of any sex taken at any time during the season. Management of the MCH through RC503 continued through RY19. Hunting became more restrictive following consecutive years of low abundance estimates, and, in RY20, the bag limit was reduced to 1 bull caribou from 1 August to 20 September. Further reductions were warranted in RY21, and the hunting season was closed that year due to the low abundance of approximately 12,850 caribou.

Results and Discussion

Harvest by Hunters

A decline in reported harvest began in the late 1990s, a trend which has continued through RY17–RY21. The change from the general season harvest ticket to the registration permit in RY13 may have played a role in the low reported harvest, as many hunters were not aware of or accustomed to the new registration permit. However, the number of hunters reporting did increase during this reporting period as compared to RY12–RY16, as hunters have become more familiar with the registration permit process. Harvest saw a continued decline from 442 caribou harvested in RY17 to just 57 harvested in RY20, during the limited fall hunt.

Permit Hunts

Since the RC503 registration permit replaced the general season harvest ticket in RY13, all Mulchatna caribou harvest should subsequently be reported under this permit. Reporting through the permit conditions increased during RY17–RY21 with the public becoming increasingly aware of the registration permit requirement. The average number of permits issued remained similar to RY12–RY16 (2,193 permits), with an average of 2,368 permits issued during the first

3 years of this reporting period, while season dates and bag limits remained unchanged. Reported harvest documented an annual reduction of 50% through the closure of the season (Table 6).

Table 6. Mulchatna caribou reported harvest from harvest reports, regulatory years 2017–2021, Southwestern Alaska.

Regulatory year	Permits issued	GC000 harvest	Male	Female	Unknown	Total
2017	2,543	15	250	186	6	442
2018	2,446	9	148	90	1	239
2019	2,115	8	85	43	1	129
2020	878	3	57	0	0	57
2021	No open season	2	0	0	0	0

Fewer harvests occurred under a general harvest ticket as compliance increased through the reporting period. Continued compliance in reporting hunting effort or harvest across the range of the MCH requires consistent outreach by the department through news releases, radio messages, postcards, and letters reminding hunters to report. This is challenging as the Mulchatna management area spans 9 units and includes dozens of remote communities. As stated in the previous management report, using Facebook has aided in increasing the public’s awareness of herd updates and regulatory change.

Hunter Residency and Success

There has been no nonresident hunting season for Mulchatna caribou since RY08, and most harvest in recent years is by residents of the units within the Mulchatna range. Few hunters fly into Dillingham with the intent of targeting only caribou as they had in the past when the population was much higher. Most nonlocal harvest is either in conjunction with a moose hunt or conducted by private pilots from population centers on the road system who have the ability to search broad areas for caribou, which provides them with a higher probability of success over typical hunters.

Harvest Chronology

Harvest of the MCH has changed substantially from the 1990s through the RY17–RY21 reporting period. The abundance of caribou available for harvest in the 1990s led to more animals being harvested during the fall due to easier accessibility and conjunction with moose hunts. Once their range shifted as the population decreased, most of the harvest occurred during late winter, when local resident hunters pursue caribou via snowmachine for faster and more efficient travel and harvest conditions.

The peak years of harvest had high fall participation among nonlocal and nonresident hunters, and thus harvest was in concert with the fall moose seasons, when hunters could hunt multiple species and when bull caribou were at their peak trophy value. Most of these hunters used aircraft-supported transport services to access caribou and were much more successful than local hunters because of the advantages this access provided. Local subsistence hunters were much more limited in their ability to access caribou as they relied on boats for access and thus hunted only along river corridors. Although they harvested some caribou in this manner, most local

hunter effort was focused on the late winter period when they could use snowmachines to locate and access caribou away from the river corridors.

Transport Methods

Boats, snowmachines, ATVs, and aircraft provide access to caribou during all seasons if the conditions are favorable, with boats and snowmachines being the most popular methods. ATV use is limited due to the lack of many usable trails that connect to communities, and nonlocal hunters almost exclusively use aircraft (e.g., aircraft charter service or personal aircraft) for access. Winter can provide the best access for harvest if snowfall is sufficient for snowmachine travel. This is especially pronounced in the western portion of the MCH range in Unit 18, where hunters from many of the lower Kuskokwim communities can access caribou via snowmachines relatively quickly under advantageous travel conditions, when ice builds on rivers, creeks, and lakes, and adequate snow persists. Thus, snowmachines are by far the most commonly used form of transport to access and harvest caribou in the MCH.

Other Mortality

Both bears and wolves are responsible for some level of adult caribou mortality, but acquiring cause-specific mortality can be challenging without access to an airplane. The department has data on annual adult survival from radiocollared animals; however, visits to mortality sites are typically weeks after the mortality event, and remains are often limited to bones and the collar. This leaves little evidence to determine specific cause of mortality.

Alaska Board of Game Actions and Emergency Orders

During RY17–RY21, the board authorized the following:

- In January 2020, an emergency order (04-02-20) was issued closing RC503 for the remainder of the year. A subsequent emergency order (04-04-20) was issued in July to reduce the bag limit, allowing for 1 bull caribou and season dates of 1 August–20 September.
- State and federal caribou hunting for the MCH was closed by emergency order (04-05-21) in July 2021 due to a continued lack of caribou available for sustainable harvest.

Recommendations for Activity 2.1

Continue.

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Evaluate the condition of the Mulchatna caribou range by monitoring the condition and productivity of captured female caribou.

Data Needs

Acquiring body condition and pregnancy data on female caribou provides important insight into the condition of the caribou range. This data helps guide our management strategy and is very important in determining whether the landscape can sustain an increased caribou population.

Methods

During early April of each year, the department focuses its capture efforts on 10-month-old female caribou for an ongoing nutritional assessment. Once captured, the caribou are weighed and fitted with VHF radio collars. Animals are then located by VHF signal during aerial surveys. We compare the weights of these short-yearlings over time to determine if they are in healthy or poor condition and locate these same animals when they are 2 and 3 years of age to determine pregnancy status. Both metrics provide valuable insight into habitat quality.

Results and Discussion

The body condition of 10-month-old female caribou has remained relatively healthy throughout RY17–RY21, with body weights greater than 120 lb (Table 1). Pregnancy rates were slightly lower this reporting period than during RY12–RY16, with up to 30% of 2-year-old females being pregnant (down from 60%) and up to 92% of 3-year-old females being pregnant, which is slightly lower than the previous reporting period of 100% (Table 2).

Recommendations for Activity 3.1

Continue.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

Paper records of aerial surveys are stored in the Dillingham area office. Backup copies of data and activity summaries are stored on an in-house server.

Agreements

None.

Permitting

Institutional Animal Care and Use Committee approval for caribou capture activities (No. 2015-33).

Conclusions and Management Recommendations

The population estimates obtained during RY17–RY21 did not meet management objectives and suggest that the population is stable at low density. Caribou body condition and pregnancy rates suggest that the MCH is in relatively healthy condition with high reproductive potential, although age at first reproduction decreased slightly among 2-year-old females. The factor limiting growth of this herd is low calf survival, and therefore reduced recruitment of calves into the adult portion of the population. This is evidenced by the calf ratio only exceeding management objectives during 2 of the 4 years during which the department was able to conduct composition surveys. Similarly, the bull ratio exceeded the management objective during 2 of the 4 years.

The department's IM program for the MCH includes an SDA wolf control program with the goal of enhancing caribou calf survival. This program has not shown to have had an effect on improving calf survival and recruitment. There have been several years in which winter conditions were not adequate to facilitate wolf removal. However, even in winters with adequate snow conditions, the SDA program does not contribute significantly to the overall number of wolves taken, as typical harvest (i.e., trapping and hunting) methods continue to contribute to the majority of the wolf take since the program's inception. Even in years of increased wolf harvest, predation has remained the highest source of calf mortality; thus, wolf control does not appear to be helping achieve composition or population objectives.

Managers of the MCH will work with the board and the public to evaluate and determine the next management strategy. Management strategies should remain adaptive with population objectives, calf-to-cow ratios, and bull-to-ratios being reevaluated as abundance changes, just as season dates and bag limits change throughout different population trajectories. While the 2 major segments of the herd are spatially distinct during most of the year, there is variable interannual dispersal between them. Due to this spatial separation, hunter access is limited to one segment or the other.

The MCH remains a high-priority resource for both the department and the public. Survey efforts confirm that the herd is currently stable at low density, with indicators of high adult female survival, healthy body condition of calves, and high reproductive potential. However, population growth remains stagnant, likely due to low calf survival. Current wolf control measures have not been effective, potentially because predation from brown and black bears is a higher source of neonate mortality (Tables 4 and 5). Maintaining a robust sample of marked caribou will be critical for ongoing monitoring of key population metrics, including survival, reproduction, recruitment, and movement patterns. These data are essential to evaluate management actions and detect early signs of demographic change.

II. Project Review and RY22–RY26 Plan

Review of Management Direction

MANAGEMENT DIRECTION

Annual S&I activities should continue to provide ADF&G with the best available data on herd abundance, reproductive potential, and demographics. These data are essential for guiding decisions on seasons and bag limits as well as IM decisions, which are based on caribou abundance and demographics. IM objectives were not met during RY17–RY21, and this period may represent the lowest abundance estimate in nearly 30 years. Desire for caribou in western Alaska is high, and currently, the population cannot meet public demand. IM activities should follow those outlined in this plan and the *Operational Plan for Intensive Management of Caribou (Rangifer tarandus) in Game Management Units 9b, 17, 18, 19A, 19B and 19E during Regulatory Years 2022–2028* (ADFG 2023).

GOALS

Goals will remain unchanged from RY17–RY21.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

Across the entire MCH range, the amount reasonably necessary for subsistence value is 2,100–2,400 caribou per year (5 AAC 99.025(4)).

Intensive Management

In 2001, the board adopted a positive finding for IM of caribou for the MCH, with the following objectives:

- Population objective: 30,000–80,000 caribou.
- Harvest objective: 2,400–8,000 caribou.

The IM program for the MCH has been in place since 2011. However, it only includes public wolf removal via SDA permittees, which has been generally unsuccessful.

There are several wolf packs found throughout the MCH range, within and adjacent to the herd's important calving grounds. ADF&G initiated a wolf control program under IM to enhance caribou calf survival and recruitment, which has remained below objectives. Due to the lack of calf survival, it is recommended that department staff conduct targeted predator removal during peak calving directly surrounding MCH.

MANAGEMENT OBJECTIVES

Management objectives will remain unchanged from RY17–RY21.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Maintain a sample of radiocollared caribou in the MCH.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

ACTIVITY 1.2. Conduct parturition surveys each spring using radiocollared female caribou of known age to determine age-specific pregnancy rates.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

ACTIVITY 1.3. Conduct annual photo surveys of the MCH to estimate abundance.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

ACTIVITY 1.4. Conduct fall composition surveys to estimate sex ratios, age ratios, and recruitment of calves to fall.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

ACTIVITY 1.5. Investigate and monitor calf survival to determine factors responsible for calf mortalities.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor the caribou harvest through registration permit harvest reports and contact with hunters.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Evaluate the condition of the Mulchatna caribou range by monitoring the condition and productivity of captured female caribou.

Data Needs

No change from RY17–RY21.

Methods

No change from RY17–RY21.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

There are no nonregulatory problems or needs expected for the MCH during RY17–RY21.

Data Recording and Archiving

No change from RY17–RY21.

Agreements

None.

Permitting

Institutional Animal Care and Use Committee approval for caribou capture activities (No. 2015-33).

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