

**Annual Report to the Alaska Board of Game on
Intensive Management for Caribou
with Wolf Predation Control
in Game Management Units 9B, 17B&C, and 19A&B,
the Mulchatna Caribou Herd**

**Prepared by the Division of Wildlife Conservation
February 2016**



1) Description of IM Program¹ and Department recommendation for reporting period

A) This report is an annual evaluation for a predation control program authorized by the Alaska Board of Game (Board) under 5 AAC 92.111²

B) Month this report was submitted by the Department to the Board:

February X (annual report) August ___ (interim annual update³) Year 2016

C) Program name: Units 9B, 17B&C, and 19A&B – Mulchatna Caribou Herd

D) Existing program does not have an associated Operational Plan, it does have a detailed Intensive Management Plan in regulation (5 AAC 92.111).

E) Game Management Units (Units) fully or partly included in IM program area: Units 9B, 17B&C, and 19A&B

F) IM objectives for caribou: population size 30,000-80,000 harvest 2,400-8,000.

G) Month and year the current predation control program was originally authorized by the Board:

The plan was initially authorized in March 2011 for Units 9B and 17B&C and was modified in March 2012 to include Units 19A&B.

H) Predation control is currently active in this IM area.

I) If active, month and year the current predation control program began:

March 1, 2012 in Regulatory Year (RY) 2011 (RY 2011 = July 1, 2011 through June 30, 2012).

J) An habitat management program funded by the Department or from other sources is currently active in this IM area (Y/N): N

K) Size of IM program area (square miles) and geographic description:

39,683 sq. miles in Units 9B, 17B&C, and 19A&B.

L) Size and geographic description of area for assessing ungulate abundance:

Approximately 50,000 sq. miles and includes the range of the Mulchatna Caribou Herd.

M) Size and geographic description of area for ungulate harvest reporting:

Approximately 50,000 sq. miles and includes the range of the Mulchatna Caribou Herd.

¹ For purpose and context of this report format, see *Intensive Management Protocol, section on Tools for Program Implementation and Assessment*

N) Size and geographic description of area for assessing predator abundance:

The wolf assessment area in Units 17 and 9B is a 7,612 sq. mile area defined by corners (N60 34.0 W158 25.0, N60 34.0 W155 55.0, N59 18.0 W158 25.0, and N59 18.0 W155 55.0). Wolf numbers are also monitored in the eastern portion of Unit 19B by Region IV staff and in Unit 19A by Region III staff.

O) Size and geographic description of predation control area:

The predation control area measured approximately 2,870 sq. miles during RY 2011 and is planned for continuation of the project. It encompasses an area from Tikchik Mountain (N 60 03.00, W 158 18.00) east to Sleitat Mountain (N 60 03.00, W 157 04.00), southeast to the Kuktuli Hills (N 59 48.00, W 156 18.00) southwest to Lower Klutuk Creek (N 59 19.00, W 157 04.00), west to the Muklung Hills (N 59 19.00, W 158 18.00) and then north returning to Tikchik Mountain (see Figure 1).

P) Criteria for evaluating progress toward IM objectives:

- Fall calf-to-cow ratios
- Fall bull-to-cow ratio
- Caribou abundance

Q) Criteria for success with this program:

- Fall bull-to-cow ratio can be maintained at a minimum of 35 bulls:100 cows
- Fall calf-to-cow ratio can be sustained above 30 calves:100 cows
- The population can grow at a sustained rate of 5% annually
- Caribou harvest objectives are met

R) Department recommendation for IM program in this reporting period:

The Department recommends continuation of the predation control program during 2016 calving season while monitoring the herd to determine progress towards IM objectives (details provided in sections 6).

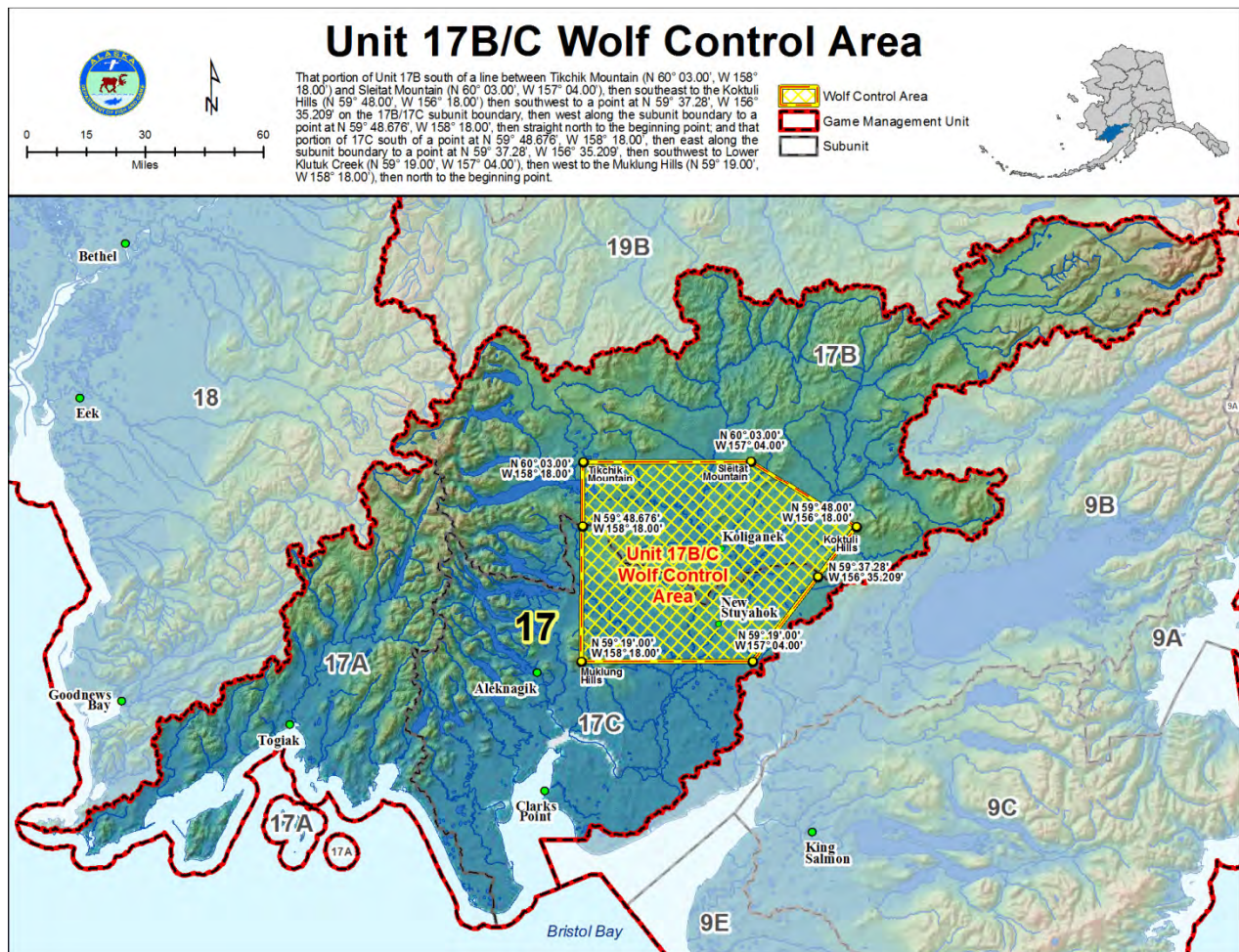


Figure 1. Map of the Mulchatna Caribou Herd Predation Control Area in Game Management Unit 17, Spring 2012 (RY2011).

2) Prey data

Date(s) and method of most recent summer abundance assessment for caribou (if statistical variation available, describe method here and show result in Table 1):

The last successful photo-census of post-calving aggregation was conducted on June 25, 2015.

Compared to IM area, was a similar trend and magnitude of difference in abundance observed in nearby non-treatment area(s) since program inception (Y/N) N/A and in the last year (Y/N) N/A?

Describe comparison if necessary:

The IM area comprises a small portion of the annual range of the Mulchatna caribou herd. The annual range of the majority of caribou in the herd includes use of areas both within and outside of the IM area, but the spatial and temporal

characteristics of movements within the IM area are variable. Therefore, it is difficult to quantify trends in abundance relative to treatment and non-treatment areas.

Date(s) of most recent age and sex composition survey (if statistical variation available, describe method here and show result in Table 1):

October 19-20, 2015

Compared to IM area, was a similar composition trend and magnitude of difference in composition observed in nearby non-treatment area(s) since program inception (Y/N) N/A and in the last year (Y/N) N/A? Describe comparison if necessary:

Ratio of calves to 100 cows: The IM area is utilized in different seasons by different segments of the herd. Generally, the IM area is utilized for calving by caribou that spend the summer and winter in GMU 18 ('western segment'), but is important summer and winter habitat for 'eastern segment' caribou that calve elsewhere (northeastern GMU 17b, GMUs 19a and 19b). Further, a small portion of radiocollared caribou have seasonal movement and range fidelity patterns that are not consistent with the general patterns described above. Because of these factors, it is difficult to quantify the effect of treatment areas relative to each segment.

Caution must be used in interpreting this year's calf ratios, as there were confounding factors influencing the data. The increase in calf ratios in both eastern and western segments of the MCH are due in part from increased early calf survival in the northern calving grounds. The area utilized for northern calving in 2014 and 2015 was 50 miles from the calving grounds used in the previous 3 years. This move resulted in a change of major predators from bears and wolves to golden eagles in 2014, and overall lower early calf mortality. Although we did not conduct early calf survival studies in 2015, the same pattern of high early survival as seen in 2014 may have existed. Cows and calves from this northern calving area, though predominantly of the eastern population segment are not exclusive to it, and may mix with the western segment as well.

Ratio of bulls to 100 cows: Fall bull:cow ratio has historically been higher in the western segment, but during 2010-2015 both the eastern and western segments showed an increasing trend in these indices.

Table 1. Caribou abundance, age and sex composition in assessment area (L) since program implementation in year 1 (not exclusively limited to inception of predation control) to reauthorization review in year 2017 in Mulchatna Caribou Herd Predation Management Area. Regulatory year is 1 July to 30 June (e.g, RY 2010 is 1 July 2010 to 30 June 2011).

Eastern Segment of the MCH (No Predator Control)

		Composition (number per 100 cows)		
Period	RY	Calves	Bulls	Total (n)
Year 0	2010	17	13	2,581

Year 1	2011	14	18	2,649
Year 2	2012	22	17	2,217
Year 3	2013	14	27	1,479
Year 4	2014	33	31	2,226
Year 5	2015	31	32	2,827

Western Segment of the MCH (Active Predator Control)

		Composition (number per 100 cows)		
Period	RY	Calves	Bulls	Total (n)
Year 0	2010	23	23	2,011
Year 1	2011	28	34	1,995
Year 2	2012	38	29	2,636
Year 3	2013	23	27	1,743
Year 4	2014	27	38	2,567
Year 5	2015	27	38	2,587

All Areas Combined

		Composition (number per 100 cows)			
Period	RY	Abundance (variation)	Calves	Bulls	Total (n)
Year 0	2010	-	20	17	4,592
Year 1	2011	-	19	22	5,282 ^a
Year 2	2012	19,000-27,000 ^b	30	23	4,853
Year 3	2013	15,000-22,000 ^b	19	27	3,222
Year 4	2014	21,000-32,000	30	35	4,793
Year 5	2015	30,736-38,190	29	35	5,414

^a Includes caribou not assigned to the Eastern or Western Segment of the MCH.

^b Preliminary estimate of abundance based on Rivest et al. 1998.

Describe trend in abundance or composition:

Trends in calf:cow ratios are variable from year to year, and are still far below those observed in the late 1980s-early 1990s when the herd was in a significant growth phase. Bull:cow ratios improved each year during 2010-2014 and remained at the 2014 level in 2015. This level of 35:100 meets our bull:100 cow objective. The 2014 and 2015 abundance estimates are showing promise of an increasing trend.

Table 2. Caribou harvest in assessment area (M). Methods for estimating unreported harvest are described in Survey and Inventory reports.

Period	RY	Reported			Estimated		Total harvest	Other mortality ^a	Total
		Male	Female	Unk Sex	Unreported	Illegal			
Year 0	2010 ^b	250	220	4	Unk	Unk	470	Unk	474
Year 1	2011 ^b	242	243	9	Unk	Unk	494	Unk	494
Year 2	2012 ^b	184	173	4	Unk	Unk	361	Unk	361
Year 3	2013 ^b	71	29	1	Unk	Unk	101	Unk	101
Year 4	2014 ^b	80	39	6	Unk	Unk	125	Unk	125

^aClarify (vehicle mortality, Defense of Life and Property, Mortuary, etc.).

^bData from WinfoNet, Harvest Information, Data Download (harvest report cards), November 25, 2015.

Describe trend in harvest:

There has been a decline in the reported harvest since 1999 and throughout this IM program (2010–2014). During these past 5 years, the majority of harvest shifted geographically from Unit 17 to Unit 18 and chronologically from fall to late winter. The majority of hunters are local residents (i.e. people who live within the herd’s range), and of those, primarily residents of Unit 18. During the past 2 winters (RY13–RY14), minimal snow conditions have prevented hunters from accessing caribou with snowmachines which is largely the reason the harvest has been so minimal.

Describe any other harvest related trend if appropriate:

NA

3) Predator data

Date(s) and method of most recent spring abundance assessment for wolves (if statistical variation available, describe method here and list in Table 3):

A minimum abundance estimate survey was conducted in February, 2012.

Date(s) and method of most recent fall abundance assessment for wolves (if statistical variation available, describe method here and list in Table 3):

Not Applicable: Fall abundance has not been estimated due to logistical and weather constraints.

Other research or evidence of trend or abundance status in wolves:

Beginning in spring of 2015 reports from residents and pilots have indicated increased numbers of wolves sighted. Wolves have also been observed during caribou research and management studies within the SDA area, indicating wolf abundance is fairly high at this time.

Table 3. Wolf abundance objectives and removal in wolf assessment area (N) of Mulchatna Caribou Herd Predation Management Area. Removal objective is to annually remove 100 % of the wolves in the wolf predation control area (O), so estimated or confirmed number remaining in the control area (O) by the May calving season each regulatory year is 0.

Subunits 9B and 17B&C (Subunits 19A&B are outside of areas N and O)

Period	RY	Non-SDA Harvest removal from area N		Dept. control removal from area O	SDA Public control removal from area O	Total removal ^a from area N	Minimum Spring abundance (variation) in area N
		Trap	Hunt				
Year 1	2011	14	63	0	11	77	14
Year 2 ^b	2012	1	8	0	4	9	-
Year 3 ^c	2013	0	10	0	0	10	-
Year 4 ^d	2014	0	0	0	0	0	-

^a Additional removal may be Defense of Life and Property, vehicle kill, etc.

^b ADF&G database, March 2, 2015.

^d ADF&G database, November 24, 2015.

4) Habitat data and nutritional condition of prey species

Where active habitat enhancement is occurring or was recommended in the Operational Plan, describe progress toward objectives:

Objective(s):

Not Applicable: There are no demonstrated methods to improve caribou habitat and no evidence that habitat is limiting the caribou population.

Area treated and method: Not Applicable

Observation on treatment response: Not Applicable

Evidence of progress toward objective(s) (choose one: Apparent Statistical):

Not Applicable

Similar trend in nearby non-treatment areas? Not Applicable

Describe any substantial change in habitat not caused by active program:

Not Applicable

Table 4. Nutritional indicators for caribou in assessment area (L) of the Mulchatna Caribou herd Predation Management Area.

Period	RY	Pregnancy Females >2 yrs age ^a	Female Calf Weights at 10.5 months in lbs. (n)
Year 0	2010	(May 2011) 79%	(April 2011) 124 (20)

Year 1	2011	(May 2012) 76%	(April 2012) 119 (13)
Year 2	2012	(May 2013) 79%	(April 2013) 127 (14)
Year 3	2013	(May 2014) 90%	(April 2014) 128 (14)
Year 4 ^b	2014	(May 2015) 61%	(April 2015) 133 (13)

^a Pregnancy rate is based on known-aged animals from a collared sample of adult female caribou. Pregnancy status is determined in May based on observed characteristics of pregnancy (antler retention, udder development, and/or presence of a calf at heel).

^b Survey delayed due to weather which affected sample size and timing of survey.

Where objectives on nutritional condition were listed in the Operational Plan, describe trend in condition indices since inception of (a) habitat enhancement or (b) enhanced harvest: N/A

Evidence of trend: N/A

Similar trend in nearby non-treatment areas? N/A

5) Costs specific to implementing Intensive Management

Table 5. Cost (\$1000 = 1.0) of agency salary based on estimate of proportional time of field level staff and cost of operations for intensive management activities (e.g., predator control or habitat enhancement beyond normal Survey and Inventory work) performed by personnel in the Department or work by other state agencies (e.g., Division of Forestry) or contractors in Mulchatna Caribou Herd Predation Management Area. Fiscal year (FY) is also 1 July to 30 June but the year is one greater than the comparable RY (e.g, FY 2010 is 1 July 2009 to 30 June 2010).

Period	FY	Predation control ^a		Other IM activities		Total IM cost	Research cost ^d
		Time ^b	Cost ^c	Time ^b	Cost ^c		
Year 1	2012	0.0	0.0	1.0	36.0	36.0	415.0
Year 2	2013	0.0	0.0	0.5	6.0	6.0	421.2
Year 3	2014	0.0	0.0	0.5	6.0	6.0	215.0
Year 4	2015	0.0	0.0	0.3	3.0	3.0	0.0

^aState or private funds only.

^bPerson-months (22 days per month)

^cSalary plus operations.

^dSeparate from implementing IM program but beneficial for understanding of ecological or human response to management treatment (scientific approach that is not unique to IM).

6) Department recommendations² for annual evaluation (1 February) following Year 4 (RY14) for the Mulchatna Caribou herd Predation Management Area

Has progress toward defined criteria been achieved?

² Prior sections include primarily objective information from field surveys; Sections 6 and 7 involve professional judgment by area biologists to interpret the context of prior information for the species in the management area.

Yes, fall composition bull-to-cow and calf-to-cow ratios have improved. The 2014 and 2015 abundance estimates show an increasing trend in caribou numbers.

Has achievement of success criteria occurred?

We have mixed results in meeting the objectives of the success criteria. The bull:100 cow objective of 35:100 was met in each of the past 2 years (RY14–RY15), while the calf:100 cow objective of 30:100 was met in RY14 (30:100) but narrowly missed in RY15 (29:100). The abundance estimates during RY14 and RY15 indicate an increasing abundance of caribou, though the confidence intervals on the point estimates overlap. However, these indices cumulatively show a positive direction for this herd. The one success criteria that we are not approaching is the harvest objective of 2,400–8,000. The reported harvest hasn't even been within 10% of the lower objective. This is certainly due to lack of opportunity for harvest due to lack of snow, but may also be the result of harvest reporting. We have recently required a registration permit for hunting Mulchatna caribou, and it may take constituents some time to get used to this reporting requirement.

Recommendation for IM program (choose one): Continue Modify Suspend Terminate
Continue Same Day Airborne Wolf Control Program in control area (O)