

**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  
April 2017**



1) **Description of IM Program<sup>1</sup> 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 92.111**

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

February (annual report)                      Year 2017

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.

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<sup>1</sup> 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 initial predation control area measured approximately 2,870 sq. miles during RY 2011-2016. It encompassed an area from Tikchik Mountain east to Sleitat Mountain, southeast to the Kuktuli Hills southwest to Lower Klutuk Creek, west to the Muklung Hills and then north returning to Tikchik Mountain (see Figure 1). This area encompassed the core southern calving area of the MCH when established, but in recent years caribou have begun moving outside this area to calve. Present plans are to expand and possibly relocate this predation control area to accommodate this change in calving distribution.

**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 RY2016 calving season while monitoring the herd to determine progress towards IM objectives (details provided in sections 6).

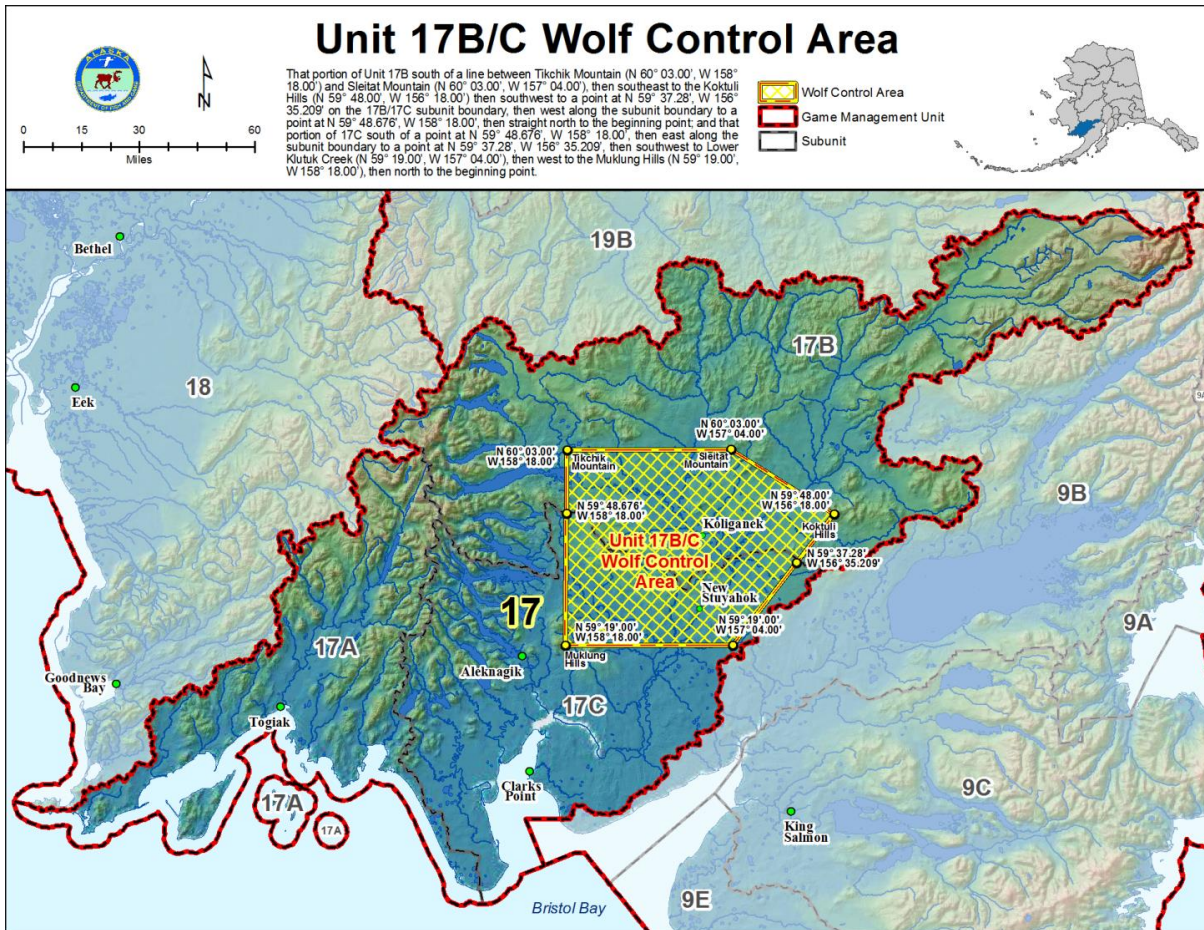


Figure 1. Map of the Mulchatna Caribou Herd Predation Control Area in Game Management Unit 17, RY2012-RY2016.

## 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 27–29, 2016.

**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 14–15, 2016

**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:**

The IM area comprises a small portion of the annual range of the Mulchatna caribou herd and is overlap between the calving ground used by the western segment of the population and the summer and winter grounds used by the eastern segment of the population (Table 1). Therefore, teasing out the treatment and non-treatment effects based on a comparison of the population segments is difficult.

The combined calves:100 cows ratio of 22 calves:100 cows in RY2016 was lower than 2014 and 2015 when the ratios were 30 and 29 calves:100 cows respectively, and the trend in this metric indicates a static situation. The combined bull:100 cows ratio of 39 bulls:100 cows was the highest recorded since 2000, an increase over the past two years of 35 bulls:100 cows.

**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 ( <i>n</i> )
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
Year 6	2016	27	38	2,525

*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
Year 6	2016	18	40	2,670

*All Areas Combined*

		Composition (number per 100 cows)			
Period	RY	Abundance <sup>a</sup> (variation)	Calves	Bulls	Total (n)
Year 0	2010	-	20	17	4,592
Year 1	2011	-	19	22	5,282 <sup>b</sup>
Year 2	2012	19,061–26,558	30	23	4,853
Year 3	2013	15,014–21,602	19	27	3,222
Year 4	2014	20,724–31,826	30	35	4,793
Year 5	2015	30,736–38,190	29	35	5,414
Year 6	2016	21,346–33,137	22	39	5,195

<sup>a</sup> Estimate of abundance based on the Rivest methodology (Rivest et al. 1998).

<sup>b</sup> Includes caribou not assigned to the Eastern or Western Segment of the MCH.

**Describe trend in abundance or composition:**

Calf:cow ratios vary annually and are still less than the values observed in the late 1980s–early 1990s when the herd was in a significant growth phase. Bull:cow ratios have been improving during RY2010–RY2016 and has exceeded the bull:100 cow objective for the last three consecutive years. The RY2016 bull:cow ratio was the highest ratio observed since 2000. The abundance estimates also show an increasing trend during the past 5 years. Although the 2016 estimate was lower than that of 2015, the overlap in confidence intervals between these two estimates suggest another year of data may be necessary to provide us with a better indication of the abundance 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 <sup>a</sup>	Total
		Male	Female	Unk Sex	Unreported	Illegal			
Year 0	2010 <sup>b</sup>	250	220	4	Unk	Unk	470	Unk	474
Year 1	2011 <sup>b</sup>	242	243	9	Unk	Unk	494	Unk	494
Year 2	2012 <sup>b</sup>	184	173	4	Unk	Unk	361	Unk	361
Year 3	2013 <sup>c</sup>	70	35	1	Unk	Unk	106	Unk	106
Year 4	2014 <sup>c</sup>	125	52	5	Unk	Unk	182	Unk	182
Year 5	2015 <sup>c</sup>	159	74	2	Unk	Unk	235	Unk	235

<sup>a</sup> Clarify (vehicle mortality, Defense of Life and Property, Mortuary, etc.).

<sup>b</sup> Data from WinfoNet, Harvest Information, Data Download (harvest report cards).

<sup>c</sup> Data from WinfoNet, Permitting, Hunt Statistics, General Hunt, RY, RC503.

**Describe trend in harvest:**

Although the reported harvest is still far below objectives, the harvest has increased during each of the past 2 years from the low in RY2013. During these past 6 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, primarily residents of Unit 18). During the winters of RY2013–RY2015, minimal snow conditions prevented hunters from accessing caribou with snowmachines and likely explains the low harvest. Snow conditions for winter travel were better in RY2016, and preliminary harvest reports indicate that harvest increased to a minimum of 291 animals.

**Describe any other harvest related trend if appropriate:**

None

**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. A wolf collaring effort conducted in spring 2017 resulted in 17 wolves being captured and radio collared in the eastern portion of the Mulchatna caribou range. Data from these collared animals will help us in enumerating wolf numbers and estimating wolf density and abundance for this area in future years.

**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 currently continues

to be fairly high. This makes sense since wolf abundance is a reflection of harvest, which has been minimal during RY2013–RY2015 due to lack of snow for hunters and trappers to access wolves.

**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 <sup>a</sup> from area N	Minimum Spring abundance (variation) in area N
		Trap	Hunt				
Year 1	2011	14	52	0	11	77	14
Year 2 <sup>b</sup>	2012	17	0	0	0	17	-
Year 3 <sup>c</sup>	2013	0	10	0	0	10	-
Year 4 <sup>d</sup>	2014	0	0	0	0	0	-
Year 5 <sup>e</sup>	2015	19	2	0	0	21	-

<sup>a</sup> Additional removal may be Defense of Life and Property, vehicle kill, etc.

<sup>b</sup> ADF&G database, March 2, 2015.

<sup>d</sup> ADF&G database, November 24, 2015.

<sup>e</sup> ADF&G database, February 20, 2017.

#### 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 the nutritional indices suggest habitat is not a limiting factor for this herd.

**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 <sup>a</sup>	Female Calf Weights <sup>b</sup> at 10.5 months in lbs. (n)
Year 0	2010	79%	124 (20)
Year 1	2011	76%	119 (13)
Year 2	2012	79%	127 (14)
Year 3	2013	90%	128 (14)
Year 4 <sup>c</sup>	2014	61%	133 (13)
Year 5	2015	83%	119 (23)

<sup>a</sup> Pregnancy rate is based on known-aged animals from a collared sample of adult female caribou. Pregnancy status is determined in May, i.e., RY 2010 pregnancy data is collected in May 2011, based on observed characteristics of pregnancy, i.e., antler retention, udder development, and/or presence of a calf at heel.

<sup>b</sup> Female calf weight data is collected in April of the RY, i.e., RY 2010 female calf weight data is collected in April 2011.

<sup>c</sup> 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 <sup>a</sup>		Other IM activities		Total IM cost	Research cost <sup>d</sup>
		Time <sup>b</sup>	Cost <sup>c</sup>	Time <sup>b</sup>	Cost <sup>c</sup>		
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	0.5	6.0	6.0	106.3
Year 5	2016	0.0	0.0	0.5	6.0	6.0	60.6

<sup>a</sup> State or private funds only.

<sup>b</sup> Person-months (22 days per month).

<sup>c</sup> Salary plus operations.

<sup>d</sup> Separate 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 recommendations<sup>2</sup> for annual evaluation (1 February) following Year 5 (RY2016) for the Mulchatna Caribou herd Predation Management Area**

**Has progress toward defined criteria been achieved?**

Yes; the fall bull-to-cow ratios have been steadily increasing, are on an upward trend above objectives. The calf-to-cow ratios have improved slightly but are still not increasing at the desired rate remaining below management objectives. The abundance estimate is for positive growth over the past 5 years (an increase of 19%).

**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 3 years (RY2014–RY2016), while the calf:100 cow objective of 30:100 was met in RY2014 (30:100), narrowly missed in RY2015 (29:100), and well below in RY2016 (22:100). The abundance estimates during RYs 2012-2015 indicate an increasing abundance of caribou, but not at the 5% annual rate prescribed in the IM objectives. The one success criteria that we are not close to meeting is the harvest objective of 2,400–8,000. The reported harvest has been less than 10% of the lower objective since the inception of this IM program. There are indications that the actual harvest may exceed the reported harvest by a substantial amount, but we are unable to quantify the amount. We have also 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)

**7) Evaluation (1 February) for program renewal (following final Year 6 [RY 2016]) and Department recommendations for the Mulchatna Caribou herd Predation Management Area**

**Has progress toward defined criteria been achieved (describe)?** \_\_\_\_\_

**Has achievement of success criteria occurred (describe)?** \_\_\_\_\_

**Recommendation for IM program [choose one]:** Continue Modify Suspend Terminate

**Rationale for recommendation on overall program:** \_\_\_\_\_

**Other recommendations (if continuation is recommended, specific actions on individual practices):** \_\_\_\_\_

<sup>2</sup> 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.