Annual Report to the Alaska Board of Game on Intensive Management for Caribou with Wolf Predation Control in Game Management Unit 9D, the Southern Alaska Peninsula Caribou Herd.

Prepared by the Division of Wildlife Conservation
February 2017

1) Description of IM Program[1] 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 92.112

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

February (annual report)) Year 2017

C) Program name (geographic description/GMU and species/herd):
Southern Alaska Peninsula Predation Management Area - Unit 9D
Southern Alaska Peninsula Caribou Herd (SAP).

D) Existing program does not **have an associated *Operational Plan***, it does however have a detailed Intensive Management Plan in regulation (5AAC 92.112).

E) Game Management Unit(s) fully or partly included in IM program area: Unit 9D.

F) IM objectives for caribou: population size 1,500–4,000 **harvest** 150–200 annually.

G) Month and year the current predation control program was originally authorized by the Board: March 2008

H) Predation control is currently inactive **in this IM area.**

I) If active, month and year the current predation control program began:
Control activities were initiated in May 2008 during regulatory year (RY) 2007 (RY2007 = 1 July 2007 through 30 June 2008) and suspended in July 2010 (RY2010)

J) Indicate if 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:
- 3,819 square miles
- Includes all lands on the mainland portion of Unit 9D.

L) Size and geographic description of area for assessing ungulate abundance:
- 3,819 square miles
- Includes all the mainland portion of Unit 9D.

M) Size and geographic description of area for ungulate harvest reporting:
- 3,819 square miles
- Includes all the mainland portion of Unit 9D.

[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:

- Less than 200 square miles; The actual size of the area varies annually based on caribou calving distribution.
- Includes all state lands on the mainland portion of Unit 9D.

O) Size and geographic description of predation control area:

- Defined annually based on caribou calving distribution.
- Up to 3,819 square miles.
- Can include any drainage of the Alaska Peninsula west of a line from the southernmost head of Port Moller Bay to the head of American Bay (not applicable to federal lands unless approved by federal land management agencies).

P) Criteria for evaluating progress toward IM objectives:

- Fall bull:cow ratio
- Fall calf:cow ratio
- Caribou abundance
- Caribou harvest

Q) Criteria for success with this program:

- Fall bull:cow ratio can be sustained within management objectives (35 bulls:100 cows).
- Fall calf ratio can be sustained above 30 calves:100 cows.
- The caribou population can grow at a sustained rate of 5% annually.
- Harvest objectives are met.

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

The Department recommends suspending the predation control program during the 2017 calving season while monitoring the herd for progress towards IM objectives (details provided in sections 6).

2) Prey data

Date(s) and method of most recent fall abundance assessment for the Southern Alaska Peninsula Caribou Herd (SAP):

October 20, 2016; Population size is extrapolated from the number of caribou and percent of collared caribou observed during the October composition survey.

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

No, the trend and magnitude of difference in abundance were different in the nearby non-treatment area.

Describe comparison if necessary:

The adjacent Unimak caribou herd (UCH) declined in abundance since the SAP program started (May 2008; suspended July 2010) into 2012, while the SAP showed a steady increase in abundance. However, the UCH has increased steadily in abundance from 2012 to 2016.

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

October 20, 2016.

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

For the initial three years following inception of the calving ground predation reduction program in the SAP, Unimak Caribou Herd (UCH) bull and calf ratios remained low while the SAP bull ratio and calf ratio rapidly increased. Although UCH ratios began to increase in 2012, SAP ratios have continued to exceed UCH ratios.

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 11 (2017) in the Southern Alaska Peninsula Predation Management Area. **Regulatory year is 1 July to 30 June (e.g, RY 2010 is 1 July 2010 to 30 June 2011).**

			Composition (number per 100 females)[a]		
Period	RY	Abundance	Young	Males	Total (n)
Year 1[b]	2007	600[c]	1	15	431
Year 2[b]	2008	700[c]	39	10	570
Year 3[b]	2009	800[c]	43	21	679
Year 4[de]	2010	-	47	28	532
Year 5[de]	2011	1,061[f]	20	40	920
Year 6[de]	2012	-	20	45	500
Year 7[e]	2013	1,720	40	50[g]	600
Year 8	2014	-	45	45	884
Year 9	2015	-	-	-	-
Year 10	2016	-	38	49	1,422

[a] Composition surveys are conducted prior to wolf control activities that occur in the same regulatory year (e.g. during RY2007 the composition survey was conducted in October 2007 and wolf control was conducted in May 2008).

[b] Wolf control was conducted on the caribou calving grounds during May and June.

[c] Post-calving population count conducted by ADFG in July.

[d] Scheduled post-calving population counts were not conducted due to poor weather conditions.

[e] Wolf control program activities suspended to evaluate the effects of increased calf recruitment.

[f] USFWS February, 2012 winter minimum count.

[g] Model-based adjustment of bulls probably miscategorized during survey by a new observer.

Describe trend in abundance or composition:

SAP caribou abundance, bull and calf ratios have consistently increased since the program was implemented in May 2008 (RY2007). The fall calf ratio (RY2008) increased dramatically after the first year of wolf removal and remained high each fall (RY2008 through RY2010) following active wolf control. The fall calf ratio in RY2011 decreased after the program was suspended in RY2010, but still remained high relative to pre-control levels. In RY2014 the fall calf ratio continued to show a strong increase. The apparent decrease in RY2011 and RY2012 was in part related to the preponderance of nonproductive female caribou (<3 years of age) recruited into the population following the initial predator control efforts. As the initial influx of surviving females reached reproductive maturity in RY2012, these now productive females began contributing to herd's productivity. The bull ratio has also increased steadily; in RY2011 it exceeded the 2008 SAP management objective of 35 bulls:100 cows, for the first time since 2004 at 40.2 bulls:100 cows. In RYs 2012–2016 it continued to increase to the current 49 bulls:100 cows.

Table 2. **Caribou abundance, age and sex composition of the Unimak Caribou Herd in adjacent Game Management Unit 10 since the implementation of** the Southern Alaska Peninsula Predation Control program **in Unit 9D in year 1 (RY2007).**

			Composition (number per 100 females)		
Period	RY	Abundance (variation)	Young	Males	Total (*n*)
Year 1	2007	-	6	31	433
Year 2	2008	-	6	9	260
Year 3	2009	400 [a]	3	5	221
Year 4	2010	-	8	8	284
Year 5	2011	-	7	6	117
Year 6	2012	-	3	10	83
Year 7	2013	-	19	10[b]	67
Year 8	2014	-	22	15	127
Year 9	2015	-	-	-	-
Year 10	2016	-	40	33	258

[a] Minimum count conducted in winter by USFWS.
[b] Model-based adjustment of bulls probably miscategorized during survey by new observer.

Table 3. **Caribou harvest in assessment area (M). Methods for estimating unreported harvest are described in Survey and Inventory reports.**

		Reported[b]		Estimated		Total harvest	Other mortality[a]	Total
Period	RY	Male	Female	Unreported	Illegal			
Year 1	2007	0	0	0	10	10	0	10
Year 2	2008	0	0	0	10	10	0	10
Year 3	2009	0	0	0	10	10	0	10
Year 4	2010	0	0	0	10	10	0	10
Year 5	2011	0	0	0	10	10	0	10

Year 6	2012	9	0	0	10	19	0	19
Year 7	2013	18	1	0	10	29	0	29
Year 8	2014	12	0	0	10	22	0	22
Year 9	2015	17	2	0	10	29	0	29
Year 10	2016	32	3	0	10	45	0	45

[a]Clarify (vehicle mortality, Defense of Life and Property, Mortuary, etc.).
[b]Reported harvest includes State and Federal authorized hunts.

Describe trend in harvest: A limited number of excess bulls resulting from the this IM program were available through a U.S. Fish and Wildlife Service permit hunt in RY2012–2014. The State hunt TC506 conducted RY2013–2015 enabled harvest of the continued increase in bulls. In RY2016 ADF&G implemented a general harvest hunt for residents and non-residents. We estimate illegal harvest to have remained level over the course of the program.

Describe any other harvest related trend if appropriate:
Not Applicable

3) Predator data

Date(s) and method of most recent spring abundance assessment for wolves:
The objective of the program is to remove wolves from the control area (calving grounds of the SAP) from birth through the first 2 weeks of life, the period when calves are most vulnerable to predation, to improve caribou calf survival and recruitment. This wolf control effort was suspended after the RY2009 calving season. (Wolves were last removed in June 2010). To date no wolf surveys have been conducted.

Date(s) and method of most recent fall abundance assessment for wolves:
The objective is to annually remove all wolves from the control area (calving grounds of the SAP). This wolf control effort was suspended after the RY2009 calving season (Wolves were last removed in June 2010). To date no wolf surveys have been conducted.

Other research or evidence of trend or abundance status in wolves:
Observations by department biologists of wolves and wolf tracks from aerial flights in UnitUnit 9D indicate wolves have persisted in the area since the program was implemented. Data from satellite-collared wolves indicate dispersal into the area does occur from northern Alaska Peninsula packs.

Table 4. **Wolf abundance objectives and removal in wolf assessment area (N) of** the Southern Alaska Peninsula Predation Management Area, Unit 9D. **Removal objective for the wolf populations in caribou calving areas within Unit 9D is** N/A% **of pre-control fall abundance in year 1 of wolf predation control program.**

Not Applicable: The program is designed to remove the fewest number of wolves possible during the period of time in which calves are most vulnerable to predation to increase calf survival and recruitment. The program does not have a wolf removal objective.

Period	RY	Harvest removal from area N		Dept. control removal from area O	Public control removal from area O	Total removal[a] from area N	Spring abundance (variation) in area N
		Trap	Hunt				
Year 1	2007	1	8	28	0	37	-
Year 2	2008	0	3	8	0	11	-
Year 3	2009	0	9	2	0	11	-
Year 4	2010	0	2	0	0	2	-
Year 5	2011	2	13	0	0	15	-
Year 6	2012	1	4	0	0	5	-
Year 7	2013	1	8	0	0	10[b]	-
Year 8	2014	0	1	0	0	1	-
Year 9	2015	7	0	0	0	7	-

[a] Additional removal may be Defense of Life and Property, vehicle kill, etc.
[b] Includes 1 wolf recorded harvested by 'other' method, not trap or hunt.

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: Not Applicable

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): 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 5*. **Nutritional indicators for caribou in the area (L) of** the Southern Alaska Peninsula Caribou Herd.

Period	RY	Pregnancy (Females 2+ yrs of age)	Male Calf Weights (kg)	Female Calf Weights (kg)
Year 1	2007	86%	7.6	7.5
Year 2	2008	90%	7.4	6.4

Year 3	2009	91%	7.7	6.8
Year 4	2010	85%	-	-
Year 5	2011	93%	-	-
Year 6	2012	84%	7.6	7.1
Year 7	2013	84%	-	-
Year 8	2014	89%	-	-
Year 9	2015	89%	-	-
Year 10	2016[a]	-	-	-

*Discrepancies in Table 5 data in previous annual and interim reports resulted from different personnel recording data according to calendar year vs. regulatory year, and calf capture weights vs. estimated birth mass. These data have been updated in a consistent format in this annual report February 2016.

[a] 2016 parturition survey not yet conducted.

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:

Not Applicable

Evidence of trend: Not Applicable

Similar trend in nearby non-treatment areas? Not Applicable

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

5) Costs specific to implementing Intensive Management

Table 6. 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 the Southern Alaska Peninsula 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[c]	Research cost[d]
		Time[b]	Cost[c]	Time[b]	Cost[c]		
Year 6	2012	0.0	0.0	0.2	6.0	6.0	0.0
Year 7	2013	0.0	0.0	0.5	6.0	6.0	118.3
Year 8	2014	0.0	0.0	0.5	6.0	6.0	118.4
Year 9	2015	0.0	0.0	0.5	6.0	6.0	198.2
Year 10	2016	0.0	0.0	0.5	6.0	6.0	126.9

[a] State or private funds only.
[b] Person months (22 days per month).
[c] Salary plus operations.
[d] 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[2] for annual evaluation (1 February) following Year 6 (RY 2012) for the Southern Alaska Peninsula Predation Management Area, Unit 9D — skip in final year and go to section 7

Has progress toward defined criteria been achieved?

Yes. Caribou abundance, fall bull-to-cow ratio, and fall calf-to-cow ratio have all increased since the program started.

Has achievement of success criteria occurred?

Success has been achieved for three criteria: fall bull-to-cow ratios, fall calf-to-cow ratios, and population growth. In RY2011 the fall bull ratio exceeded management objectives for the first time since 2004 and a Tier II hunting season was opened. The fall bull:cow ratio has continued to exceed the 35:100 objective since 2011, and the population has maintained annual growth in excess of 5%. In addition, the fall calf:cow ratio increased during the first year of the program and reversed the negative population trend. The calf:cow ratio continued to increase until the program was suspended in Year 4 (RY2010) at which time it dropped below the objective for 2 years – likely due to an influx of young non-reproductive cows. The current calf ratio has remained above management objectives since 2013.

[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.

Recommendation for IM program (choose one): Continue Modify Suspend **Terminate**
Abundance, as well as fall bull:cow and calf:cow ratios have all increased under this program. Fall calf ratios were above objectives following each year of active predation reduction. Although the calf ratio decreased upon suspension of the program, in RY2013 it rebounded and currently exceeds management objectives. Because increases in the bull ratio and abundance stem from increased recruitment, these parameters should continue to improve as the calves from Years 1 through 4 reach adulthood. The remaining criteria, harvest, is below the objective of 150-200 annually, but has increased. The inability to reach objective is not due to insufficient availability of caribou.

7) Evaluation (1 February) for program renewal (following final Year 11 [RY 2017]) and Department recommendations for the Southern Alaska Peninsula Predation Management Area, Unit 9D.

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): _____