Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf, Black Bear, and Grizzly Bear Predation Control in Game Management Unit 19A

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 92.123

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

February (annual report) **Year** 2017

C) Program name: Unit 19A wolf and bear predation control program (Fig. 1)

D) Existing program has **an associated Operational Plan**

E) Game Management Unit(s) fully or partly included in IM program area: Unit 19A

F) IM objectives for moose population size 7,600–9,300 **harvest** 400–550

G) Month and year the current predation control program was originally authorized by the Board: March 2004**. Indicate date(s) if renewed:** March 2009; February 2014

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

I) If active, month and year the current predation control program began: December 2004 for wolves, July 2012 (regulatory year 2012) for bears

J) A habitat management program funded by the Department or from other sources is currently active in this IM area: No

K) Size of IM program area (square miles) and geographic description: Unit 19A is 9,972 mi^2

L) Size and geographic description of area for assessing ungulate abundance: The Wolf Control Focus Area (WCFA) is 3,905 mi^2; Unit 19A Bear Control Focus Area (BCFA) is 534 mi^2

M) Size and geographic description of area for ungulate harvest reporting: WCFA is 3,905 mi^2

N) Size and geographic description of area for assessing predator abundance: WCFA is 3,905 mi^2 ; Unit 19A Bear Control Focus Area (BCFA) is 534 mi^2

O) Size and geographic description of predation control area: WCFA is 3,905 mi^2 for wolves BCFA; 534 mi^2 for bears

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

P) Criteria for evaluating progress toward IM objectives: moose abundance and harvest

Q) Criteria for success with this program: BCFA abundance=2.0 moose/mi^2 (~1,100 moose); and WCFA harvest=120 moose

R) Department recommendation for IM program in this reporting period: Continue program **(details provided in section 6)**

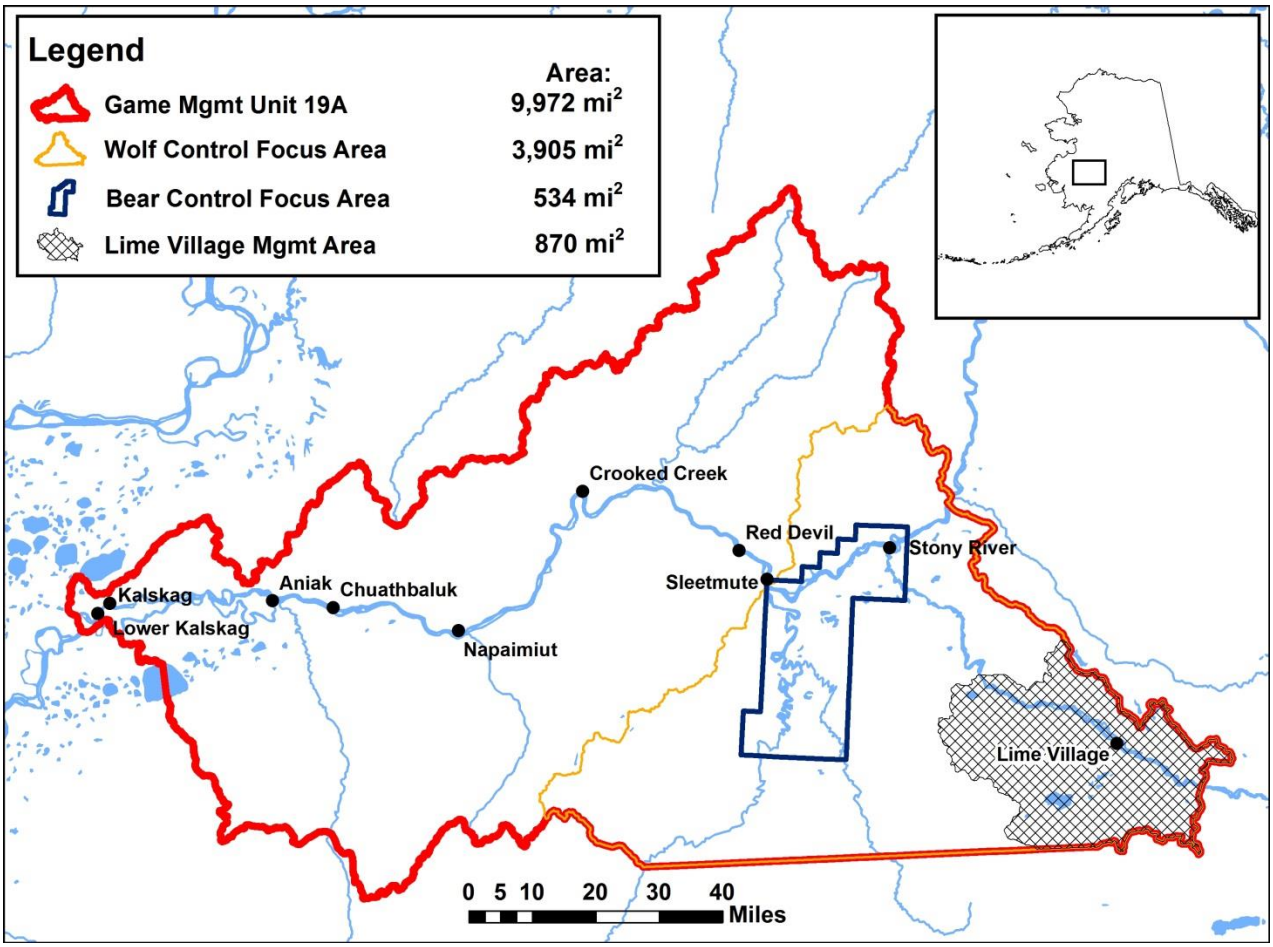

Figure 1. Unit 19A intensive management area and wolf and bear control focus areas.

2) Prey data

Date(s) and method of most recent abundance assessment for moose: March 2014, Geospatial moose population estimate (GSPE) in BCFA

Compared to IM area, was a similar trend and magnitude of difference in abundance observed in nearby non-treatment area(s) since program inception: Non-treatment area not established

Date(s) of most recent age and sex composition survey: November 2013, east-west line transects in Holitna-Hoholitna Drainages

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: Non-treatment area not established

Table 1. Moose abundance, age and sex composition in Wolf Control Focus Area (WCFA) or Bear Control Focus Area (BCFA) since program implementation in year 1 to year 12. Regulatory year is 1 July to 30 June (e.g, RY 2015 is 1 July 2015 to 30 June 2016).

Period	Regulatory Year	Abundance (variation)[a]	Composition (number per 100 females)[b]		
			Calves	Males	Total *n*
Year 1	2004	1085 moose (± 17%; 90% CI)	--	--	--
Year 2	2005	--	24	8	307
Year 3	2006	--	--	--	--
Year 4	2007	1703 moose (± 28%; 90% CI)	45	35	200
Year 5	2008	--	27	34	124
Year 6	2009	--	36	51	129
Year 7	2010	962 moose (± 18% at 90% CI) 1,666 moose (± 36% 90% CI) with scf[c]	19	48	212
Year 8	2011	--	31	38	164
Year 9	2012	--	--	--	--
Year 10[d]	2013	798 moose (±13.6% at 90% CI) with scf[c]	50	55	244
Year 11	2014	--	--	--	--
Year 12	2015	--	--	--	--
Year 13	2016	--	52	22	

[a]February-March GSPE surveys (observed moose, not corrected for sightability unless denoted w/scf [with sightability correction factor]).
[b]November line transect surveys; 2005 composition survey conducted in a larger geographic area than other years.
[c]Sightability Correction Factor
[d]GSPE conducted in BCFA only

Describe trend in abundance or composition: No detectable trend in moose abundance within the WCFA

Table 2. Moose harvest in Wolf Control Focus Area (WCFA) since program implementation in year 1 to year 12. Regulatory year is 1 July to 30 June (e.g, regulatory year 2015 is 1 July 2015 to 30 June 2016).

Period	Regulatory Year	Reported Harvest		Total harvest	Other mortality[a]	Total
		Male	Female			
Year 1	2004	37	--	37	--	37
Year 2	2005	42	--	42	--	42
Year 3	2006	1[b]	--	1	0	1
Year 4	2007	2[b]	--	2	0	2
Year 5	2008	1[b]	--	1	4	5
Year 6	2009	1[b]	--	1	1	2
Year 7	2010	3[b]	--	3	0	3
Year 8	2011	2[b]	--	2	2	4
Year 9	2012	2[b]	--	2	0	2
Year 10	2013	3[b]	--	2	1	3
Year 11	2014	2[b]	--	2	3	5
Year 12	2015	3[b]	0	3	5	8
Year 13	2016[c]	4[b]	0	4	1	5

[a]Mortuary harvest; other permitted harvest
[b]Hunting season closed, except within the Lime Village Management Area
[c]Preliminary results

Describe trend in harvest: Declined due to hunting season closure in most of the WCFA

Describe any other harvest related trend if appropriate: None

3) Predator data

Wolves

Date(s) and method of most recent spring abundance assessment for wolves in the WCFA: April 2015, private pilot interviews and state biologist observations from aircraft

Date(s) and method of most recent fall abundance assessment for wolves in the WCFA: April 2015, calculated for fall 2014 by adding total removal from WCFA to spring 2014 abundance estimate

Other research or evidence of trend or abundance status in wolves: Pre-control wolf estimate was modeled at 75–100 wolves in the WCFA

Table 3. Wolf abundance and removal in Wolf Control Focus Area (WCFA) since program implementation in year 1. Removal objective is to reduce wolf numbers as low as possible in the WCFA and to maintain 25–30 in all of Unit 19A to ensure wolves persist in the unit. The fall regulatory year 2014 modeled wolf population estimate for all of Unit 19A is 88-118. Regulatory year is 1 July to 30 June (e.g, regulatory year 2015 is 1 July 2015 to 30 June 2016).

Period	Regulatory Year	Fall abundance[a]	Harvest removal		Dept. control removal	Public control removal	Total removal	Spring abundance
			Trap	Hunt				
Year 1	2004	--	3	0	0	40	43	--
Year 2	2005	44–46	2	0	0	36	38	5–7[b]
Year 3	2006	--	0	0	0	7	7	--
Year 4	2007	27	0	3	0	12	15	12[b]
Year 5	2008	--	1	0	0	19	20	--
Year 6	2009	--	0	0	0	2	2	--
Year 7	2010	30	1	0	0	10	11	19[b]
Year 8	2011	21	0	0	0	8	8	13[c]
Year 9	2012	24	2	0	0	0	2	22[c]
Year 10	2013	32	2	0	0	6	8	24[c]
Year 11	2014	13	4	1	0	2	7	20[c]
Year 12	2015	--	2	0	0	0	2	--
Year 13	2016[d]	--	0	0	0	0	0	--

[a]Calculated by subtracting total removal from WCFA spring abundance during each RY.
[b]Abundance based on aerial reconnaissance survey.
[c]Abundance based on private pilot and department biologist observations.
[d] Preliminary data.

Black Bears

Date(s) and method of most recent spring abundance assessment for black bears in the BCFA: May 2013, based on removal estimator.

Date(s) and method of most recent fall abundance assessment for black bears in the BCFA: None

Other research or evidence of trend or abundance status in black bears: Estimated population of 2,500–3,000 black bears in Unit 19A and 135–160 total bears in the BCFA prior to removal. Estimator is based on known bear densities in similar habitats in other game management units in Interior Alaska.

MILLER S., G.C. WHITE, R.A. SELLERS, H.V. REYNOLDS, J.W. SCHOEN, K. TITUS, V.G. BARNES, JR., R.B. SMITH, R.R. NELSON, W.B. BALLARD, AND C.C. SCHWARTZ. 1997. Brown and black bear density estimation in Alaska using radiotelemetry and replicated mark-resight techniques. *Wildlife Monographs* 133.

BOUDREAU T.A. 2005. Units 19, 21A and 21E black bear management report. Pages 218–222 *in* C. Brown, editor. Black bear management report of survey and inventory activities 1 July 2001–30 June 2004. Alaska Department of Fish and Game. Project 17.0. Juneau, Alaska.

Table 4. Black bear abundance and removal in Bear Control Focus Area (BCFA) since bear control was implemented in Year 9. Removal objective is to reduce bear numbers as low as possible within the BCFA. The spring regulatory year 2012 estimated black bear population for all of Unit 19A is 2,500–3,000. Regulatory year is 1 July to 30 June (e.g. regulatory year 2015 is 1 July 2015 to 30 June 2016).

Period	Regulatory Year	Spring abundance (95% CI)	Harvest removal		Dept. control removal		Total removal	Fall abundance
			FA[a]	SP[b]	FA	SP		
Year 9	2012	92–102[c]	0	1	0	84[d]	85	12
Year 10	2013	--	0	0	0	54	54	--
Year 11	2014	--	0	0	0	0	0	--
Year 12	2015	--	2	1	0	0	3	--
Year 13	2016[e]	--	0		0			--

[a]Fall
[b]Spring
[c]Independent bears
[d]Includes one bear killed but not recovered
[e]Preliminary data

Brown Bears

Date(s) and method of most recent spring abundance assessment for brown bears in the BCFA: May 2012, modeled based on known bear densities in similar habitats.

Date(s) and method of most recent fall abundance assessment for brown bears in the BCFA: None

Other research or evidence of trend or abundance status in black bears: Estimated population of 200 brown bears in Unit 19A is based on known bear densities in similar habitats in other game management units in Interior Alaska.

MILLER S., G.C. WHITE, R.A. SELLERS, H.V. REYNOLDS, J.W. SCHOEN, K. TITUS, V.G. BARNES, JR., R.B. SMITH, R.R. NELSON, W.B. BALLARD, AND C.C. SCHWARTZ. 1997. Brown and black bear density estimation in Alaska using radiotelemetry and replicated mark-resight techniques. *Wildlife Monographs* 133.

BOUDREAU T.A. 2005. Units 19, 21A and 21E black bear management report. Pages 218–222 *in* C. Brown, editor. Black bear management report of survey and inventory activities 1 July 2001–30 June 2004. Alaska Department of Fish and Game. Project 17.0. Juneau, Alaska.

Table 5. Brown bear abundance and removal in Bear Control Focus Area (BCFA) since bear control was implemented in Year 9. Removal objective is to reduce bear numbers as low as possible within the BCFA. The Spring regulatory year 2012 estimated brown bear population for all of Unit 19A is 200. Regulatory year is 1 July to 30 June (e.g. regulatory year 2015 is 1 July 2015 to 30 June 2016).

Period	Regulatory Year	Spring abundance (95% CI)	Harvest removal		Dept. control removal		Total removal	Fall abundance
			FA[a]	SP[b]	FA	SP		
Year 9	2012	10–15[c]	0	0	0	5	5	--
Year 10	2013	--	0	0	0	10	10	--
Year 11	2014	--	0	0	0	0	0	--
Year 12	2015	--	7	0	0	0	7	--
Year 13	2016[d]	--	0		0			--

[a]Fall
[b]Spring
[c]Based on known bear densities in similar habitats
[d]Preliminary data

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: No active habitat enhancement.

Table 6. Nutritional indicators for moose in Wolf Control Focus Area (WCFA) since program implementation. Regulatory year is 1 July to 30 June (e.g, Regulatory Year 2015 is 1 July 2014 to 30 June 2016).

Period	Regulatory Year	Twinning Rate of radiocollared cows with calf that had twins (*n*)	Twinning Rate of uncollared cows with calf that had twins (*n*)
Year 1	2004	43% (7)	--
Year 2	2005	--	--
Year 3	2006	--	64% (11)
Year 4	2007	--	75% (4)
Year 5	2008	--	--
Year 6	2009	--	--
Year 7	2010	--	--
Year 8	2011	--	--
Year 9	2012	54% (26)	60% (15)
Year 10	2013	70% (27)	48% (27)
Year 11	2014	--	--
Year 12	2015	--	--

5) Costs specific to implementing Intensive Management

Table 7. Unit 19A cost ($1,000 = 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 Unit 19A during years 7-10. Fiscal year (FY) is also 1 July to 30 June but the year is one greater than the comparable regulatory year (e.g, FY 2010 is 1 July 2009 to 30 June 2010).

Period	Fiscal Year	Predation control[a]		Other IM activities		Total IM cost	Research cost[d]
		Time[b]	Cost[c]	Time[b]	Cost[c]		
Year 8	2011	0.4	3.5	5.2	47.2	50.7	0.0
Year 9	2012	0.5	3.9	2.0	31.8	35.7	0.0
Year 10	2013	9.7	408.7	2.0	29.2	437.9	0.0
Year 11	2014	17.3	260.3	0.6	41.8	302.1	0.0
Year 12	2015	1.4	11.4	0.4	5.0	16.4	0
Year 13	2016	1.4	9.5	0.4	5.0	14.5	0

[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) Evaluation (August 2016) for program renewal following Year 10 and Department recommendations for Unit 19A

Has progress toward defined criteria been achieved? ___Unknown_____

Has achievement of success criteria occurred? ____No_____

Recommendation for IM program: Continue

Rationale for recommendation on overall program: The second of 2 years of bear control was completed in spring 2014. Calf survival appears to have improved. Continued predation reduction is needed to enhance moose recovery.

Other recommendations (if continuation is recommended, specific actions on individual practices): _Program was modified to include bear control during spring 2013 and 2014. We concluded the department bear control effort in spring 2014. We recommend continuing aerial wolf control as moose recover. Program was modified during the February 2014 Board meeting by providing an option for department bear control; continuing public wolf control; establishing a population criteria of 2.0 moose/mi^2 within the BCFA; establishing harvest criteria of 120 moose from within the WCFA; and evaluating moose harvest from within the WCFA.