

**Annual Report to the Alaska Board of Game on
Intensive Management for Moose
with Wolf and Black Bear
Predation Control in GMU 16**

**Prepared by the Division of Wildlife Conservation
February 2011**



1) **Description of IM Program and Department recommendation for reporting period**

- A) This report is an interim review ____ or renewal evaluation X for a predation control program authorized by the Alaska Board of Game (Board) under 5 AAC 92.125
- B) Date this report was submitted by the Department to the Board:
1 February X (annual report) 1 August ____ (interim annual update¹) Year 2011
- C) Program name (geographic description/UNIT and species/herd):
Unit 16 Predation Control Area/ Unit 16 / moose
- D) Existing program has a separate *Intensive Management plan* ____ /incorporates an *Intensive Management Plan* in regulation 5AAC 92.125 X (if a separate *IM Plan* exists, list version: _____ and effective date: _____)
- E) Game Management Unit(s) fully or partly included in IM program area:
Subunit 16A and 16B
- F) IM objectives for moose: population size 6,500 – 7,500 harvest 310 - 600
- G) Month and year the current predation control program was originally authorized March 2004 by the Board. Indicate date(s) if renewed: May 2006
- H) Predation control is currently active X or temporarily inactive ____ in this IM area
- I) If active, month and year the current predation control program began or resumed (if more than one predator species, list dates separately)
- Program originally authorized in March 2004 (wolf predation control)
 - Program was reauthorized in May 2006 (wolf predation control)
 - Program was modified to include black bear predation control in March 2007
- 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:
All non-federal lands in Subunit 16B and the western half of Unit 16A (11,105 mi² total)
- L) Size and geographic description of area for assessing ungulate abundance:
All available moose habitat in Subunit 16B below 3500 ft. elevation including park and preserve land. (7018 miles² total)
- M) Size and geographic description of area for ungulate harvest reporting:

¹ Interim annual updates are limited to sections that changed substantially since the prior annual report. For complete information, see the annual report.

All available moose habitat in Subunit 16B below 3500 ft. elevation including park and preserve land. (7018 miles² total)

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

All available moose habitat in Subunit 16B below 3500 ft. elevation including park and preserve land. (7018 miles² total)

O) Size and geographic description of predation control area:

The predation control area includes all non-federal lands in Subunit 16B and the western portion of Subunit 16A. Area available for control is 7862 mi² for black bears and 7777 mi² for wolves. Wolf control areas include buffers around local airstrips.

P) Criteria for evaluating progress toward IM objectives:

- Moose population in Subunit 16B between 6500 and 7500 animals
- Harvest between 310 and 600 moose.

Q) Criteria for success with this program:

The program will be considered successful when the moose population reaches population objectives of 6500 to 7500 animals and harvest reaches 310 to 600 moose.

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

Renew current IM program for a 6 year period beginning 1 July, 2011 (details provided in section 7)

Refer to one or more scaled maps in the *Intensive Management Plan* for areas described in this section [*IM plan may not exist for all active programs*].

2) Prey data

Date(s) and method of most recent fall abundance assessment for moose (if statistical variation available, describe method here and show result in Table 1): 18 November 2010

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

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

Subunit 16B South, 13-18 November 2010; 16B Middle, 15-17 November 2010; 16B North 29-31 October 2008

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) and in the last year _____ (Y/N)? Describe comparison if necessary:

Table 1. Moose abundance, age and sex composition in assessment area (L) since program implementation in Year 1 (2005) to reauthorization review in year 6 (2011) in Subunit 16B. Regulatory year is 1 July to 30 June (e.g, RY 2010 is 1 July 2010 to 30 June 2011). Note: This table is subdivided into areas corresponding with Subunit 16B survey areas

North			Composition (number per 100 females)			
Period	RY	Abundance (variation)	Young	Yearlings	Males	Sample size
Year 1	2005					
Year 2	2006	898 ± 162.5*	17	13.6	35.3	326
Year 3	2007	Not surveyed				
Year 4	2008	1042 ± 235	11	32	59.7	340
Year 5	2009	Not surveyed				
Year 6	2010	Not surveyed				

*Survey data is from 2003

Middle			Composition (number per 100 cows)			
Period	RY	Abundance (variation)	Calves	Yearlings	Bulls	Sample size
Year 1	2005					
Year 2	2006	1714 ± 218*	14	8	29.29	628
Year 3	2007	Not surveyed				
Year 4	2008	2446 ± 322**	21	21.6	54	678
Year 5	2009	Composition Survey	19.4	na	38.8	359
Year 6	2010	Not surveyed				

*Survey data is from 2005

**Estimate includes sightability correction factor of 1.28

South			Composition (number per 100 cows)			
Period	RY	Abundance (variation)	Calves	Yearlings	Bulls	Sample size
Year 1	2005					
Year 2	2006	~960*	23	19.4	23.2	604
Year 3	2007	Not surveyed				
Year 4	2008	Composition Survey	18.3	25.4	77.8	247
Year 5	2009	Not surveyed				
Year 6	2010	2372 ± 778	17.8	30.2	51.5	703

*Survey data are from 2004

**Estimate includes sightability correction factor of 1.57

Describe trend in abundance or composition:

Increases in the population may be due in part to changes in survey techniques.

Table 2. Moose 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	Unreported	Illegal			
Year 1	2005							
Year 2	2006	106	0	7	25	138	0	138
Year 3	2007	103	0	7	25	135	0	142
Year 4	2008	117	1	8	25	150	0	150
Year 5	2009	181	0	13	25	219	0	219
Year 6	2010 ^b	167	0	12	25	204	0	204

^aClarify other additional removal (Defense of Life and Property, etc.).

^bPreliminary harvest as of 1 March 2011. Moose harvested during the Subunit 16B Tier II hunts may not be fully accounted for.

Describe trend in harvest:

Harvests are generally increasing. However this is confounded by the fact that the Tier 1 Resident season was closed from the RY 2006 season to the RY 2008 season.

3) Predator data

Date(s) May 2010 and method of most recent spring abundance assessment (if statistical variation available, describe method here and list in Table 2):

The population assessment is based on reports from control pilots, and trapper sealing records.

Date(s) September 2010 and method of most recent fall abundance assessment for wolves (if statistical variation available, describe method here and list in Table 2):

Fall abundance is based on spring estimate plus 4 pups per pack for packs greater than 2 individuals.

Other research or evidence of trend or abundance status in wolves: N/A

Table 3. Wolf abundance objectives and removal in wolf assessment area (N) of the Unit 16 Predation Control Area. Removal objective is 73-80 % of pre-control fall abundance in year 1 of wolf predation control program, so minimum number remaining by 30 April each RY in the IM area (N) must be at least 22. If non-lethal predation control methods used by Department personnel, clarify with footnote in control removal tally.

Period	RY	Fall abundance (variation)	Harvest removal		Dept. control removal	Public control removal	Total removal ^a	Spring abundance (variation)
			Trap	Hunt				
Year 0	2004	175 ± 25	11	26	0	91	128	47 ± 25
Year 1	2005	106.5 ± 15.5	25	12	0	24	61	45.5 ± 15.5
Year 2*	2006	121 ± 23	8	9	0	32	49	72 ± 23
Year 3	2007	117 ± 13	5	6	0	21	32	85 ± 13
Year 4	2008	92 ± 10	15	8	0	24	47	45 ± 10
Year 5	2009	84 ± 13	1	5	0	3	9	75 ± 13

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

*In spring of 2006 the BOG increased the area for predator control to include the western portion of 16A. The wolf population goal for 16A was 8 to 15 wolves thus the population objective for Unit 16 is 30 to 60 wolves. The fall abundance and harvest estimates in Table 3 reflect these changes.

Date(s) May 2007 and method of most recent spring abundance assessment for black bears (if statistical variation available, describe method here and list in Table 3)

Date(s) N/A and method of most recent spring abundance assessment for brown bears (if statistical variation available, describe method here and list in in Table 3)

Other research or evidence of trend or abundance status in black or brown bears: N/A

Table 4. Black bear abundance objectives and removal in black bear assessment area (N) of the Unit 16 Predation Control Area. Removal objective is 80 % of pre-control spring abundance in year 1 of bear predation control program, so minimum number remaining by 31 October each RY in the IM area defined in (N) must be at least 600. If non-lethal predation control methods used by Department personnel, clarify with footnote in control removal tally.

Period	RY	Spring abundance (variation)	Harvest removal		Dept. control removal		Public control removal		Total removal ^b	Fall abundance (variation)
			FA	SP	FA	SP	FA	SP		
Year 1	2005		52	111	---	---	---	---	163	
Year 2	2006		75	112	---	---	---	---	187	
Year 3 ^a	2007	3500± 300	72	210	0	0	1	106	389	
Year 4	2008		69	163	0	0	32	131	395	
Year 5	2009		76	95	0	0	23	99	293	
Year 6	2010		62	---	---	---	129	---	191	

^aFor example, bear harvest needed for 31 October calculation in Year 1 combines spring (SP: 1 January-30 June) of the prior RY (Year 0) with fall (FA: 1 July – 31 Dec) of the current RY.

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

While no estimates of black bear abundance have been measured in recent year, the population is above the minimum population objective for black bears based on harvest rates and incidental observations by biologists.

Table 5. Brown bear abundance objectives and removal in black bear assessment area (N) of the Unit 16 Predation Control Area. Removal objective is 60 % of pre-control spring abundance in year 1 of bear predation control program, so minimum number remaining by 31 October each RY in the IM area defined in (E) must be at least 250. If non-lethal predation control methods used by Department personnel, clarify with footnote in control removal tally.

Period	RY	Spring abundance (variation)	Harvest removal		Dept. control removal		Public control removal		Total removal ^b	Fall abundance (variation)
			FA	SP	FA	SP	FA	SP		
Year 1	2005		64	69	---	---	---	---	133	
Year 2	2006		56	51	---	---	---	---	107	
Year 3 ^a	2007	937 ± 313	65	40	---	---	---	---	105	
Year 4	2008		83	36	---	---	---	---	119	
Year 5	2009		34	28	3	---	---	---	65	
Year 6	2010		95	34	---	---	---	---	129	

^aFor example, bear harvest needed for 31 October calculation in Year 1 combines spring (SP: 1 January-30 June) of the prior RY (Year 0) with fall (FA: 1 July – 31 Dec) of the current RY.

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

While no estimates of brown bear abundance have been measured in recent year, the population is above the minimum population objective for brown bears based on harvest rates and incidental observations by biologists.

4) Habitat data and nutritional condition of prey species

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

Objective(s): N/A

Area treated and method: N/A

Observation on treatment response [*improved forage production, increased proportional forage removal by ungulate, more time spent in treatment area, or higher density of ungulates in treatment area*] (specify which, and use table if ongoing program): N/A

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

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

Describe any substantial change in habitat not caused by active program (e.g., new wildland fires, flooding, insect mortality of vegetation, etc.): N/A

Table 6. Nutritional indicators for Moose in assessment area (L) of the Unit 16 Predation Control Area.

Period	RY	Pregnancy Rate of radio collared cows ^a	Twinning Rate of radio collared cows ^b	Average Rump Fat in Spring (cm) ^c
Year 1	2005	71.43	51%	0.6 ± 0.212
Year 2	2006	83.33	45%	1.4 ± 0.704
Year 3	2007	79.78	50%	1.8 ± 0.816
Year 4	2008	70.79	48%	-----
Year 5	2009	78.95	59%	0.5 ± 0.200
Year 6	2010	83.72	47%	-----

^a Apparent pregnancy rate based on field observations of calves born to radio collared cows. The reported values likely underestimate calf production in cases where calves were born, but lost before they could be observed by biologists.

^b Apparent twinning rate is based on field observations of the number of calves born to individual radio collared cows. The reported values likely underestimate twinning in cases where twins were born, but one or both were lost before they could be observed by biologists.

^c Rump Fat measurements are collected using an ultrasound during the spring capture of adult cow moose.

Where objectives on nutritional condition were listed in the *Intensive Management Plan*, describe trend in condition indices since inception of (a) habitat enhancement or (b) enhanced harvest (clarify which: _____) (choose one: Positive, No change, Negative) N/A

Evidence of trend (choose one: Apparent Statistical)

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

5) Costs specific to implementing Intensive Management

Table 7. 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 Unit 16 Predation Control 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	Salary ^a	Operations and contracting			Total cost
			Federal Aid ^b	Public Funds ^c	Other ^d	
Year 1	2006	15.0				15.0
Year 2	2007	15.0				15.0
Year 3	2008	15.0				15.0
Year 4	2009	30.0		31.6		61.6
Year 5	2010	40.0		48.6		88.6
Year 6	2011					

^aState Fish and Game fund matched 1:3 with Federal Aid (see footnote b) except for activities directly involving predator control (state funding only).

^bFederal Aid in Wildlife Restoration (excise tax on firearms and ammunition)

^cCapital Improvement Project or General Fund revenue from Alaska Legislature

^dGrants, donations from private organizations, etc.

6) Department recommendations² for annual evaluation (1 February) following Year ____ for Subunit 16B —skip in final year and go to section 7

Program Renewal Year – Section 6 is skipped in this report

Has progress toward defined criteria been achieved? _____

Has achievement of success criteria _____

Recommendation for IM practice(s) (specify practices [*predation control, habitat enhancement, harvest strategy*] and choose one action for each): Continue Modify Suspend Terminate

7) Evaluation (1 February) for program renewal (following final Year 6 [2010]) and Department recommendations for Unit 16

Has progress toward defined criteria been achieved (describe)?

Some, there has been an increase in overall moose numbers and the bull ratio is good. However moose calf survival during the first 6 months of life and calf recruitment remain low

Has achievement of success criteria occurred (describe)?

No. Harvest and population objectives have not been met.

Recommendation for IM program (choose one): Continue Modify Suspend Terminate

Rationale for recommendation on overall program:

Continue existing program for a six year period and evaluate the feasibility of implementing brown bear control on an experimental basis

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

8) Appendix: Purpose and context of Department Report

This document provides a standard format for area biologists in the Alaska Department of Fish and Game (Department) to periodically report on progress in intensive management (IM) programs with predation control to the public and the Alaska Board of Game (Board). Predation control programs are authorized in Title 5, Chapter 92, Section 125 of the Alaska Administrative Code (5 AAC 92.125). The Department Report is premised on the 10 November 2010 draft *Guidelines for intensive management of big game in Alaska*, which describes the legal background, scientific principles, and management factors of producing and maintaining elevated harvests of ungulates (caribou, deer, or moose) in selected areas of Alaska. For IM programs initiated or renewed after 1 January 2012, the intent is that details of rationale, decision

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.

criteria involving public process and other biological and management factors for specific IM programs will be found in the corresponding *Intensive Management Plan*.

IM objectives for deer and moose are determined by the Board for a game management unit (GMU), whereas those for caribou are determined by herd. The IM program area may be described by geography (drainage) or community(s) if it is focused in a smaller area than the one describing the corresponding IM objectives, or if the area is composed of multiple GMUs. A predation control area may be smaller, and contained within, the IM program area or the area used for assessing predator abundance in a game management unit. Thus, the number of wolves, black bears, or grizzly/brown bears remaining in the larger abundance assessment area on a specific date incorporates the potential for recolonization of the smaller control area by predators on surrounding lands (where hunting and trapping but not control methods are allowed), in addition to reproduction by predators remaining in the control area.

The Department Report to the Board documents evaluation of progress toward IM population or harvest objectives for ungulate or other objectives determined by public process for existing IM programs. Initially these reports will be only for areas with predation control to meet annual reporting requirements (Alaska Statutes, Title 16, Section 50, Part b), but they may be expanded to IM programs that only include ungulate habitat enhancement, diverse strategies for hunter access and ungulate harvest, and outreach programs (see *Guidelines*). Predator harvest is achieved through hunting and trapping regulations, whereas predation control typically removes predators by additional means such as by public participants (by special Department permit) or by Department personnel (non-lethal methods could also be applied). Report information will be used for Department recommendations and Board decisions on continuing, modifying, suspending, or terminating IM programs. The annual report will be issued on 1 February with an interim report on 1 August. These dates account for lag time in entering reported predator removal and ungulate harvest into an electronic database for archive and analysis. The August interim report will have the ungulate harvest and wolf removal from the previous regulatory year, whereas the February annual report will include most of the ungulate harvest from the prior fall and bear removal from the prior regulatory and calendar years. Report information is for a single program, but it may also be presented in a table showing multiple IM programs in a region or all IM programs statewide.