

Interim Report to the Alaska Board of Game on Intensive Management for Moose with Wolf and Bear Predation Control in Game Management Unit 19D (East

**Prepared by the Division of Wildlife Conservation
August 2012**



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

1) Prey data

Date(s) and method of most recent fall/spring abundance assessment for moose: Nov 2011-goespatial moose population estimate (GSPE) in MMA

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 (Y/N); and in the last year: Non-treatment area not established (Y/N)?

Date(s) of most recent age and sex composition: Nov 2011-goespatial moose population estimate in MMA

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 (Y/N) and in the last year Non-treatment area not established (Y/N)?

Table 1. Moose abundance, age and sex composition in Upper Kuskokwim Villages Moose Management Area (MMA) since program implementation in year 1 to year 11. Regulatory year is 1 July to 30 June (e.g, RY 2011 is 1 July 2011 to 30 June 2012).

Period	RY	Abundance ^a (90% CI)	Composition (number per 100 Cows)			Total <i>n</i>
			Calves (90% CI)	Yearling Bulls (90% CI)	Bulls (90% CI)	
Year 1	2001	868(+147)	36(+10)	8(+3)	21(+6)	455
Year 2	2002	--	--	--	--	--
Year 3	2003	--	--	--	--	--
Year 4	2004	1192(+228)	66(+18)	8(+4)	18(+6)	578
Year 5	2005	--	--	--	--	--
Year 6	2006	1308(+174)	55(+10)	12(+3)	30(+8)	762
Year 7	2007	1720(+306)	53(+14)	15(+4)	36(+10)	844
Year 8	2008	1718(+352)	44(+12)	14(+5)	40(+11)	678
Year 9	2009	1820 (+323)	38(+10)	11(+4)	40(+11)	711
Year 10	2010	1796(+312)	43(+11)	16(+5)	49(+13)	712
Year 11	2011	1647(+296)	42(+11)	10(+3)	33 (+10)	639

^aEstimate with sightability correction applied

Describe trend in abundance or composition: Results of a RY 2001-2009 trend analysis indicate a statistically significant increasing linear trend in abundance within the MMA (115 moose/year, SE=19.2, P=0.004).

Table 2. Moose harvest in Upper Kuskokwim Villages Moose Management Area (MMA) since program implementation in year 1 to year 11. Regulatory year is 1 July to 30 June (e.g, RY 2011 is 1 July 2011 to 30 June 2012).

Period	RY	Reported		Other mortality ^a	Total
		Male	Female		
Year 1	2001	29	0	- ^b	29
Year 2	2002	23	0	- ^b	23
Year 3	2003	32	0	- ^b	32
Year 4	2004	7	0	- ^b	7
Year 5	2005	14	0	- ^b	14
Year 6	2006	12	0	3	15
Year 7	2007	25	0	1	26
Year 8	2008	61	0	1	62
Year 9	2009	56	0	2	58
Year 10	2010	50	0	2	52
Year 11	2011	100	0	1	101

^aMortuary harvest

^bRecords destroyed by fire

Describe trend in harvest: Increasing as moose have become more abundant and seasons liberalized

Describe any other harvest related trend if appropriate: None

2) Predator data

Wolves

Date(s) and method of most recent spring abundance assessment for wolves: March 2009 - aerial reconnaissance survey

Date(s) and method of most recent fall abundance assessment for wolves: March 2009 - calculated by subtracting total removal from following spring abundance estimate

Other research or evidence of trend or abundance status in wolves: Keech, M. A., M. S. Lindberg, R. D. Boertje, P. Valkenburg, B. D. Taras, T. A. Boudreau, K. B. Beckmen. 2011. Effects of Predator Treatments, Individual Traits, and Environment on Moose Survival in Alaska. The Journal of Wildlife Management 75(6):1361–1380. And, Keech, M. A. 2012. Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D. Alaska Department of Fish and Game, Federal Aid in Wildlife Restoration, Final Wildlife Research Report ADF&G/DWC/WRR-2012-#, Grants W-33-4 through W-33-10, Project 1.62, Juneau, Alaska.

Table 3. Wolf abundance and removal in Wolf Control Focus Area (WCFA). Removal objectives are to reduce wolf numbers as low as possible in the WCFA and to maintain a minimum of 40 wolves in all of Unit 19D East to ensure wolves persist in the unit. The WCFA was established in RY 2010. Prior to RY 2010, control was conducted in various different geographic areas. All values listed are for the current WCFA. Regulatory year is 1 July to 30 June (e.g, RY 2011 is 1 July 2011 to 30 June 2012).

Period	RY	Fall abundance ^a	Harvest removal		Dept. control removal	Public control removal ^b	Total removal	Spring abundance ^c
			Trap	Hunt				
Year 1	2001	89	19	3	0	N/A	22	67
Year 2	2002	--	28	5	0	N/A	33	--
Year 3	2003	--	9	1	0	17	27	--
Year 4	2004	--	12	2	0	12	26	--
Year 5	2005	26	9	1	0	3	13	13
Year 6	2006	29	13	1	0	2	16	13
Year 7	2007	--	6	2	0	19	27	--
Year 8	2008	--	4	3	0	19	26	--
Year 9	2009	37	7	4	0	4	15	22
Year 10	2010	--	4	2	0	13	19	--
Year 11	2011	--	11	0	0	22	33	--

^aCalculated by subtracting total removal from following spring abundance in each RY when spring abundance surveys were conducted

^bPublic control removal began in RY 2003

^cCalculated by extrapolating density within a 3,210 mi² aerial reconnaissance survey area within the WCFA to the entire WCFA

Black Bears

Date(s) and method of most recent spring abundance assessment for black bears: May 2010 - mark/recapture estimator

Date(s) and method of most recent fall abundance assessment for black bears: November 2009 - calculated by subtracting total removal from May 2010 abundance estimate.

Other research or evidence of trend or abundance status in black bears: Keech, M. A., M. S. Lindberg, R. D. Boertje, P. Valkenburg, B. D. Taras, T. A. Boudreau, K. B. Beckmen. 2011. Effects of Predator Treatments, Individual Traits, and Environment on Moose Survival in Alaska. *The Journal of Wildlife Management* 75(6):1361–1380;

Keech, M. A. 2012. Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D. Alaska Department of Fish and Game, Federal Aid in Wildlife Restoration, Final Wildlife Research Report ADF&G/DWC/WRR-2012-#, Grants W-33-4 through W-33-10, Project 1.62, Juneau, Alaska.

Table 4. Black bear abundance and removal in Bear Control Area (BCA). Removal objective is to reduce bear numbers as low as possible within the BCA. Regulatory year is 1 July to 30 June (e.g, RY 2010 is 1 July 2010 to 30 June 2011).

Period	RY	Spring abundance ^a (95% CI)	Harvest removal		Dept. control removal		Public control removal		Total removal	Fall abundance ^{a,b}
			FA ^c	SPR ^d	FA	SP	FA	SP		
Year 1	2001	--	1	0	0	0	0	0	1	--
Year 2	2002	96(+13) ^e	4	0	0	67 ^f	0	0	73	--
Year 3	2003	30(+9) ^e	1	5	0	26 ^f	0	0	32	23
Year 4	2004	--	0	1	0	0	0	0	1	Near 0
Year 5	2005	--	1	5	0	0	0	0	6	--
Year 6	2006	70(+14) ^g	0	0	0	0	0	0	0	--
Year 7	2007	--	1	7	0	0	0	0	8	70
Year 8	2008	--	1	5	0	0	0	0	9	--
Year 9	2009	123(96–162) ^g	4	0	0	0	0	6	10	--
Year 10	2010	--	1	3	0	0	4	13	21	113
Year 11	2011	--	7	1	0	0	1	2	11	--

^aDoes not include cubs

^bCalculated by subtracting total removal from spring abundance estimate in the previous RY

^cFall

^dSpring

^eRemoval estimator

^fNon-lethal removal

^gMark/recapture estimator

Grizzly Bears

Date(s) and method of most recent spring abundance assessment for grizzly bears: May 2002- Estimated by using density extrapolated from other areas of Interior Alaska with comparable habitat

Date(s) and method of most recent fall abundance assessment for grizzly bears: November 2003- Calculated by subtracting total removal from May 2002 abundance estimate.

Other research or evidence of trend or abundance status in grizzly bears: Keech, M. A., M. S. Lindberg, R. D. Boertje, P. Valkenburg, B. D. Taras, T. A. Boudreau, K. B. Beckmen. 2011. Effects of Predator Treatments, Individual Traits, and Environment on Moose Survival in Alaska. *The Journal of Wildlife Management* 75(6):1361–1380.

Keech, M. A. 2012. Response of moose and their predators to wolf reduction and short-term bear removal in a portion of Unit 19D. Alaska Department of Fish and Game, Federal Aid in Wildlife Restoration, Final Wildlife Research Report ADF&G/DWC/WRR-2012-#, Grants W-33-4 through W-33-10, Project 1.62, Juneau, Alaska.

Table 5. Brown bear abundance and removal in Bear Control Area (BCA). Removal objective is to reduce bear numbers as low as possible within the BCA. Regulatory year is 1 July to 30 June (e.g, RY 2011 is 1 July 2011 to 30 June 2012).

Period	RY	Spring abundance ^a	Harvest removal		Dept. control removal		Public control removal		Total removal	Fall abundance ^{a,b}
			FA ^c	SP ^d	FA	SP	FA	SP		
Year 1	2001	--	0	0	0	0	0	0	0	--
Year 2	2002	12 ^e	0	0	0	6 ^f	0	0	6	--
Year 3	2003	--	0	0	0	0	0	0	0	6
Year 4	2004	--	0	0	0	0	0	0	0	--
Year 5	2005	--	0	0	0	0	0	0	0	--
Year 6	2006	--	0	2	0	0	0	0	2	--
Year 7	2007	--	1	2	0	0	0	0	3	--
Year 8	2008	--	0	0	0	0	0	0	0	--
Year 9	2009	--	2	0	0	0	0	0	2	--
Year 10	2010	--	0	0	0	0	0	0	0	--
Year 11	2011	--	0	0	0	0	0	0	0	--

^aDoes not include cubs

^bCalculated by subtracting total removal from spring abundance estimate in the previous RY

^cFall

^dSpring

^eEstimated by using density extrapolated from other areas of Interior Alaska with comparable habitat

^fNon-lethal removal

3) Costs specific to implementing Intensive Management

Table 6. Proportional time of field level staff and cost (\$1000 = 1.0) of ADF&G personnel salary plus operations for predation control and for other intensive management activities (e.g., habitat enhancement, wildlife survey efforts beyond normal Survey and Inventory work) in Unit 19D East. 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	Cost		
Year 10	2011	0.4	3.5	0.4	5.0	8.5	56.0
Year 11	2012	1.2	7.3	4.0	43.6	50.9	39.0

^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).