Annual Report to the Alaska Board of Game on Intensive Management for Moose and Caribou with Wolf Predation Control in the Upper Yukon/Tanana Rivers

Prepared by the Division of Wildlife Conservation
February 2013

1) Description of Intensive Management (IM) Program[1] and Department recommendation for reporting period

A) This report is an interim review __X__ or renewal evaluation ___ 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 update[2]) Year 2013

C) Program name: Upper Yukon Tanana Wolf predation Control Program (UYTPCP)

D) Existing program has ___ / does not have __X__ an associated IM Plan

E) Game Management Unit(s) fully or partly included in IM program area: Units 12, 20B, 20D, 20E and 25C__

F) IM objectives for Fortymile caribou herd (FCH): population size 50,000–100,000 and harvest 1,000–15,000 ; for moose in Unit 12 north of the Alaska Highway and all of Unit 20E: population size 8,744–11,116 and harvest 547–1,084

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

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 January 2005 or resumed ____

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: 18,750 mi^2 in that portion of Unit 12 north of the Alaska Highway; that portion of Unit 20D within the Goodpaster River drainage upstream from and including the South Fork Goodpaster River drainage, and within the Healy River, and the Billy and Sand creek drainages; that portion of Unit 20B within the Salcha River drainage upstream from and including the Goose Creek drainage, and within the Middle Fork of the Chena River drainage; all of Unit 20E; and that portion of Unit 25C within the Birch Creek drainage upstream from the Steese Highway bridge, and within the area draining into the south and west bank of the Yukon River upstream from the community of Circle (Fig. 1).

[1] For purpose and context of this report format, see appendix.

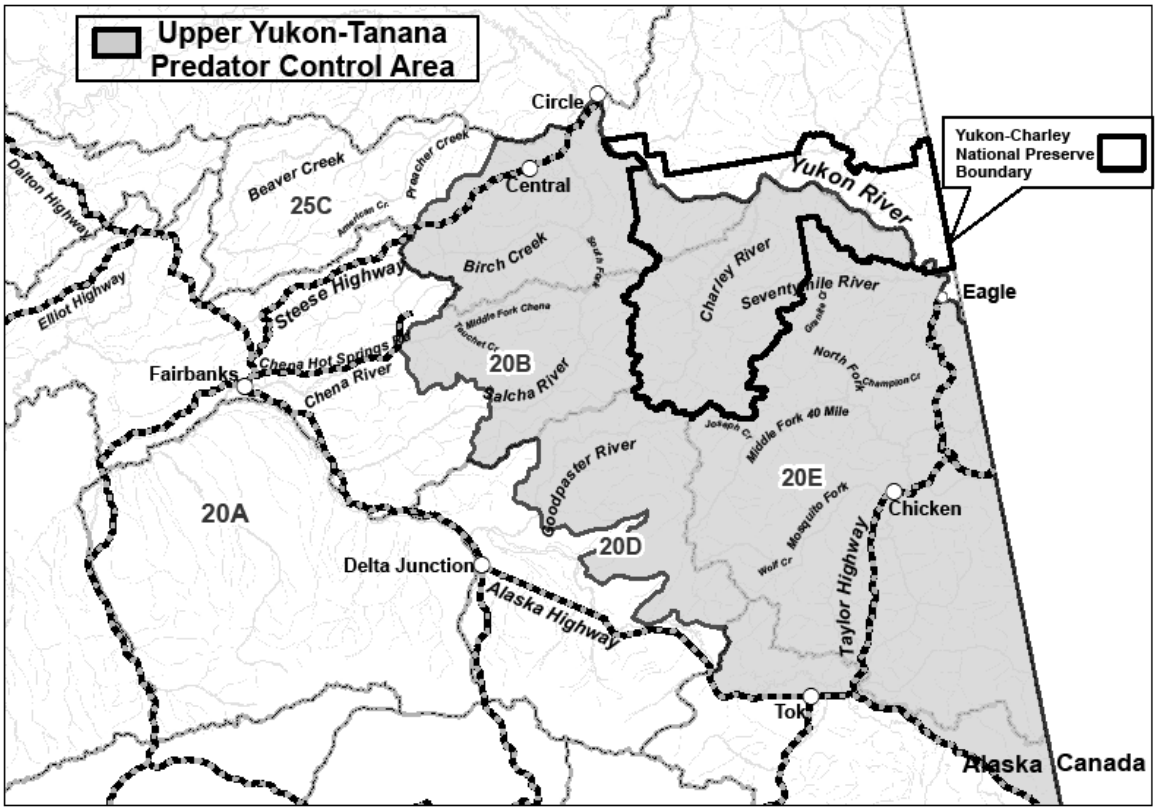

Figure 1. Upper Yukon Tanana Predator Control Program Area (18,750 mi^2)

L) Size and geographic description of area for assessing ungulate abundance: Caribou-25,217 mi^2 FCH hunt area (Fig. 2); Moose-4,630 mi^2 within the Unit 20E West and 20E Central Moose Survey Areas in southern Unit 20E.

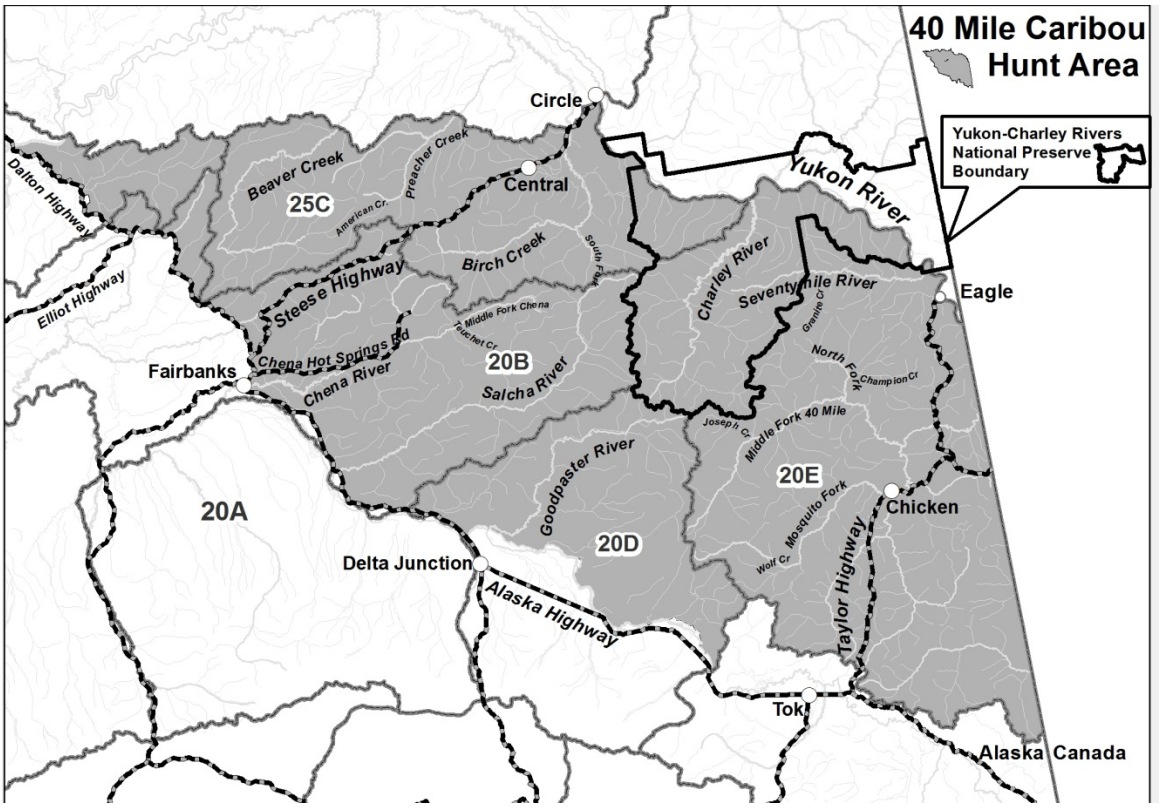

Figure 2. Fortymile Hunt Area (25,217 mi^2)

M) Size and geographic description of area for ungulate harvest reporting: Caribou–FCH hunt area (25,217 mi^2); Moose–Unit 12 north of the Alaska Highway and all of Unit 20E (9,150 mi^2).

N) Size and geographic description of area for assessing predator abundance: Wolf Control Area (WCA)-18,750 mi^2.

O) Size and geographic description of predation control area: WCA-18,750 mi^2.

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

Q) Criteria for success with this program: FCH population = 50,000–100,000 and harvest = 1,000–15,000 caribou; moose population in Unit 12 north of the Alaska Highway and in all of Unit 20E population = 8,744–11,116 and harvest = 547–1,084 moose.

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

2) Prey data

Date(s) and method of most recent [fall/spring] abundance assessment: Caribou–June 2010 photo census; Moose – November 2012 geospatial moose population 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: 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 survey Caribou – October 2012 composition survey; Moose – November 2012 geospacial moose population survey

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 1a. Fortymile Caribou Herd (FCH) abundance, age and sex composition in FCH hunt area since the herd was added to the control program in year 3 to year 9. A regulatory year is 1 July through 30 June (e.g., RY12 = 1 July 2012 through 30 June 2013).

	Regulatory		Composition (number per 100 cows)		
Period	**year**	**Abundance**	**Calves**	**Bulls**	**Total *n***
Year 1	2004	--	--	--	--
Year 2	2005	--	--	--	--
Year 3	2006	43,837[a]	34	43	4,995
Year 4	2007	44,673[a]	37	36	5,228
Year 5	2008	46,510[b]	33	37	4,119
Year 6	2009	51,675[b]	34	59	4,503
Year 7	2010	--	32	43	7,169
Year 8	2011	--	25	42	3,949
Year 9	2012	--	22	40	4,832

[a] Modeled population estimate.
[b] Minimum population estimate from photo census.

Describe trend in abundance or composition: 2–4% annual rate of increase during RY06–RY09, based on modeling and photo census results

Table 1b. Moose abundance, age and sex composition in Unit 20E West and 20E Central moose survey areas in southern Unit 20E since program implementation in year 1 to year 9. A regulatory year is 1 July through 30 June (e.g., RY12 = 1 July 2012 through 30 June 2013).

	Regulatory		Composition (number per 100 cows)		
Period	**year**	**Abundance (variation)**	**Calves**	**Bulls**	**Total *n***
Year 1	2004	2268 (90% CI±17%)	24	55	516
Year 2	2005	2913 (90% CI±14%)	23	52	887
Year 3	2006	3352 (90% CI±15%)	31	42	1104

Period	Regulatory year	Abundance (variation)	Composition (number per 100 cows)		
			Calves	Bulls	Total *n*
Year 4	2007	3469 (90% CI±14%)	26	48	935
Year 5	2008	3147 (90% CI±11%)	28	60	865
Year 6	2009	3950 (90% CI±12%)	30	58	1046
Year 7	2010	3894 (90% CI±15%)	28	70	987
Year 8	2011	4148 (90% CI±16%)	14	67	1071
Year 9	2012	4165 (90% CI±16%)	17	53	1061

Describe trend in abundance or composition: Moose increased during RY04–RY12 based upon point estimates with non-overlapping 90% confidence intervals in RY04 and RY12.

Table 2a. Fortymile Caribou harvest in FCH hunt area since the herd was added to the control program in year 3 to year 8. A regulatory year is 1 July through 30 June (e.g., RY11 = 1 July 2011 through 30 June 2012). Methods for estimating unreported harvest are described in Survey and Inventory reports.

Period	Regulatory year	Reported		Estimated			Total harvest
		Male	Female	Unreported	Illegal	Yukon	
Year 1	2004	--	--	--	--	--	--
Year 2	2005	--	--	--	--	--	--
Year 3	2006	601	247	10	10	5	873
Year 4	2007	746	262	10	10	5	1033
Year 5	2008	696	217	10	10	10	913
Year 6	2009	891	192	10	10	20	1083
Year 7	2010	636	89	10	10	5	750
Year 8	2011	918	103	10	10	5	1046

Describe trend in harvest: Harvest controlled by fixed annual harvest quota. Annual quota was 850 during RY06–RY09, 795 in RY10, and 1,000 during RY11–RY12.

Describe any other harvest related trend if appropriate: None.

Table 2b. Moose harvest in Unit 12 north of the Alaska Highway and all of Unit 20E since program implementation in year 1 to year 8. A regulatory year is 1 July through 30 June (e.g., RY11 = 1 July 2011 through 30 June 2012). Methods for estimating unreported harvest are described in Survey and Inventory reports.

Period	Regulatory year	Reported		Estimated		Total harvest
		Male	Female	Unreported	Illegal	
Year 1	2004	86	0	0–5	5–10	91–101
Year 2	2005	123	0	0–5	5–10	128–138
Year 3	2006	141	1	0–5	5–10	147–157
Year 4	2007	151	0	0–5	5–10	156–166
Year 5	2008	189	0	0–5	5–10	194–204
Year 6	2009	180	0	0–5	5–10	185–195
Year 7	2010	184	0	0–5	5–10	189–199

Period	Regulatory year	Reported		Estimated		Total harvest
		Male	Female	Unreported	Illegal	
Year 8	2011	212	0	0–5	5–10	217–227

Describe trend in harvest: Harvest increased during RY04–RY11.

Describe any other harvest related trend if appropriate (e.g., harvest per unit effort): None

3) Predator data

Date(s) and method of most recent spring abundance assessment for wolves: May 2012 modeled estimate.

Date(s) and method of most recent fall abundance assessment for wolves: October 2012 – ADF&G Pred–Prey model which uses the relationship between spring wolf, moose and caribou population sizes to predict a likely growth rate for the wolf population from spring to fall. Mathematical equations which define model functions were taken from published predator–prey studies.

Other research or evidence of trend or abundance status in wolves: None

Table 3. Wolf abundance and removal in Wolf Control Area (WCA) since program implementation in year 1 to year 9. Removal objective is 60–80% of pre-control fall abundance in year 1 of wolf predation control program, so estimated or confirmed number remaining by 1 May each regulatory year in the WCA must be at least 88. Regulatory year is 1 July through 30 June (e.g., RY12 = 1 July 2012 through 30 June 2013).

Period	Regulatory year	Fall abundance (range)	Harvest removal		Dept. control removal	Public control removal	Total removal	Spring abundance (range)[a]
			Trap	Hunt				
Year 1	2004	380[bc] (350–410)	52	23	N/A	60	135	245 (215–275)
Year 2	2005	335[c] (300–370)	58	10	N/A	17	85	250 (215–285)
Year 3	2006	362[c] (300–425)	73	7	N/A	23	103	259 (197–322)
Year 4	2007	382[c] (366–398)	57	14	N/A	27	98	284 (268–300)
Year 5	2008	372[d]	82	11	84	49	226	146
Year 6	2009	235[e]	31	4	15	10	60	175
Year 7	2010	274[c] (262–285)	26	11	0	25	62	212 (200–223)
Year 8	2011	329[c] (315–342)	62	17	56	8	145	184 (170–197)

Period	Regulatory year	Fall abundance (range)	Harvest removal		Dept. control removal	Public control removal	Total removal	Spring abundance (range)[a]
			Trap	Hunt				
Year 9	2012	386[c] (368–403)	1[f]	8[f]	0[f]	12[f]	21[f]	N/A

[a] Fall estimate minus all know wolf kills.
[b] Pre-control population estimate.
[c] Fall modeled estimate.
[d] Revised fall modeled estimate using results from a March 2009 reconnaissance survey and RY08 removal data. The original fall modeled estimate was 393–431.
[e] Revised fall modeled estimate using results from a March 2010 reconnaissance survey and RY09 removal data. The original fall modeled estimate was 262–299.
[f] Preliminary data.

4) Habitat data and nutritional condition of prey species

Where active habitat enhancement is occurring or was recommended in the IM Plan, describe progress toward objectives: No active habitat enhancement.

Table 4a. Nutritional indicators for Fortymile Caribou in FCH hunt area since the herd was added to the control program in year 3 to year 8. A regulatory year is 1 July through 30 June (e.g., RY11 = 1 July 2011 through 30 June 2012).

Period	Regulatory Year	Spring Birthrates (% of cows ≥36 months that gave birth)
Year 1	2004	--
Year 2	2005	--
Year 3	2006	89
Year 4	2007	90
Year 5	2008	70
Year 6	2009	70
Year 7	2010	86
Year 8	2011	82

Table 4b. Nutritional indicators for moose in Unit 20E West and 20E Central moose survey areas in southern Unit 20E since program implementation in year 1 to year 8. A regulatory year is 1 July through 30 June (e.g., RY11 = 1 July 2011 through 30 June 2012).

Period	Regulatory Year	Twinning Rates (% of cows observed with calf that had twins)
Year 1	2004	24
Year 2	2005	47
Year 3	2006	27

Period	Regulatory Year	Twinning Rates (% of cows observed with calf that had twins)
Year 4	2007	17
Year 5	2008	41
Year 6	2009	22
Year 7	2010	21
Year 8	2011	35

5) Costs specific to implementing Intensive Management

Table 5. 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 the Upper Yukon/Tanana Predator Control Area during years 7 and 8. Fiscal year (FY) is also 1 July through 30 June but the year is one greater than the comparable RY (e.g., FY12 = 1 July 2011 through 30 June 2012).

		Predation control[a]		Other IM activities		Total IM	Research
Period	FY	Time[b]	Cost[c]	Time	Cost	cost	cost[d]
Year 7	2011	0.4	3.5	12.7	166.4	169.9	67.1
Year 8	2012	3.9	242.5	12.0	154.0	396.5	80.3

[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 for annual evaluation (1 February) following Year 8 for UYTPCP

Has progress toward defined criteria been achieved? Yes. The FCH increased at 2–4% annually during RY06–RY09, based on modeling and photo census results. Moose abundance increased within the combined Unit 20E West and 20E Central Moose Survey Areas in southern Unit 20E during RY04–RY12, based point estimates with non-overlapping 90% confidence intervals in RY04 and RY12. Moose harvest increased during RY04–RY11.

Has achievement of success criteria occurred? Caribou – Yes. The caribou population estimate of 51,675 is within the IM population objective of 50,000–100,000. Moose – No.

Recommendation for Predation Control: Continue as currently being conducted.

7) 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 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 game management units. 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.