Unit 19D East Wolf Predation Control Implementation Plan and Activities
Report to the Alaska Board of Game
Revision 1
March 2005

Background

A wolf control implementation plan was adopted for Unit 19D East that consists of those portions of the Kuskokwim River drainage within Unit 19D East upstream from the Selatna River, but excluding the Selatna River drainage and the Black River drainage. The plan was in effect for 5 years beginning February 1, 2000 and was reauthorized at the spring 2004 Board of Game meeting for 5 years beginning July 1, 2004. The objective for the program as listed in 5 AAC 92.125 (1)(A) is:

- To reverse the decline in the moose population and initiate an increase toward the intensive management moose population objective of 6000–8000 moose with a sustainable annual harvest of 400–800 moose.

The 19D East wolf predation control implementation plan involves both research and management components. As part of our efforts, we have established an Experimental Micro Management Area (EMMA). This area encompasses the highest density of moose in Unit 19D East and was established as a treatment area where predator population manipulations and other management actions could be tested. The EMMA is 528 mi^2 and is within a 20 mi radius of McGrath.

Plan Implementation Activities

We conducted a bear removal project in May 2003 and May 2004. During those 2 years 115 black bears and 10 grizzly bears were captured and moved from the EMMA and surrounding area. Current data obtained from radiocollared moose and from fall moose surveys indicates that survival of moose calves within the EMMA increased, likely as result of this removal project. After resolution of a legal challenge in Alaska Superior Court, we initiated a wolf reduction program on December 5, 2003. From December 2003 through April 2004, private individuals were permitted by ADF&G to take wolves from aircraft within and around the EMMA. These control activities resumed in December 2004 and are expected to continue through April 2005.

Status of Prey and Predator Populations

Research Component. Prey/predator research in Unit 19D East included the following objectives and results during March 2001–January 2005.

OBJECTIVE 1A: Estimate moose numbers and population composition in Unit 19D East.

In October 2001 we completed a high intensity moose survey in the EMMA and a standard intensity survey in the 19D East moose survey area (a 5,204 mi^2 portion of 19D East, called here after the 19D East MSA). No moose surveys were conducted in 2002 due to poor survey conditions. In November 2003 we completed a survey in the EMMA.

In 2003 we were unable to complete a reliable moose survey in the remainder of the 19D East MSA because of weather constraints, although we do provide data from that survey (Table 1). In November 2004 we completed a high intensity moose survey in the EMMA and a standard intensity survey in the 19D East MSA (Table 1).

Table 1. Results of 2001, 2003, and 2004 moose surveys in the EMMA, the remainder of 19D East MSA, and combined results for the 19D East MSA total. The three values given are the lower 90% confidence interval, the estimate, and the upper 90% confidence interval.

Year	Area (mi^2)	Population estimate*	Calves:100 Cows	Bulls:100 Cows	Yearling bulls:100 cows
2001	EMMA (528)	479,531,605	29,34,40	15,18,21	2,5,8
2003	EMMA (528)	457,580,736	39,57,79	12,19,28	6,8,9
2004	EMMA (528)	634	63	13	6
2001	Remainder 19D East MSA (4,676)	1135,2005,2912	10,24,45	20,47,88	1,7,15
2003	Remainder 19D East MSA (4,676)	692,1084,1528	21,53,99	5,29,60	0,2,4
2004	Remainder 19D East MSA (4,676)	1652,2190,2728	43,55,67	24,35,45	8,14,21
2001	19D East MSA (5,204)	1652,2536,3469	14,25,42	19,39,66	3,7,13
2003	19D East MSA (5,204)	1219,1664,2195	30,53,84	13,23,37	0,3,13
2004	19D East MSA (5,204)	2287,2825,3464	47,56,66	22,30,37	7,12,17

*Based upon radio-collared moose sightings during surveys, sightability correction factors of 1.16, 1.25, and 1.20 were applied to population estimates in 2001, 2003, and 2004, respectively.

OBJECTIVE 1B: Determine primary causes of mortality of moose calves.

In May 2001 we captured and radiocollared 67 newborn moose calves in Unit 19D East, 51 of which were captured within or near the EMMA. We monitored radiocollared calves through their first year of life and investigated causes of mortality. The overall survival rate of radiocollared calves was 26% (17 of 66). We attributed 18 deaths (37%) to black bears, 17 deaths (35%) to grizzly bears, 12 deaths (24%) to wolves, 1 (2%) death to drowning, and 1 death (2%) to nonpredation cause. The survival rate for only those calves captured within or near the EMMA was 33% (17 of 51). Within the EMMA we attributed 18 deaths (53%) to black bears, 5 deaths (15%) to grizzly bears, 9 deaths (26%) to wolves, 1 (3%) death to drowning, and 1 death (3%) to nonpredation cause.

In May 2002 we captured and radiocollared 81 newborn moose calves, and visually monitored an additional 4 calves, within and near the EMMA. Survival for those calves

through their first year of life was 26% (22 of 85 lived). We attributed 21 deaths (33%) to black bears, 12 (19%) to grizzly bears, 28 (44%) to wolves, and 2 (3%) to nonpredation cause.

In May 2003 we captured and radiocollared 53 newborn moose calves in the EMMA. Survival for those calves through their first year of life was 52% (26 of 53 lived, 2 calves were censored from the study in mid-summer). We attributed 8 deaths (32%) to black bears, 4 (16%) to grizzly bears, 9 (36%) to wolves, 3 (12%) to nonpredation causes, and 1 (4%) to an unknown cause.

In May 2004 we captured and radiocollared 52 newborn moose calves in the EMMA. Survival for those calves through 25 January 2005 was 61% (31 of 52 lived). We attributed 3 deaths (15%) to black bears, 7 (35%) to wolves, and 10 (50%) to nonpredation causes.

OBJECTIVE 1C: Determine condition, movements, and mortality rates of yearling and adult moose.

Within the study area we captured 25 adult and 15 short-yearling moose in March 2001, 15 adults and 15 short-yearlings in March 2002, 15 short-yearlings in March 2003, and 15 short-yearlings in March 2004. These moose had a blood sample taken, a tooth pulled (adults only), morphometric measurements obtained, rump fat determined via ultrasound (adults only in 2001 and 2002), weight taken (yearlings only), and a radio collar affixed. These radiocollared individuals were then monitored to determine reproductive indices, movements, and mortality rates.

Year	Observed adult rate of parturition (%)	Observed twinning rate (%)	10-month calf weight in kg	Average adult rumpfat depth in cm (median)
2001	70	30	179.1	0.71 (0.55)
2002	92	59	191.8	1.51 (1.58)
2003	95	25	179.5	-- --
2004	75	34	184.9	-- --

Monthly locations of study animals indicated that moose within the EMMA were relatively nonmigratory, and no discernable large-scale movement pattern was evident. However, some moose that resided in the Pitka Flats (east of the EMMA) during calving season were apparently migratory, spending spring and summer in the Pitka Flats and then moving to the Farewell Burn/Alaska Range foothills in fall and winter.

Survival of radiocollared yearlings from May 2001 to May 2002 was 83% (10 of 12). Survival of radiocollared yearlings from May 2002 to May 2003 was 67% (18 of 27, 1 individual censored from the data set). Survival of radiocollared yearlings from May 2003 to May 2004 was 70% (18 of 37, 9 individuals were censored from the data set). The greatest component of yearling mortality during each year of this study was

attributed to wolves, with legal harvest and unknown cause accounting for additional deaths.

Survival of radiocollared adult females from May 2001 to May 2002 was 88% (30 of 34). Survival of radiocollared adult females from May 2002 to May 2003 was 89% (31 of 35). Survival of radiocollared adult moose from May 2003 to May 2004 was 95% (42 of 44). Wolves were the greatest mortality factor during these time periods, with illegal take and nonpredation cause also accounting for some mortality.

OBJECTIVE 1D: Determine twinning rates and age at first reproduction of moose in Unit 19D East.

Twinning rates for radiocollared adult females are listed under Objective 1c. In addition to radiocollared individuals, we recorded sightings of uncollared cows with calves that we saw within the study area. Twinning rates observed for these uncollared moose was 39% (18 of 46) in spring 2002, 36% (14 of 39) in spring 2003, and 39% (12 of 31) in spring 2004.

We have not observed any parturient radiocollared 2-year-old moose. In spring 2003, 5 of 9 radiocollared 3-year-old moose were observed with calves, giving an observed parturition rate of 56% for that age class. In spring 2004, 7 of 10 radiocollared 3-year-old moose were observed with calves, giving an observed parturition rate of 70%. In 2003, one of the 5 births to 3-year-old cows was a set of twins; the other 4 were single calves. In 2004 all 10 observed births to 3-year-old cows were single calves.

OBJECTIVE 1E: Obtain snow depth and density data within the EMMA.

Data collected by the National Weather Service on snow depth within the EMMA and adjacent areas has been obtained. Results have not been summarized.

OBJECTIVE 2: Characterize winter moose browse in Unit 19D East.

Browse surveys were conducted in March 2003 via helicopter and snowmobile throughout the EMMA. A total of 39 locations and 236 plants were sampled within the area. Browse biomass removal in the EMMA was 20%, which falls between the range seen in areas of high moose browse use and low moose browse use. Birch, poplar, and willow species were all present in the survey area, although willow species tend to be the preferred winter browse species in the EMMA. This is similar to other areas observed in Interior Alaska.

OBJECTIVE 3A: Estimate wolf numbers in Unit 19D East and identify wolf packs that hunt moose within the EMMA.

In a March 2001 survey, 103 wolves (no estimate of survey precision was possible) were estimated in Unit 19D East, and 19 wolves were taken from the area prior to the survey. Results of this survey indicate that 33 wolves in 5 core packs were largely resident within the EMMA.

Since the March 2001 survey no additional wolf survey data have been obtained. Information collected incidentally during other fieldwork by department staff and from

local trappers and pilots indicates that Unit 19D is still inhabited by approximately the same number of wolves, although the yearly numbers within the EMMA fluctuate because of its small size, trapper efforts and the current aerial wolf control program.

OBJECTIVE 3B: Determine reproductive rates and condition of wolves in Unit 19D and compare rates with other wolf populations in Alaska.

We purchased 25 hunter- and trapper-killed wolf carcasses for necropsy during June 2001–July 2002, 30 during June 2002–July 2003, and 28 during July 2003–June 2004. Necropsies were performed in spring 2002, 2003, and 2004. Data collected from carcasses and reproductive tracts indicate wolves from Unit 19D had normal parameters of condition.

OBJECTIVE 4: Document the distribution of black bear and grizzly bears numbers within and adjacent to the EMMA and characterize bear predation on moose calves.

In a collaborative project with Pennsylvania State University, we captured 20 black bears during May and June 2002 within the study area. Preliminary analysis of data obtained by monitoring these bears indicates that most black bears use riparian areas within the central portion of the study area in spring and summer and move to higher elevations in fall. Most of these bears also denned in back spruce forests near the areas where they spent time in the fall.

During May 2003, we captured and moved 81 black bears (all older than 1-year old) and 9 grizzly bears (including a sow with her 2 cubs-of-the-year) from the EMMA and surrounding area. Bears were captured using both helicopter darting and ground based snaring, and translocated using fixed-winged aircraft to areas at least 150 miles from McGrath. Twenty-three (22 black bears and 1 grizzly bear) of these translocated bears were fitted with radio collars for continued monitoring. The bear removal program was conducted again in spring 2004 and resulted in the capture and removal of 34 black bears and 1 grizzly bear. Several of the black bears captured in 2004 were bears that had been captured and moved in 2003 and had returned to the EMMA, however, the majority of 2004 captures were new bears.

The bear capture and observation data gathered during 2002–2004 will be used to formulate better estimates of bear density in the Upper Kuskokwim area.

Management Component.

Based on the March 2001 population estimate, trapper interviews, and the ongoing moose mortality study, the wolf population density is moderate in 19D East and the EMMA. Although a formal population estimate has not been conducted, black bears are abundant within the EMMA and surrounding area, similar to most riparian habitats in Interior Alaska, and data gathered from radiocollared bears in 2002 and from the spring 2003 removal program confirm this. In addition, the grizzly bear population appears to be at least at moderate levels relative to the habitat.

The 3-year average reported harvest of moose in Unit 19D East under the registration permit system is 78 moose per year. It is likely that the spike in harvest in 2002 was an effect of the summer 2002 fires that caused a temporary redistribution of some moose into the unburned riparian areas where they were more vulnerable to hunters. Another possible reason for the higher harvest is the increase in money in the village from the fire fighting income that enabled hunters to purchase more fuel for hunting transportation. The 2003 harvest was similar to 2001 because moose were likely more normally distributed and hunters had less cash to buy fuel than in 2002. The total number of permits issued has been declining each year. Possible reasons could be that 1) hunters under the age of ten are no longer allowed to obtain permit and 2) hunters who had a low expectation of harvesting a moose did not obtain permits. Overall, the registration permit system has worked to increase reporting rates and is being accepted by the 19D hunters. Also, in September 2004 moose hunting was closed in the EMMA to facilitate growth of the moose population.

Unit 19D East registration permit hunt (RM650) results, 2001–2004.

Regulatory Year	Successful	Unsuccessful	Did not hunt/ Report	Total permits issued
2001–2002	73	137	83	293
2002–2003	98	127	50	275
2003–2004	75	115	67	256
2004–2005	60	108	70	242

The effort by trappers in Unit 19D to harvest wolves has been high. Harvests have been variable since Regulatory Year 1997–1998. The majority of the Unit 19D harvest was in Unit 19D East and has been highly variable within the EMMA. Pelt quality of most 19D East wolves was low, which reduced the financial returns on harvested wolves from the sale of hides. Several hides and a carcass were studied to look for reasons for the poor pelt condition, but no clear reasons were found. However, the desire of local trappers to help reduce predation on moose, and a private wolf harvest incentive program have helped maintain a relatively high level of trapping effort. For example, during the 2002–2003 season very little snow made wolf trapping more difficult, however, trappers still harvested wolves.

Reported wolf trapper harvest and control kill in 19D, 19D East, and EMMA; 1997–2004

Regulatory Year	Wolf take			% 19D East take in EMMA
	19D	19D East	EMMA	
1997–1998	30	29	22	76%
1998–1999	21	14	3	21%
1999–2000	40	34	12	35%
2000–2001	37	36	17	47%
2001–2002	29	23	7	30%
2002–2003	35	35	15	43%
2003–2004	30(17[1])	27(17)	11(5)	41%(29%)
Total	222	198	87	
7-year mean	32	28	12	

[1]Number or percent of yearly total taken in wolf control program.

Only 4 black bears have been sealed since sealing became mandatory in July 2001. No fall baiting permits were issued during 2001–2003. The average harvest of brown bears was 5 per year. Harvest averaged 2 per year prior to implementation of the brown bear resident tag fee exemption in 1998.

As a result of 2 major wildfires during summer 2002, moose habitat within 19D will improve as early successional plant species replace spruce forests that were burned in the fires. One fire south of McGrath covered 209,000 acres and primarily burned in 19D East south of the EMMA. The second fire was north of Medfra and covered 31,000 acres. During 2003 the Medfra fire restarted and increased it's acreage but was suppressed quickly. In 2004, almost 10,000 acres burned in 2 wildfires in 19D East. The 2004 fires were not suppressed but failed to burn more acreage because of poor burning conditions.

Plans for 2005

Plans for 2005 include the continuation of the ongoing moose research project and aerial wolf control activities. The principal research activities for 2005 will be monthly monitoring of radiocollared moose, capture and processing of short-yearling moose in March, a calf mortality study starting in May, and moose surveys in fall.