

RC 122

PROPOSAL 239A - 5AAC 92.125. Predation Control Areas Implementation Plans. Establish a Unit 21E predation control implementation plan as follows, with a delayed effective date of July 1, 2010 and with implementation of wolf control activities only if the moose population declines below the current level. The Adaptive Plan for Intensive Management of Moose in Unit 21(E) that is referenced in the proposal was made available for review on the department's web site in late January 2009.

...

() **Unit 21(E) predation control area:** The Unit 21(E) Predation Control Area is established encompassing approximately 7,995 square miles; this predator control program does not apply within National Wildlife Refuge Lands unless approved by the federal agencies; notwithstanding any other provision in this title, and based on information contained in version 1 (March 6, 2009) of the Adaptive Plan for Intensive Management of Moose in Unit 21(E) and on the following information contained in this section, the commissioner or the commissioner's designee may conduct a wolf population reduction or wolf population regulation program in the Unit 21(E) Predation Control Area;

(1) the discussion of wildlife population and human use information is as follows:

- (A) a GASH moose management area (MMA) is established within the Unit 21(E) Predation Control Area; the MMA encompasses approximately 2,612 square miles, adjacent to the village of Grayling and surrounding the villages of Anvik, Shageluk, and Holy Cross; the purpose of the MMA is to focus intensive management activities, including predator control and habitat management, in a relatively small area near villages where moose are most accessible to hunters, rather than spread this effort over the entire game management unit; wolf control will be conducted only within the MMA; the department will have the discretion to adjust the size and shape of the MMA up to 40% (approximately 3,200 square miles) of Unit 21(E);
- (B) prey population and human use information is as follows:
 - (i.) local residents and other hunters have reported a decline in the Unit 21(E) moose population since the mid 1990s and are concerned that additional declines may occur; however, there are few data available on the number of moose prior to 2000 for comparison; population estimates of 7,000–9,000 in 2000 and 2005 for Unit 21(E) indicated little change; moose density in a 5,070 square mile moose survey area (MSA) in 2000 was 1.0 per square mile and in 2005 was 0.9 per square mile; neither of these estimates were corrected for sightability of moose
 - (ii.) the intensive management moose population objective established by the board for Unit 21(E) is 9,000–11,000 moose;
 - (iii.) the objective for moose within the MSA is a *minimum* of 5,070, as estimated from aerial surveys and not corrected for sightability; achieving this objective will contribute to achieving the Unit 21(E) intensive management population objective;
 - (iv.) the board identified moose in Unit 21(E) as important for providing high levels of harvest for human consumptive use in accordance with AS 16.05.255(e)–(g);
 - (v.) the current harvestable surplus in Unit 21(E) is 280–360 moose based on a conservative harvest rate of 4 percent of the total estimated population;

- (vi.) estimated average annual moose harvest by all Alaska resident hunters in Unit 21(E) was 311; this harvest was based on all available harvest data between 1996 and 2005, including harvest ticket reports, division of subsistence household surveys, and other subsistence research; the average nonresident harvest between 2000 and 2004 was 30 moose;
 - (vii.) according to harvest ticket reports, the number of moose harvested in Unit 21(E) declined from an average of 182 annually during the 1998–2002 seasons to 127 during the 2003–2007 seasons; most of this decline can be attributed to a decrease in non-local harvest;
 - (viii.) the intensive management moose harvest objective established by the board for Unit 21(E) is 550–1,100 moose; as the moose population increases and more harvest can be allowed, a greater portion of the unmet demand for moose in Unit 21(E) can be satisfied;
 - (ix.) the moose harvest objective within the MSA is a minimum of 203 (4 percent of 5,070) during each season; achieving this objective will contribute to achieving the Unit 21(E) intensive management harvest objective;
- (C) predator population and human use information is as follows:
- (i.) the pre-control wolf population in Unit 21(E) was estimated in fall 2005 using an extrapolation technique combined with harvest sealing records and anecdotal observations; the population in the entire 7,995 square mile area was estimated at 180–240 wolves or approximately 23–30 wolves per 1000 square miles;
 - (ii.) the primary objective of the Unit 21(E) wolf predation control plan is to reduce wolf numbers and wolf predation on moose within the 2,615 square mile MMA to the lowest level possible; this plan also has a goal to maintain wolves as part of the ecosystem within Unit 21(E); the minimum wolf population objective for Unit 21(E) is 40 wolves, which represents a 78 percent reduction from the pre-control minimum estimated fall wolf population of 180 wolves (23 wolves per 1,000 square miles); the minimum wolf population control objective will achieve the desired reduction in wolf predation primarily within the MMA, and also ensures that wolves persist within Unit 21(E);
 - (iii.) average annual reported harvest of wolves by hunters and trappers during the 2003–2007 seasons was 16;

(2) justifications for the predator control implementation plan are as follows:

- (A) the upper end of the range of the estimated moose population in Unit 21(E) currently is equal to the lower end of the range of the intensive management population objective; the number of animals that can be removed from the Unit 21(E) moose population on an annual basis without preventing growth of the population or altering the composition of the population in a biologically unacceptable manner is less than the harvest objective established for the population in 5AAC 92.108;
- (B) a proactive approach is needed to allow for a timely response to any additional decline in the Unit 21(E) moose population; reducing wolf numbers through a wolf predation control program, combined with reduction in moose harvest, is the approach most likely to succeed in a recovery of the moose population if an additional decline occurs; wolf harvest through

hunting and trapping efforts has not resulted in lowering the wolf population sufficiently to prevent further decline in the moose population;

- (C) presently known alternatives to predator control for reducing the number of predators are ineffective, impractical, or uneconomical in the Unit 21(E) situation;
 - (D) moose hunting seasons and bag limits have been reduced in Unit 21(E); the state February resident season for any moose was closed in 2003 and the nonresident season was shortened and made more restrictive in 2006; while helpful, these measures alone will not likely stop additional declines in the moose population, and they will not be enough alone to allow the moose population to increase;
 - (E) without an effective wolf predation control program, the minimum wolf population objective cannot be achieved; a timely response to any additional decline in the Unit 21(E) moose population will not be possible, resulting in the population moving further into the low density dynamic equilibrium state with little expectation of increase;
- (3) the permissible methods and means used to take wolves are as follows:
- (A) hunting and trapping of wolves by the public in Unit 21(E) during the term of the program will occur as provided in the hunting and trapping regulations set out elsewhere in this title, including use of motorized vehicles as provided in 5 AAC 92.080;
 - (B) notwithstanding any other provisions in this title, the commissioner may issue public aerial shooting permits or public land and shoot permits (including use of helicopters) in Unit 21(E) as a method of wolf removal under AS 16.05.783 when a moose population estimate for a survey of defined precision in the MSA is below the critical value to begin predation control listed in the decision framework in the Unit 21(E) adaptive plan for intensive management; for example, at a 15 percent survey precision the critical value would be an estimate of 5,309 moose (1.0 observed moose per square mile);
- (4) the anticipated time frame and schedule for update and reevaluation are as follows:
- (A) for up to six years beginning on July 1, 2010, the commissioner may reduce the wolf population in Unit 21(E);
 - (B) annually, the department shall to the extent practicable, provide to the board at the board's spring board meeting, a report of program activities conducted during the preceding 12 months, including implementation activities, the status of moose and wolf populations, and recommendations for changes, if necessary, to achieve the objectives of the plan;
- (5) other specifications the board considers necessary are as follows;
- (A) the commissioner will suspend wolf control activities
 - (i) when wolf inventories or accumulated information from wolf control permittees indicate the need to avoid reducing wolf numbers below the management objective of 40 wolves in Unit 21(E) specified in this subsection;
 - (ii) no later than April 30 in any regulatory year;
 - (iii) when a moose population estimate for a survey of defined precision in the MSA is above the critical value to end predation control listed in the decision framework in the Unit 21(E) adaptive plan for intensive management; for example, at a 15 percent survey

precision the critical value would be an estimate of 5,899 moose (1.2 observed moose per square mile);

- (B) wolf control activities will be terminated
 - (i.) when prey population management objectives are attained; or
 - (ii.) upon expiration of the period during which the commissioner is authorized to reduce predator numbers in the predator control plan area;
- (C) the commissioner will annually close wolf hunting and trapping seasons as appropriate to ensure that the minimum wolf population objective is not exceeded.

Adaptive Plans for Intensive Management of moose in Region III

1) Adaptive Plans for Intensive Management

- Define “moose management areas” where we have biological and harvest data
- Statistical decision framework for when to implement (and suspend) predation control based on moose survey results
- Monitor nutritional condition of moose (twinning, browse removal) during population growth for setting harvest options
- Continued evaluation of IM population and harvest objectives based on empirical data

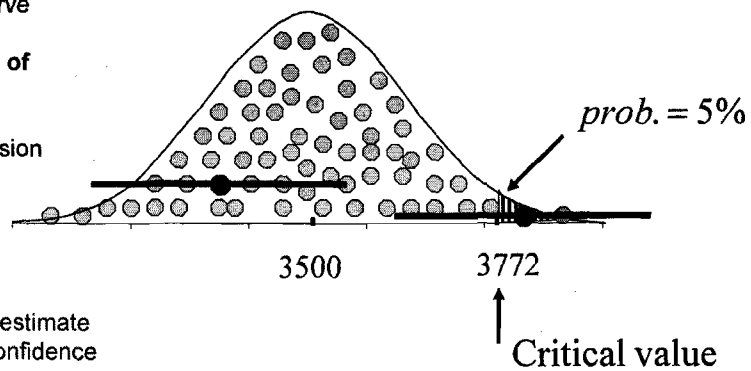
Uncertainty in population estimates is based on sampling error

Statistical Test :

True Population = 3500

Do many surveys
(●) of a population

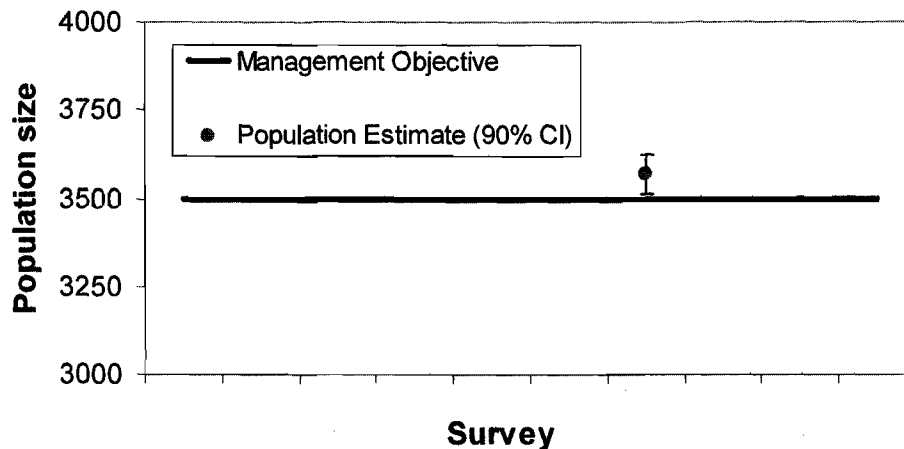
Shape of curve
(sampling
distribution of
estimates)
depends on
survey precision



Each survey estimate
has a 90% confidence
interval

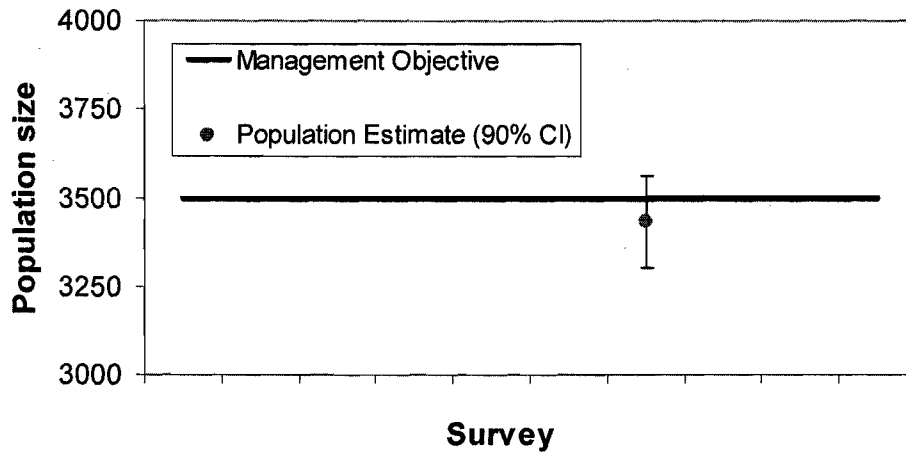
Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



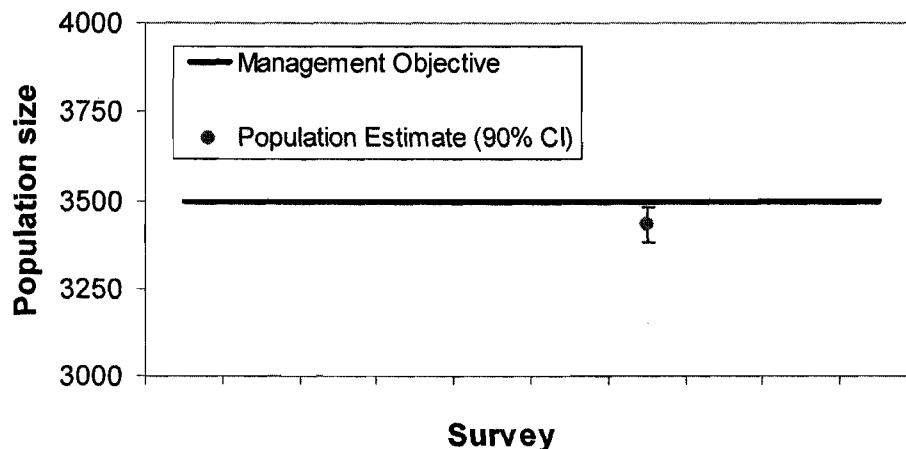
Statistical decision framework

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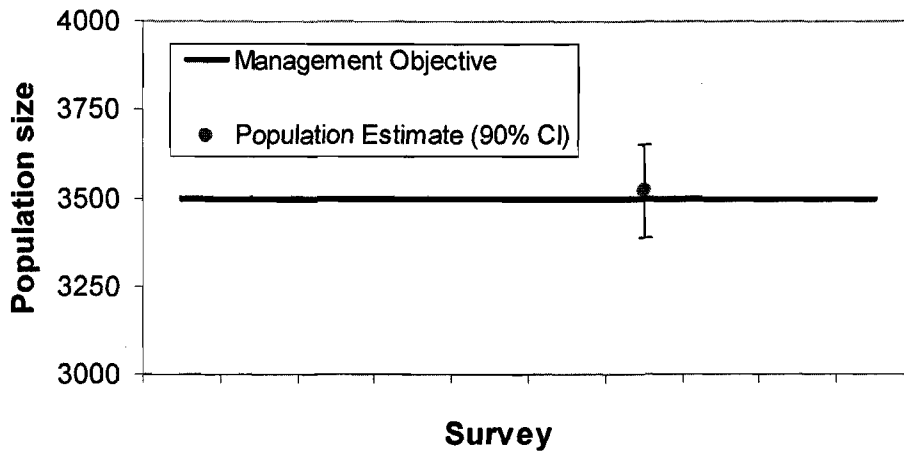
Statistical decision framework

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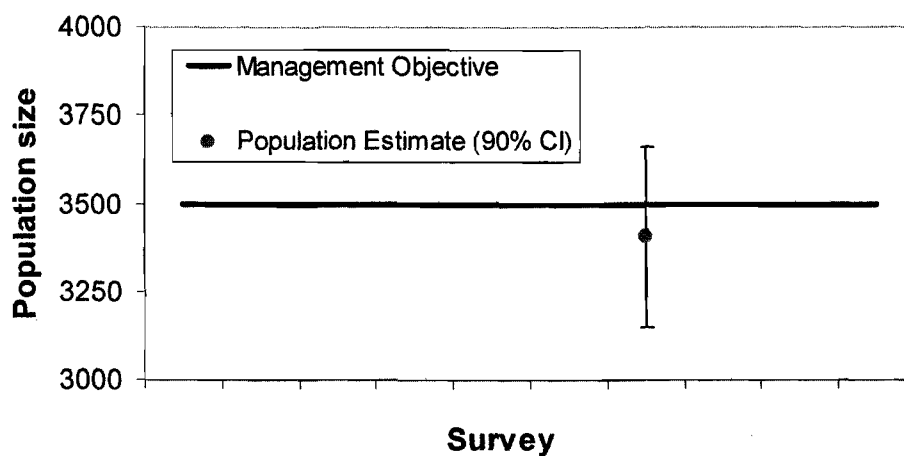
Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



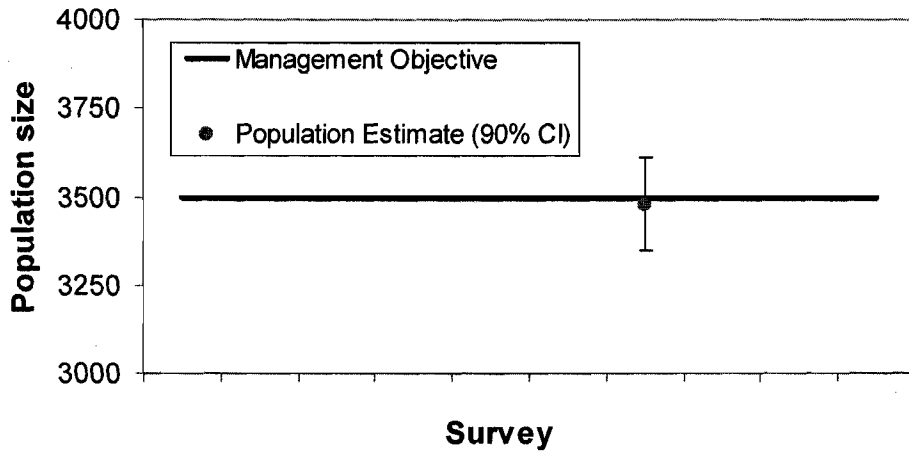
Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



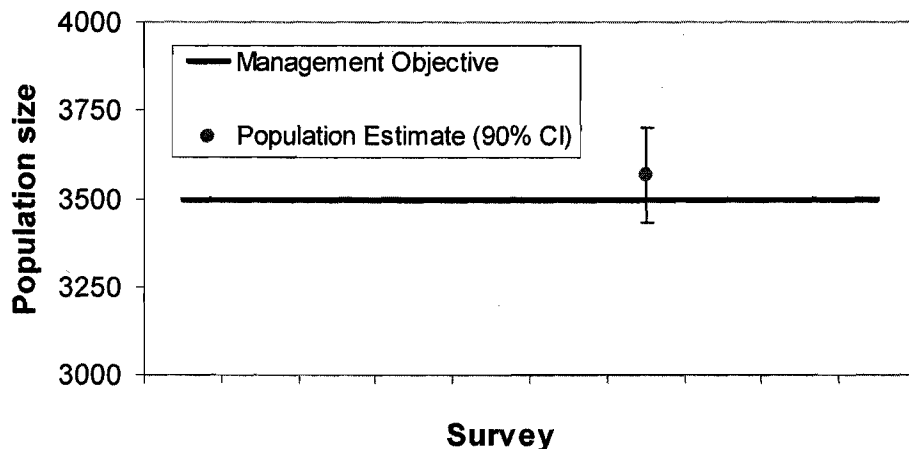
Statistical decision framework

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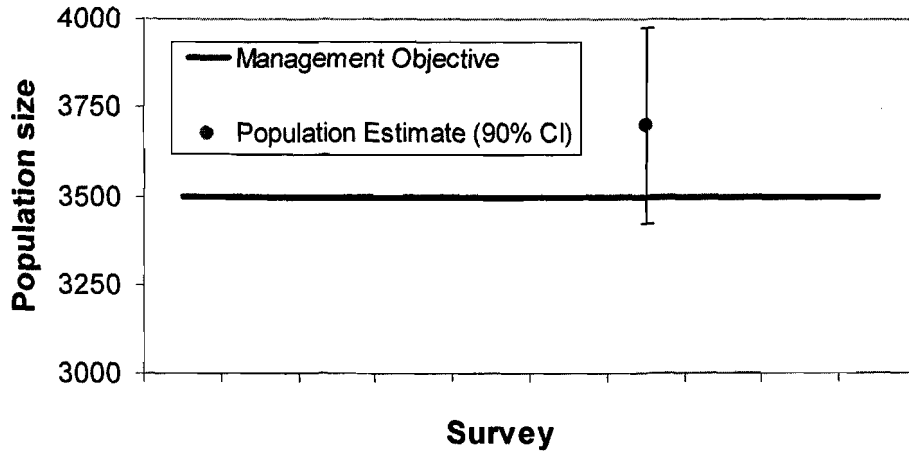
Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



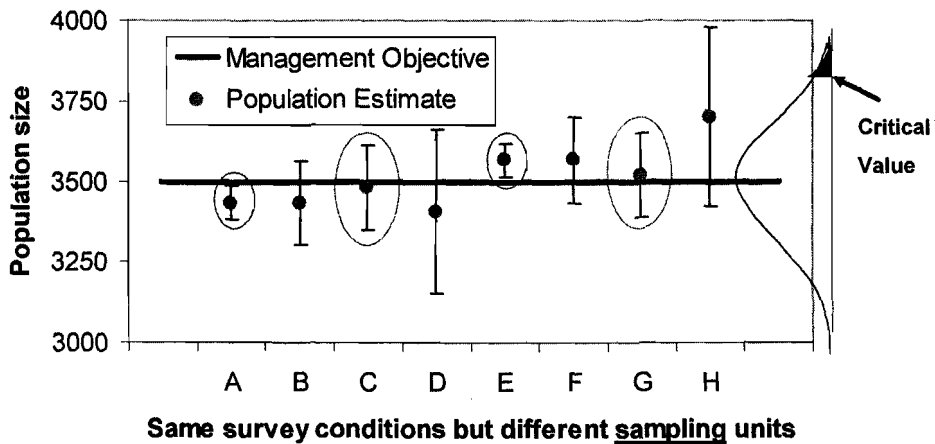
Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



Statistical decision framework

Problem: Evaluating management objectives in the face of uncertainty from survey results



Using critical values is a different approach

- Accounts for uncertainty caused by sampling error in survey estimates (population size, male : female ratio, etc.)
- Relates specific survey results to actions described in a management plan
- Defines “risk” associated with decisions

What is the “risk” in making a decision?

- Risk is the chance of making a incorrect management decision based on the level of uncertainty in the estimate
- If you know the uncertainty of the estimate, you can quantify the chance (probability) of making an incorrect decision for a given survey precision

**Risk in decision on predation control to
increase a moose population for harvesting**

Option	Start predation control?*			
If decision based on a survey is	"Yes"		"No"	
And true (but unknown) moose population is				
Then the risk factor is				

**Risk in decision on predation control to
increase a moose population for harvesting**

Option	Start predation control?*			
If decision based on a survey is	"Yes"		"No"	
And true (but unknown) moose population is	Above objective	Below objective		
Then the risk factor is	Continued moose population growth (decline in nutritional condition)*	None*		

**Risk in decision on predation control to
increase a moose population for harvesting**

Option	Start predation control?*			
If decision based on a survey is	"Yes"		"No"	
And true (but unknown) moose population is	Above objective	Below objective	Above objective	Below objective
Then the risk factor is	Continued moose population growth (decline in nutritional condition)*	None*	None	Continued low moose abundance and delayed recovery*

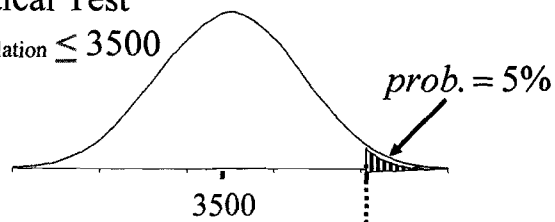
What defines the "risk" of a whether or not to take a management action?

- Risk implies a consequence of an incorrect decision for at least two competing interests
- The critical value can be adjusted to achieve a desired level of tradeoff between competing interests

How does a statistical test detect when the true population is actually higher than the objective for a defined "risk" level?

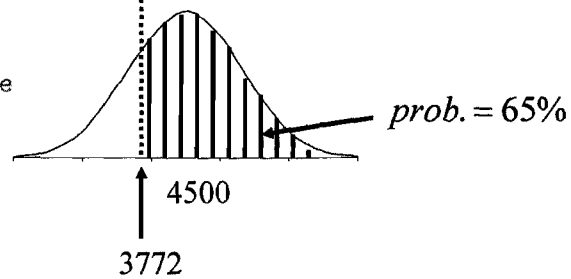
Statistical Test

True population ≤ 3500



Test assumes population ≤ 3500 and management action will occur unless strong evidence that population is > 3500

If the true population is actually 4500, you are 60% more likely to estimate 3772 with a survey and conclude the population is > 3500



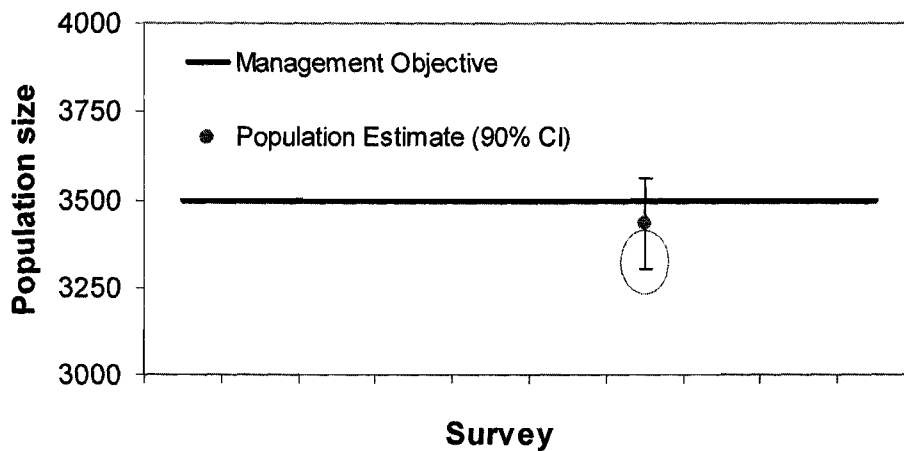
Risk level and management actions

Statistical tests can be used to link management actions to the risk of incorrect decision perceived by managers or the public

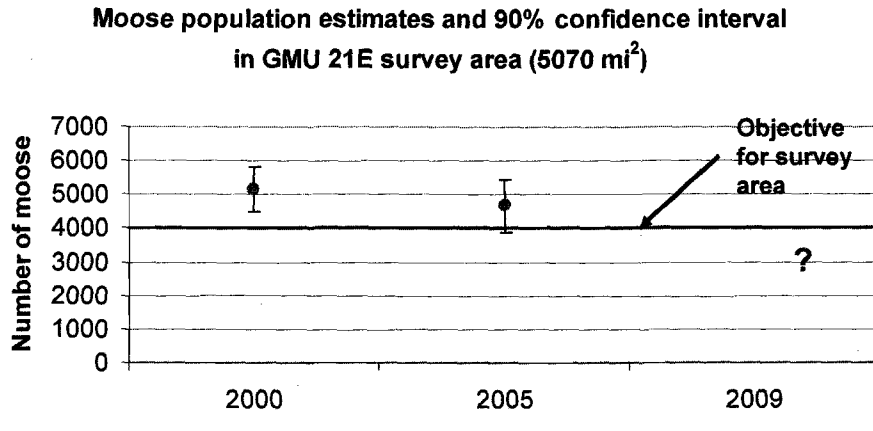
Decision framework for starting and ending predation control to benefit moose in Unit 21E

- Yukon Innoko Moose Management Working Group reviewed population and harvest trends through 2006
- The Yukon Innoko Plan emphasized taking a *proactive* approach to prevent further decline below the 2005 estimate of ~4500 observed moose (0.9 / mi² in 5070 mi² survey area)

What is acceptable level of risk in using confidence interval that includes the objective for a declining population?



Survey data used in management decision

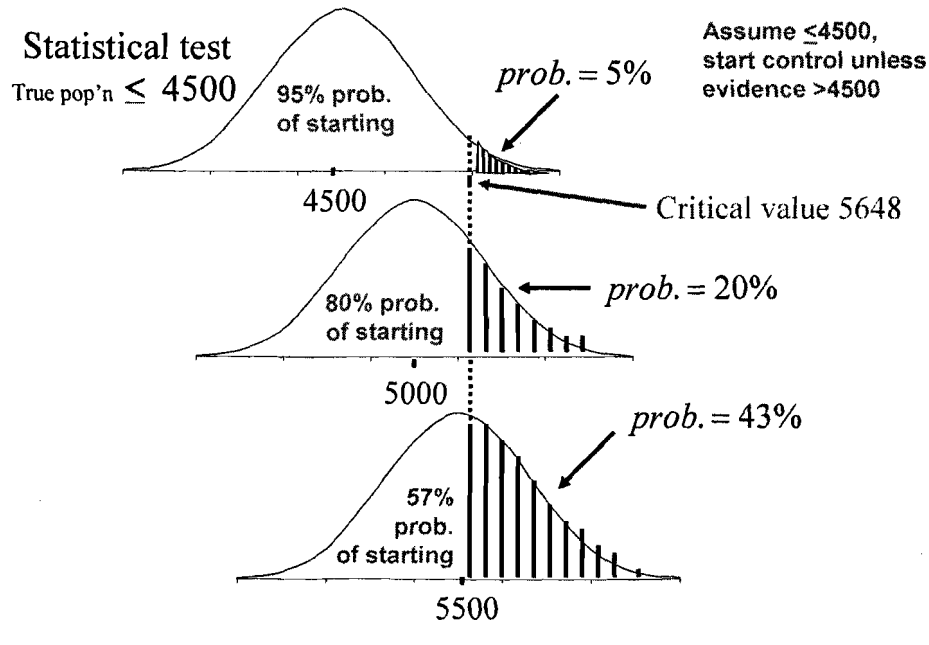


Decision framework to start predation control in GMU 21E (Table A1, pg. 35 Adaptive Plan)

Scenario of true but unknown population size	Moose per square mile ^a	Probability of <u>starting</u> predation control at a given [survey precision] and (critical value, prob. = 5%).		
			[20%] (5648)	
4000	1.0 (LDDE)		1.00	
Test: ≤4500	1.1 (LDDE)		0.95	
5000	1.2		0.80	
5500	1.4		0.57	
6000	1.5		0.35	

^aObserved density multiplied by Sightability Correction Factor of 1.25

Decision test to start predation control in GMU 21E



Decision framework to start predation control in GMU 21E (Table A1, pg. 35 Adaptive Plan)

Scenario of true but unknown population size	Moose per square mile ^a	Probability of starting predation control at a given [survey precision] and (critical value, prob. = 5%).		
		[15%] (5309)	[20%] (5648)	[25%] (6032)
4000	1.0 (LDDE)	1.00	1.00	0.99
Test: ≤ 4500	1.1 (LDDE)	0.95	0.95	0.95
5000	1.2	0.71	0.80	0.84
5500	1.4	0.37	0.57	0.68
6000	1.5	0.14	0.35	0.51

^aObserved density multiplied by Sightability Correction Factor of 1.25

**Decision framework to start predation control
in GMU 21E (Table A1, pg. 35 Adaptive Plan)**

Scenario of <i>true but unknown</i> population size	Moose per square mile ^a	Probability of starting predation control at a given [survey precision] and (critical value, prob. = 5%).		
		[15%] (5309)	[20%] (5648)	[25%] (6032)
4000	1.0 (LDDE)	1.00	1.00	0.99
Test: <4500	1.1 (LDDE)	0.95	0.95	0.95
4673 ^b	1.2	0.89	0.91	0.92
5000	1.2	0.71	0.80	0.84
5151 ^c	1.3	0.61	0.73	0.79
5500	1.4	0.37	0.57	0.68
6000	1.5	0.14	0.35	0.51

^aObserved density multiplied by Sightability Correction Factor of 1.25

^bTrue population equal to survey estimate in 2005 (precision of 90% CI = 17%)

^cTrue population equal to survey estimate in 2000 (precision of 90% CI = 13%)

**Moose harvest potential from survey area
(5070 mi² = 63% of Unit 21E)**

Observed <u>Moose</u>	Observed x <u>SCF 1.25</u>	<u>Harvest rate from observed x SCF</u>	
		<u>4%</u>	<u>6%</u>
4500*	5625		
5000	6250		
5500	6875		
6000	7500		
6500	8125		

IM harvest objective for Unit 21E = 550 moose

***Upper end of Low Density Dynamic Equilibrium**

**Moose harvest potential from survey area
(5070 mi² = 63% of Unit 21E)**

Observed Moose	Observed x SCF 1.25	Harvest rate from observed x SCF	
		4%	6%
4500*	5625	225	338
5000	6250	250	375
5500	6875	275	413
6000	7500	300	450
6500	8125	325	488

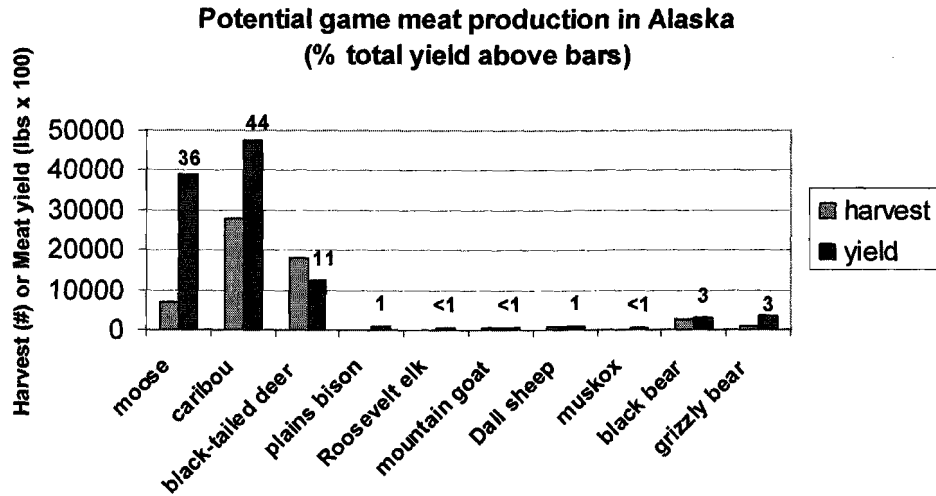
IM harvest objective for Unit 21E = 550 moose

*Upper end of Low Density Dynamic Equilibrium

2) Analysis results on sustainable harvest rate for moose in GMU 20A (1996-2007)

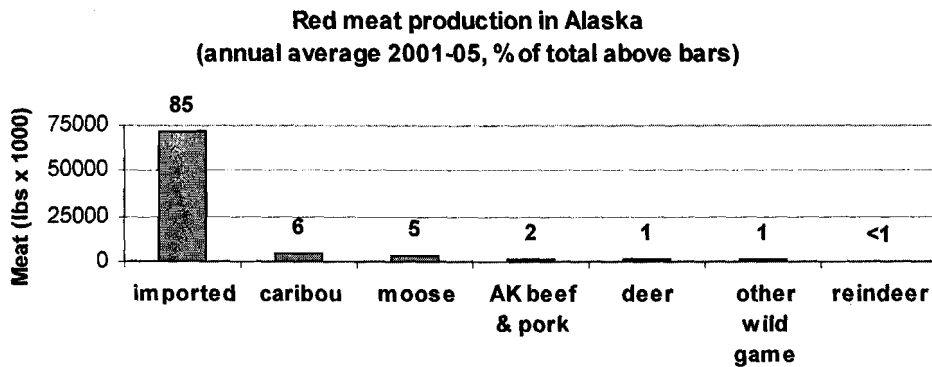
- Liberal female harvest 2004-07 to reduce population showing nutritional stress
- 7% harvest (3.5 - 4.5% female) from prehunt population caused decline
- Total harvest of 6% (60% M, 40% F) for stable prehunt population and M:F ratio
- Bears and wolves killed 4 times as many moose as hunters (~80% of total mortality)
- GMU 20A unique with 9% bear predation on calves; bear predation documented at 18-27% in low-density moose areas of Interior

3) Role of game meat in food supply for Alaska



Moose, caribou, and deer composed 91% of both the reported harvest and boned-out meat yield during 2001-05 (Source: *Alaska Wildlife Harvest Summary 2005-06*)

Role of game meat in food supply for Alaska



Beef and pork: ADNR Division Agriculture

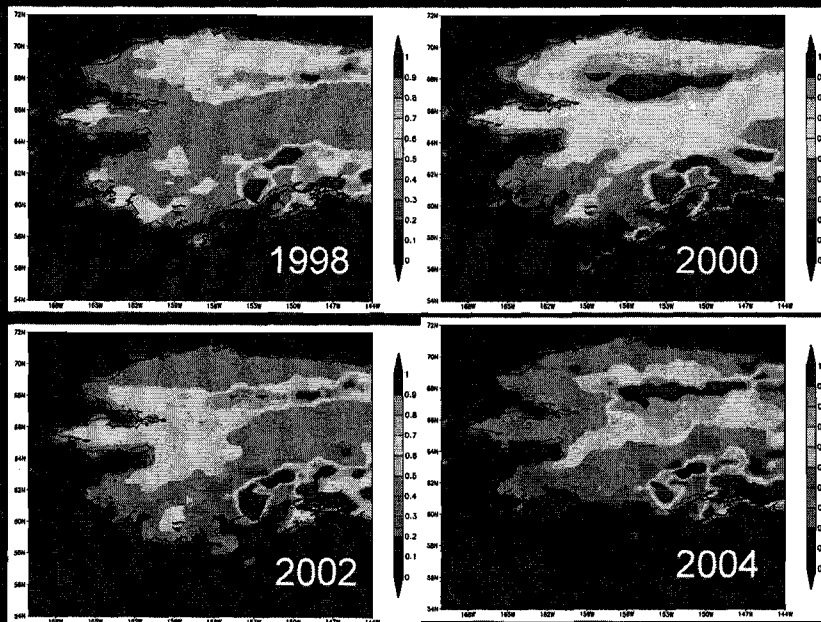
Reindeer: USDA

Imported meat: USDA (calculations by Dr. Jennifer Schmidt, UAF)

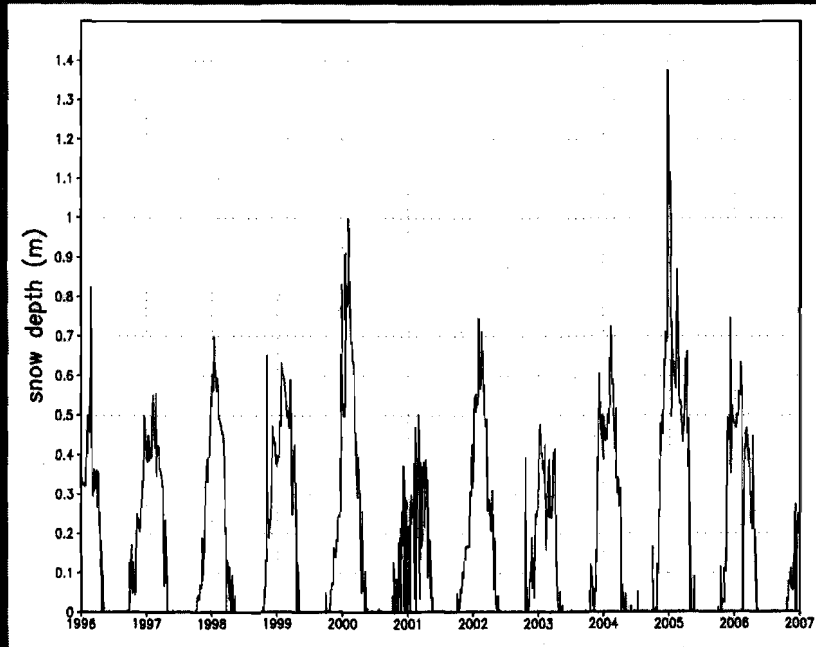
March 2010 Board of Game (Region III)

- Recommendations on IM population objectives based on habitat information
 - location of browse
 - location and frequency of deep snow

N.A. Regional Reanalysis, 1 March Snow Depth (m)



NARR Snow Depth (m), 1995-2007, Takotna, AK



March 2010 Board of Game (Region III)

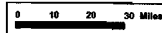
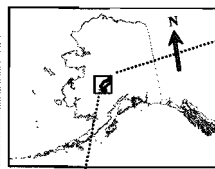
- Recommendations on IM population objectives based on habitat information
 - location of browse
 - location and frequency of deep snow
- Recommendations on focused “moose management areas” within all IM areas
- Adaptive Plans for Intensive Management of moose in GMUs 19A, 19D, and 20E

End

Response of Moose to Experimental Removal of Bears and Public Wolf Control Efforts in Western Interior Alaska



Study Area



19D East (8,513 mi²)
 *the BOG has authorized the Department to conduct predator removals within this entire area.

EMMA (528 mi²)
 *75 black bears and 6 grizzly bears (>1 yr-of-age) captured and removed May 11-31, 2003 (89% by the median calving date, May 22). 34 black bears (7 recaptures) and 1 grizzly bear captured and removed May 12-22, 2004 (100% by median calving date). In total, the department removed 102 individual black bears and 7 grizzly bears from this area.
 *94 black bears were captured using aerial search followed by helicopter captures, 15 black bears were captured using leg snares. Three grizzly bears were captured using aerial search, 2 with leg snares, and 2 with radio-equipped neck snares.

Wolf control zone (RY03-RY06 3,210 mi², RY07-present 6,245 mi²)
 *public aerial wolf reduction was allowed between RY03 and present in these areas. The intent was to focus control efforts on those wolves that resided/utilized the EMMA. Take of wolves in the 3,210 mi² area has been:

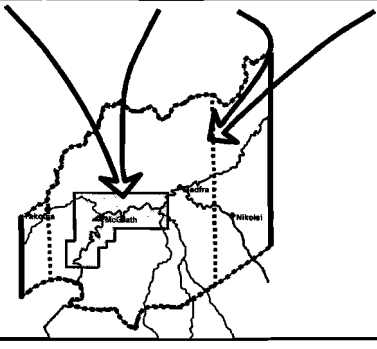
Year	Total take	SDA take
2003/04	27	17
2004/05	22	14
2005/06	11	4
2006/07	12	2
2007/08	19	17

Expanded EMMA (1,118 mi²)
 *this area best captures the moose population in the McGrath area, based on radio collar data and population modeling.

48109

Estimates of black bears and wolves in the McGrath area pre- and post-removal

	Black Bears (522mi ² EMMA)		Wolves (3,210mi ² wolf control area)	
	Population estimate	Density (bears/100mi ²)	Population estimate	Density (wolves/100mi ²)
Pre-removal	100	19	47	1.5
Immediate post-removal	7	1.3	11	0.3
Most recent estimate	69	13	11	0.3

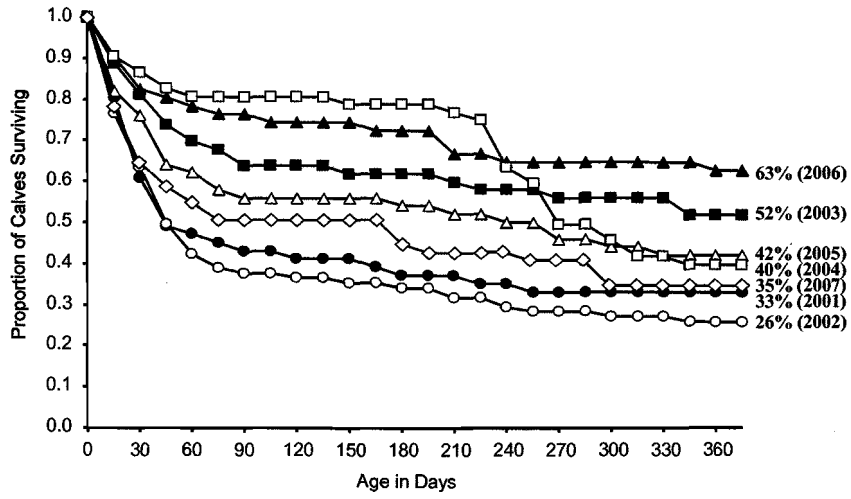


Causes of calf mortality

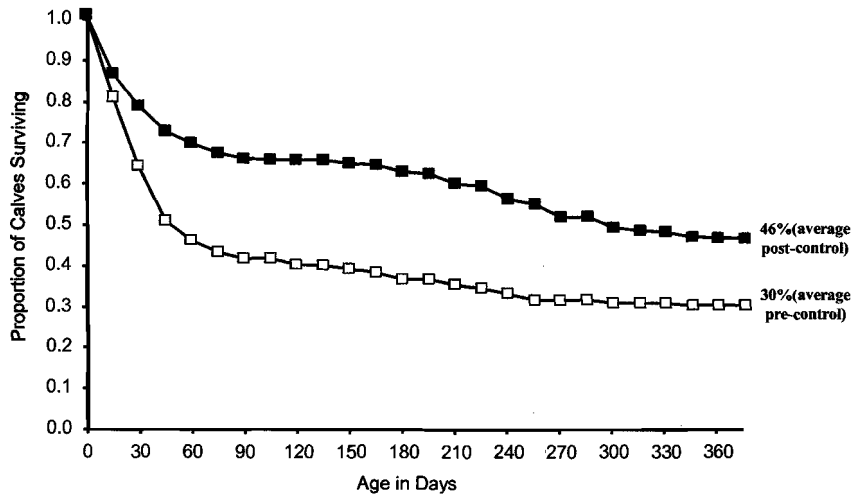
Number calf deaths from birth to September/Total number deaths 1st yr-of-life

	Cohort (May-May)	Black bear	Grizzly bear	Wolf	Non-predation	Illegal take	Unknown cause	# of Calves monitored	Annual survival
No predator removal	2001 cohort	18/18	5/5	4/9	1/1	0/0	1/1	51	33%
	2002 cohort	23/23	13/13	16/23	1/2	0/0	0/2	81	26%
Bear removal and wolf control have occurred during these years	2003 cohort	8/8	4/4	4/9	3/3	0/0	0/1	53	52%
	2004 cohort	3/3	0/0	4/8	3/19	0/1	0/0	52	40%
	2005 cohort	12/12	3/3	2/3	5/10	0/0	0/1	50	42%
	2006 cohort	6/6	2/3	1/3	3/6	0/0	1/1	51	63%
	2007 cohort	7/7	14/14	2/6	1/4	0/0	1/2	51	35%

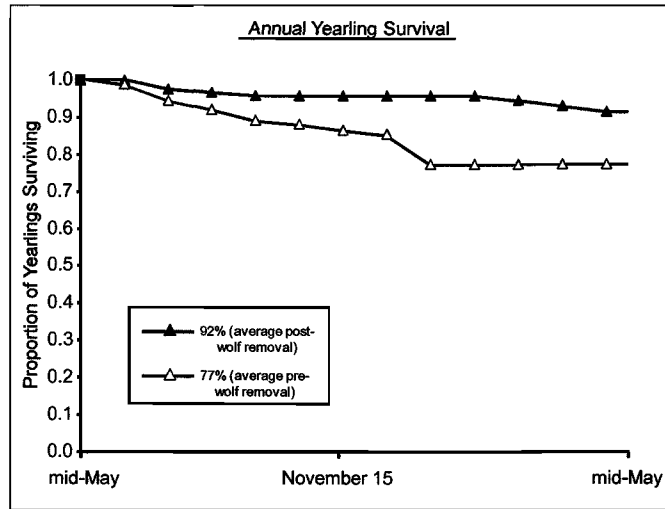
Timing of calf mortality



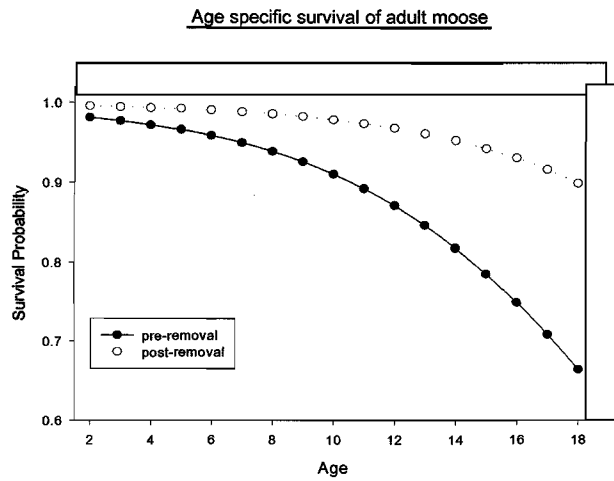
Timing of calf mortality



Yearling and adult survival pre- and post-control



Yearling and adult survival pre- and post-control

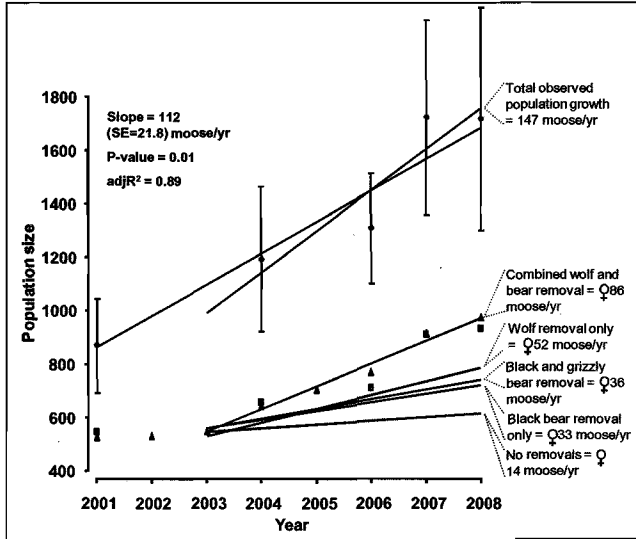


Expanded EMMA population trends

Models we developed based on data obtained from radioed moose agree with survey data.

Using this same model we can predict the outcome of a variety of alternative actions:

- 1) What would have happened if we had taken no action?
- 2) What would have happened if we only had wolf control?
- 3) What would have happened if we only had bear removals?
- 4) What would have happened if we only had black bear removals?



Bear effectiveness as predators

Data collected in McGrath is also helping us develop a better understanding of some aspects of bear predation on young moose. Although preliminary, some of what we have learned is presented here:

*The out come of predation events differs when multiple (twin) calves encounter black bears and grizzly bears.

*Although one previous study and intuition would suggest that male black bears would numerically account for more calf mortalities than females. During this study, in cases where we could identify sex of responsible bears we observed similar numbers of calves killed by male and female black bears.

Predator	# of encounters resulting in one calf dying	# of encounters resulting in both calves dying	% of encounters resulting in both calves dying
Black bears	22	3	12%
Grizzly bears	4	5	56%

Year	# identified as male (by genetic analysis or visual observation)	# identified as female (by genetic analysis or visual observation)
2001	7	3
2002	9	9
2003	5	4
2004	0	2
2005	4	2
2006	2	1
2007	1	3
Total	28	24

Population modeling – the next 10 years

Results of 25 model iterations of the expanded EMMA (1,118 mi²) moose population starting in 2008, given an additional 5 years of wolf reduction similar to what is presently occurring (0.3 wolves/100mi², likely achievable with public aerial wolf control).

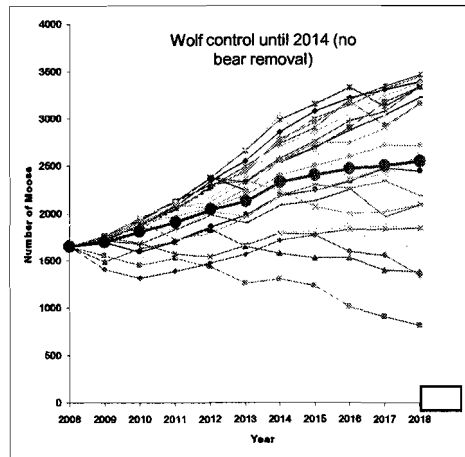
Assumptions:

*A harvest of moose from the expanded EMMA population of 75 moose from 2008-12, and 150 moose from 2013-18 (approximately 90% male 10% female).

*Bear predation rates starting in 2008 equivalent to those documented before bear removals.

*Moose will begin to show density dependent responses in life-history characteristics at approximately 3 moose/mi².

*Weather events are stochastic.



RC125

Intensive Management for GMU16 Moose



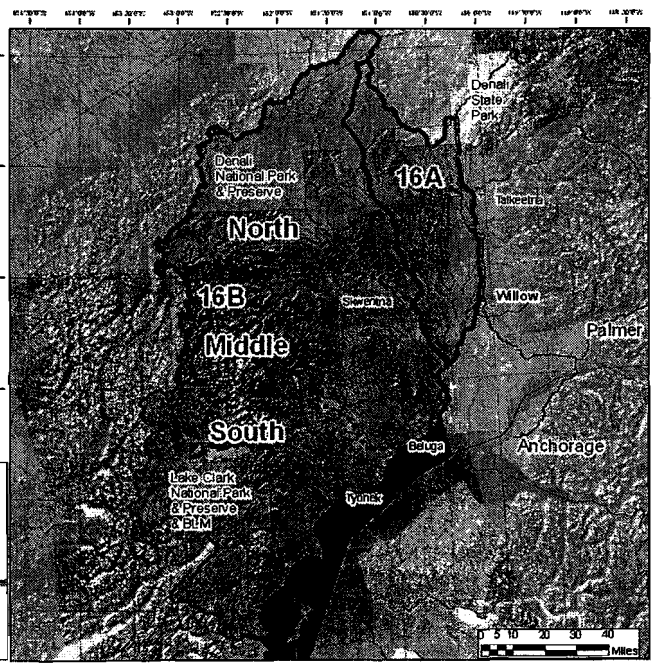
Game Management Units 16A & B



Legend

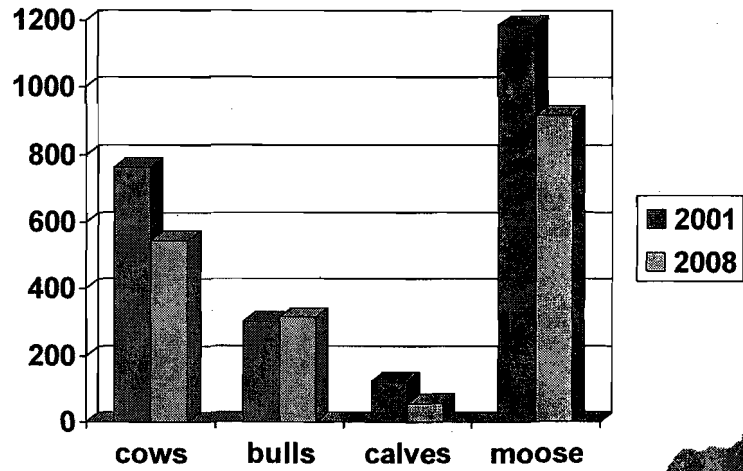
- Roads
- Lake Clark National Park
- Unit 16 Boundaries
- Denali State Park
- Denali National Park
- Lakes
- Rivers

16 A = 1,850 sq mi
16 B = 10,405 sq mi

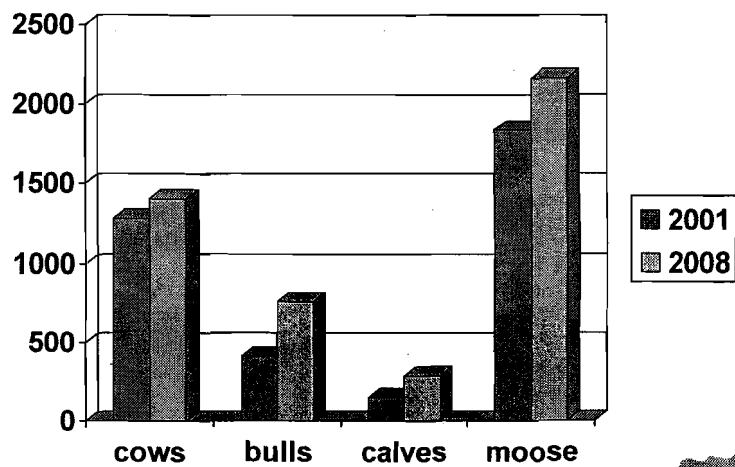


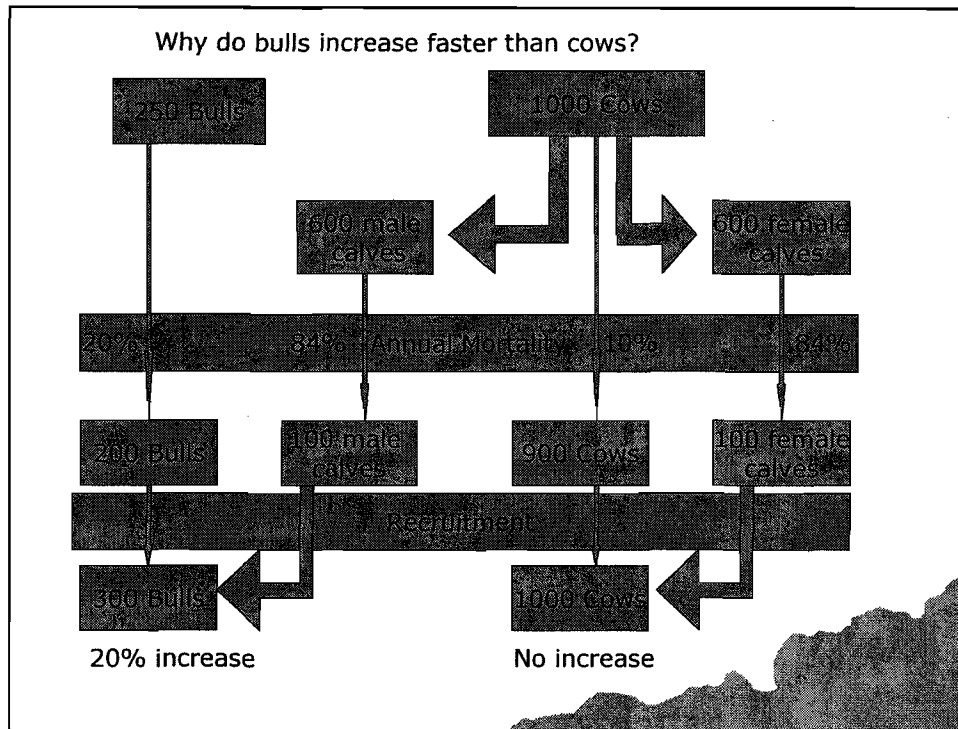
25157

GMU 16B North Moose Surveys



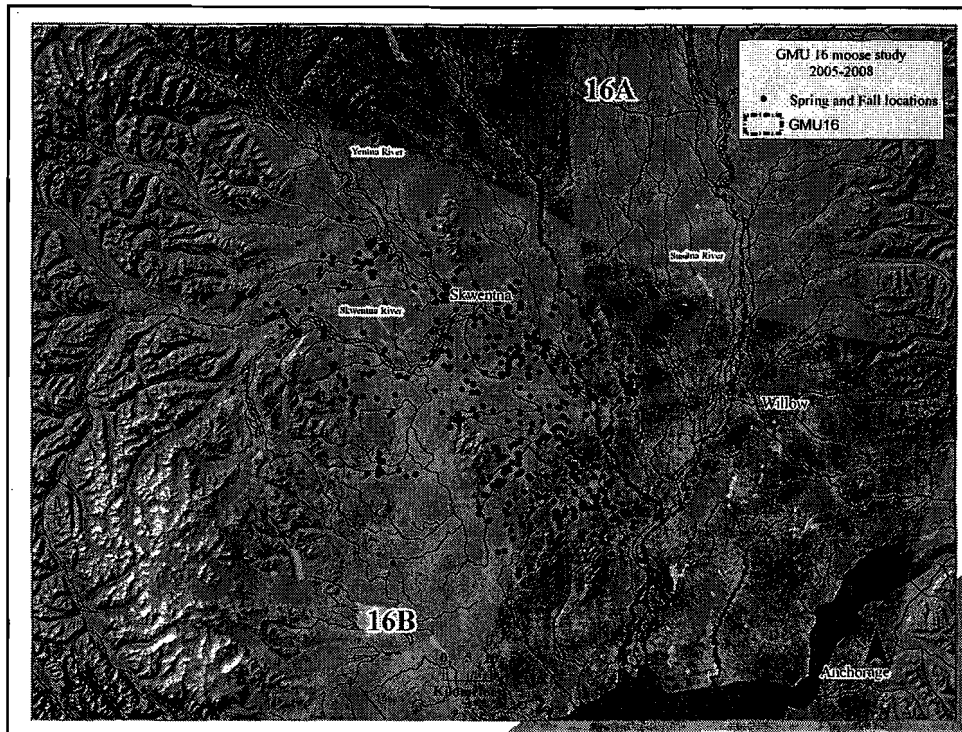
GMU 16B Middle Moose Surveys





16B Moose Research and Monitoring

- ◆ Study initiated in March 2005
 - PI John Crouse ADF&G
- ◆ Objective 1: Evaluate moose condition
- ◆ Objective 2: Estimate moose survival
- ◆ Collared 84 adults and 55 calves
- ◆ Monitored survival of 337 calves



16B Moose Research Results

◆ Productive

- 50% twinning rate
- 1.4 calves: cows >2yo
- 0.5 calves: 2-year-olds

◆ Healthy

- 2.4 - 4.8cm fat
- calf mass = 411 lbs



16B Moose Survival

◆ High Survival for moose >4 months old

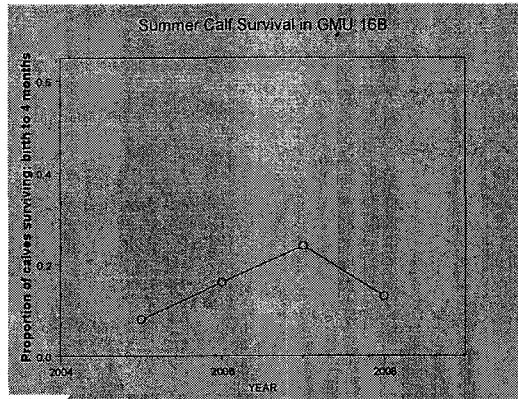
- 88% for calves over winter
- 94% annual for yearlings
- 95% for 2-year-old females
- 91% for females > 2 years old

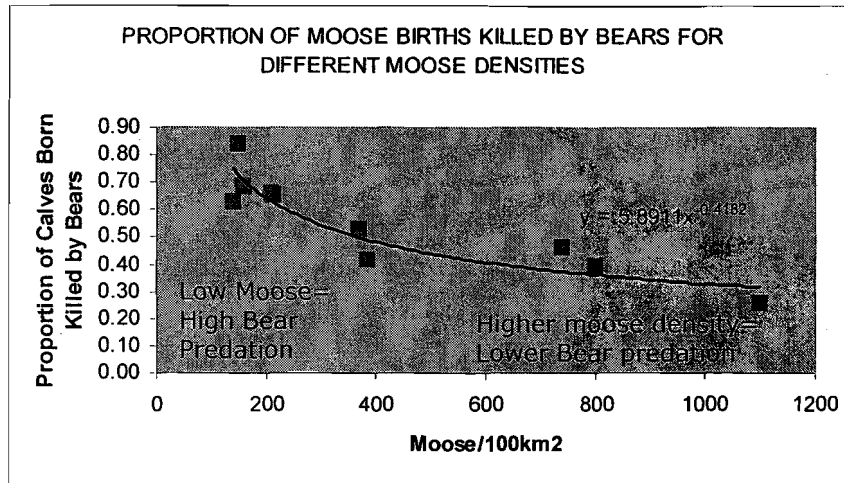
16B Moose Survival

◆ The Problem:

◆ 16% survival of calves from birth to 4 months

- 2005 8%
- 2006 16%
- 2007 24%
- 2008 13%

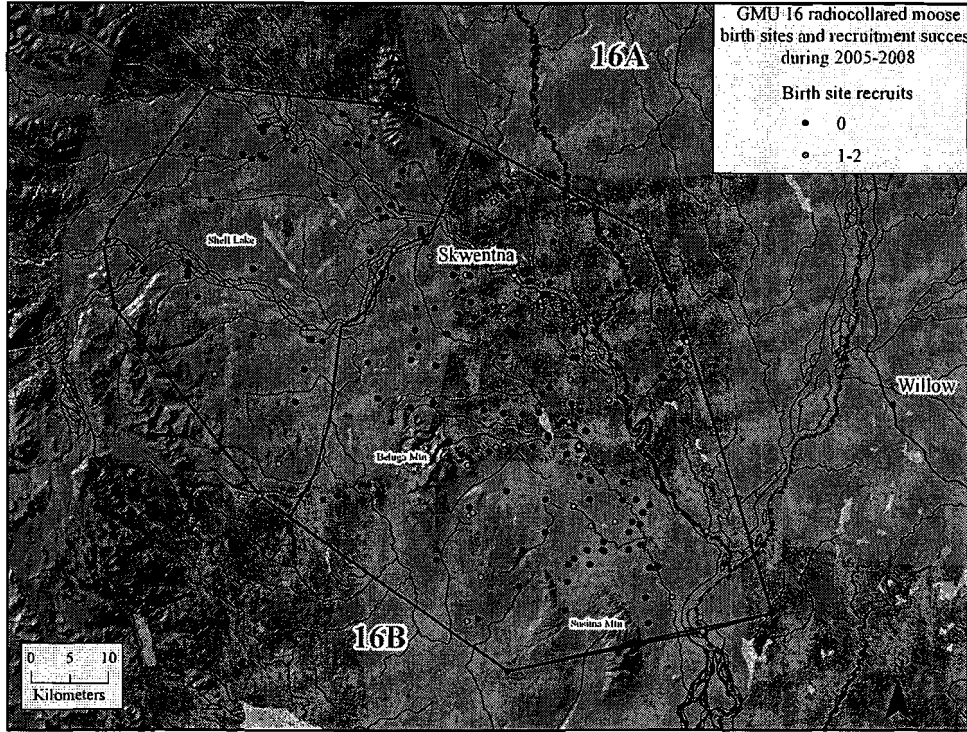




the "Dilution" effect

Management Implications of Dilution Effect

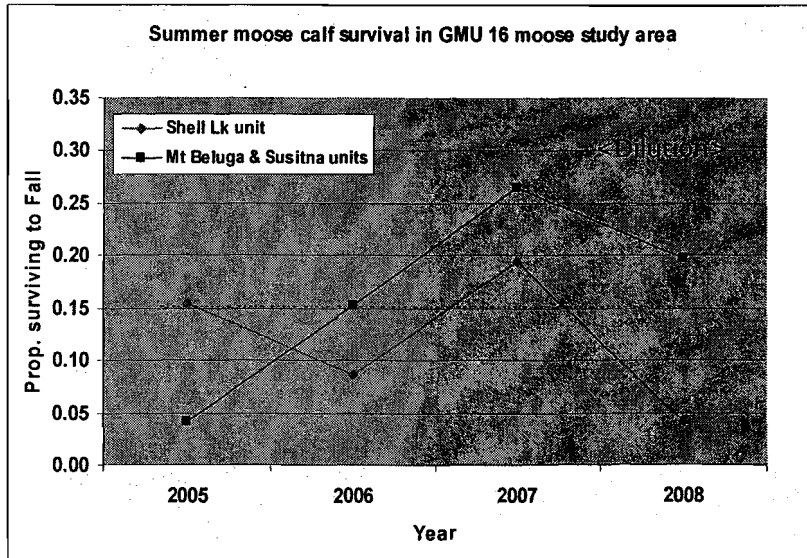
- ◆ Bear reduction not always necessary even if bears are important predators
- ◆ Bear reduction not needed to maintain higher harvests at management objectives



16B Moose Survival

- ◆ High Survival for moose >4 months old
- ◆ Low summer calf survival
- ◆ Moose and calf survival lower to north





McGrath Bear Reduction Results

◆ Summer calf survival

- Pre reduction..... 38%

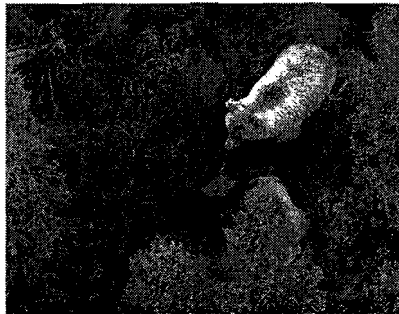
- Post reduction.... 65%

◆ Survival to 1 year

- Pre reduction..... 33%

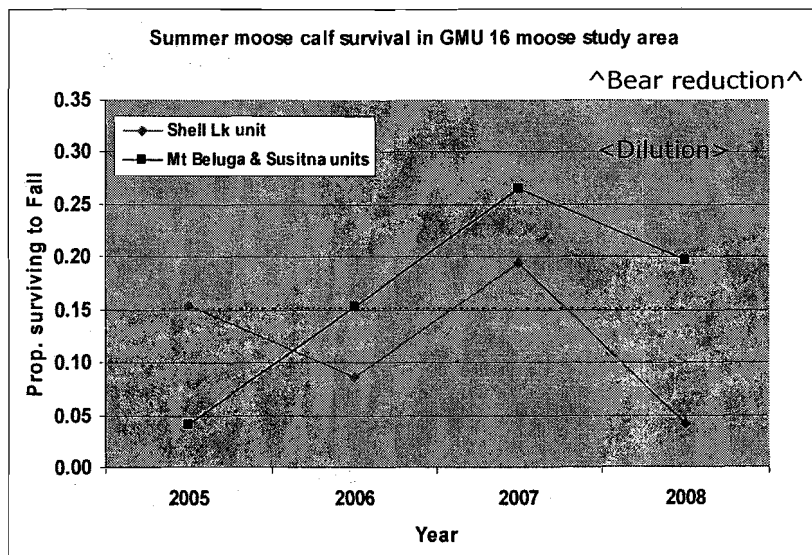
- Post reduction.... 46%

◆ Result: good population growth



Bear Reduction Methods

- ◆ McGrath:
 - 80% of black bears captured and moved
 - Removal completed in 2 years
 - Reduction across entire study area (528 mi²)
 - Most bears moved in early spring
 - Fewer brown bears
 - Moose population already growing
- ◆ GMU 16
 - Different methods and area (10,000 mi²)
 - Expect <46% survival to 1 year realized in McGrath



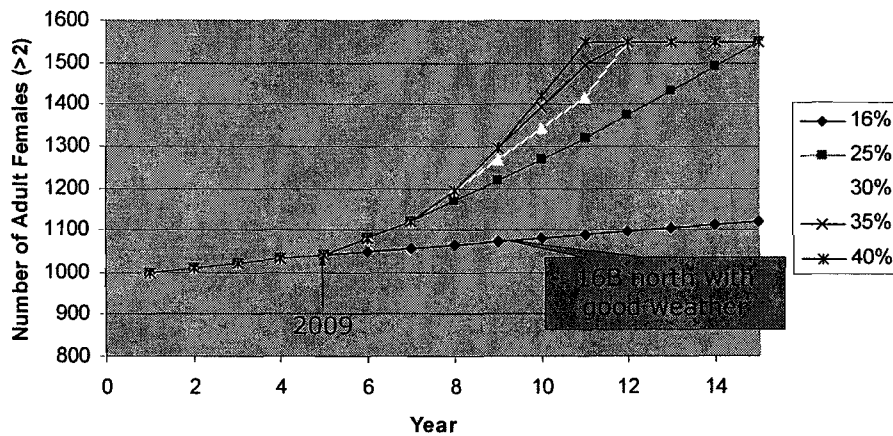
Example of moose model parameters

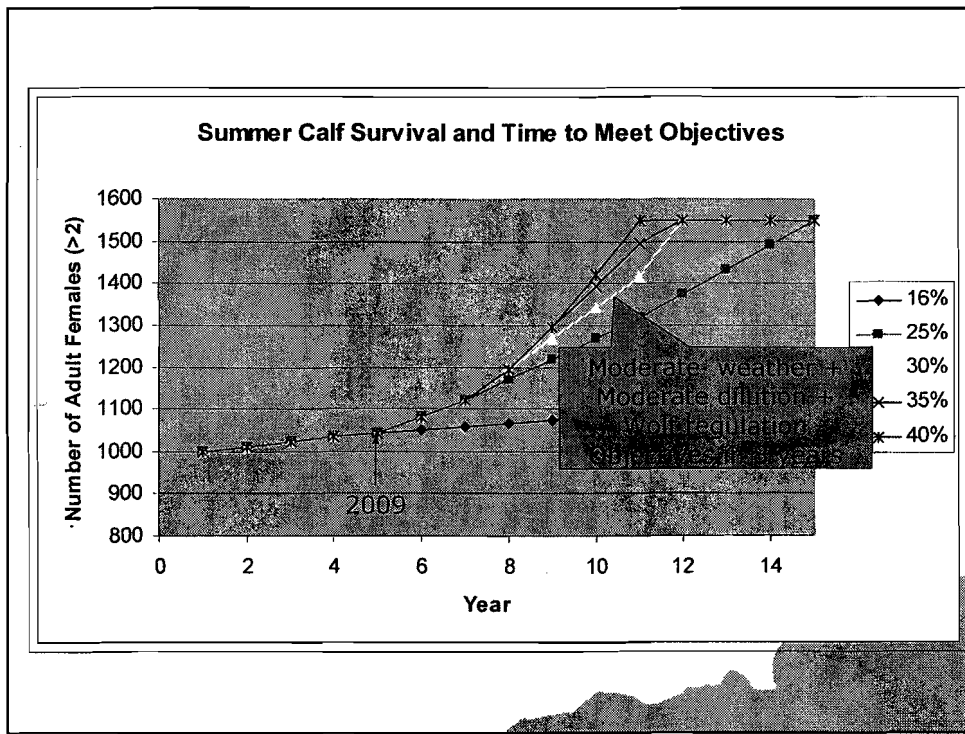
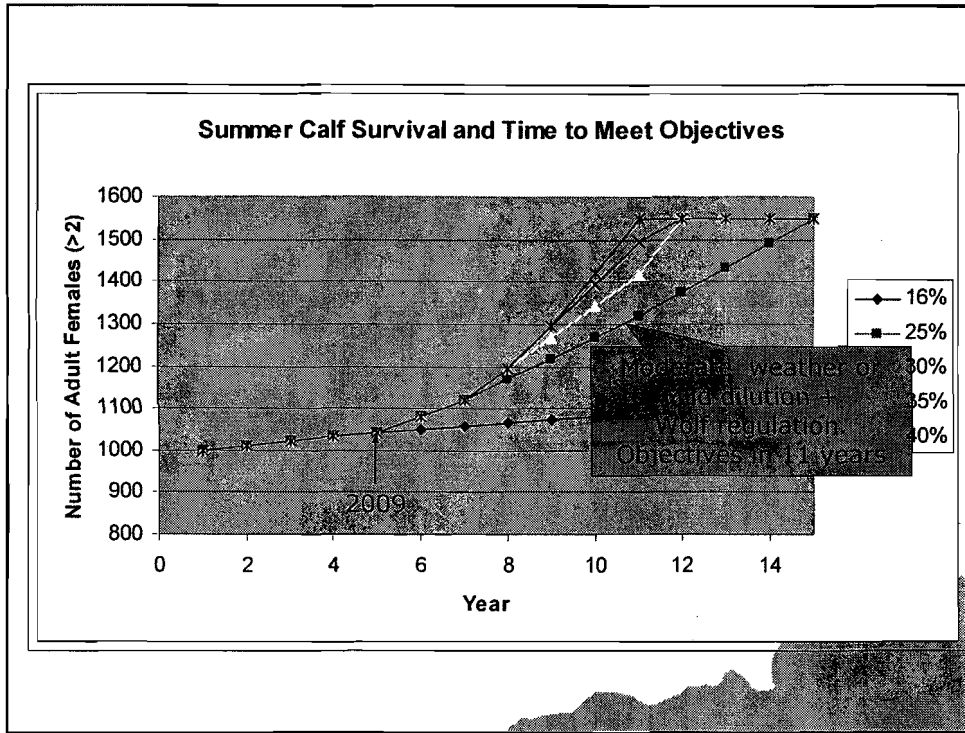
*Population model for female 16B
Moose*

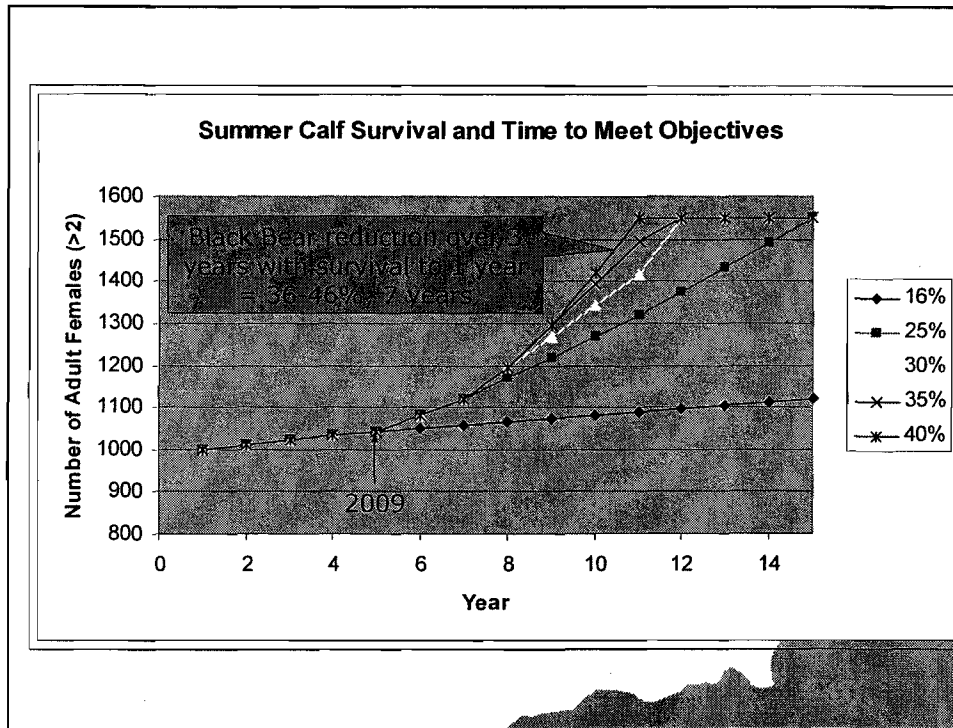
Shell Lk

Calves; survival [S _{6mo}] birth to 6 months =	0.15
Calves; survival [S _{1yr}] 6 months to 1 year =	0.88
Calves; survival [S _c] to first birthday =	0.132
Yearlings; survival [S _y] to second birthday =	0.94
2-yr-old adults; survival [S _{A2}] to subsequent birthday =	0.95
Adults older than 2 yrs; survival [S _{A>2}] to subsequent birthday =	0.91
A>2 Birth Rate [B _{A>2}] =	1.4
A2 Birth Rate [B _{A2}] =	0.5
Calf sex ratio [S _R] =	0.5

Summer Calf Survival and Time to Meet Objectives







16B Expectations

- ◆ Increasing the female segment of the moose population is a slow process regardless of IM methods
- ◆ Deep and persistent snow in winter and spring will delay population growth; especially to the north
- ◆ Bulls are increasing nicely; Harvestable surplus should increase annually

Proposal 239

Effect of the proposal:

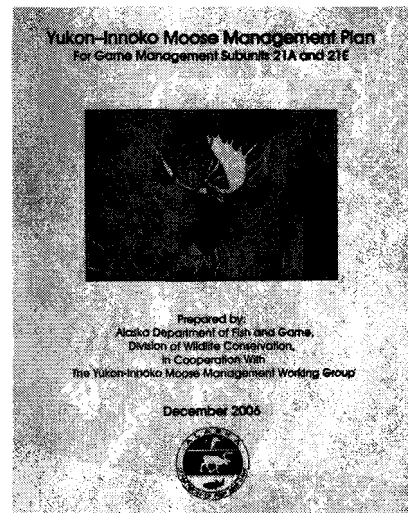
Establish a Predation Control Implementation Plan for Unit 21E

Component of the Adaptive Plan for Intensive Management for Unit 21E



Recommendation:

- **We recommend adopting the amended proposal 239A.**
 - To achieve review on the normal Region III board cycle we would need a 6 year review.
- **Adoption of this proposal is consistent with previous Board action.**
 - The Board endorsed the Yukon Innoko Moose Management Plan in March 2006
 - The Dept was instructed to develop the Adaptive Plan for Intensive Management of Moose in Game Management Unit 21E



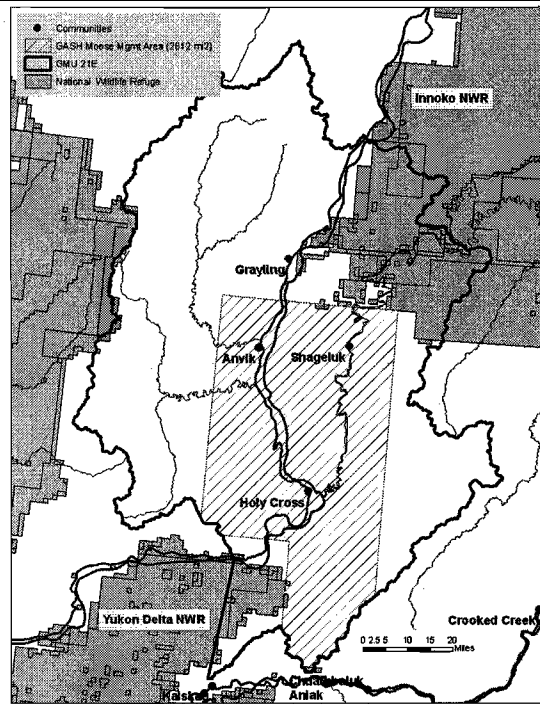
Moose, wolf, and bear population, harvest, and habitat data and other information were presented in the Adaptive Plan



Highlights of this proposal:

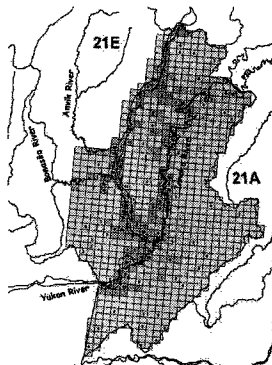
- 1) establishes a GASH MMA in Unit 21E
- 2) establishes Moose Survey Area population and harvest objectives
- 3) establishes a minimum number of wolves for Unit 21E
- 4) establishes the use of aerial methods for taking wolves under a control program
- 5) references the Adaptive Plan, including decision rules for implementing and suspending wolf control
- 6) establishes a timeframe

**Proposed
GASH MMA:
about 1/3
of Unit 21E
(2,612 mi²)**



**Moose management population and
harvest objective for
21E Moose Survey Area (5070 mi²)**

- **Population objective: a minimum of 5070**
- **Harvest objective: a minimum of 203**



Reduce the number of wolves

- **No fewer than 40 wolves remaining post control**
- **No fewer than 80% of pre-control wolf population**
- **Fixed wing pilots would be permitted to take wolves from the air and SDA**

Timeframe: Amended Proposal 239A

- **Beginning July 1, 2010**
- **Ending June 30, 2016**
- **Region III Board meeting would be scheduled in spring 2016 and review could take place on cycle.**
- **Annual updates**
- **A wolf predation control program can be in place in winter 2010-11, if criteria for implementation are met.**

Expected results of wolf reduction

- **60 – 80% wolf reductions for at least 4 consecutive years can be expected to reverse a perceived decline and allow moose population growth**
- **Other alternatives are unlikely to succeed.**

Proposal 239A Summary

- **Effect of the proposal: Would establish a predation control area within Unit 21E**
- **Department recommendation:
Adopt amended
proposal 239A**

March 7, 2009

RC 127

Members of the Board of Game,

I encourage you to support Proposals #180 and 177.

Proposal 180 was submitted by the Matanuska Valley Fish and Game Advisory Committee, where it had broad support both by the AC and by people speaking before the AC. This proposed season change would more closely align the seasons in Unit 14A, 14B, and 16A with the current moose season in Unit 13 and Unit 14C. In addition, ADF&G is proposing a similar season for Tier I season for Unit 16B. ADF&G supports this proposal as biologically sound, and while it would provide an opportunity to hunt 5 days later in September than what is currently allowed, it still represents a shorter season than has occurred in these Units in the past. In the past, the only one of these subunits that ever fell below (slightly) bull:cow objective ratio is Unit 14A -- and moose production from Unit 14A has always remained the highest from all of the sub Units through out the whole SF50 moose hunting regulation era. I encourage you to approve a change supported by the moose hunting public in this area.

Proposal #177 was again submitted by the Matanuska Valley Fish and Game Advisory Committee and seeks to create an opportunity to provide significantly more antlerless moose permits in Unit 14A in a biologically neutral manner. This proposal was crafted in consultation with ADF&G and has the support of the Department as being biologically feasible. Some may say that this opportunity would take away from the general public hunting opportunity as a whole and provide benefit to a special interest group -- specifically bowhunters -- The Matanuska Valley AC believes, instead -- that this proposal would provide benefit to ALL Unit 14A moose hunters who would like a higher opportunity to participate in Unit 14A antlerless moose hunts. The vast majority of the AC, who submitted and supported this proposal, are rifle hunters and not bowhunters, yet they saw and voted for the benefit provided by this proposed regulation. Please support.

Sincerely,



Andy Couch

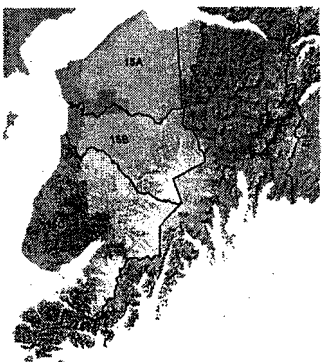
PO Box 155, Palmer, AK 99645 907-746-2199

Kenai Peninsula GMUs 7&15


Soldotna
Technician: Larry Lewis
Area Biologist: Jeff Selinger

Homer
Asst. Area Biologist: Thomas McDonough

Kenai Peninsula GMUs 7 & 15

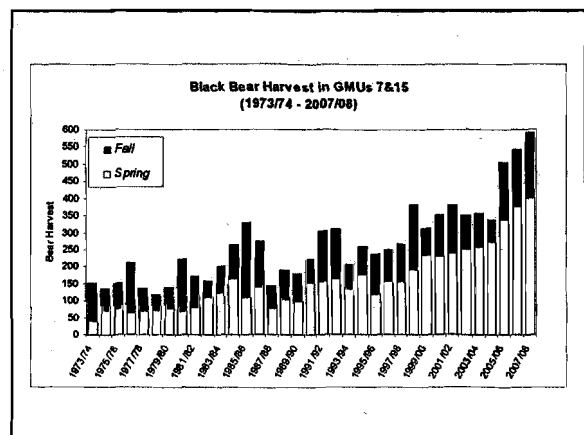
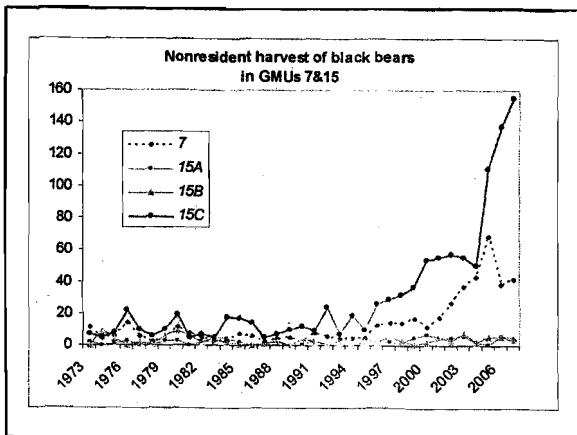
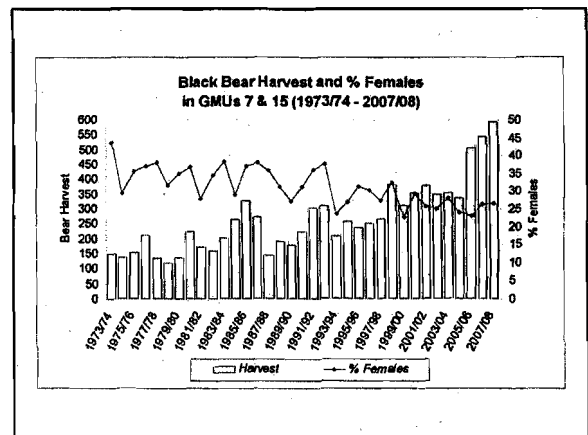


- 8,400 miles²
- Land ownership
 - ▶ 71% Federal
 - ▶ 29% State/Private/Borough/Native
- Human Population
 - ▶ >50,000



Black Bears

- Population size: 3000-4000+
- Increasing harvest
- 5 black bear proposals

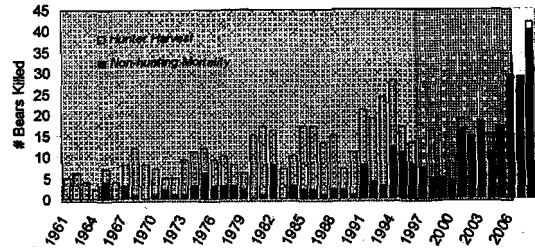


Brown Bears

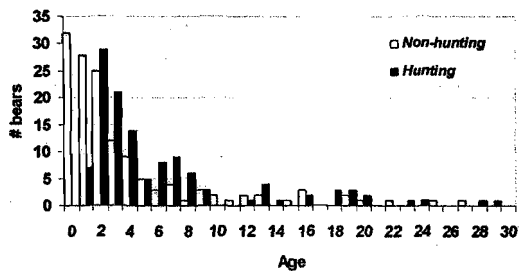
- Listed as a species of special concern in 1998
- Increase in defense of life or property kills
- 13 brown bear proposals



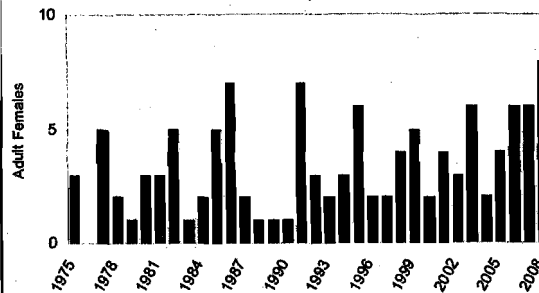
Known human-caused brown bear mortalities in GMUs 7 & 15, 1961-2006



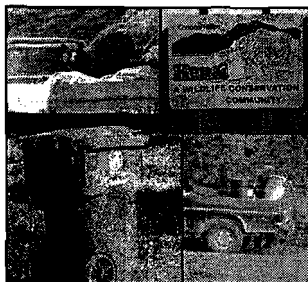
Known Ages of Kenai Brown Bear Mortalities 1990-2006



Adult Female Mortality of Brown Bears (≥5 years old) in GMUs 7 & 15 (1975-2008)



Wildlife Conservation Community Program



Kenai Brown Bear Research

- Adult female survival rate = 92%
- 1.8% growth rate



Mountain Goats

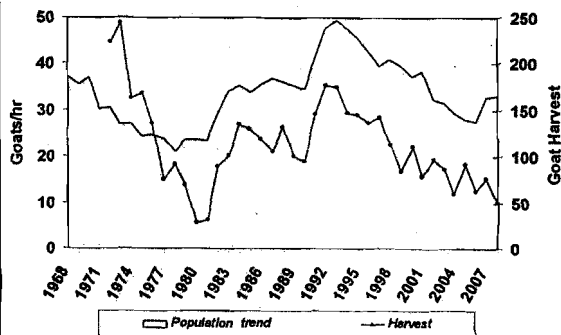
- Population decline from early 1990s
- Population size: 3500-4500
- 3 goat proposals



Individual goat hunt areas



Kenai goat harvest and population size trend
(# goats seen per hour) 1968 - 2008

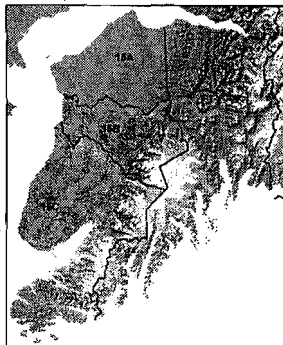
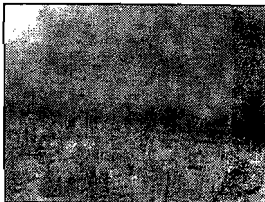


Moose

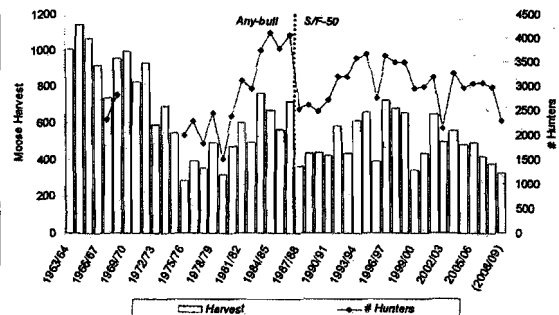
- Spike-Fork 50" antler restriction since 1987
- Population Estimates
 - ▶ 15A 1400-1900 moose (2007 survey)
 - ▶ 15B 800-1100 moose (2002 survey)
 - ▶ 15C 2500-3500 moose (2002 survey)
 - ▶ 7 700-900
- 8 moose proposals

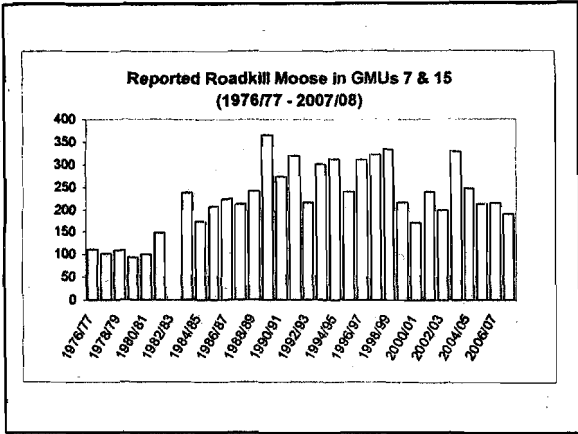


Fire history on the Kenai: 1950-2007



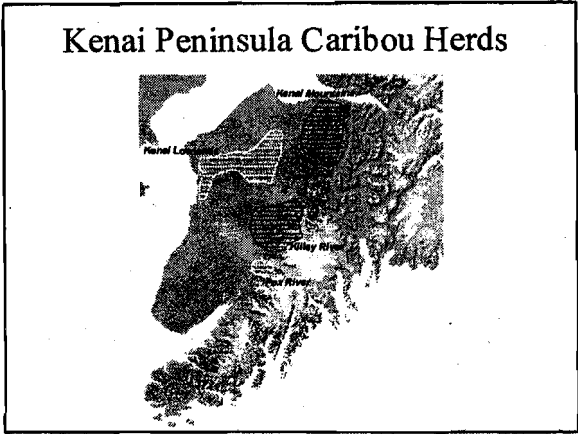
General Season Moose Harvest and Hunter Numbers
in GMUs 7 & 15 (1963/64 - 2008/09)





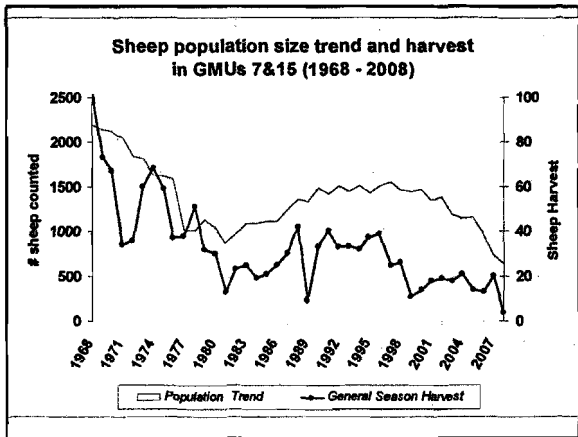
Caribou

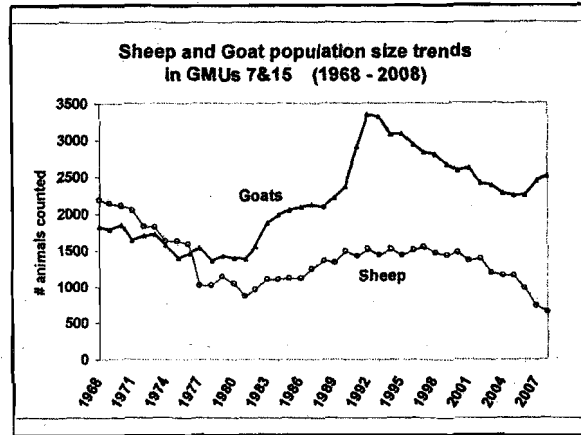
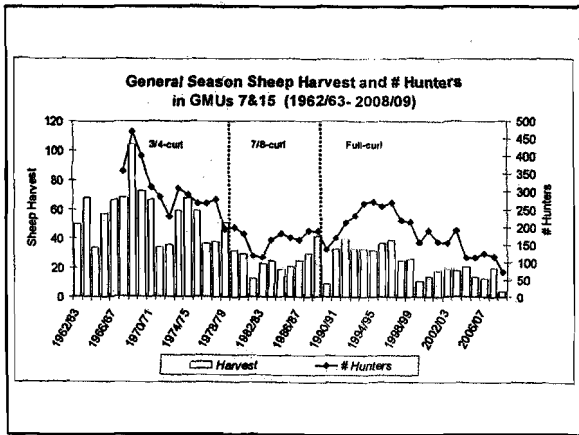
- 4 small herds
- All were reintroduced
- No caribou proposal



Sheep

- Population decline since mid 1990s
- Low harvest of full-curl rams
- 1 sheep proposal





Furbearers

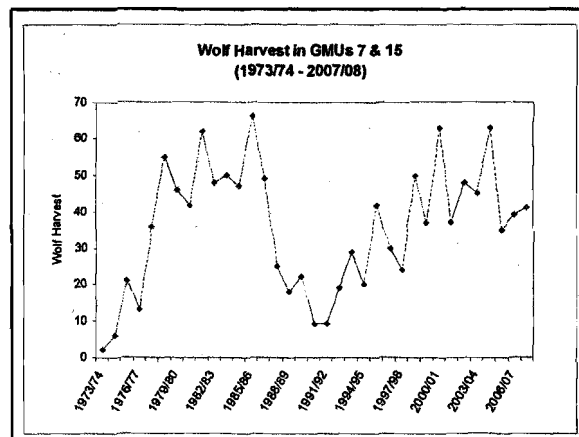
- Louse infestation (1982)
- 1st Lynx trapping season since 2001
- 5 proposals

Furbearer Harvest: 5-year average (2003 – 2007)

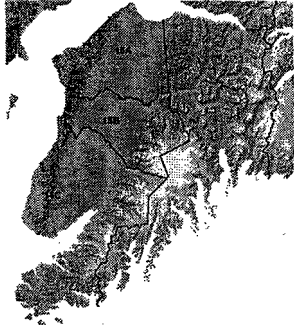
- Beaver: 106
- Marten: 107
- Wolverine: 21
- Otter: 45
- Wolf: 45

Wolves

- Extirpated from Kenai around 1915
- Population re-established in the 1960s
- Closed seasons from 1962-1973
- Trapping opened in 1974
- Kenai-wide range by 1975
- Lice infestation in 1982



Kenai Peninsula Game Proposals



Proposal 142

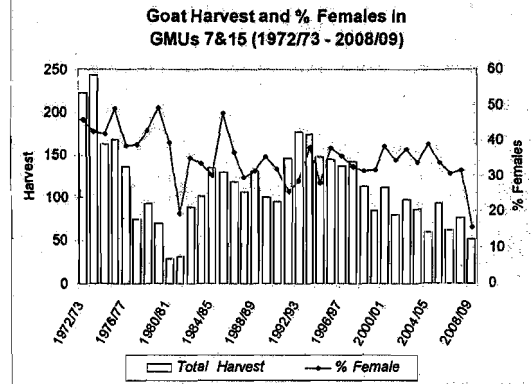
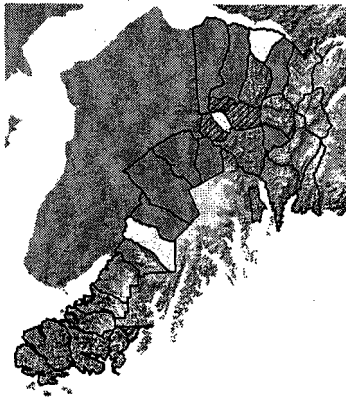
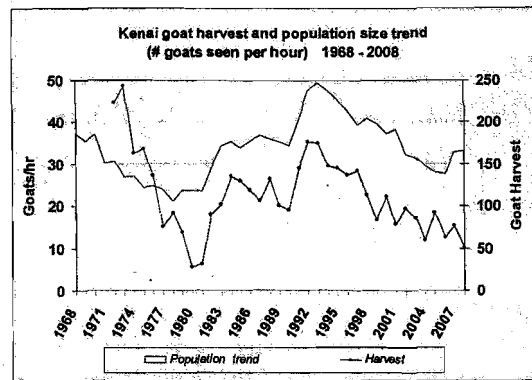
Effect : establish separate goat bag limit for hunters taking nannies in Units 7&15

Concern : loss of opportunity due to relatively high nanny harvest

Department position : adopt - staff proposal

Proposal 142 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Cooper Landing	Pass (9-0)
Homer	Pass (14-0)
Kenai/Soldotna	Pass (14-0)
Seward	Pass (6-1-1)



Proposal 144

Effect : opens Seward Closed Area and establish goat drawing hunt in Unit 7

Concern : missed hunting opportunity

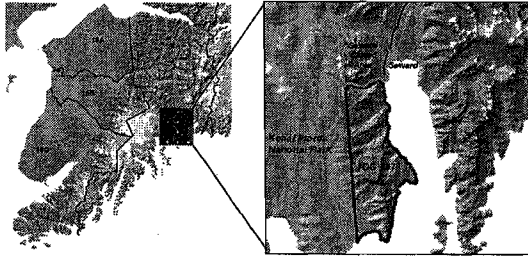
Department position : no recommendation

Proposal 144 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Cooper Landing	Pass (7-1-1)
Seward	Pass (7-0-1)
Kenai/Soldotna	NA
Homer	NA

Seward Closed Area

Closed to the taking of big game
except black bear



Proposal 143

Effect : require guide-client agreements for goat drawing hunts in Unit 7

Concern : lack of non-resident hunting

Department position : do not adopt

Proposal 143 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Cooper Landing	Fail (4-4-1)
Kenai/Soldotna	Fail (0-13)
Homer	NA
Seward	NA

Proposal 155

Effect : allocate some sheep, goat, and brown bear drawing permits to nonresidents in Unit 7

Concern : have fair allocation

Department position : no recommendation

Proposal 155 Advisory Committee Vote

Cooper Landing	Fail (0-9)
Central Peninsula	Fail (0-9)
Kenai/Soldotna	Fail (0-13)
Homer	NA
Seward	NA

Proposal 152

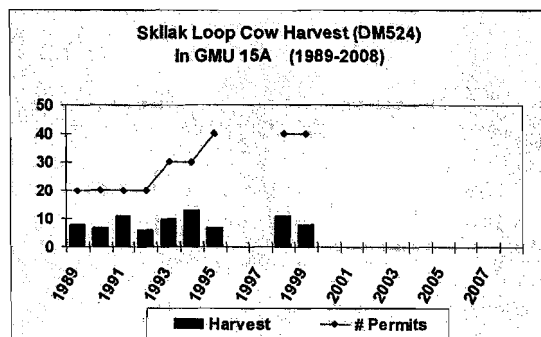
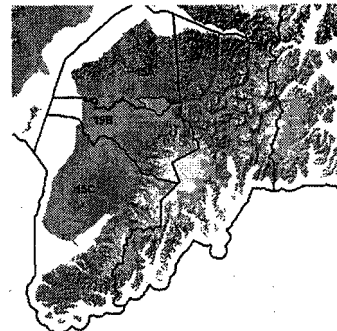
Effect : reauthorize antlerless moose season in Skilak Loop Management Area

Department position : adopt - staff proposal

Proposal 152 Advisory Committee Vote

Central Peninsula	Pass (8-1)
Cooper Landing	Pass (9-0)
Homer	Pass (13-1)
Kenai/Soldotna	Pass (15-0)
Seward	Pass (7-1)

Skilak Loop Area Cow Reauthorization



Proposal 148

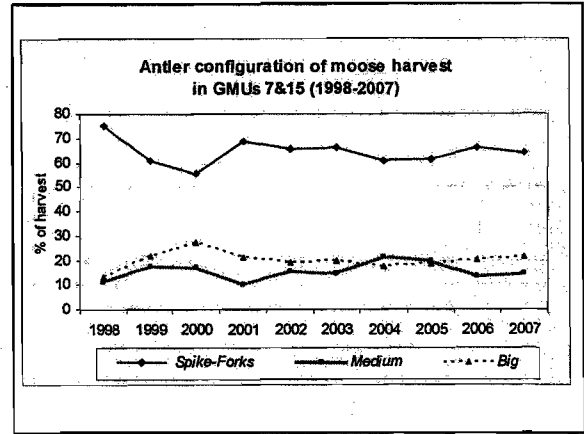
Effect : modifies season dates for moose in Units 7&15

Concern : decrease illegal kill when bulls in velvet and reduce chance of meat spoilage

Department position : do not adopt

Proposal 148 Advisory Committee Vote

Cooper Landing	Fail (1-8)
Central Peninsula	Fail (0-9)
Kenai/Soldotna	Fail (0-13)
Homer	NA
Seward	NA



Proposal 147

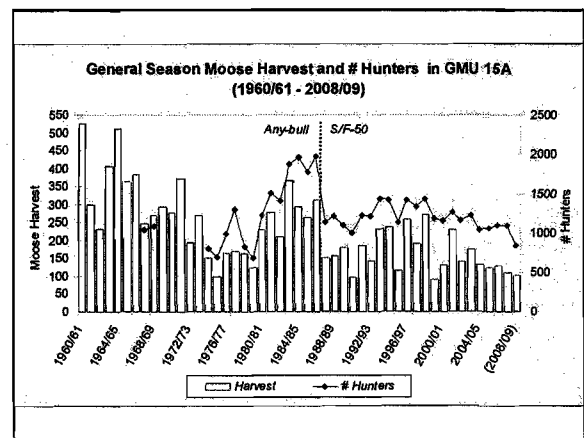
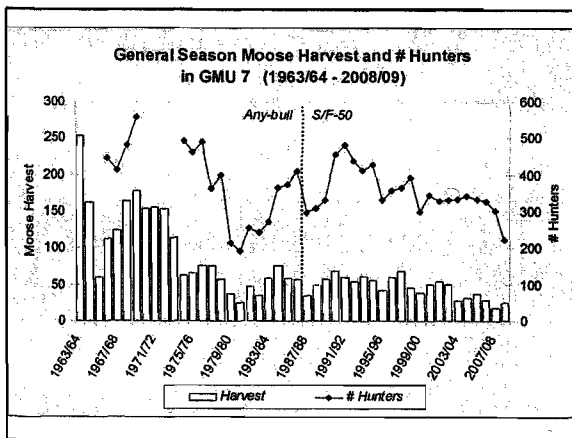
Effect : close moose season for 3 years in Units 7&15A

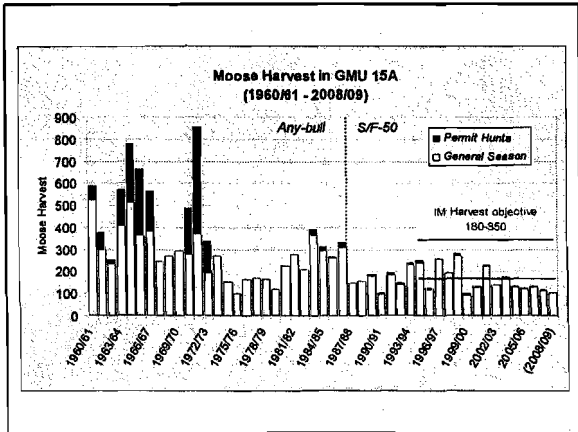
Concern : need to allow current moose population to recover

Department position : do not adopt

Proposal 147 Advisory Committee Vote

Central Peninsula	Pass (8-1)
Seward	Pass (8-0)
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA





Proposal 146

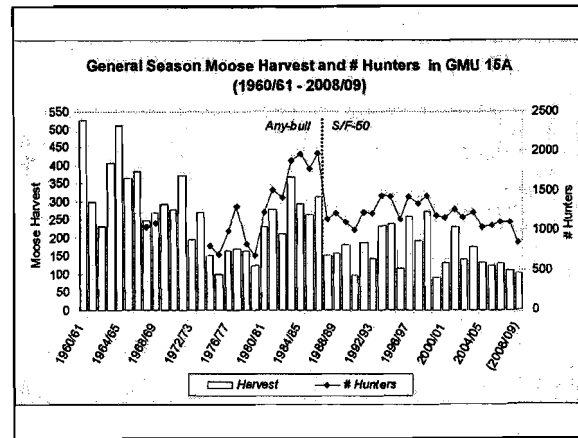
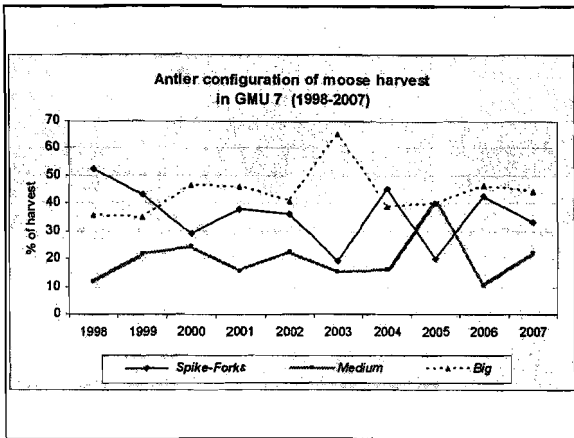
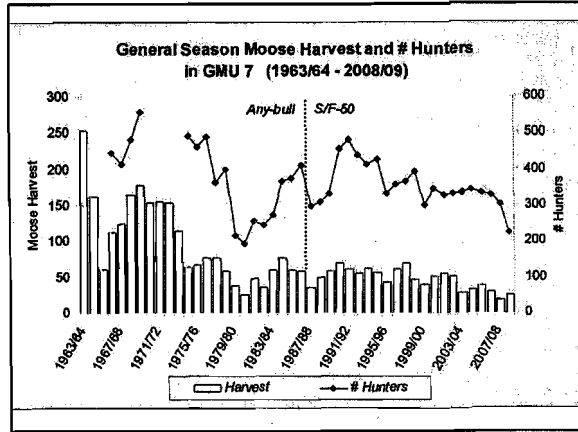
Effect : eliminate general season for moose and create a limited drawing hunt for S/F bulls only in Units 7&15A

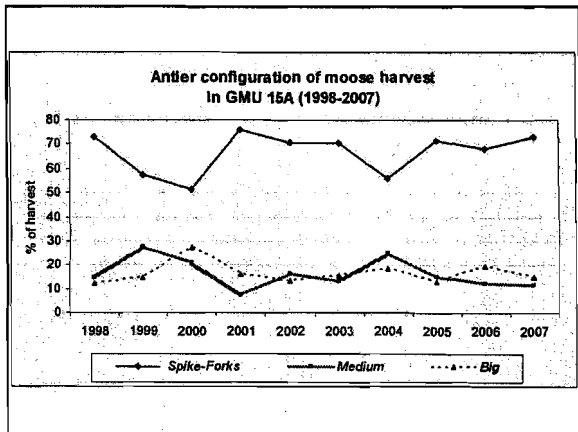
Concern : collapse of moose population and lack of bull recruitment

Department position : do not adopt

Proposal 146 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Seward	Pass (7-0-1)
Cooper Landing	Fail (0-9)
Kenai/Soldotna	Fail (0-13)
Homer	NA





Proposal 149

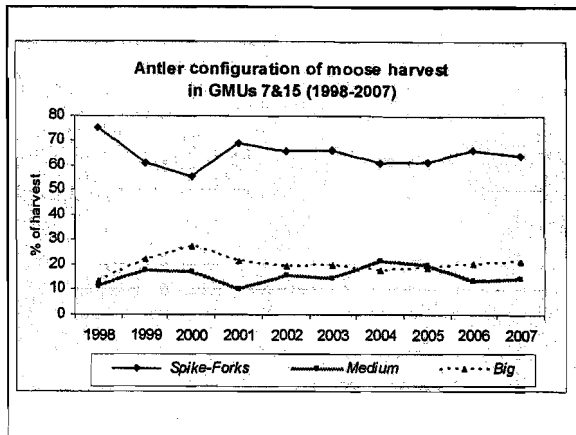
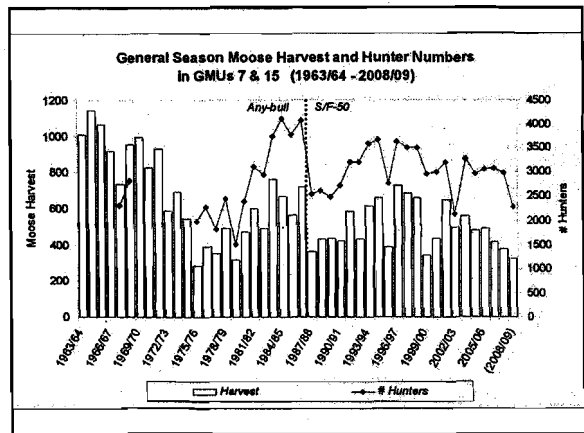
Effect : eliminate S/F bull portion of bag limit in Units 7&15

Concern : lack of bull recruitment

Department position : do not adopt

Proposal 149 Advisory Committee Vote

Cooper Landing	Fail (2-6-1)
Kenai/Soldotna	Fail (0-11-3)
Homer	Fail (0-14)
Central Peninsula	Pass ^A (7-2)
Seward	NA



Proposal 150

Effect : modify bag limit for moose drawing hunts in Unit 15B-east

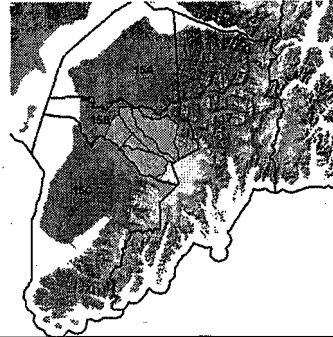
Concern : add some additional opportunity to offset declining harvest of trophy bulls

Department position : adopt - staff proposal

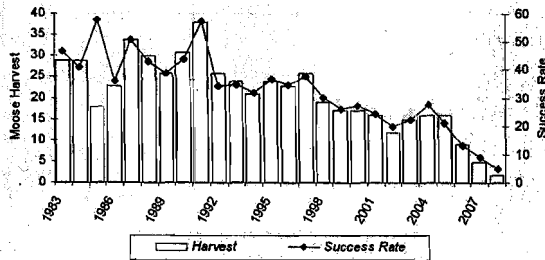
Proposal 150 Advisory Committee Vote

Cooper Landing	Pass (7-0-2)
Homer	Pass (14-0)
Kenai/Soldotna	Pass (12-1-1)
Seward	Pass (4-0-4)
Central Peninsula	Fail (3-6)

Unit 15B Drawing Permit Hunts



**Moose Harvest and Success Rate
in Unit 15B-East: 1983-2008**



Proposal 151

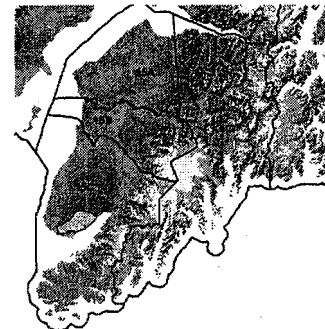
Effect : reauthorize antlerless moose season in a portion of Unit 15C

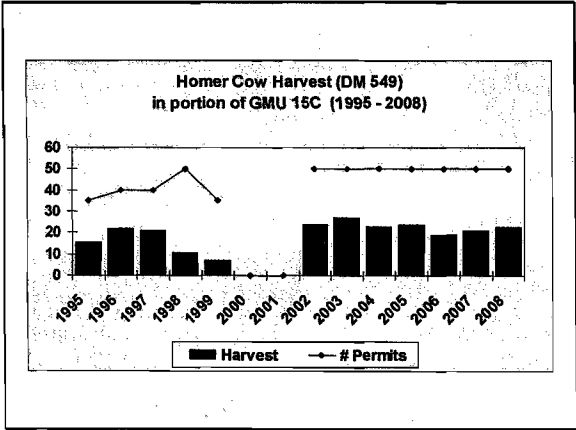
Department position : adopt-staff proposal

Proposal 151 Advisory Committee Vote

Cooper Landing	Pass (9-0)
Kenai/Soldotna	Pass (15-0)
Seward	Pass (7-1)
Homer	Pass (13-1)
Seldovia	Pass
Central Peninsula	Fail (1-8)

Homer Area Cow Reauthorization





Proposal 145

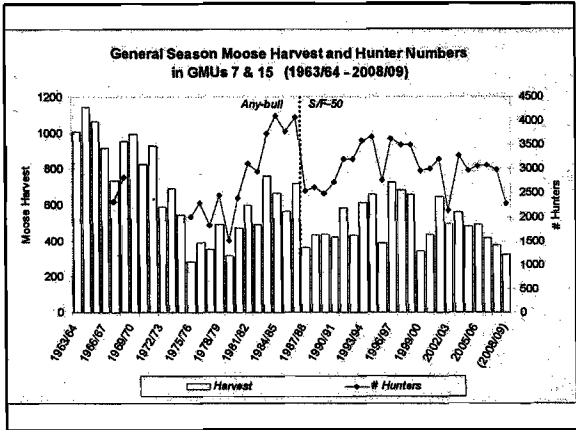
Effect : require sealing of moose antlers in Units 7&15

Concern : high harvest of illegal moose

Department position : do not adopt

Proposal 145 Advisory Committee Vote

Cooper Landing	Fail (0-9)
Seward	Fail (0-7-1)
Kenai/Soldotna	Fail (0-13)
Central Peninsula	Pass (8-1)
Homer	NA



Proposals 132

Effect : establish brown bear drawing hunt with minimum number of permits in Units 7&15

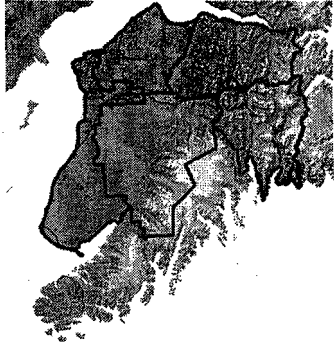
Concern : high bear numbers, predation on moose, human-bear conflicts

Department position : amend and adopt (TNA on props 130, 131, 133-141)

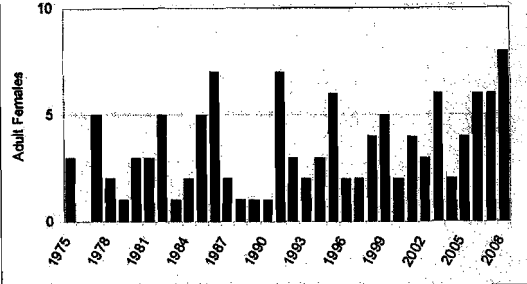
Proposal 132 Advisory Committee Vote

Seward	Pass (7-0-1)
Kenai/Soldotna	Pass (12-1)
Central Peninsula	NA
Cooper Landing	NA
Homer	NA

Brown Bear Drawing Hunt Areas



Adult Female Mortality of Brown Bears (25 years old) in GMUs 7 & 15 (1975-2008)



Proposals 129

Effect : open non-resident drawing hunt for brown bears with a guide-client agreement in Unit 7

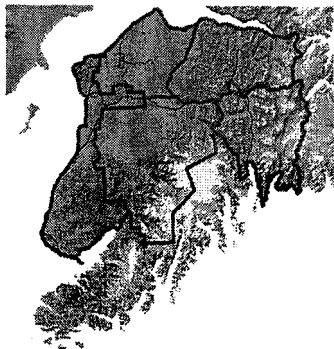
Concern : no non-resident season

Department position : amend and adopt

Proposal 129 Advisory Committee Vote

Central Peninsula	Fail (1-7-1)
Cooper Landing	Fail (1-8)
Seward	Fail (0-7-1)
Kenai/Soldotna	Fail (0-14)
Homer	NA

Brown Bear Drawing Hunt Areas



Proposals 130

Effect : establish general season brown bear hunt in Unit 7

Concern : growing brown bear population

Department position : TNA

Proposal 130 Advisory Committee Vote

Central Peninsula	NA
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 131

Effect : establish archery general season for brown bear in Unit 7

Concern : increasing number of DLP kills

Department position : TNA

Proposal 131 Advisory Committee Vote

Kenai/Soldotna	Pass ^A (8-2-3)
Central Peninsula	Fail (0-9)
Cooper Landing	NA
Homer	NA
Seward	NA

Proposals 141

Effect : open brown bear archery season in Unit 15

Concern : increasing number of DLP kills

Department position : TNA

Proposal 141 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Kenai/Soldotna	Fail (3-9-1)
Cooper Landing	NA
Homer	NA
Seward	NA

Proposals 136

Effect : open brown bear fall hunting season in Units 7&15

Concern : no biological reason for current restrictions

Department position : TNA

Proposal 136 Advisory Committee Vote

Central Peninsula	NA
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 140

Effect : open brown bear fall hunting season in Unit 15

Concern : increasing bear population

Department position : TNA

Proposal 140 Advisory Committee Vote

Central Peninsula	NA
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 133

Effect : establish brown bear drawing hunt with harvest of up to 20 reproductive age females in Units 7&15

Concern : increasing bear population

Department position : TNA

Proposal 133 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Cooper Landing	Pass ^A (9-0)
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 134

Effect : shift brown bear drawing hunt dates earlier in Units 7&15

Concern : current season too late in the fall

Department position : TNA

Proposal 134 Advisory Committee Vote

Central Peninsula	Pass ^A (9-0)
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 135

Effect : allow brown bear hunting in areas where DLPs occur in Unit 7&15

Concern : decisions should be made by local area biologists

Department position : TNA

Proposal 135 Advisory Committee Vote

Homer	Pass (14-0)
Central Peninsula	NA
Cooper Landing	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 137

Effect : create long general season and baiting season for brown bears in Units 7&15

Concern : current restrictions on bear hunting

Department position : TNA

Proposal 137 Advisory Committee Vote

Seward	Pass (5-1-2)
Central Peninsula	NA
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA

Proposals 138

Effect : shift brown bear season dates to allow taking of big boars in Unit 15

Concern : allow hunting dates that would focus on males

Department position : TNA

Proposal 138 Advisory Committee Vote

Central Peninsula	NA
Cooper Landing	NA
Homer	NA
Kenai/Soldotna	NA
Seward	NA

Proposals 139

Effect : increase the number of brown bear permits in Unit 15

Concern : harvestable surplus not being utilized

Department position : TNA

Proposal 139 Advisory Committee Vote

Homer	Pass ^A (14-0)
Central Peninsula	NA
Cooper Landing	NA
Kenai/Soldotna	NA
Seward	NA

Proposal 126

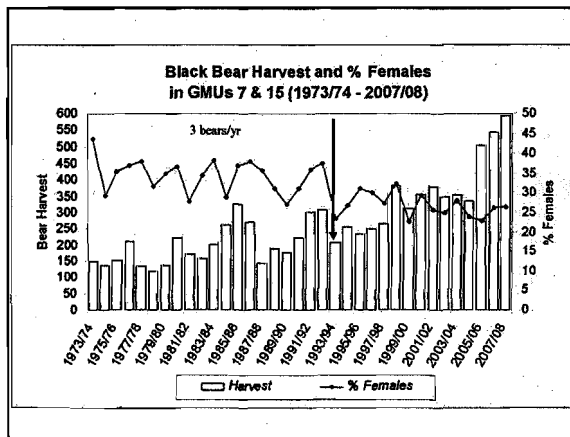
Effect : increase black bear bag limit to 3/yr in Units 7&15

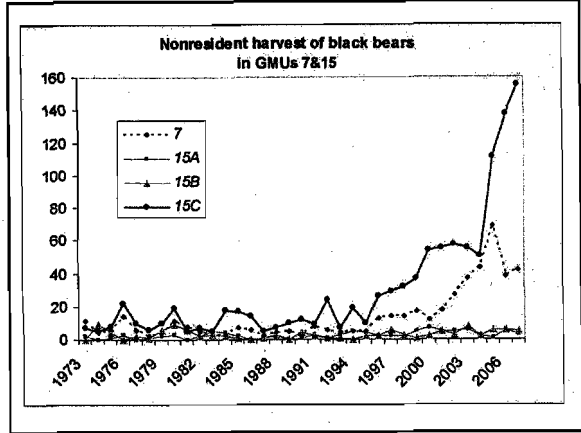
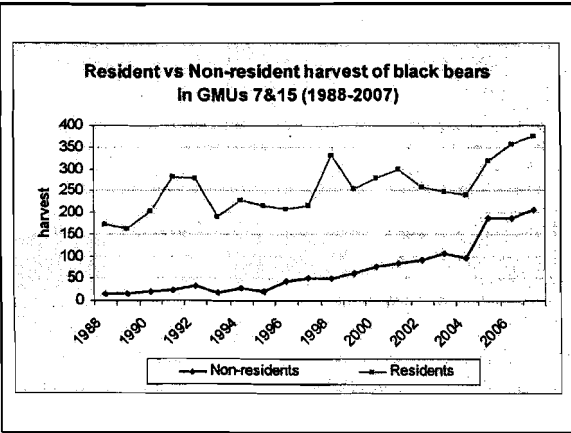
Concern : need for lower bear numbers to reduce problems and help moose

Department position : amend and adopt

Proposal 126 Advisory Committee Vote

Central Peninsula	Pass ^A (8-1)
Kenai/Soldotna	Pass (9-2-3)
Seward	Pass (7-0-1)
Cooper Landing	Fail (1-8)
Homer	Fail (1-11-2)





Proposal 127

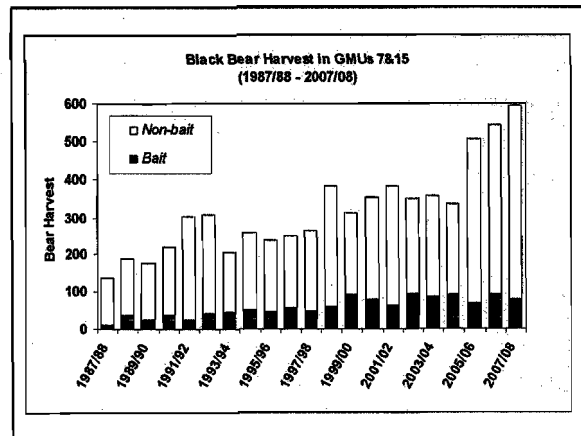
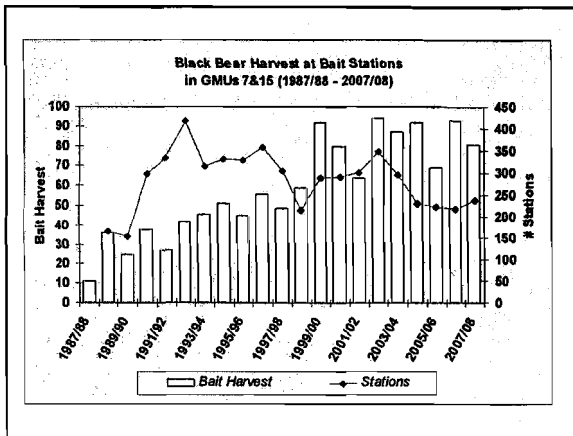
Effect : adds 15 days to black bear bait season and increases bag limit to 3 in Units 7&15

Concern : lost opportunity, need to decrease bear numbers to help moose

Department position : do not adopt

Proposal 127 Advisory Committee Vote

Central Peninsula	Fail (1-8)
Cooper Landing	Fail (1-8)
Homer	Fail (1-13)
Seward	Pass (5-2-1)
Kenai/Soldotna	NA



Proposal 124

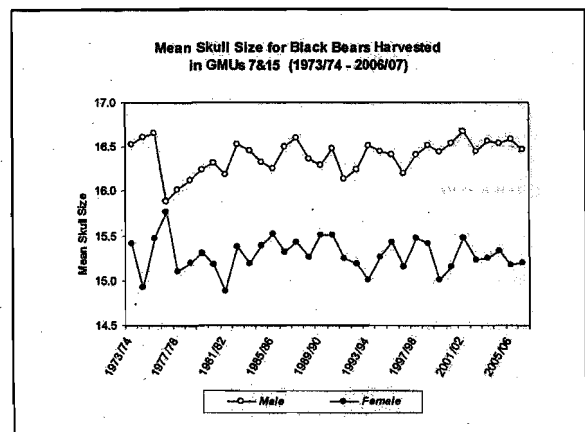
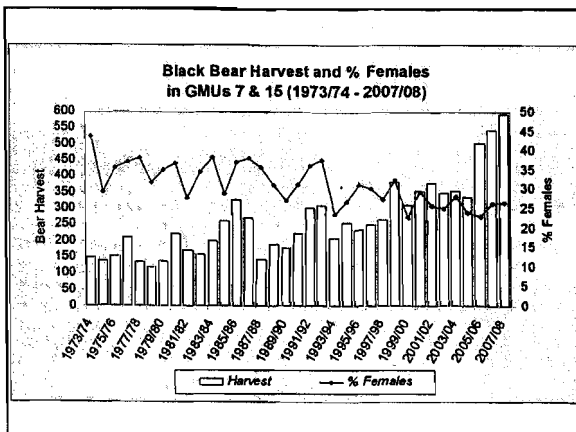
Effect : remove salvage requirement for black bear hide and evidence of sex in Units 7&15

Concern : unnecessary burden of hide salvage

Department position : do not adopt

Proposal 124 Advisory Committee Vote

Central Peninsula	Pass ^A (9-0)
Cooper Landing	Pass ^A (7-2)
Kenai/Soldotna	Pass ^A (11-3)
Seward	Fail (0-6-1)
Homer	NA



Proposal 128

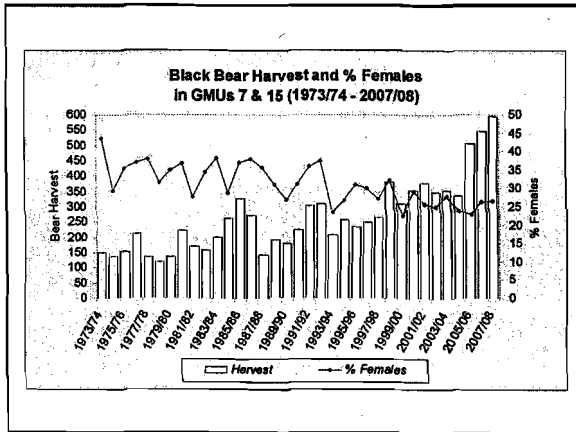
Effect : allow for sale of black bear hides, reclassify as furbearer in Unit 15

Concern : need to decrease bear numbers to help moose

Department position : do not adopt

Proposal 128 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Cooper Landing	Pass (9-0)
Kenai/Soldotna	Pass ^A (14-0)
Homer	Fail (4-6-4)
Seward	NA



Proposal 125

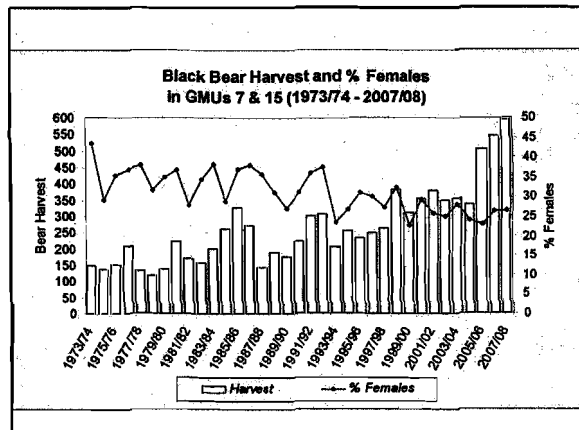
Effect : allow for sale of black bear hides and skulls under predator management plan in Units 7&15

Concern : need for lower bear numbers and increased moose survival

Department position : do not adopt

Proposal 125 Advisory Committee Vote

Central Peninsula	Pass ^A (9-0)
Seward	Pass ^A (7-0-1)
Kenai/Soldotna	Fail (0-13)
Homer	NA
Cooper Landing	NA



Proposal 153

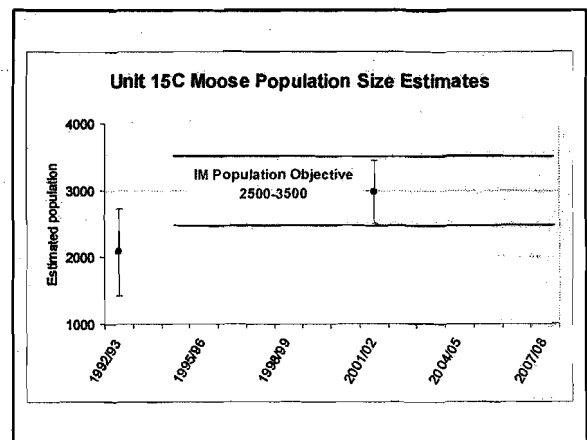
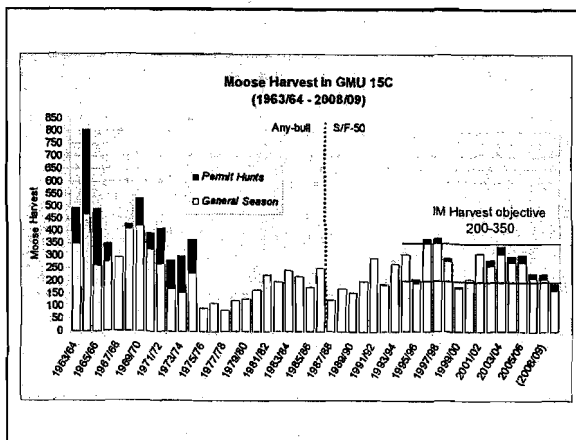
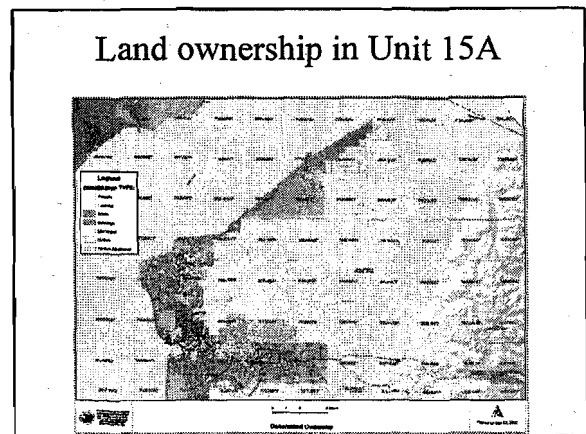
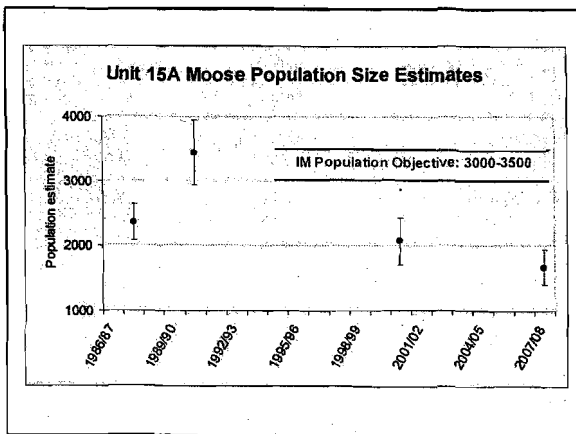
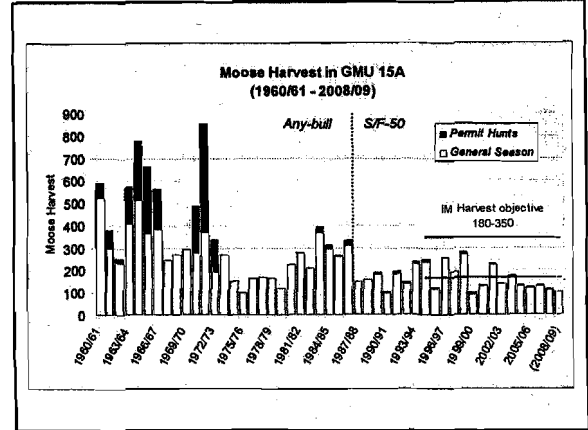
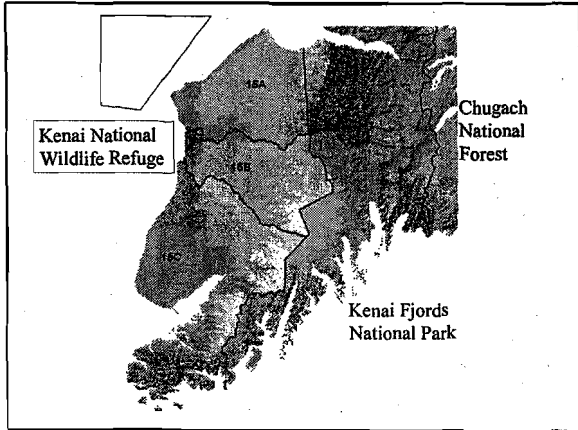
Effect : establish a wolf control plan in Units 7&15

Concern : declining moose and sheep populations

Department position : do not adopt

Proposal 153 Advisory Committee Vote

Cooper Landing	Fail (1-5-3)
Homer	Fail (2-11-1)
Kenai/Soldotna	Fail (0-11-2)
Central Peninsula	Pass (9-0)
Seward	Pass (7-0-1)



Proposal 154

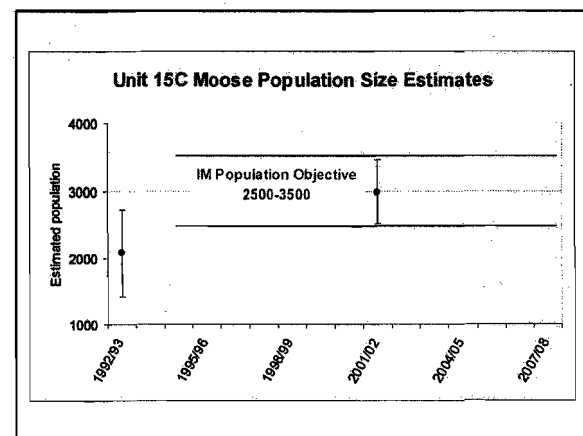
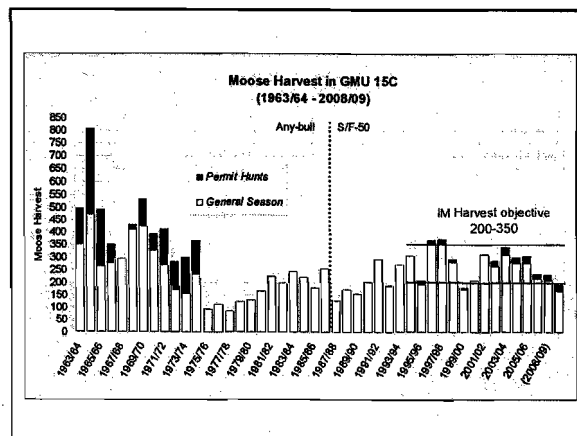
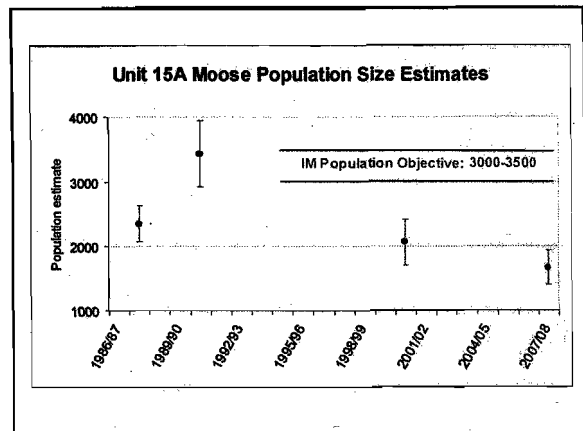
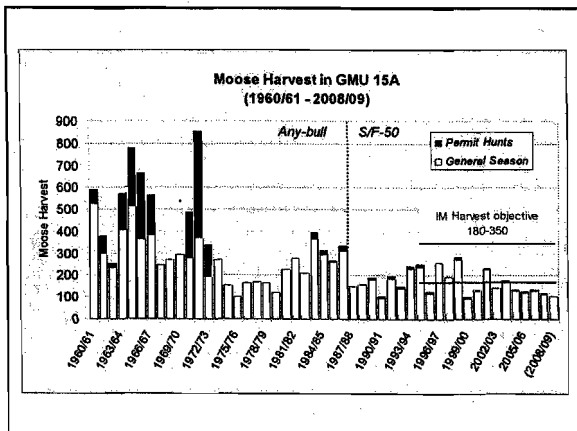
Effect : implement predator control area in Units 15A&C

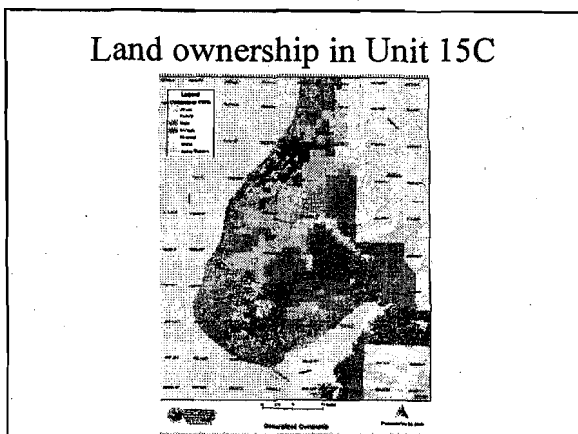
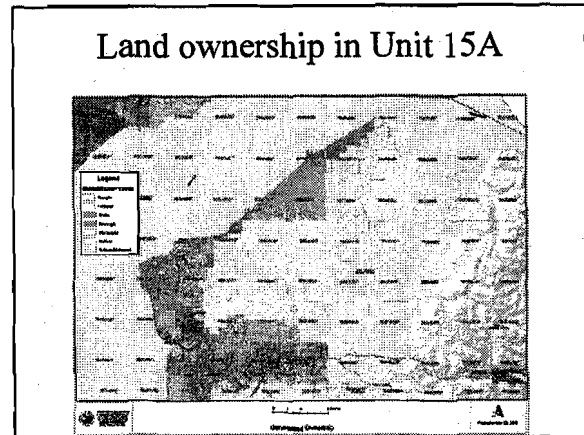
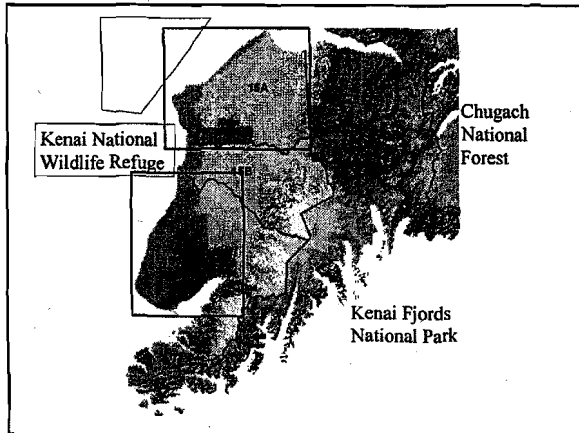
Concern : low moose numbers

Department position : do not adopt

Proposal 154 Advisory Committee Vote

Cooper Landing	Fail (2-3-4)
Homer	Fail (2-12)
Central Peninsula	Pass (9-0)
Kenai/Soldotna	NA
Seward	NA





Proposal 156

Effect : removes Seward Closed Area restriction and overrides City Ordinance to allow hunting in city by registration permit

Concern : loss of hunting opportunity

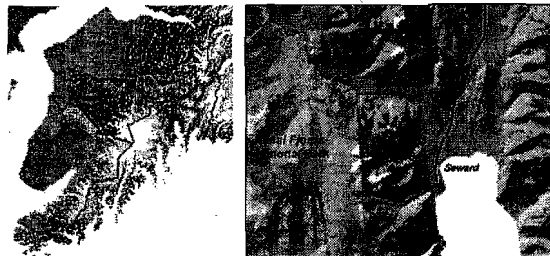
Department position : no recommendation

Proposal 156 Advisory Committee Vote

Seward	Pass (6-1-1)
Cooper Landing	Fail (3-6)
Central Peninsula	NA
Homer	NA
Kenai/Soldotna	NA

Seward Closed Area

Closed to the taking of big game
except black bear



Proposal 117

Effect : modify sea duck season and bag limits in Unit 15

Concern : local population depletions from guided hunting

Department position : do not adopt

Proposal 117 Advisory Committee Vote

Cooper Landing	Fail (0-9)
Central Peninsula	Fail (0-9)
Kenai/Soldotna	Fail (0-13)
Seward	Fail (0-7-1)
Homer	NA

Proposal 118

Effect : close season for sandhill cranes in Unit 15

Concern : hunting impacts on small population

Department position : do not adopt

Proposal 118 Advisory Committee Vote

Cooper Landing	Fail (0-9)
Central Peninsula	Fail (0-9)
Homer	Fail (0-12)
Kenai/Soldotna	Fail (0-13)
Seward	NA

Proposal 119

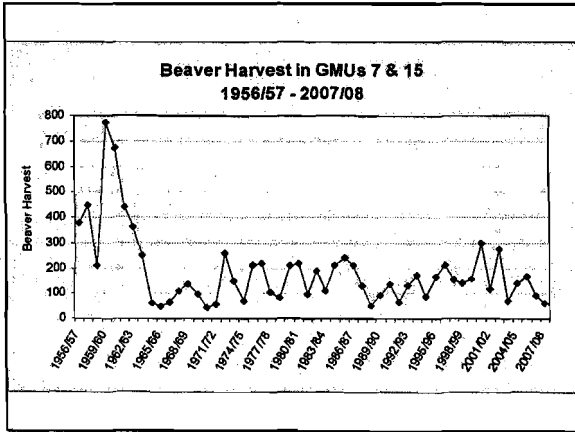
Effect : lengthen beaver trapping season in Units 7&15

Concern : missed opportunity

Department position : do not adopt

Proposal 119 Advisory Committee Vote

Cooper Landing	Pass (9-0)
Kenai/Soldotna	Pass ^A (13-0)
Central Peninsula	Fail (3-6)
Homer	Fail (0-12-2)
Seward	NA



Proposal 120

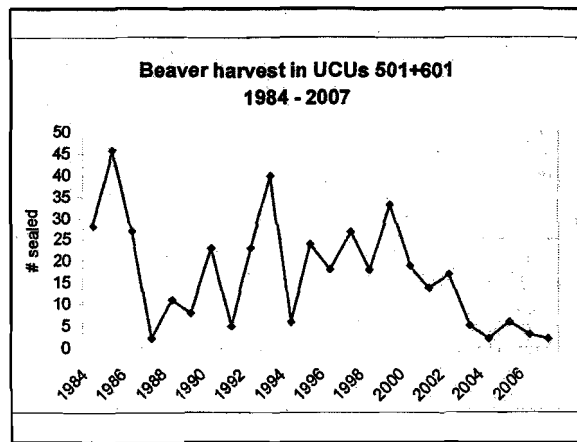
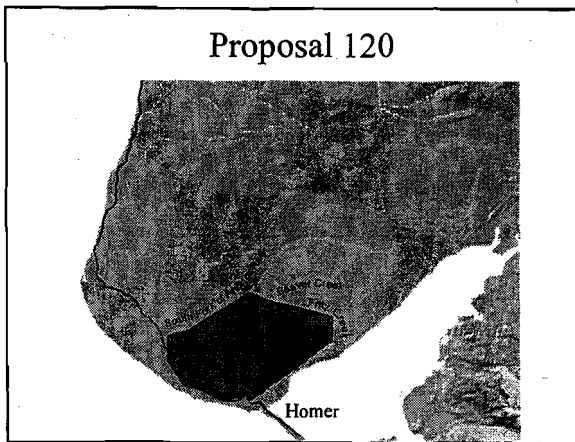
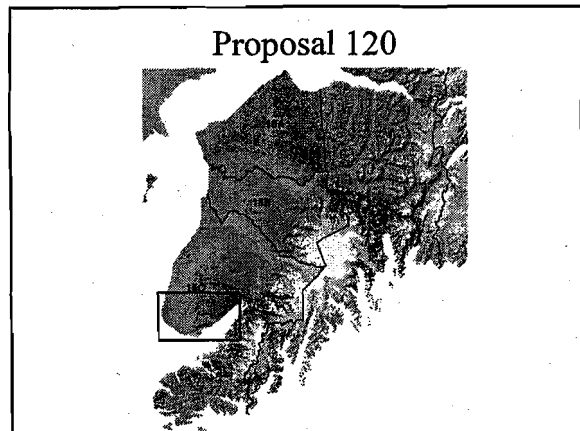
Effect : close beaver trapping season in portion of Unit 15C around Homer

Concern : local population declines

Department position : do not adopt

Proposal 120 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Homer	Fail (0-14)
Cooper Landing	NA
Kenai/Soldotna	NA
Seward	NA



Proposal 121

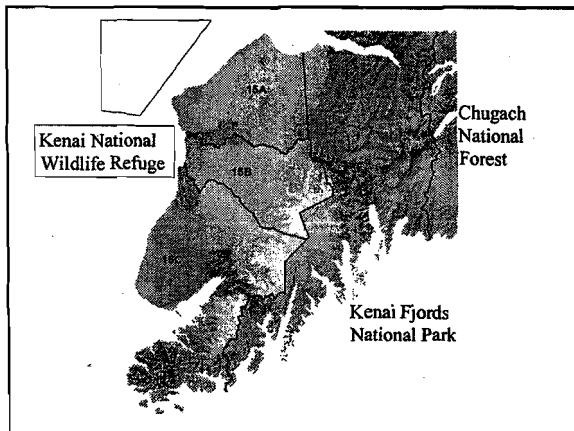
Effect : close fox trapping season in Units 7&15

Concern : very low population levels

Department position : do not adopt

Proposal 121 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Cooper Landing	Fail (0-8-1)
Kenai/Soldotna	Fail (0-14)
Seward	Fail (2-4-2)
Homer	NA



Proposal 122

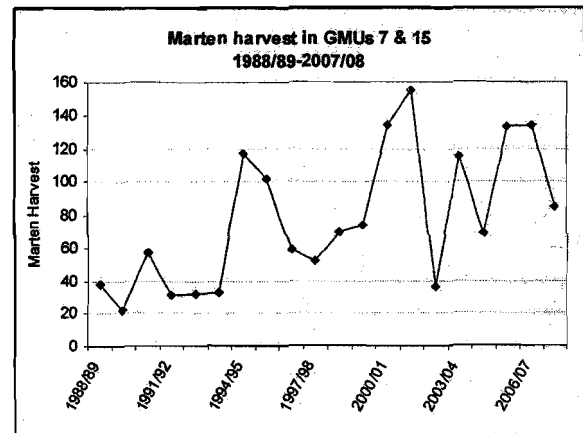
Effect : restricts seasons and bag limits for marten trapping in Unit 15

Concern : Localized depletions

Department position : do not adopt

Proposal 122 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Cooper Landing	Fail (0-9)
Kenai/Soldotna	Fail (0-14)
Seward	Fail (0-7-1)
Homer	NA



Proposal 123

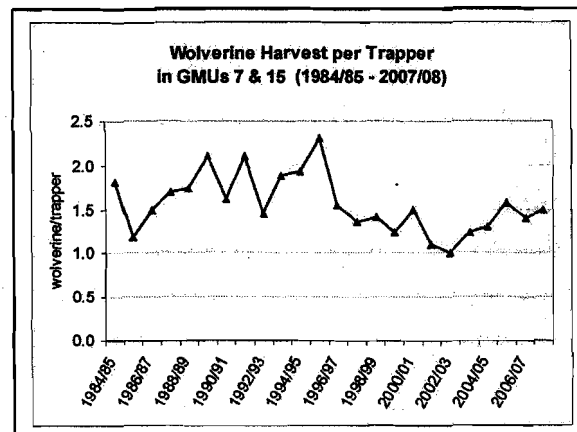
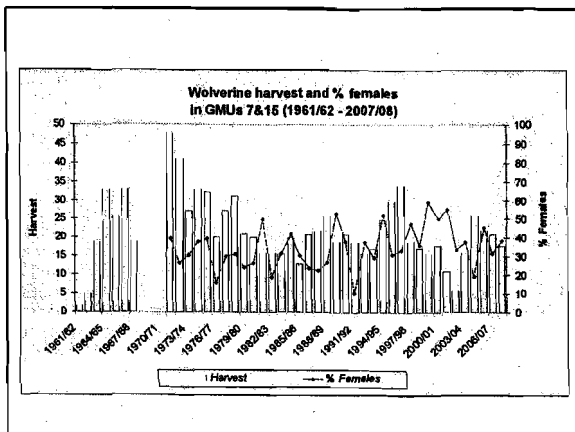
Effect : restricts season and bag limit for wolverine trapping in Unit 15

Concern : Localized depletions

Department position: do not adopt

Proposal 123 Advisory Committee Vote

Central Peninsula	Fail (0-9)
Cooper Landing	Fail (0-9)
Homer	Fail (0-14)
Seward	Fail (0-7-1)
Kenai/Soldotna	Fail (0-13)



Proposal 157

Effect : modify trapping season ending date to accommodate leap years in Units 7&15

Concern : confusion with current regulations

Department position : adopt

Proposal 157 Advisory Committee Vote

Central Peninsula	Pass (9-0)
Cooper Landing	Pass (9-0)
Kenai/Soldotna	Pass ^A (14-0)
Homer	NA
Seward	NA

STATE OF ALASKA

ALASKA BOARD OF GAME

RC 130

SARAH PALIN, GOVERNOR

P.O. Box 115526
Juneau, AK 99811-5526
Fax: 907-465-6094

March 6, 2009

Anchorage Assembly
Harriet Drummond, Chair
632 W. 6th Avenue, Suite 250
Anchorage, AK 99501

Dear Chairwoman Drummond:

The Board of Game serves as the regulatory body for wildlife for the State of Alaska. We would like to recognize and commend the city's recent interest and concern regarding issues of urban wildlife, user conflicts, and public safety. We, too, believe an opportunity and responsibility lies in front of all the public safety, land management, people management, and resource management agencies relative to wildlife (bears) in Anchorage.


In urban areas, both in Alaska and Canada, where "progress" has been made on urban wildlife issues, community involvement and ownership relative to "people management" has been key to this success. Thus, we would like to identify some key roles the municipality of Anchorage can play in mitigating this issue:

- 1) Pass and enforce a garbage ordinance specifically targeting the potential attraction/feeding of wildlife. ADF&G staff have confirmed their willingness to help the municipality develop such regulations.
- 2) Collaborate with ADF&G on a survey to assess what the residents of Anchorage want/expect relative to wildlife, development, recreation.
- 3) This survey could provide a basis for an inclusive planning process that involves all the relevant entities (e.g. DNR State Parks, BLM, Elmendorf AB, Fort Richardson, Department of Public Safety, ADF&G, the municipality, NGOs, the Board of Game, business/industry, and the public).
- 4) Participate in the Board of Game process. This is the public process by which wildlife regulations are developed and passed.
- 5) Support relaxation of discharge of firearms ordinances on city owned and managed lands in conjunction with hunting liberalizations (most likely for moose) passed by the Board of Game.

- 6) Continue to manage trails in Anchorage for multiple uses and utilize temporary or seasonal closures as appropriate and enforce those closures when they occur.
- 7) Continue to support and participate with the Anchorage Bear Committee and continue to support educational efforts.
- 8) Appropriately acknowledge wildlife and public safety issues in Title 21 and park ordinances and individual planning and zoning decisions to avoid exacerbating existing problems.
- 9) Support increased staffing and operational support for ADF&G.

Thank you for your time and interest in the wildlife-related opportunities and challenges that lie in front of us collectively. We encourage you to continue your productive relationship with the staff of the Alaska Department of Fish and Game. Please contact Dr. Grant Hilderbrand, Regional Supervisor for the Division of Wildlife Conservation, in this regard (267-2190, grant.hilderbrand@alaska.gov).

Sincerely,



Cliff Judkins,
Chairman

cc: Mayor Claman
Assemblyman Flynn
Assemblywoman Ossiander
Assemblyman Starr
Assemblyman Coffey
Assemblywoman Gray-Jackson
Assemblywoman Selkregg
Assemblyman Gutierrez
Assemblywoman Johnston
Assemblyman Birch
Bob Bell, Board of Game
Doug Larsen, ADF&G
Grant Hilderbrand, ADF&G

STATE OF ALASKA

ALASKA BOARD OF GAME

RC 131
SARAH PALIN, GOVERNOR

P.O. Box 115526
Juneau, AK 99811-5526
Fax: 907-465-6094

March 6, 2009

Municipality of Anchorage
Matt Claman, Acting Mayor
632 W. 6th Ave.
Anchorage, AK 99501

Dear Mayor Claman:

The Board of Game serves as the regulatory body for wildlife for the State of Alaska. We would like to recognize and commend the city's recent interest and concern regarding issues of urban wildlife, user conflicts, and public safety. We, too, believe an opportunity and responsibility lies in front of all the public safety, land management, people management, and resource management agencies relative to wildlife (bears) in Anchorage.


In urban areas, both in Alaska and Canada, where "progress" has been made on urban wildlife issues, community involvement and ownership relative to "people management" has been key to this success. Thus, we would like to identify some key roles the municipality of Anchorage can play in mitigating this issue:

- 1) Pass and enforce a garbage ordinance specifically targeting the potential attraction/feeding of wildlife. ADF&G staff have confirmed their willingness to help the municipality develop such regulations.
- 2) Collaborate with ADF&G on a survey to assess what the residents of Anchorage want/expect relative to wildlife, development, recreation.
- 3) This survey could provide a basis for an inclusive planning process that involves all the relevant entities (e.g. DNR State Parks, BLM, Elmendorf AB, Fort Richardson, Department of Public Safety, ADF&G, the municipality, NGOs, the Board of Game, business/industry, and the public).
- 4) Participate in the Board of Game process. This is the public process by which wildlife regulations are developed and passed.
- 5) Support relaxation of discharge of firearms ordinances on city owned and managed lands in conjunction with hunting liberalizations (most likely for moose) passed by the Board of Game.

- 6) Continue to manage trails in Anchorage for multiple uses and utilize temporary or seasonal closures as appropriate and enforce those closures when they occur.
- 7) Continue to support and participate with the Anchorage Bear Committee and continue to support educational efforts.
- 8) Appropriately acknowledge wildlife and public safety issues in Title 21 and park ordinances and individual planning and zoning decisions to avoid exacerbating existing problems.
- 9) Support increased staffing and operational support for ADF&G.

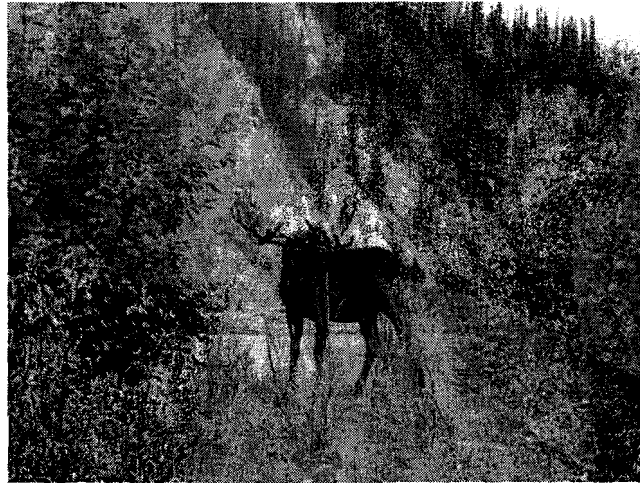
Thank you for your time and interest in the wildlife-related opportunities and challenges that lie in front of us collectively. We encourage you to continue your productive relationship with the staff of the Alaska Department of Fish and Game. Please contact Dr. Grant Hilderbrand, Regional Supervisor for the Division of Wildlife Conservation, in this regard (267-2190, grant.hilderbrand@alaska.gov).

Sincerely,

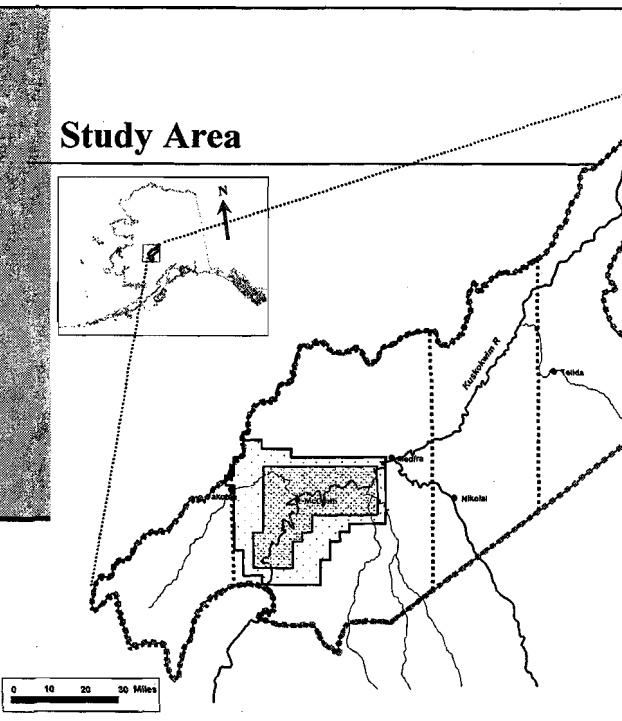
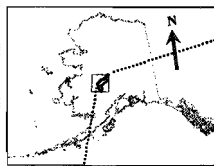

Cliff Judkins,
Chairman

cc: Anchorage Assembly
Bob Bell, Board of Game
Doug Larsen, ADF&G
Grant Hilderbrand, ADF&G

Response of Moose to Experimental Removal of Bears and Public Wolf Control Efforts in Western Interior Alaska



Study Area



19D East (8,513 mi²)

*the BOG has authorized the Department to conduct predator removals within this entire area.

EMMA (528 mi²)

*75 black bears and 6 grizzly bears (>1 yr. of age) captured and removed May 11-31, 2003 (83% by the median calving date, May 22); 34 black bears (7 recaptures) and 1 grizzly bear captured and removed May 12-22, 2004 (100% by median calving date). In total, the department removed 102 individual black bears and 7 grizzly bears from this area.

*34 black bears were captured using aerial search followed by helicopter capture; 15 black bears were captured using leg snares. Three grizzly bears were captured using aerial search, 2 with leg snares, and 2 with radio-equipped neck snares.

Wolf control zone (RY03-RY06

3,210 mi², RY07-present 6,245 mi²)

*public aerial wolf reduction was allowed between RY03 and present in these areas. The intent was to focus control efforts on those wolves that resided/utilized the EMMA. Take of wolves in the 3,210 mi² area has been:

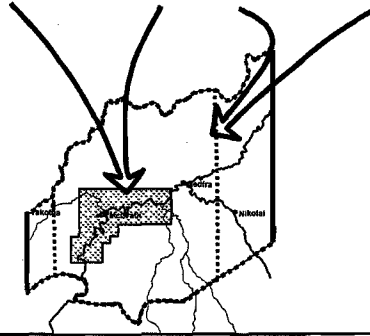
Year	Total take	SDA take
2003/04	27	17
2004/05	22	14
2005/06	11	4
2006/07	12	2
2007/08	19	17

Expanded EMMA (1,118 mi²)

*this area best captures the moose population in the McGrath area, based on radio collar data and population modeling.

Estimates of black bears and wolves in the McGrath area pre- and post-removal

	Black Bears (522mi ² EMMMA)		Wolves (3,210mi ² wolf control area)	
	Population estimate	Density (bears/100mi ²)	Population estimate	Density (wolves/100mi ²)
Pre-removal	100	19	47	1.5
Immediate post-removal	7	1.3	11	0.3
Most recent estimate	69	13	11	0.3

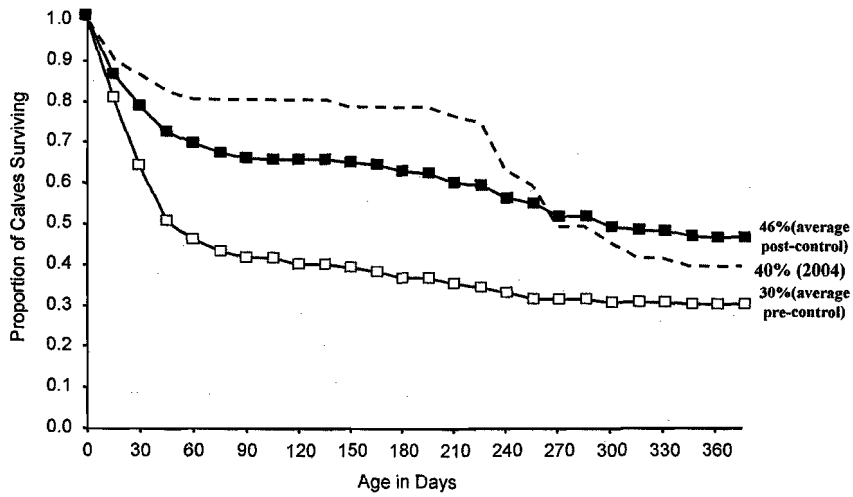


Causes of calf mortality

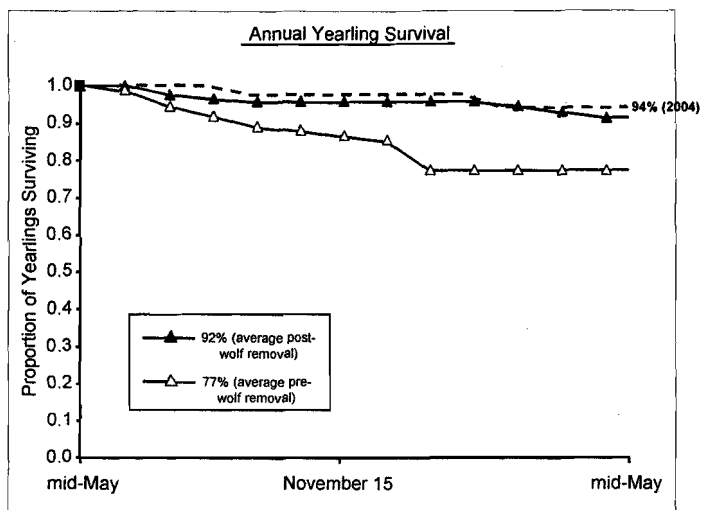
Number calf deaths from birth to September/Total number deaths 1st yr-of-life

	Cohort (May-May)	Black bear	Grizzly bear	Wolf	Non-predation	Illegal take	Unknown cause	# of Calves monitored	Annual survival
No predator removal	2001 cohort	18/18	5/5	4/9	1/1	0/0	1/1	51	33%
	2002 cohort	23/23	13/13	16/23	1/2	0/0	0/2	81	26%
Bear removal and wolf control have occurred during these years	2003 cohort	8/8	4/4	4/9	3/3	0/0	0/1	53	52%
	2004 cohort	3/3	0/0	4/8	3/19	0/1	0/0	52	40%
	2005 cohort	12/12	3/3	2/3	5/10	0/0	0/1	50	42%
	2006 cohort	6/6	2/3	1/3	3/6	0/0	1/1	51	63%
	2007 cohort	7/7	14/14	2/6	1/4	0/0	1/2	51	35%

Timing of calf mortality

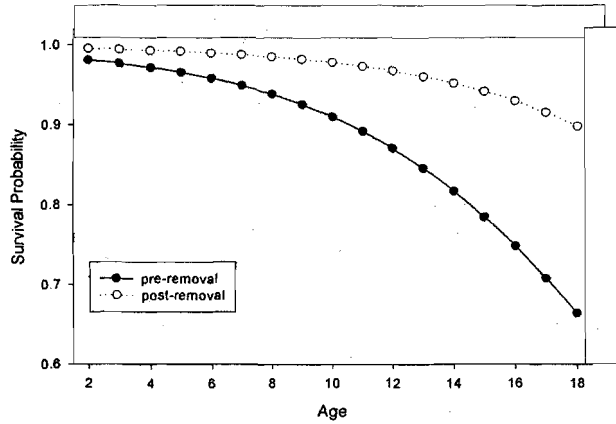


Yearling and adult survival pre- and post-control



Yearling and adult survival pre- and post-control

Age specific survival of adult moose

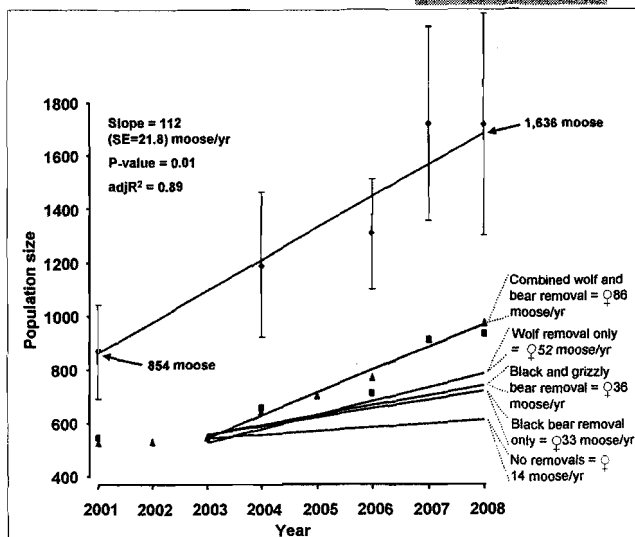


Expanded EMMA population trends

Models we developed based on data obtained from radioed moose agree with survey data.

Using this same model we can predict the outcome of a variety of alternative actions:

- 1) What would have happened if we had taken no action?
- 2) What would have happened if we only had wolf control?
- 3) What would have happened if we only had bear removals?
- 4) What would have happened if we only had black bear removals?



Population modeling – the next 10 years (wolf control)

Results of 25 model iterations of the expanded EMMA (1,118 mi²) moose population starting in 2008, given an additional 5 years of wolf reduction similar to what is presently occurring (0.3 wolves/100mi², likely achievable with public aerial wolf control).

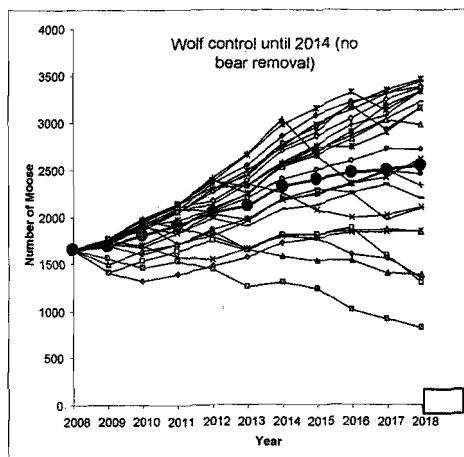
Assumptions:

*A harvest of moose from the expanded EMMA population of 75 moose from 2008-12, and 150 moose from 2013-18 (approximately 90% male 10% female).

*Bear predation rates starting in 2008 equivalent to those documented before bear removals.

*Moose will begin to show density dependent responses in life-history characteristics at approximately 3 moose/mi².

*Weather events are stochastic.



Bear effectiveness as predators

Data collected in McGrath is also helping us develop a better understanding of some aspects of bear predation on young moose. Although preliminary, some of what we have learned is presented here:

*The out come of predation events differs when multiple (twin) calves encounter black bears and grizzly bears.

*Although one previous study and intuition would suggest that male black bears would numerically account for more calf mortalities than females. During this study, in cases where we could identify sex of responsible bears we observed similar numbers of calves killed by male and female black bears.

Predator	# of encounters resulting in one calf dying	# of encounters resulting in both calves dying	% of encounters resulting in both calves dying
Black bears	22	3	12%
Grizzly bears	4	5	56%

Year	# identified as male (by genetic analysis or visual observation)	# identified as female (by genetic analysis or visual observation)
2001	7	3
2002	9	9
2003	5	4
2004	0	2
2005	4	2
2006	2	1
2007	1	3
Total	28	24

Population modeling – the next 10 years (bear removal)

Results of 25 model iterations of the expanded EMMA (1,118 mi²) moose population starting in 2008, given an additional 1 year of wolf reduction similar to what is presently occurring, followed by reducing black bear predation rates on moose calves to 17% (theoretically achievable with black bear trapping).

Assumptions:

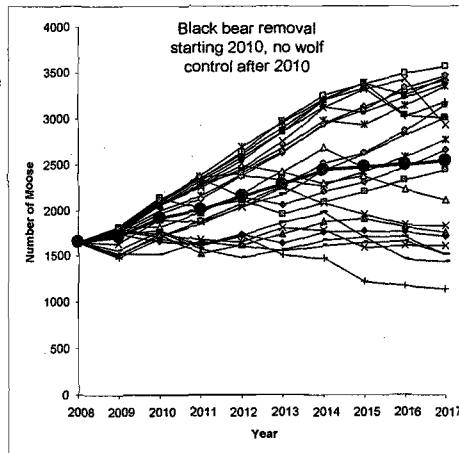
*A harvest of moose from the expanded EMMA population of 75 moose from 2008-12, and 150 moose from 2013-18 (approximately 90% male 10% female).

*Public harvest of wolves with conventional methods takes 25% of the wolf population annually.

*Compensatory mortality similar to what was observed during previous bear removals.

*Moose will begin to show density dependent responses in life-history characteristics at approximately 3 moose/mi².

*Weather events are stochastic.



How many black bears will need to be removed to achieve a 17% black bear predation rate on calves?

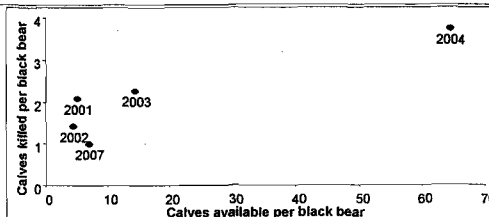
*Population models predict approximately 800 moose calves produced in the EMMA during 2010.

*By 2010 black bear numbers will likely have returned to pre removal levels (approximately 100 independent bears).

*We can make a rough approximation that each black bear will on average kill 2 moose calves.

Model estimate of moose calves within the EMMA (522mi ²)				
	2002	2004	2007	2010
Estimated # of calves	460	453	482	797

Black bear population estimates within the EMMA (522mi ²)				
	2002	2004	2007	2010
Population estimate (independent bears)	100	7	69	100?



*Therefore, in order to maintain a 17% or less black bear predation rate on calves, the black bear population should be maintained at approximately 68 independent bears, a reduction of 32? bears from the predicted 2010 population.

In summary

*Moose numbers have increased with the expanded EMMA from 854 moose in 2001 to 1,636 moose in 2008

*Models we developed from radio collar and survey data suggest that wolf control (conducted between RY03 and present) contributed a proportionally larger amount to the observed increase than did bear removals (conducted during 2003 and 2004).

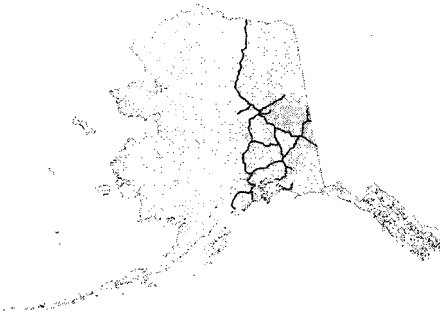
*Based on models we should be able to double the harvest of moose within the expanded EMMA to 150 moose by 2013 and still have continued population growth if wolf control is continued an additional 5 years. However, winter conditions can significantly influence the outcome moose population trends.

*Theoretically, black bear reductions could replace wolf control, however we need to meet several untested assumption to achieve that.

RC 133

**Upper Yukon/Tanana Predation Control
Program (Proposal 237)**

March 2009 BOG



(Unit 20E and portions of 12, 20B, 20D & 25C)

**Proposal 237 - Upper Yukon/Tanana
Predation Control Program**

Submitted by: Upper
Tanana/Fortymile AC

Proposal: Modify Upper Yukon
Tanana Predator Control
Program

ADFG

Recommendation: Amend and Adopt

UYTPCP

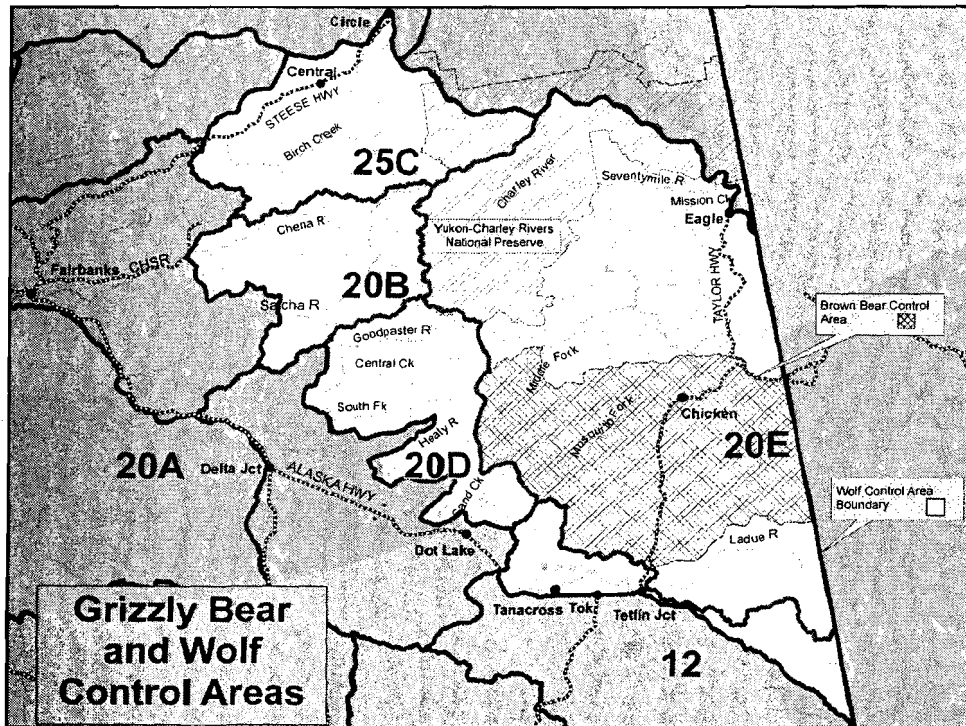
- **Adopted November 2004**
 - **Reduce Predation - wolves and brown bears**
 - **Increase moose –portions of Units 12 and 20E**

- **Implemented January 2005**
 - **Up to 5-Years (Sunset in January 2010)**

- **Expanded May 2006**
 - **Wolf Control Area**
 - **Fortymile Caribou Range**
 - **Larger portion of Units 12 and 20E – Moose**
 - **Bear Control Area**
 - **Larger Portion of southern Unit 20E**

Program Objectives

- **Increase the Fortymile Caribou Herd** to aid in achieving the intensive management population objective of 50,000–100,000 and harvest objective of 1,000–15,000.
- **Increase the moose population in Unit 12 north of the Alaska Highway and in Unit 20E** to aid in achieving the geographically proportional intensive management moose population objective of 8,744–11,116 and harvest objective of 547–1,084.



Wolf Control Objective

- **75% reduction** in the pre-control population (350-410 wolves)
- Minimum population objective = **88-103 wolves** (midpoint = 96)

Brown Bear Control Objective

- **60% reduction** in the pre-control brown bear population
- Minimum population = **68 brown bears**

Wolf Control Summary (RY04 – RY07)

Year	Dates	Permits Issued	Wolf Kill Objective (mid-Point)	Wolves Taken	Objective
2004-2005	Jan. 1 – April 30	50 Total (17 Pilot, 33 Gunner)	170	101 Total (58 Control, 43 Trap & Hunt)	Not Met
2005-2006	Nov. 1 – April 30	35 Total (14 Pilot, 21 Gunner)	114	73 Total (17 Control, 56 Trap & Hunt)	Not Met
2006-2007	Oct. 2 – April 30	50 Total (21 Pilot, 31 Gunner)	267	103 Total (23 Control, 80 Trap & Hunt)	Not Met
2007-2008	Oct. 10 – April 30	51 Total (24 Pilot, 27 Gunner)	286	97 Total (27 Control, 70 Trap & Hunt)	Not Met

Wolf Control

2008 - 2009

➤ **Oct. 6, 2008 – April 30, 2009**

➤ **52 Permits Issued**

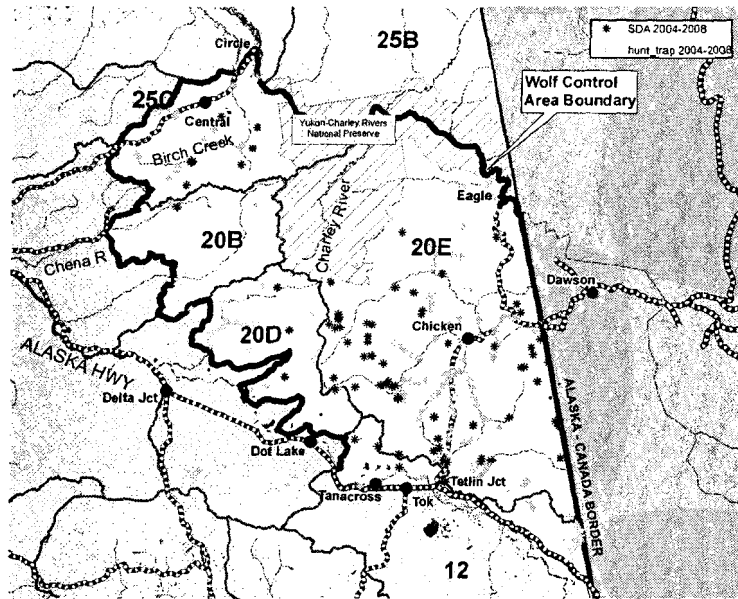
- 24 pilots
- 28 gunners

➤ **24 SDA wolves taken (to date)**

- 24 control
- Sealing record are not compiled for RY08

➤ **Permits valid until April 30, too early to draw conclusions**

Wolf Control Summary (RY04 – RY08)



Wolf Population Estimates

Pre-Control Estimate

- Fall 2004 Population Estimate in Current Area (early fall)
 - 350–410 wolves or approximately 19–22 wolves/1000 mi²

Current Estimate

- Fall 2008 Population Estimate Current Area (early fall)
 - 393–431 wolves or approximately 21–23 wolves/1000 mi²

Bear Control Summary (RY04 – RY07)

Year	Dates	Permits Issued	Bear Kill Objective	Bears Taken	Objective
2004-2005	April 1 – June 30	110 Total (76 bait stations reg.)	81	10 Total (2 Control, 8 Hunting)	Not Met
2005-2006	Aug. 25 – June 30	28 Total (4 bait stations reg.)	81	10 Total (3 Control, 7 Hunting)	Not Met
2006-2007	Sept. 1 – June 30	40 Total (23 bait stations reg.)	82	3 Total (1 Control, 2 Hunting)	Not Met
2007-2008	Aug. 1 – June 30	36 Total (13 bait stations reg.)	82	11 Total (6 Control, 5 Hunting)	Not Met

Brown Bear Control

2008 - 2009

- July 1, 2008 – June 30, 2009
- 30 Permits Issued (to date)
- 6 Bait Sites Registered (to date)
- 5 bears taken in Brown Bear Control Area (to date)
 - 0 by control
 - 5 by hunters (under general hunting regulations)
- Permits valid until June 30, too early to draw conclusions

Bear Population Estimates

Pre-Control (summer 2004)

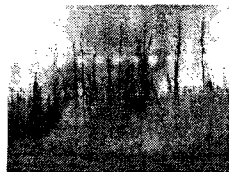
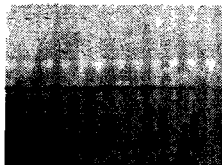
- Mid-Summer 2004 Population Estimate in Current Area
 - 170 bears (mid-point est.) or approximately 42 bears/1000 mi²

Current (summer 2008)

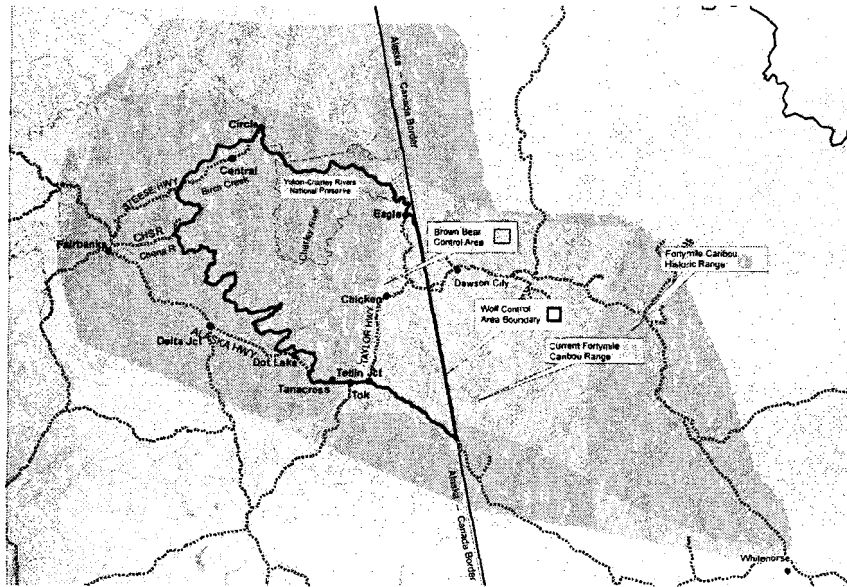
- Mid-Summer 2008 Population Estimate Current Area
 - 150 bears (mid-point est.) or approximately 37 bears/1000 mi².

Effects of 2004 Fires

- 31% of Brown Bear Control Area burned
- Redistribution of bears following burn
- Likely affected success of bear control program
- Fewer bears = lower calf predation???
 - Data analysis was inconclusive.



Caribou Benefit Area



Fortymile Caribou Population Status

Population Size

- > 2007 = 38,364 (Census Survey)
- > 2008 = 40,000 - 42,000 (Model)

Population Composition (late - Sept./early Oct.)

- > 37 calves:100 cows (fall 2007)
- > 33 calves:100 cows (fall 2008)

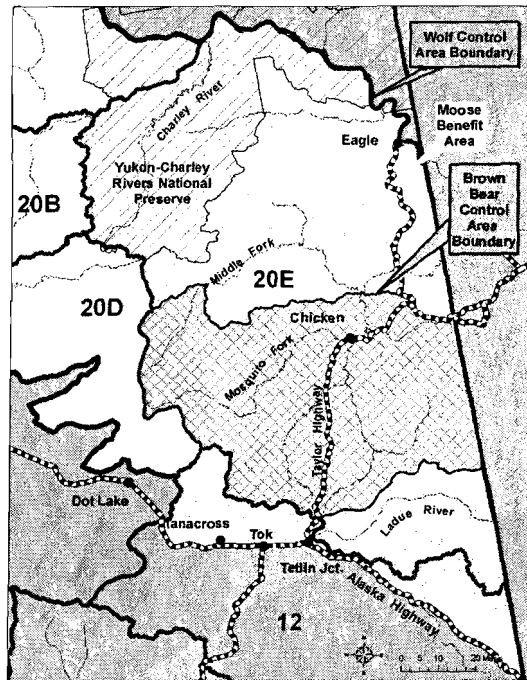
Population Trend

- > Likely increased in 2008 (modeling data)
- > Increase likely in 2009 (modeling data)

After first 2-years of Wolf Control

- > Additional time needed

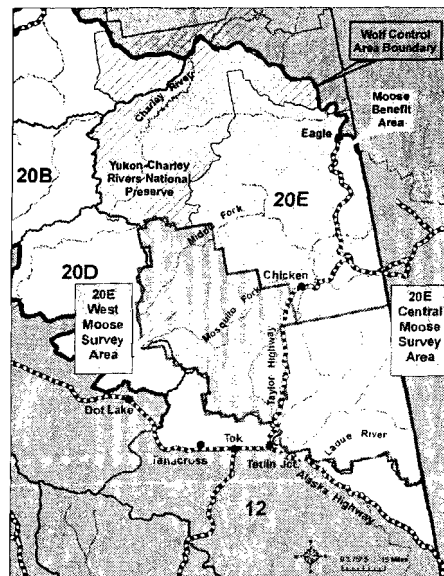
Moose Benefit Area



Unit 20E Fall Moose Surveys

Tok West and Central Moose Survey Areas (4,600 m²)

> Fall 2004-2008



Unit 20E Fall Moose Surveys

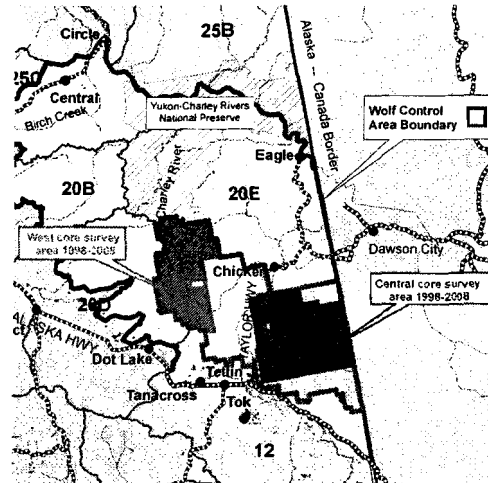
Tok West and Central Moose
Survey Areas (4,600 m²)

> Fall 2004-2008

Portion surveyed during
1998-2008

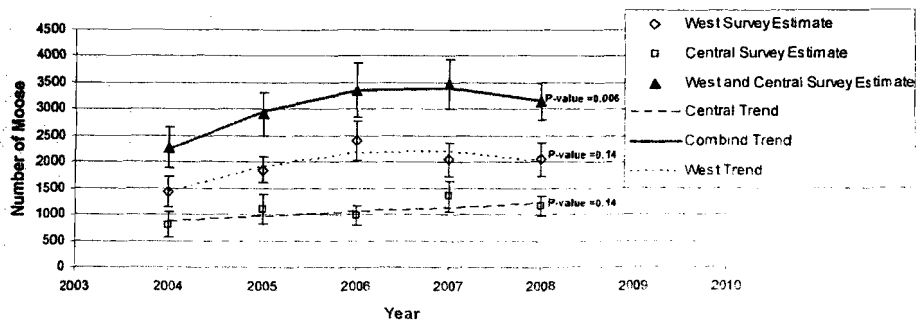
> Core West (1,227 m²)

> Core Central (1,652 m²)



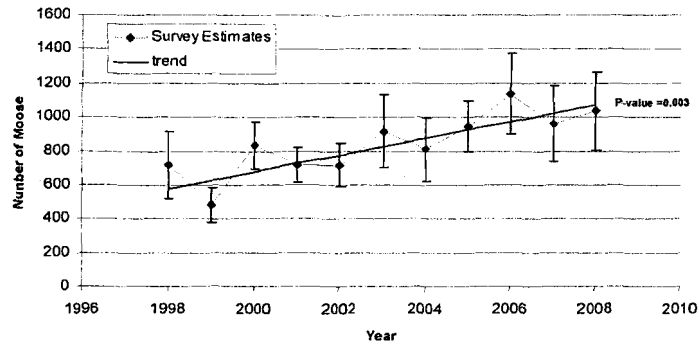
Moose Population Status

Unit 20E West and Central (Observable Moose Only)
2004-2008



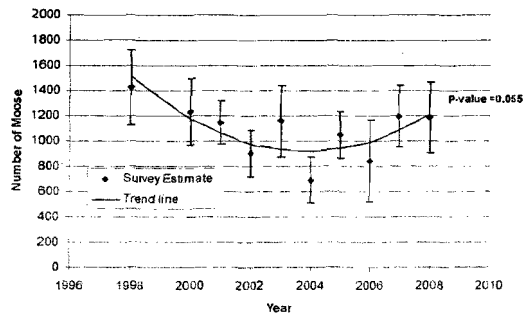
Moose Population Status

20E West Survey Core Area - Observable Moose



Moose Population Status

20E Central Survey Core Area - Observable Moose



Take Home Message - Moose

Moose Population = increased

Driving factors = unclear

Factors likely include a combination of:

- **Favorable weather**
- **Wolf removal**
- **Bear redistribution**
- **Alternative Prey (caribou)**
- **Fire – habitat change**

UYTPCP – What have we learned?

Brown Bear Control – Ineffective

- **No increase in bear kill**
 - **Methods - ineffective**
 - **Incentive - lacking**
- **Survey shows fewer bears in burned areas**
- **Relationship between bear redistribution and moose calf survival is unclear.**

UYTPCP – What have we learned?

Wolf Control – affects unclear

- **Objectives not met**
 - **Snow, caribou track density, gas and fur prices all play a role in success.**

- **Affect on moose and caribou**
 - **Inconclusive with current levels of wolf removal**
 - **Additional wolf removal needed for measurable affect**

Where do we go from here?

ADF&G Recommendation: Amend and Adopt Proposal 237

Where do we go from here?

ADF&G Recommendation: Amend and Adopt Proposal 237

Amendment #1 – Eliminate the Brown Bear Control portion of the UYTPCP.

Where do we go from here?

ADF&G Recommendation: Amend and Adopt Proposal 237

Amendment #1 – Eliminate the bear control portion of the UYTPCP.

Amendment #2 – Re-authorize the Wolf Control portion of the UYTPCP for another 5-years (July 1, 2009-July 1, 2014) to benefit the FCH and moose in northern Unit 12 and 20E.

Where do we go from here?

ADF&G Recommendation: Amend and Adopt Proposal 237

Amendment #1 – Eliminate the bear control portion of the UYTPCP.

Amendment #2 – Re-authorize the Wolf Control portion of the UYTPCP for another 5-years (July 1, 2009-July 1, 2014) to benefit the FCH and moose in northern Unit 12 and 20E.

Amendment #3 – In addition to fixed-wing, allow use of helicopters by the public under aerial control permits.

Where do we go from here?

ADF&G Recommendation: Amend and Adopt Proposal 237

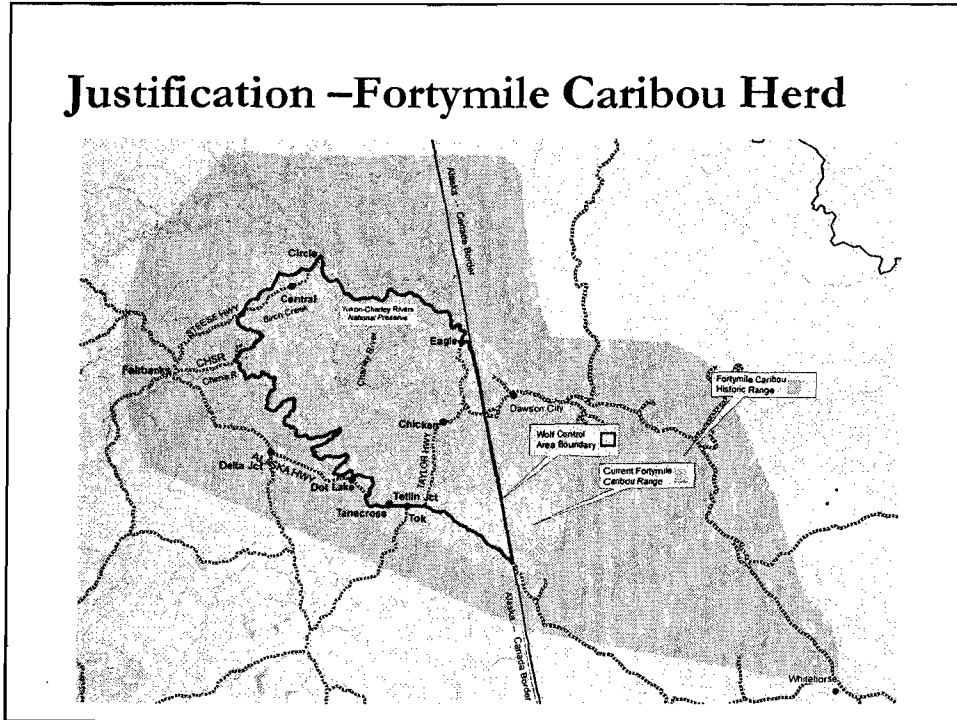
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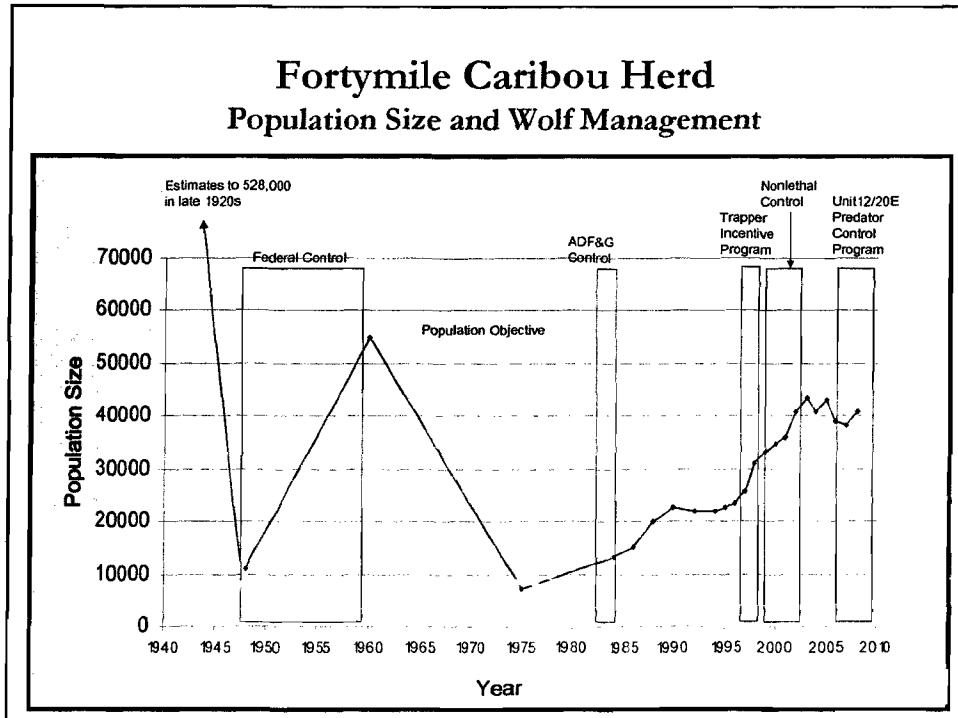
Amendment #3 – In addition to fixed-wing, allow use of helicopters by the public under aerial control permits.

Amendment #4 – Update 92.125 with the most current information available to the Department.

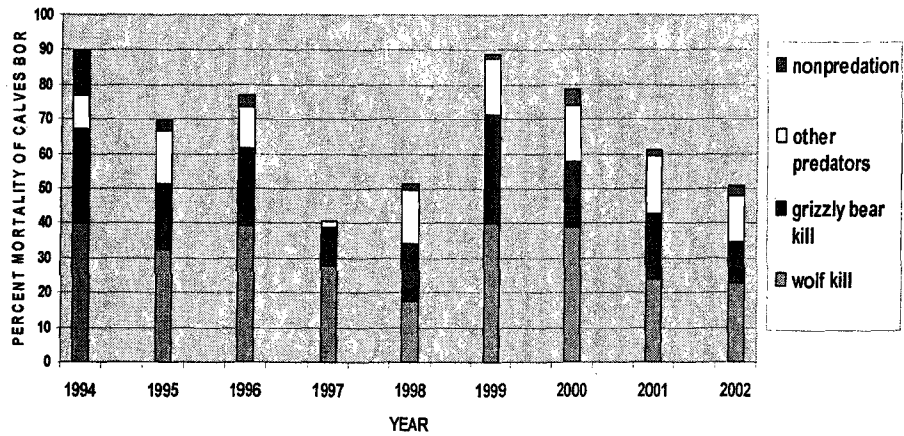
Justification –Fortymile Caribou Herd



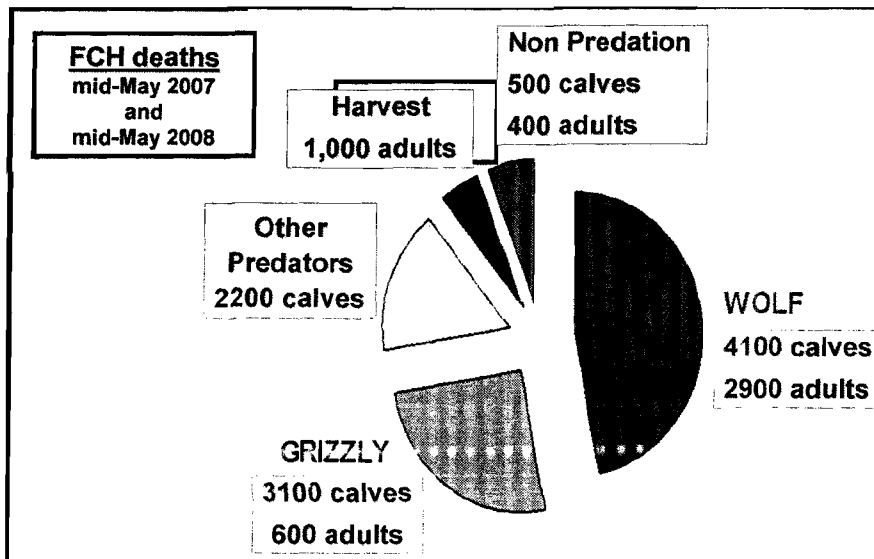
Fortymile Caribou Herd Population Size and Wolf Management



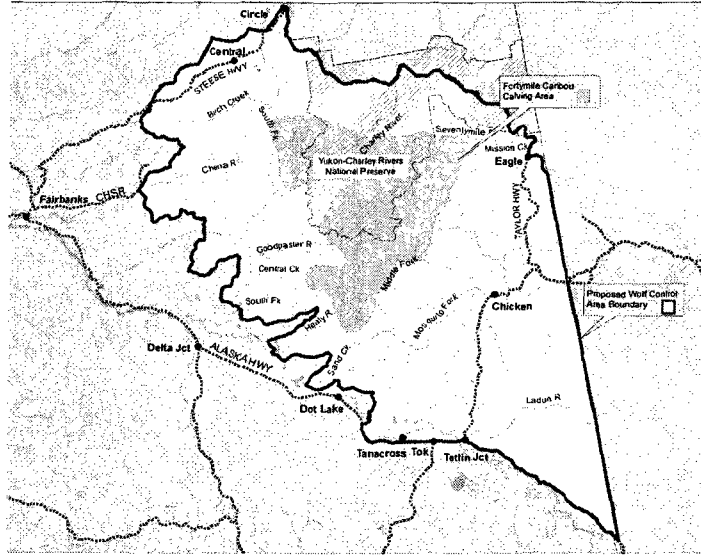
Fortymile Caribou Herd Calf Mortality Study (1994-2002)



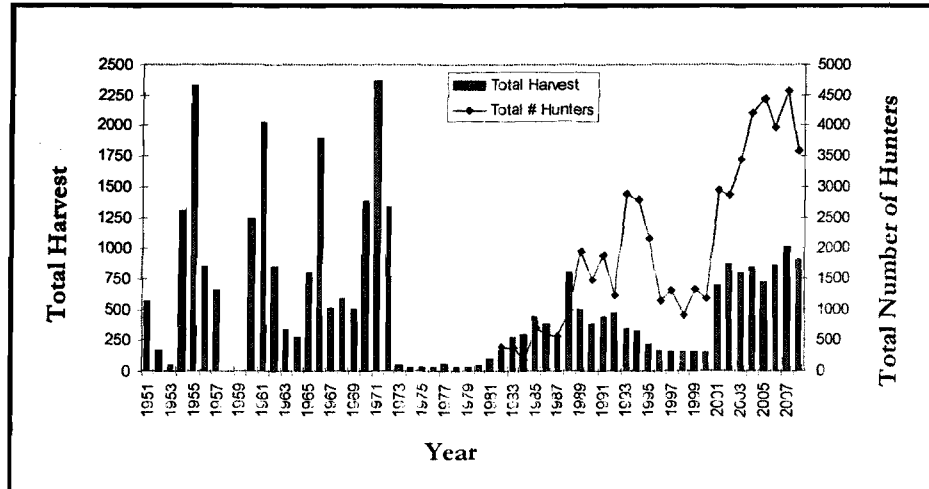
Fortymile Caribou Herd Population Modeling (based on FCH research)



Justification – Wolf Control for FCH



Fortymile Caribou Herd Harvest and Demand



Justification – Wolf Control for FCH

High Lichen in diet = habitat not limiting

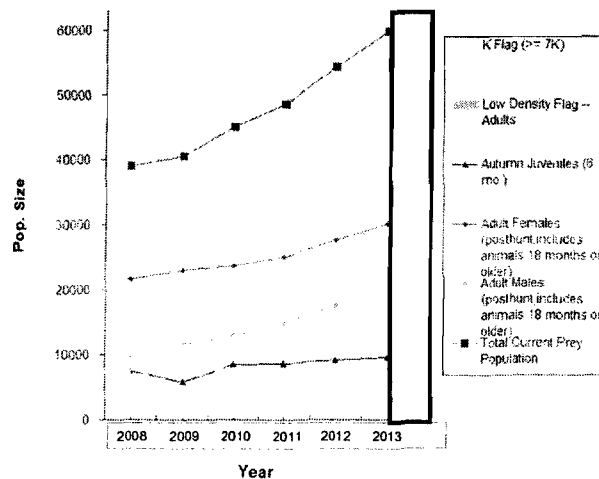
Attempts to increase the FCH include:

- Restrictive harvest regulations
- Liberalizing wolf and brown bear regulation
- Non-lethal wolf control program
- Private wolf harvest incentive program

Alternatives to predator control are ineffective, impractical, or uneconomical in the Plan Area.

Justification – Wolf Control for FCH

FCH Trend with 70% Wolf Removal (PREDPREY Model)



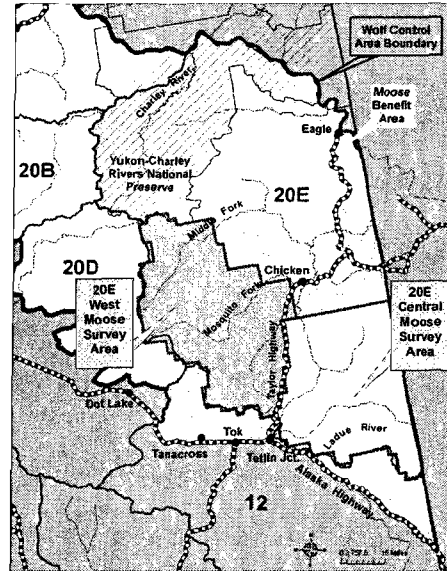
Justification – Moose northern Unit 12 and 20E

Moose population below IM objectives.

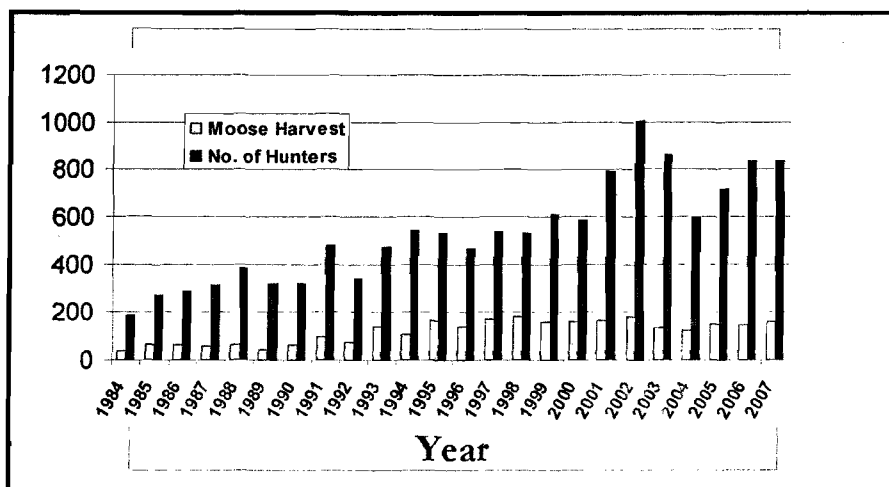
- Current estimate of 3,900 – 5,500 (Fall 2008)
- IM Objective = 8,744 - 11,116 moose

1980s ADF&G research in Unit 20E

- wolves major predator on moose
- 53% adult mortality
- 9% calf mortality



Moose in Moose Benefit Area Harvest and Demand



Justification – Wolf Control for Moose

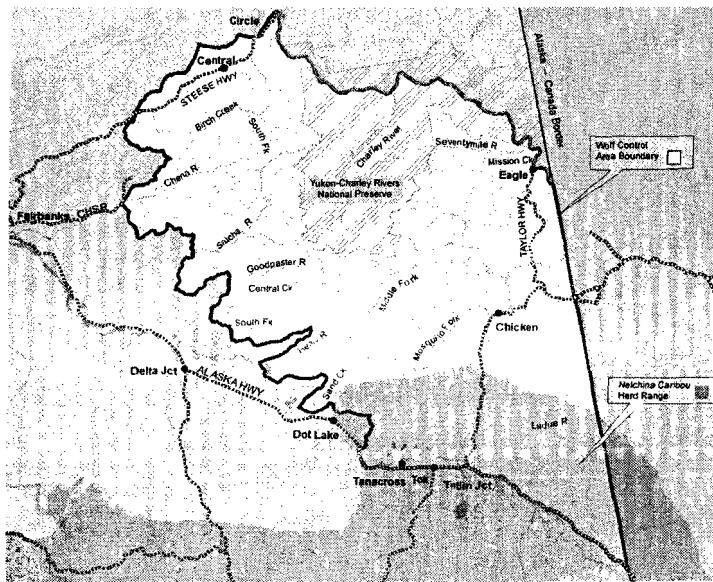
29% twinning (2004-2008) = habitat not limiting

Attempts to increase moose:

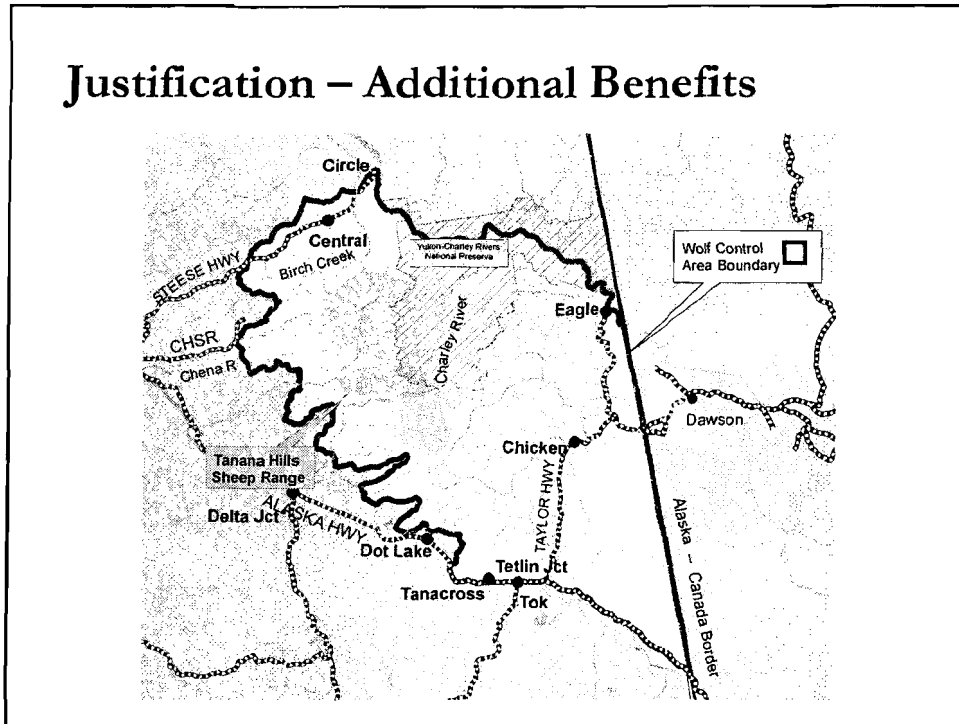
- Restrictive harvest regulations
- Liberalizing wolf and brown bear regulation
- Habitat enhancement projects (fire)

Alternatives to predator control are ineffective, impractical, or uneconomical in the control area.

Justification – Additional Benefits



Justification – Additional Benefits



Justification – Additional Benefits

- Increased prey populations may support higher levels of predators and scavengers (wolverine, eagles, etc.) that depend on them.
- Increased predator and prey populations provide better viewing opportunities for these species and all other species that will benefit from increased predator and prey populations
- Increased hunting and trapping opportunity for predator populations.

UYTPCP - Methods and Means

- **Permits issued to the Public for aerial control using fixed-wing aircraft and helicopters**
- **Department control with helicopters in areas where the public is unsuccessful**
- **Authorize UYTPCP for 5-years**
 - **beginning July 1, 2009**
- **Annual reports provided to BOG**
- **Hunting and trapping continue**
- **Work with area trappers to improve success**

UYTPCP - Wolf Control Objectives

Wolf reduction of 75% of the pre-control (fall 2004) wolf population

- **Suspended annually when:**
 - **minimum population = 88 wolves, or**
 - **April 30**

Control Program halted when:

- **Prey population objectives are attained, or**
- **Authorization expires**

Proposal 237 – UYTPCP Reauthorization

ADF&G **Adopt as**
Recommendation: **Amended**

THE END