PROPOSAL 96 RC-24 (see also RC-22)

Customary and Traditional Uses of Game Populations (5 AAC 92.025)

Prepared for
Alaska Board of Game
February/March 2009

Proposal 96

This proposal

- Recommends that the board review and possibly revise its "amount reasonably necessary for subsistence uses" finding (ANS finding) for moose in GMU 13.

- At its emergency meeting in July 2008, the board expressed its intent to review this ANS finding at the February/March 2009 meeting.

Department Recommendation:

No recommendation.

Current State Regulations

- The ANS finding for moose in GMU 13 is 600 moose (5 AAC 92.025).
- The board made this finding in 1992.
- Background on this ANS determination can be found in written findings adopted by the board during its 1992 meeting (No. 92-60-BOG).

Background on current ANS for moose in GMU 13 (1992 action)

- Board accepted department's estimate of 600 bull moose available for harvest.
- Focused on 12 years of data (1980 – 1991) due to reliability and relevance to human population.
- Determined that approximately 3,000 "subsistence users" would hunt moose in GMU 13, including 600 local residents.
- Determined that under the "all Alaskans policy," all 600 moose were needed for the ANS.
- Determined that a success rate of 20% (600 moose by 3,000 hunters) was acceptable given the recent historical range.

Figure 1. Population of Areas of Alaska Connected by Road to Game Management Unit 13: 1990, 2000, and 2007

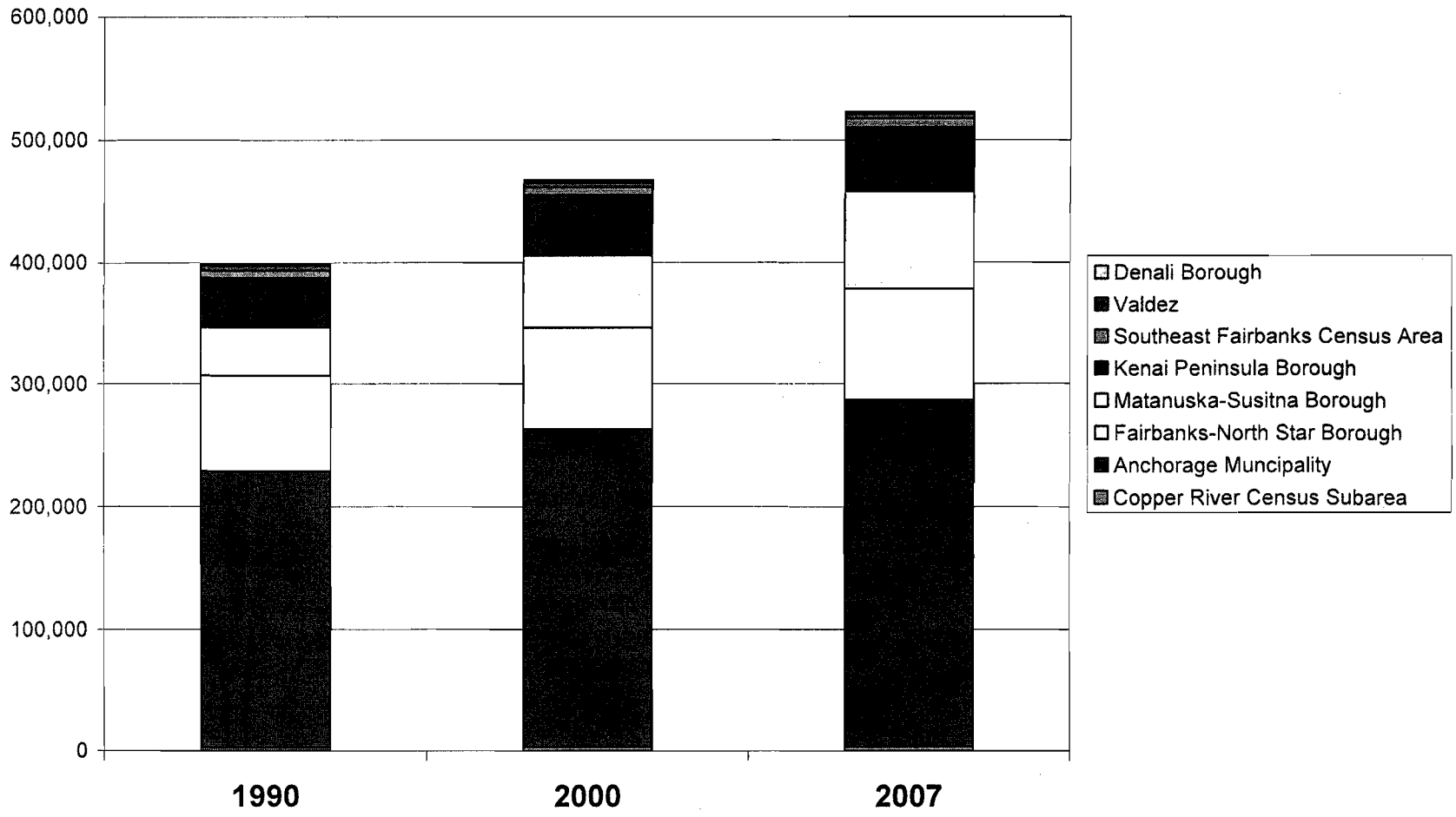


Figure 2. Number of Alaska Resident Hunters of Moose in GMU 13 and Number of Moose Harvested, All Hunts, 1967 - 2007

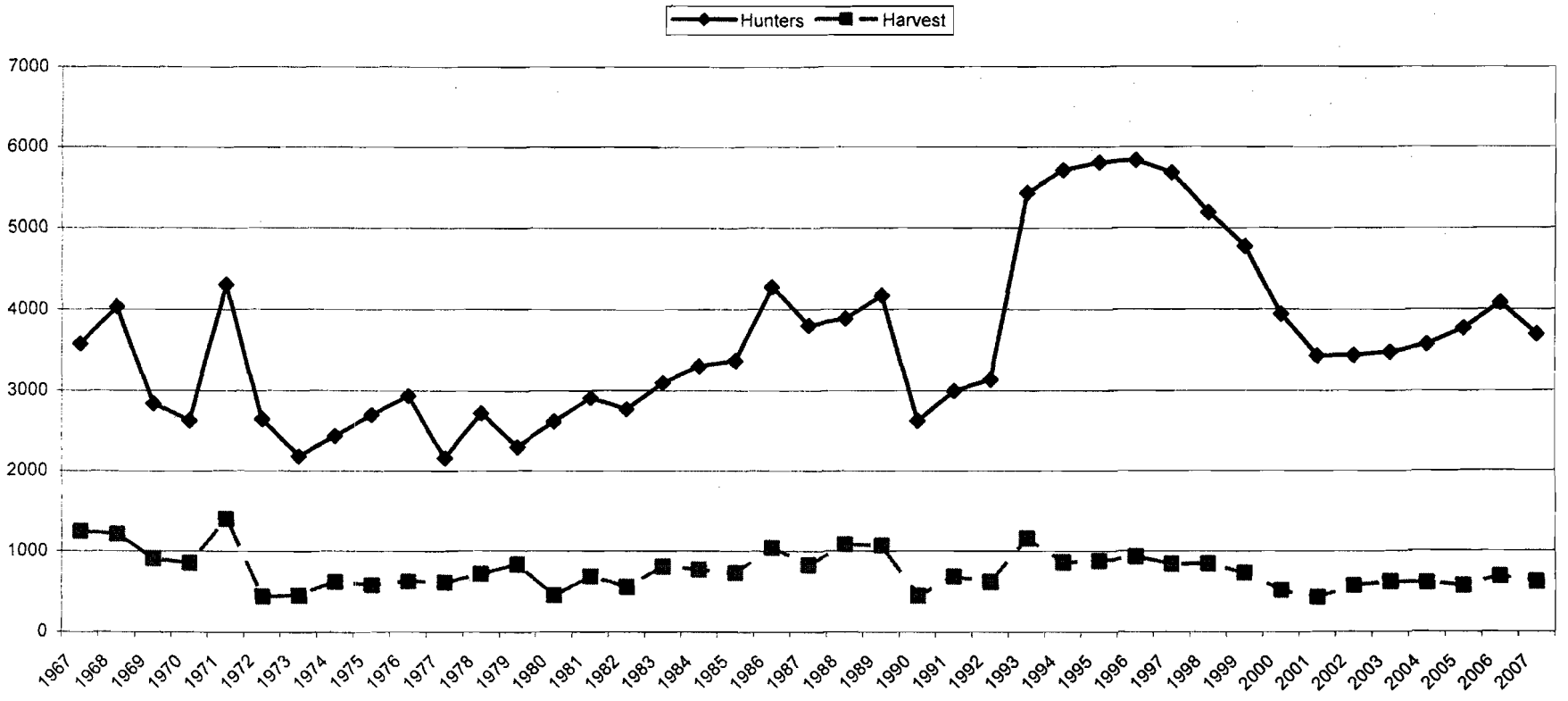


Figure 4. Number of Local Resident Hunters of Moose in GMU 13 and Number of Moose Harvested, All Hunts, 1969 - 2007

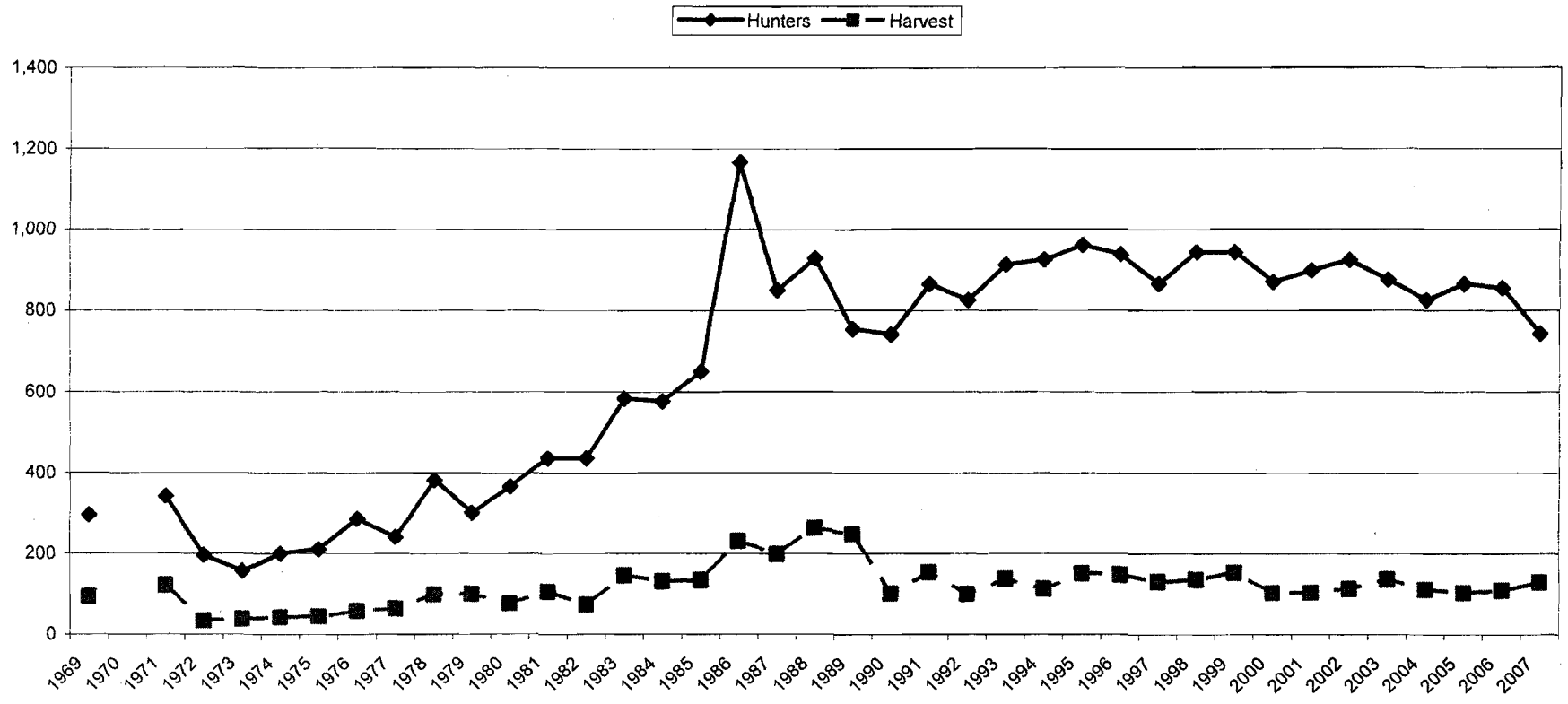


Table 4.–Mean annual number of hunters and successful hunters, and success rates, GMU 13 moose, 1980-1991 and 1992-2007.

	1980 to 1991[a]		1992 to 2007	
	Annual mean	Range	Annual mean	Range
GMU 13 residents only:				
Number of hunters	696	366 - 1,166	885	743 - 961
Number of successful hunters	156	74 - 263	124	103 - 153
Success rate	22.3%	16.9% - 33.0%	14.0%	11.6% - 17.4%
All Alaska residents:				
Number of hunters	3,317	2,615 - 4,278	4,435	3,132 - 5,834
Number of successful hunters	764	450 - 1,084	716	428 - 1,158
Success rate	23.0%	17.1% - 27.9%	16.1%	12.5% - 21.3%

a. This is the 12-year period upon which the present ANS of 600 moose is based.

Figure 3. Hunter Success Rates, Alaska Resident Hunters, GMU 13 Moose, 1967 - 2007

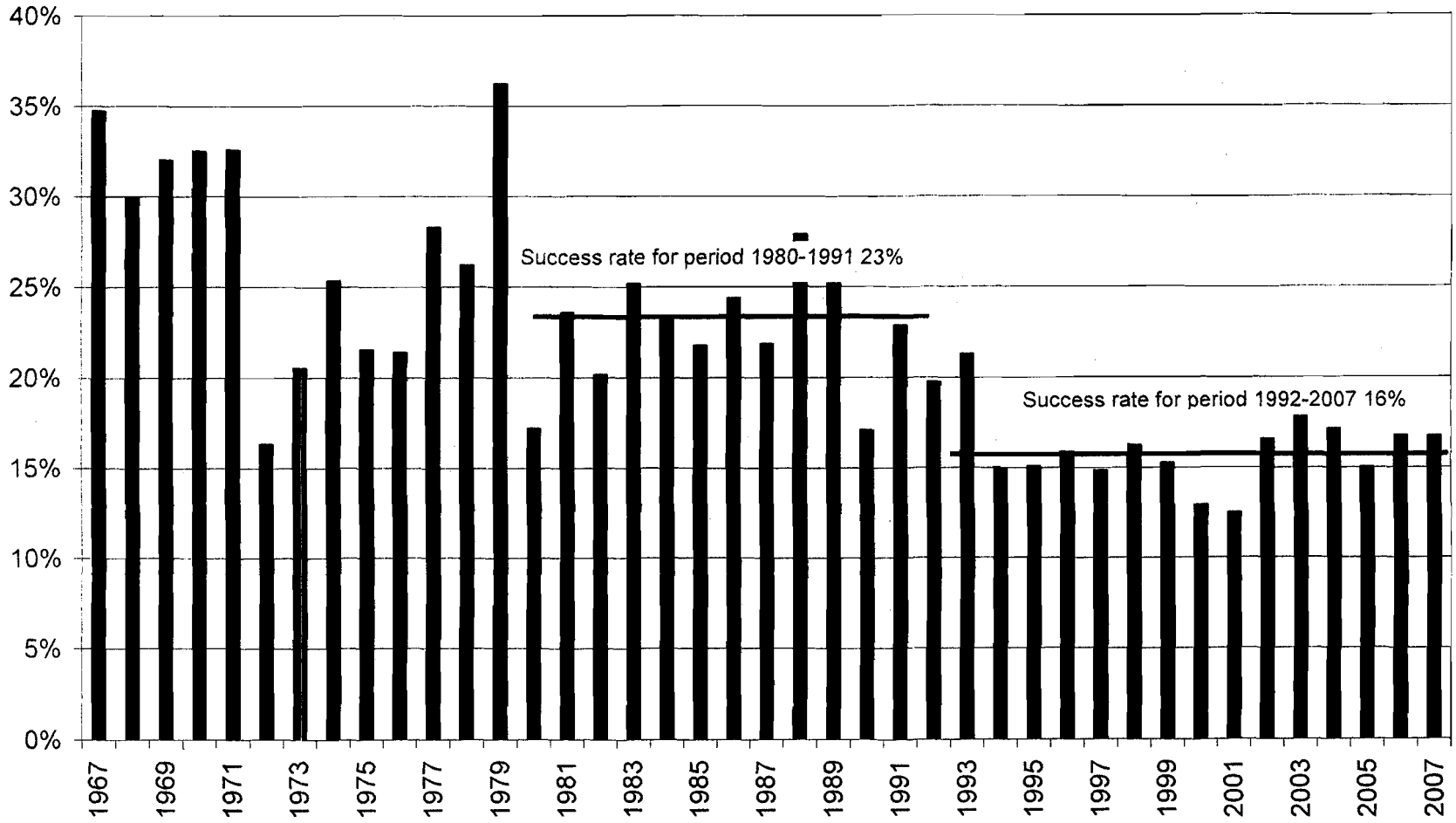


Figure 6. Percentage of GMU 13 moose hunters by area of residence,1992-2008

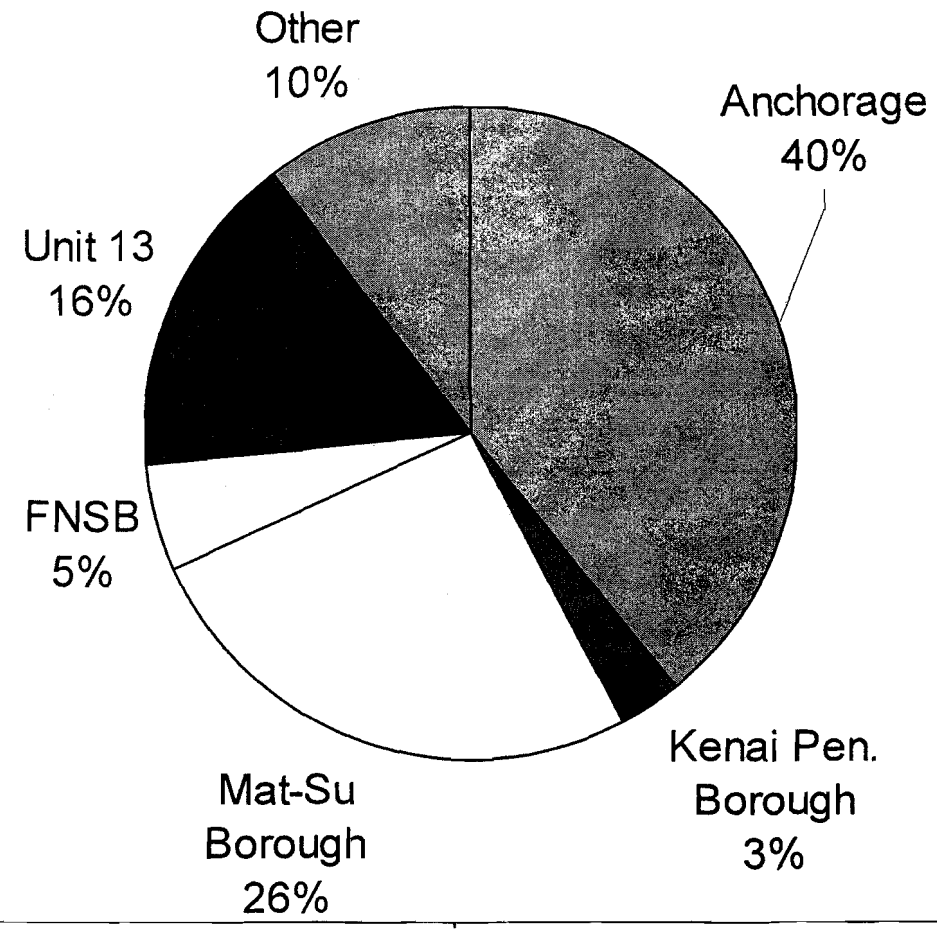


Figure 8. GMU 13 moose hunters, method of transport by area of residence, 1998-2007

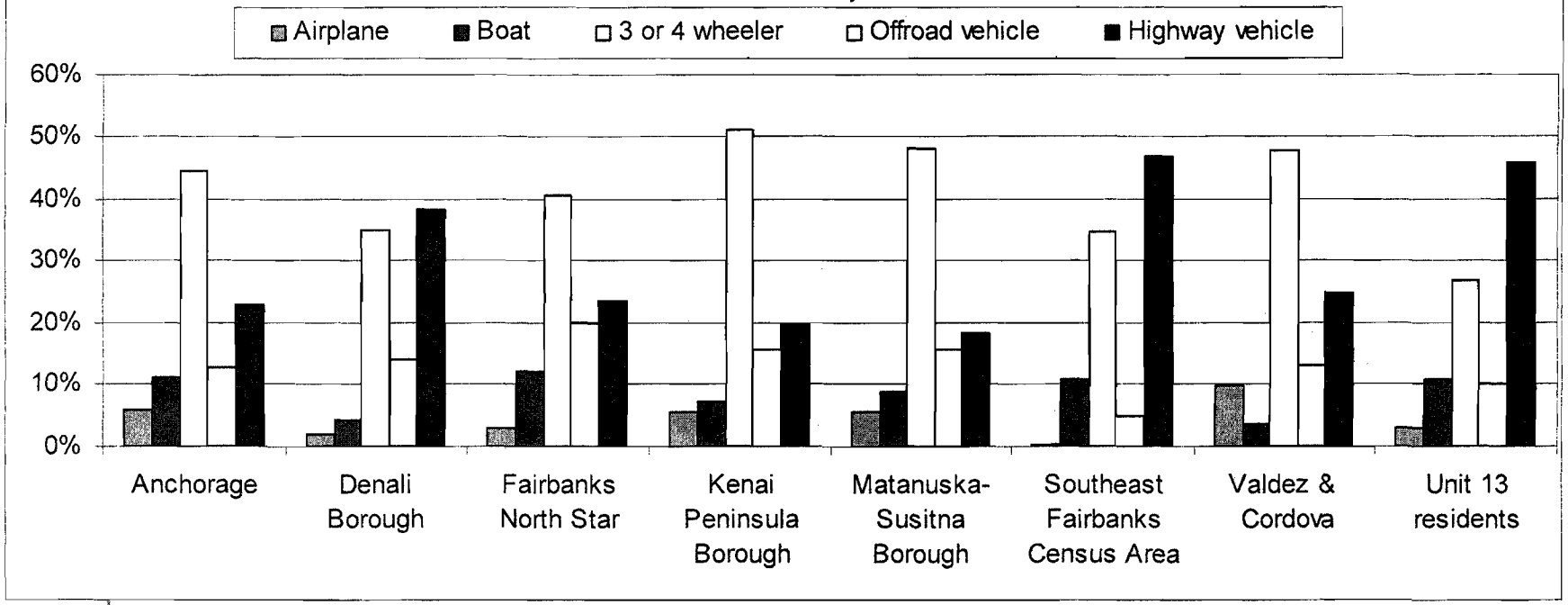
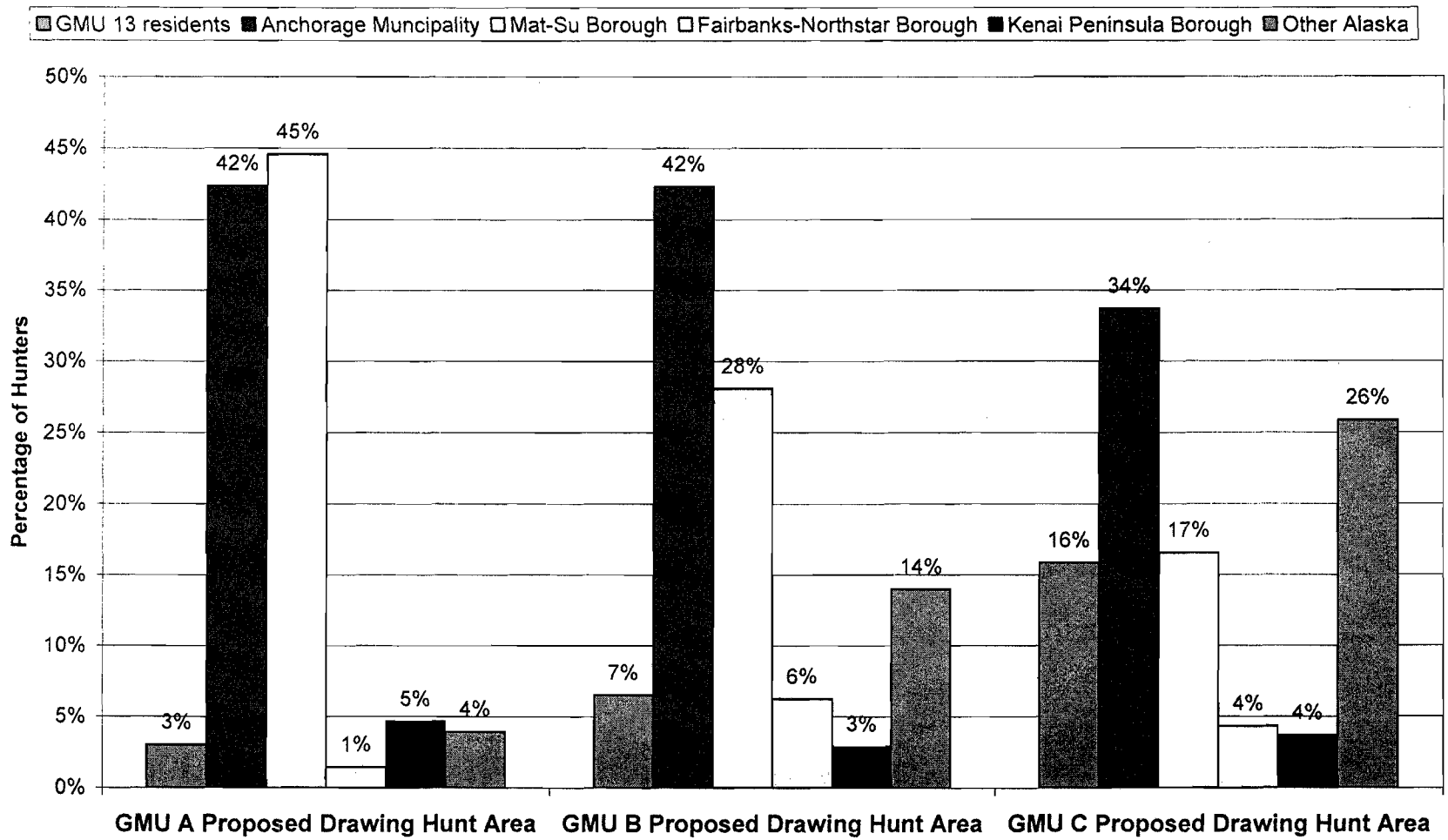


Figure 11. Percentage of Moose Hunters by Area of Residence, 3 Areas with GMU 13 proposed for drawing hunts, 1992 - 2007



Some Options for GMU 13 Moose ANS

- Option A: No action; leave ANS at **600 moose.**
- Option B: Mean harvests 1992-2007 (716 moose), +/-25%: **537 to 895 moose**.
- Option C: High and low harvest, 1992-2007: **428 to 1,158 moose**.
- Option D: Mean and low harvest, 1992 -2007: **428 – 716 moose**.
- Other Options can be developed.

Questions?

Thank you!

Minutes of G.A.S.H. River Advisory Committee
Teleconference February 24, 2009

RC 25

1:00 p.m.

Meeting was called to order by Arnold Hamilton
Roll Call.
Present were: Gabe Nicholi, (Grayling)
Arnold Hamilton, Roger Hamilton (Shageluk)
Kathy Chase, LeRoy Peters, Peter Walker (Holy Cross)
Absent were: Marlene Madrose, Harry Maillelle, Ken Chase, Jay Jensen

Also present were Randy Rogers and Rita St. Louis

New Business
The committee wanted to vote on Proposal # 238 that will be deliberated on by the Board of Game starting the end of this week.

Randy briefly summarized the predator control plan for 21E that the Department was planning to take to the board. Then the members had some questions.
Arnold: If this is passed in this March meeting, will it be implemented next winter?
Randy: Yes

Kathy Chase: Can the winter hunt be revisited in the future.
Randy: Any thing can be revisited in the future. The winter hunt is a federal hunt, so the state does not control it.
Gabe: For us in Grayling, the federal hunt is more important than the state hunt. Last winter 6 cows were taken.
Kathy: She is not in favor of cow hunts
Gabe: You have more moose there. This population is really low and we are barely surviving.
Roger: In Shageluk, there are hard times, no jobs, a lot did not get moose in September, and a lot did not get moose the 1^{st} – 10^{th} either.

Leroy: It is not worth going after wolves with $7.25 for gas
After more discussion the committee **Moved, 2^{nd}, and unanimously supported Proposal 238.**

The committee felt a lot more discussion needed to go into endorsing the closure of the winter hunt as the 21E plan calls for. Perhaps it would work in portions of 21E and not others. Everyone agreed that a face-to-face meeting was important to discuss this.

Randy gave a brief Wood Bison Update, and told that Yukon-Innoko would probably be the primary site for introduction.

The committee agreed to meet in Anvik on April 2.
Meeting adjourned at 2:45

RC 26

STATE OF ALASKA

SARAH PALIN, Governor

3700 AIRPORT WAY
FAIRBANKS, ALASKA 99709

PHONE: (907) 374-3737
FAX: (907) 451-2751

CITIZENS' ADVISORY COMMISSION ON FEDERAL AREAS

February 13, 2009

Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, AK 99811-5526

ATTN: BOG COMMENTS

To the Board of Game:

The Citizens' Advisory Commission on Federal Areas submits the following comments on Proposal Numbers 44, 51, 64, 67, 77, 78, 112, 174 and 186. Because these proposals potentially affect seasons and bag limits for brown bear and wolf for portions of game management units within several national preserve units, they are of concern to this commission.

Proposals 44 – Brown Bear, Unit 9C. This proposal makes the argument that the current management of brown bear in unit 9C is not sustainable and is inconsistent with the provisions of the Alaska National Interest Lands Conservation Act (ANILCA), the National Park Service Organic Act, and NPS Management Policies at 4.4.2. Specifically, it argues that the ANILCA mandate that Katmai National Park and Preserve be managed to provide for "high concentrations of brown/grizzly bears and their denning areas" is threatened by current harvest levels.

However, the population and harvest data for Unit 9C brown bear compiled by the Alaska Department of Fish and Game do not support this argument. According to ADF&G information, the sustainable annual harvest rate of a given bear populations is around 6%. The long term harvest rate in all of GMU 9C (70% of which is closed to hunting) is 2% and the harvest rate for the remaining 30% of Unit 9C is still below 6%. The harvest level of 33 bears for the open portion of Unit 9C is well within the harvest guideline of 34-45 bears.

The proposal incorrectly implies that the State of Alaska does not regularly consult with the National Park Service. In fact, there is a longstanding Master Memorandum of Understanding between the ADF&G and the National Park Service. Both agencies cooperatively monitor brown bear populations in this area by conducting regular censuses, population surveys and

collecting harvest data. In 2004 and 2005 joint Spring surveys gave an estimate of 2,255 ±306 bears in Unit 9C. August surveys in 2006 and 2007 for the preserve portion of Unit 9C indicated a density of 331-581 bears/386 sq. miles. Clearly, this average density of about one bear per square mile meets the ANILCA mandate for "high concentrations" of brown bears.

Sections 1313 and 1314 of ANILCA recognize the State of Alaska's authority to manage resident fish and wildlife, as well as the authorities of the Secretary of the Interior. Regulations at 43 CFR Part 24 and Section 8.2.2.6 of the NPS Management Policies further clarify the respective authorities and responsibilities and encourage cooperative agreements or memoranda of understanding between the State and Federal Agencies.

Given the health of the brown bear population in this unit, continuing high densities and the level of cooperation between the ADF&G and the NPS, the allegation in the proposal that the current brown bear management structure in Unit 9C is a "violation of federal law" is unfounded. This proposal should be rejected by the Board of Game.

Proposal 51 – Brown Bear, Unit 17B. This proposal should be rejected for many of the same reasons as Proposal 42. It attempts to make the case that current harvest levels of brown bear in that portion of Unit 17B within Lake Clark National Preserve are inconsistent with the purposes for which the preserve was established and that state regulations are in conflict with NPS statutes and management policies. Our review of the available information indicates that this claim is not accurate.

Information from the ADF&G 2004 – 2006 Brown Bear Management Report is cited selectively in an effort to support the proposal. For example, the proposal states that 85 brown bear were harvested in Unit 17 in 2004 – 2005 and 119 were harvested in 2005 – 2006. What the proposal fails to state, however, is that within Unit 17B (the unit in question), 48 bears were harvested in 2004 -2005 and 72 were harvested in 2005 – 2006. It also fails to note that national preserve lands are only a small part of Unit 17B.

The Brown Bear Management Report states that brown bear habitat in Unit 17 is virtually unaltered and in excellent condition. Salmon stocks are carefully managed and escapements are adequate for the needs of the current bear population. The report, while acknowledging that no objective data on the status of the bear population in Unit 17 is available, goes on to state that the population is probably stable to increasing unit wide. It also points out that hunting pressure is greatest along the Nushagak River, in the Mulchatna River drainage, and in the mountains surrounding the Wood River/Tikchik Lakes. Only the upper reaches of the Mulchatna and some of its tributaries are within Lake Clark Preserve. The report concludes that despite an increase in the harvest of brown bears in Unit 17, ADF&G is meeting its objective of maintaining a population that will sustain a harvest of 50 bears per year.

We have already outlined the various legal and regulatory authorities of both the State of Alaska and the National Park Service. The proposal fails to establish that the current management of brown bear in Unit 17B conflict with any of those authorities or with the maintenance of healthy populations of bear within that small portion of the unit that lies within Lake Clark National Preserve. The proposal should be rejected.

Proposal 64 – Wolf, Units 9B,C, & E. The Commission recommends this proposal be rejected. The 2006 ADF&G Wolf Management Report indicates a conservative population estimate of some 350 wolves in Units 9 and 10. The report also states that wolf numbers appear to be increasing in these units. The report concludes that harvest has had little effect on the wolf population in Units 9 and 10. Consequently, it appears that current management of wolves in Units 9B, C & E, including seasons and bag limits, is consistent with the ANILCA mandate to maintain healthy populations within those portions of Lake Clark National Preserve, Katmai National Preserve and Aniakchak National Preserve.

Proposal 67 – Wolf, Unit 17B. The commission recommends this proposal be rejected. No evidence is presented that the current harvest and management objective is having an adverse impact on the existing healthy population of wolves in that small portion of Unit 17B within Lake Clark National Preserve. As the proposal points out, the management objective of an annual harvest of 25 wolves can easily be met with the estimated 280-320 wolves in Unit 17B.

Proposal 77 – Brown Bear, Unit 13C. and Proposal 112 – Wolf, Unit 13C. The commission recommends this proposal be rejected. This proposal again unconvincingly attempts to make a case that current management objectives for brown bear and wolves in Unit 13 are inconsistent with purposes and management for Wrangell –St. Elias National Preserve. The ADF&G Brown Bear Management Report and the Wolf Management Report clearly indicate that brown bear and wolf populations in this unit are healthy and are not adversely affected by current management objectives. These management objectives are within the scope of the State's regulatory authority and remain consistent with the purposes of the preserve.

Proposal 78 – Brown Bear, Unit 11Z. The commission strongly recommends rejection of this proposal. The stated objective is to maintain brown bear harvest in this unit at pre-ANILCA levels. There is absolutely no legal or regulatory foundation for this objective. Nothing in ANILCA or its legislative history requires capping the harvest level of any fish or game species at pre-ANILCA levels. The State's authority to regulate fish and wildlife on federal lands means that adjustments to seasons and harvest levels can be made so long as healthy population are maintained. To make the claim that an increase in harvest levels beyond those that existed prior to designation of the preserve would bring state regulations into conflict with federal statutes and management policies is disingenuous and without any legal basis.

By all indications the bear population in this unit is stable and healthy, with the average harvest over the last 8 years below that which occurred prior to creation of the preserve. This proposal must be rejected.

Proposal 174 – Brown Bear and Proposal 186 – Wolf, Unit 16B. The Commission recommends rejection of these two proposals for the same reasons given for Proposals 77 and 112. Populations of brown bear and wolves in this unit remain healthy. State management is within the scope of its authorities and is consistent with the purposes of Denali National Preserve as well as federal regulations and management policies.

The Commission appreciates the opportunity to submit these comments to the Board of Game. If we can provide additional information or if we need to clarify anything, please contact our Executive Director Stan Leaphart at (907) 374-3737.

Sincerely,

Stan Leaphart

for Rick Schikora
Chairman

RC 27

Paul Chanek
21035 Country View Dr
Chugiak AK 99567
688-4894
pchanek@ak.net

Feb. 25, 2009

To: Alaska Board of Game
Re: Commentary on Upcoming Proposed Regulation Changes

As a hiker and a dog owner, I am very concerned that traps are allowed to be placed anywhere near publicly used trails in Alaska. The setting of lethal, spring-loaded traps in the vicinity of heavily-used trails is completely senseless, the equivalent of a roadside bomb. We've already seen dogs—beloved family pets—maimed and killed in these traps, and to serve what end? Will it take the maiming or killing of a human—which will surely eventually happen—to bring it to an end? There is absolutely no reason trappers cannot go the extra mile to set traps off heavily used areas. The interests of a very very few trappers should certainly not outweigh the interests of the community at large. Change this practice immediately and avoid another senseless tragedy.

Along these same lines, trapping of lynx and wolverine should be closed in Chugach State Park. It likewise endangers recreational users. Far more dogs have been caught in wolverine traps than wolverines—which is not surprising, given the sparseness of these rare animals. Their value lies in viewing and in being part of a rare ecosystem, not in trapping for any dubious commercial profit. State wildlife biologists are in agreement that the numbers of these animals do not support harvesting. The public has spoken out loudly against their trapping. Yet the Board persists in allowing it to continue. Who is benefiting from this? Certainly not the majority of Park users, who come to view wildlife and enjoy the outdoors free from worry about their pets, or themselves, being hurt or killed in traps. Please respect the recommendations of wildlife professionals and of the public at large. Put an end this harmful practice.

Sincerely,

Paul Chanek

February 24, 2009

RC 28

Otto Kulm
P.O. Box 967
Valdez, AK 99686

Alaska Board of Game:

I am writing this letter in regards to proposal number 34 obtaining to extending the Brown Bear season in unit 6D. I am the original author of that proposal, and I wish to abolish the proposal entirely. The current season dates should stay the same for unit 6D.

I was originally led to believe that the harvest numbers were a lot lower than they actually are for that unit. After clarifying with fish and game about the actual harvest numbers, it seems the current take is already at the preferred level of around 25 Bears annually. Extending the season would allow additional Bears to be harvested, and could hurt the sustainable yield.

Sincerely,

Otto Kulm

Wright, Sherry (DFG)

From: Robert Purpura [kbsp@alaska.net]
Sent: Saturday, February 14, 2009 10:34 AM
To: Wright, Sherry (DFG)
Subject: RE Cow Moose Hunt

RC 29

Sherry

Keith Gain polled the members of the Seldovia AC Board about reauthorization of the request to have or extend a cow moose hunt on the Kenai Peninsular and everyone is in support of this proposal.

Please make note for the up coming game board meeting.

Thank you
Robert Purpura
Vice Chair Seldovia AC

Proposal 151 and 152 Comments from Seldovia AC

RC 30

Mount Yenlo AC meeting minutes from February 25, 2009

The meeting was held at 12: pm at the Skwentna roadhouse. Election was held and four new members were seated as were 3 previous members re-elected by consent giving the AC 10 total members. Two members were not in attendance.

The agenda was centered on the predator control proposals in the area.

Proposal 166; no action: There was a discussion, but due to the combined issues of the proposal, no action was taken by consent.

Proposal 168; carried 6-1: dissenting member was concerned of the public perception from outside of allowing non-residents to participate in predator control.

Proposal 171; carried 6-1: dissenting member was concerned for incidental take of brown bears.

Proposal 173; carried 7-0: no objections.

Proposal 174; failed 0-7: the AC is unsympathetic to this group's cause.

Proposal 182; carried 5-3: the opposition is concerned that non-residents may be able to harvest moose prior to residents, but looking at the small harvest records, the majority has little concern.

Proposal 183; carried 8-0: this is a yearly re-authorization.

Proposal 186; failed 0-8: not in keeping with this AC agenda in game management so again as with 174, this group gets no support.

Proposal 188; carried 8-0: this AC believes this is mandated by law and is nessesary.

Proposal 189; carried 8-0: this AC wants to extend the bait season and allow permittees to use choppers for predator control.

Proposal 190; failed 0-8: this AC has a long history of preferring the public/private individuals over the government employees when it comes to this type of control/management program.

Proposal 246; failed 0-8: this is adding costly paper work that is not needed.
proposal 245; failed 0-8: AC finds unnecessary, and amends to eliminate it state-wide.

approved by Tom Payton; Chair

RC 31

Kenai/Soldotna Fish & Game Advisory Committee

02/18/2009

Called to Order

Roll Call

Present: Chair Mike Crawford, Secretary Christine Brandt, Dyer VanDevere (late), George Hunt, Joe Hardy, Joe Mandurano, Nate Corr, Pegge Bernecker, Reubin Payne (late), Rik Bucy, Dick Dykema, Andrew Carmichael, Brent Burnett, John Lucking. Excused: Vice Chair Paul A. Shadura II, Bill Tappan. Absent: Wade Beard

Agency Staff Present: Jeff Selinger

A. Bucy moved to approve the minutes from 2/11/09, Carmichael seconded. Unanimous.

B. Board of Fish proposals

Proposal 44- Mandurano moved to approve, Bucy seconded. Not even information to approve management plan. Concern about abundance of shrimp. 0/12/0

Proposal 49- Bucy made a motion to approve, Burnett seconded. 0/12/2

Break – Payne present.

Brandt made a motion for Chair Crawford to travel to Anchorage to represent the Kenai/Soldotna Fish & Game Advisory, Corr seconded. 13/0/0

Board of Game proposals

Proposal 134-140- Crawford moved to take no action based on action taken on 132, Corr seconded. 13/0/0

Proposal 143- Crawford moved to adopt, Bucy seconded. Unfair to nonresidents. 0/13/0

Proposal 144-Crawford made a motion to approve, Brandt seconded. Crawford withdrew his motion. Crawford moved to take no action based on Seward AC, Corr seconded. 10/2/1

Proposal 156 – Bucy made a motion to approve, Corr seconded. Motion withdrawn. Brandt moved to take no action, Corr seconded. 13/0/0

Proposal145- Crawford moved to adopt, Brandt seconded. 0/13/0

Proposal 146- Hardy made a motion to adopt, Crawford seconded. Hunting not decreasing population. 0/13/0

Proposal 147- Crawford moved to take no action based on 146, Bucy seconded. 13/0/0

Proposal 148- Crawford moved to adopt, Corr seconded. Concern about depleting bull moose. 0/13/0

Proposal 153- Corr moved to adopt, Bucy seconded. 0/11/2

Proposal 154- Crawford moved to take no action based on 153, Corr seconded. 13/0/0

Proposal 155- Crawford moved to adopt, Bucy seconded. 0/13/0

Proposal 119- Crawford moved to bring back to the table, Brandt seconded. Crawford moved to amend the proposal to seasons to open November 01 – closing April 30, Payne seconded. 13/0/0 Amendment. 13/0/0 as amended.

Proposal 117- Hardy moved to adopt, Corr seconded. Not a biological concern. 0/13/0

Proposal 118- Corr moved to adopt, Bucy seconded. 0/13/0

Proposal 120- Corr moved to adopt, Bucy seconded. 0/13/0

Proposal 67- Corr moved to adopt, Bucy seconded. 0/13/0

Proposal 77- Corr moved to adopt, Bucy seconded. 0/13/0

Proposal 78- Brandt moved to adopt, Bucy seconded. 0/13/0

Proposal 174- Corr moved to adopt, Brandt seconded. 0/13/0

Proposal 123- Hardy moved to adopt, Corr seconded. 0/13/0

Proposal 125- Hardy moved to adopt, Corr seconded. 0/13/0

Proposal 131- Mandurano moved to bring 131 back to the table, Burnett seconded. Mandurano moved to amend 131 to bow/archery general season will be at the same dates as the drawing hunt, Burnett seconded. 3/6/4. Crawford moved to amend 131 to 10% of permits will go to archery hunters only, peninsula wide. Mandurano seconded. Amendment 7/5/1. 8/2/3 as amended.

Van Devere present 9:42PM

Proposal 201- Hardy moved to adopt, Corr seconded. Hardy moved to amend to be for guided hunters, Corr seconded. Amendment 2/12/0. As written 14/0/0

Proposal 222- Dykema moved to adopt, Corr seconded. 0/14/0

Proposal 128- Payne moved to adopt, Corr seconded. Crawford moved to amend it to include 7 & 15, Brandt seconded. Amendment 14/0/0. As amended 14/0/0

Kenai/Soldotna
AC 2-18-09

Proposal 129- Payne moved to adopt, Corr seconded. Corr moved to amend to include Unit 15, up to 1 nonresident permit total in remote areas, Payne seconded. Amendment 6/7/1. As written 0/14/0.

Next meeting March 23, 2009, Lisa Evans with Sport Fish presentation on Sport Fish Economic Report, email link to short economic report to AC members.

Meeting adjourned.

Kenai/Soldotna
AC 2-18-09

National Parks Conservation Association ♦ Alaska Regional Office
750 W. 2nd Ave. Suite 205, Anchorage, AK 99503 (907) 277-6722
Protecting Our National Parks for Future Generations

RC 32

Testimony of Jim Stratton

Alaska Regional Director - National Parks Conservation Association

Alaska Board of Game

February 27, 2009

Good Morning Mr. Chair, members of the board. My name is Jim Stratton and I am the Alaska Regional Director of the National Parks Conservation Association. I appreciate the opportunity to comment today on our eight proposals that speak to a conflict between the state's Intensive Management strategy and its application to wildlife hunted on lands managed by the National Park Service. NPCA is a national membership organization working to protect our national parks for future generations. We have over 1,000 members in Alaska and 340,000 across the country and it is the very opportunity for these members and all Americans to know that national preserve lands in Alaska support healthy populations of wolves and brown bears living in intact and functioning ecosystems that brings me before you today.

I would like to say from the very beginning of my testimony today that NPCA is NOT challenging the state's Intensive Management laws. We fully understand that Intensive Management is the direction passed onto to the Board of Game and the Department of Fish & Game by the Alaska legislature and baring any conflicting direction from federal land management agencies, it is how wildlife is managed in Alaska. What we are questioning, however, is the application of Intensive Management on lands managed by the National Park Service because of an irrefutable conflict with the direction set by Congress for managing wildlife in national preserves as embodied in Park Service management policies and other directives.

Sport hunting is provided for in the Alaska National Interest Lands Conservation Act (ANLICA) on those lands designated by Congress as national preserves. That authority, however, is not absolute and comes with some restrictions as found in ANILCA Section 1313:

> *A National Preserve in Alaska shall be administered and managed as a unit of the National Park System* ***in the same manner as a national park*** *... except that the taking of fish and wildlife for sport purposes ... shall be allowed in a national preserve* ***under applicable State and Federal law and regulation.***

The key words here are "in the same manner as a national park" and "under applicable state and federal law and regulation." Let's look at what applicable state and federal laws and regulations have to say about managing wildlife in Alaska's national preserves in the same manner as a national park.

Intensive Management is based on the Alaska legislature finding that "providing for high levels of harvest for human consumption in accordance with the sustained yield principle is the highest and best use of identified big game prey populations in most areas of the State..." If those populations are depleted, then the board takes action to control predators. Four years ago action was taken to exempt national park lands

from Predator Control Areas and that action is to be applauded. However, the philosophy of Intensive Management, regardless of whether an actual Predator Control Plan has been adopted for an area, is still impacting wolf and brown bear populations in national preserve lands.

For example, in unit 16(b) (which includes portions of Denali National Preserve) when the state's Intensive Management bill was passed, the harvest of brown bears was one bear every four years in a season from September 1 to May 25. Starting in 1999, several changes were made to both the season length and bag limit so that the regulations now provide for two bears every year in a season from August 10 to May 31. In reading the state's Brown Bear Management Report, these changes were made because "moose was the priority species...and a high population of brown bears conflicted with moose population productivity" and these changes were proposed "to reduce the bear population."

This manipulation of wildlife populations is fundamentally in conflict with national park service Management Policies which read in Section 4.4.2 that

> *The Service does not engage in activities to reduce the numbers of native species for the purpose of increasing the numbers of harvested species (i.e., predator control), nor does the Service permit others to do so on lands managed by the National Park Service.*

This prohibition against the implementation of Intensive Management on national park lands was re-emphasized in a December 19, 2006 letter to the Eastern Interior Alaska Subsistence Regional Advisory Council from the Acting Assistant Secretary for Fish, Wildlife and Parks which states that "*...undertaking intensive management practices, including predator control activities as conducted by the State of Alaska, is not allowed on NPS lands*"

The increase in bag limit in Unit 16(b) was objected to by the national park service in 2005 because of concerns over just this conflict, but those objections were not addressed by the Board of Game.

This is the rub. The National Park Service, which adopts all non-conflicting state wildlife regulations as its own, has regularly objected to increases it feels are in conflict with the Congressional management direction they must operate under and the Board of Game dismisses these concerns.

Our eight proposals – 51, 64, 67, 77, 78, 112, 174 and 186 - asks that for those portions of GMUs that are in national preserves, the hunting regulations (season length and bag limit) be rolled back to those levels that existed prior to the state's Intensive Management law. This was the level of harvest anticipated by Congress when it provided for hunting in national preserves.

Another way to address this concern would be for the Board of Game to implement a similar regulation to that which exempts national park service lands from predator control plans – simply provide that any change to hunting regulations on those portions of GMUs that are found on national preserve lands can only be implemented with the concurrence of the national park service. This puts the Park Service clearly in the decision making loop for wildlife living on its lands and allows it to make a determination if a proposed change is in conflict with federal directives. In addition to the solutions suggested in our 8 proposals, this is another way to get at the concerns we have raised and prevent them in the future and we'd be happy to work with the board, the department, and the Park Service to develop such a regulation for your consideration.

KAWERAK , INC. ○ P.O. Box 948 ○ Nome, AK 99762

TEL: (907) 443-5231 • FAX: (907) 443-4452

SERVING THE VILLAGES OF:

BREVIG MISSION
COUNCIL
DIOMEDE
ELIM
GAMBELL
GOLOVIN
KING ISLAND
KOYUK
MARY'S IGLOO
NOME
SAVOONGA
SHAKTOOLIK
SHISHMAREF
SOLOMON
STEBBINS
ST. MICHAEL
TELLER
UNALAKLEET
WALES
WHITE MOUNTAIN

PC 33

February 23, 2009

Kristy Tibbles, Executive Director Board of Game
P.O. Box 115526
Juneau, AK. 99811

SUBJECT: Comment for Board of Game Proposal#244

Kawerak Incorporated, and the 20 Seward Peninsula Region villages it represents, vehemently opposes Proposal #244 which would make illegal the use of full metal jacket ammunition for the taking of big game resources on state managed lands. This proposal, if implemented, would cause extensive and unforeseen social and economic hardships throughout rural Alaska.

Kawerak staff conducted a recent interview of six of the region's twelve village ammunition retailers and compiled information on the cost difference between the proposed illegal full metal jacket ammunition and its alternative, leaded soft point. The results were definitive: The cost for full metal jacket ammunition was less than half the cost of the alternative. This difference is due to the U.S. Military's demand and wide production of full metal cartridges, especially caliber .223.

The increased cost in securing food and clothing is only a part of the concern. The motivation for hunting big game in rural Alaska is overwhelmingly different from those of urban populations connected to the road system. Most urban users supplement their diets with sport like game hunts and take home only prized meat. Rural subsistence users depend on securing game meat and value all portions of the game including vital and internal organs.

The proponents of proposal #244 argue that outlawing full metal jacket ammunition would decrease the amount of big game non-lethal wounding. For rural subsistence users, that reasoning is illogical as rural subsistence hunters utilize head shots exclusively so as not to damage the prized vital and internal organs. There is no more effective method for penetrating the skull bone of a big game animal than full metal jacket ammunition. Maiming of animals is the result of poor shot placement rather than type of ammunition.

Kawerak Inc. and the villages it represents within Unit 22 oppose Proposal #244 because Full Metal Jacket ammo cost less in our communities, is readily available, and destroys less meat. If you would like more information, please contact Sandra Tahbone, Subsistence Program Director at 907.443.4265.

Sincerely,
Kawerak, INC.

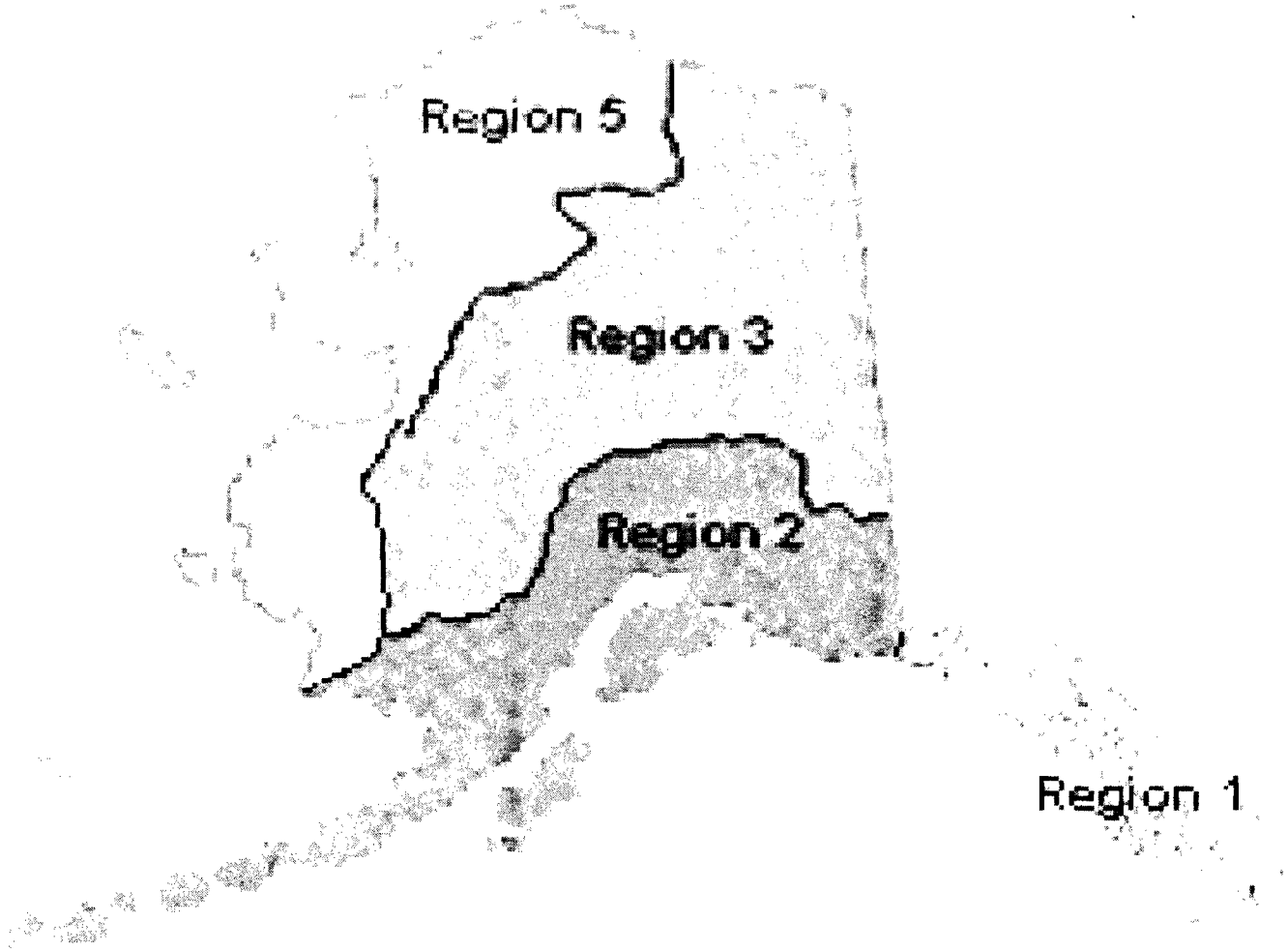
L Bullard

Loretta Bullard
President

RC

Grant Hilderbrand
March 2009

Region II Overview
2007 Board of Game



RC 34

Region II Overview
Human Population

- Approximately 420,000
- Roughly 2/3 of the state population
- Areas of major growth and development: Anchorage, Mat-Su Valley, Kenai Peninsula

Region II Overview Organization

- 55 Employees
- Regional Office in Anchorage
- Area Offices in:
  - Cordova
  - Homer
  - Soldotna
  - Kodiak
  - Palmer
  - King Salmon
  - Dillingham
  - Glennallen

Personnel Changes

- Mark Burch – planning and management
- Tom Lohuis – sheep research
- John Crouse – Moose Research Center Director
- Ed Weiss – lands program
- Joey Lindberg – info center
- Coleen Greenshields and Patricia Howard – administrative staff

Vacancies and Needs

- King Salmon AB, Assistant AB
- Moose Research Center WBII
- Moose Research Biologist – GMU 16
- Anchorage info center
- Assistant management coordinator
- Additional staff in Anchorage, the Kenai, and Palmer to address public needs and wildlife issues.

Alaska Office
333 West 4th Avenue, #302 | Anchorage, AK 99501 | tel 907.276.9453 | fax 907.276.9454
www.defenders.org

RC 35

TESTIMONY OF WADE WILLIS
DEFENDERS OF WILDLIFE

Alaska Board of Game
Spring 2009 Meeting

Defenders of Wildlife ("Defenders") appreciates the opportunity to comment on the regulatory proposals being considered at the Southcentral and Southwest regional Board of Game meeting. Established in 1947, Defenders is a non-profit membership based organization dedicated to the protection of all native wild animals and plants in their natural communities. Defenders focuses on imperiled species, habitat alteration and destruction, and the associated loss of biological diversity. Defenders also advocates new and innovative approaches to wildlife conservation that will help prevent species endangerment. Our outreach programs, including education programs being developed with and for Alaskans, emphasize increased protection for entire ecosystems and interconnected habitats while protecting predators that serve as indicator species of ecosystem health. Defenders represents more than 1,900 members and supporters in Alaska, and more than 1 million members and supporters nationwide.

I am the Alaska Representative for Defenders, a 19-year resident of Alaska, a former biologist for the Alaska Department of Fish and Game (ADF&G) and U.S. Fish and Wildlife Service, an active member of the Alaska Chapter of the Wildlife Society, a member of the Anchorage Regional Fish and Game Advisory Committee and a hunter.

Defenders has submitted detailed written comments on 54 proposals. Today in my oral testimony I will focus on those issues of greatest concern to Defenders.

Wolverine Trapping in Chugach State Park:

Defenders supports the proposals (22, 25 and 27) that seek to close wolverine, lynx and coyote trapping in Chugach State Park due to unsustainable harvest levels of wolverines in 2007 and 2008. Despite ADF&G testimony about concerns for overharvest, as well as broad public disapproval and testimony regarding wolverine trapping in the Park, the Board of Game based its decision to allow wolverine trapping on a non-scientific agenda that supports the expansion of trapping at the expense of all other user groups and the long term health of the Park's wolverine population. Trapping for lynx and coyote need be terminated as well because of the risk to non-target species including dogs and wolverines. The adoption of a wolverine trapping season in the Park was a mistake and there is broad support for correcting this error. The board should adopt these proposals to protect the few remaining wolverines in Chugach State Park. *(ADF&G Wolverine Census Population Estimate Data – 2008 and ADF&G Wolverine Harvest Data 2007 & 2008)*

National Headquarters
1130 17th Street, N.W.
Washington, D.C. 20036-4604
tel 202.682.9400 | fax 202.682.1331

Use of Helicopters by Private Citizens:

Several proposals such as 192 would allow the use of helicopters by private citizens to kill bears and wolves. Defenders opposes these proposals, in part, because the use of aircraft should only be allowed to control predators in cases of legitimate biological emergencies, and then only by ADF&G personnel. The effects of allowing private citizens to use helicopters further demonstrates that the state's predator control programs are nothing more that a guise to allow aerial hunting of wolves and bears by private citizens rather than scientifically defensible and legitimate control programs.

Helicopter use is also strongly opposed by Alaska Wildlife Troopers as promoting illegal hunting for a wide variety of wildlife, including moose. Not only do they oppose it, but the Troopers request that the Board "develop a written policy to completely eliminate any possibility of helicopter use for any type of hunting of big game by the general public." (DPS comments to BOG - Feb 09)

The Troopers further state that "by allowing the general public to use helicopters to access bait stations and associated camps during seasons when the hunting of other big game animals is open is inviting opportunities to kill brown bears, moose, wolverine and other species under the guise of accessing a bait station and associated camps." (DPS comments to BOG - Feb 09) The Troopers' concerns are especially relevant when the same-day airborne hunting is allowed in Unit 16. The Troopers have also testified about same-day airborne regulations that are allowed for one species but illegal for others at the same time: "This would give the illegal airplane hunter one more layer of defense by giving him the excuse of hunting black bear the "same day he is airborne" for a permitted bait station." *(DPS comments to BOG – Jan 08)*

And let's not forget, this would occur in a unit that allowed increased numbers of bait stations per hunter. Could there be a stronger plea from the Troopers for the board to *NOT* promote unethical, and likely, illegal, hunting in Alaska?

The Snaring of Bears:

Proposal 168, 190 and the ADF&G's preferred option recommendations all request the snaring of bears, which we strongly oppose. Snares also catch cubs of both brown and black bears, presenting a significant risk to the public should they accidently approach a sow that has a cub which has been snared. ADF&G has also requested allowing the use of snares all summer long, when recreational use is highest by campers, fishermen, hikers, and berry pickers. The dates when black bear trapping are proposed to occur would also coincide with closed seasons for other furbearers, including brown bears, increasing the opportunities for illegal harvesting of other furbearers that would be out of season.

Another of our concerns is that the Board of Game has waived the regulations requiring the salvage of game meat in Unit 16, even though spring black bears in that area are widely considered excellent sources of very good meat. Snaring bears to support the "preferred' harvest of moose meat, when both bear and moose are high quality food source, is unethical and wasteful.

The Alaska Wildlife Troopers also oppose snaring of bears and, have clearly stated in the past: "Traditional snares and techniques are ineffective at targeting specific species, which place the hunter in violation of regulations." *(DPS comments to BOG - Feb 09)*

The Sale of Bear Parts:

Defenders opposes the ADF&G recommendation to allow the "resale" of bear black bear skulls and hides, either raw or tanned in Unit 16 because harvesting bears in any predator control programs for profit is both ineffective and inappropriate. Predator control programs were never intended to provide financial gain for a hunter or an industry.

Alaska Wildlife Troopers have long opposed any form of legal sale of bear parts due to lack of available enforcement personnel and insufficient regulatory oversight associated with verifying the legal origins of the bear parts. In other words, patchwork regulations promote the illegal harvest and poaching of bears.

Astonishingly, the ADF&G's rationale for requesting this regulatory change is, and I quote; "to provide an incentive for fur buyers to actively participate in the program." Based in this statement, it appears the ADF&G wants to promote methods that do not increase harvest, but that actually encourage illegal harvest, and promote a for profit, "commercial" fur industry participation in a predator control program.

This and other recommendations by the ADF&G were made, not in the proposal book, but in a separate document, "Preferred Options for Predator Control," which was only posted very recently on the Board's website. In our opinion, this document should have made available prior to the close of the public comment period. By adding it to the website at such a late date, it appears to be an attempt to avoid the traditional and required public notice.

Killing of Wolves and Wolf Pups Through Poison Gas, Denning, Snares and Traps:

Also in the ADF&G's "Preferred Options for Predator Control" document for Unit 9, you will find a request by the ADF&G to authorize the use of carbon monoxide to kill wolves in dens, including pups. Defenders strongly opposes any type of regulation allowing the harvest of wolf pups during a predator control program as control should occur prior to pupping season to avoid the controversial killing of pups.

This practice of using lethal gas has never been employed previously by the ADF&G and deserves both extensive public discussion and debate. The Department submitted Proposal 190 as a request for "public input" on the use of carbon monoxide by agency personnel stating that "the department is considering, but not necessarily recommending, the use of carbon monoxide to euthanize wolves." By floating it for discussion in Proposal 190, and then quietly, and unequivocally, recommending it as a "preferred option" in an obscure website posting, certainly suggests the Department appears to be trying to do its best to hide the request from public view.

The Department also recommends that plan language be clarified to allow ADF&G staff and the public ("agents of the state") to trap and shoot wolves in or near dens, and to specifically allow denning. This simply dovetails with their plan, as stated by Doug Larson, to, "continue killing wolves and pups during the denning season if necessary or if simply encountered during standard field operations for Unit 9D's predator control program." *(Doug Larson, Director ADF&G, testimony to the BOG – Dec 08).*

To date, the Board of Game has not sufficiently addressed or discussed the needs and concerns of the public or the tourism industry when considering approving such a drastic method of harvest such as denning. The Board of Game never specifically called for proposals on the subject of denning at any of

their previous regional meetings. Without thorough and rigorous participation by the public and strong evaluation of the benefits and the costs associated with the policy, it is inappropriate to assume that a vaguely worded authorization, that does not specifically address denning, would be sufficient to fully address the needs and concerns of the public as well as essential industries affected by the decision to allow killing wolf pups in the den.

This lack of a formal public discussion on the policy of "denning" in Unit 9D, the lack of clarifying existing code changes by citing the change specifically, as well as the complete lack of clearly publishing calls for proposals specifically addressing denning, clearly highlights the limited scope and biased preferences during the Board of Game's evaluation and decision to promote this policy. Due to its controversial nature and this lack of proper procedure, denning should continue to be illegal in predator control programs, including in Unit 9D.

New Predator Control Programs and Renewal of Current Programs:

Proposal 239, submitted by the ADF&G at the request of the Board of Game and the Yukon-Innoko Moose Management Working group, would expand predator control programs into Unit 21E. Defenders opposes this request. Our review finds that, if adopted, this would be the least scientifically defensible predator control program to date. The Department justification for this program is not based on immediate biological need, but on "potential" need, calling this unnecessary wolf slaughter an "Adaptive Plan." Proposing to kill 80% of the wolves in an area of over 8,000 square miles when the Department has no population estimates for wolves nor any data to suggest wolves are significant contributor to moose calf mortality in the area is astonishing in its lack of scientific justification.

And last, we oppose the ADF&G's requests to renew the current control programs and to expand them to allow Department personnel to assist private aerial gunning teams by using ADF&G helicopters to kill wolves all year long. Defenders continues to contend that none of these programs have the scientific evidence to support predator control in these areas. Instead of ending these deplorable, unscientific programs, the ADF&G's response is to recommend escalating the programs. No science, no results, and no end to the war on predators.

Thank you for the opportunity to share our concerns today.

Wade Willis

Alaska Office
333 West 4th Avenue, #302 | Anchorage, AK 99501 | tel 907.276.9453 | fax 907.276.9454
www.defenders.org

RC 36

Review of National Park Service Comments

NPS commented on a large group of proposals that might affect NPS lands. Quite a few of the proposals deal with bears, wolves, and predator control programs, and are proposals that Defenders commented on too.

At issue are liberal seasons and bag limits on predators to facilitate intensive management. The National Park Service provided the sentence: "The NPS supports returning national preserves to a management strategy independent of intensive management." Defenders strongly supports this request by the National Park Service and believe that it is the states obligation to manage resources on NPS preserves cooperatively with the NPS, as agreed to by the States MOU with the park service.

Intensive management does not mesh with the mandates of the NPS to manage for "natural" abundance and diversity. Reducing predators for intensive management purposes in not appropriate when managing for natural abundance and diversity.

For Proposal 69, the NPS notes that certain park units would be virtually encircled by predator control areas thus affecting park populations of bears and wolves that migrate beyond the boundaries of the park. Management of our wildlife resources must consider the health of entire ecosystems which do not follow the rigid boundaries of the park.

For Proposal 170 and 171 regarding trapping of bears, NPS opposes that on the basis of human safety concerns. Defenders agree and also notes the State Troopers strong opposition as well as noting that snaring bears is not species specific. Unintended catch of moose, caribou, wolverine and other species is inevitable making by catch a very real problem for allowing the use of snares.

For proposal 198 regarding baiting of bears, NPS opposes due to concerns about habituating bears to human food sources. NPS lands are the favored destination for wildlife viewing by the public. Enticing bears to become accustomed to human food sources should be avoided at all costs in areas with such a reliance and historical high level of use for the wildlife viewing public. Baiting of bears often uses dog food laced with such foods as maple syrup,

National Headquarters
1130 17th Street, N.W.
Washington, D.C. 20036-4604
tel 202.682.9400 | fax 202.682.1331

donuts, sugar, bacon, grease and a wide range of other common human foods. Baiting and habituating bears to these food sources is inappropriate in NPS lands that promote camping and wildlife viewing by the public as their priorities.

Alaska Office
333 West 4th Avenue, #302 | Anchorage, AK 99501 | tel 907.276.9453 | fax 907.276.9454
www.defenders.org

Wade Willis

RC 37

REVIEW OF ADFG PREFERRED OPTIONS FOR REVISIONS TO PREDATOR CONTROL IMPLEMENTATION PLANS—FEBRUARY 2009

At the March 2009 Board of Game Meeting the Board will consider changes to the implementation plans governing predator control actions in the six currently active control programs in Alaska. Some of the plans and programs are up for re-authorization while others may be modified to accommodate proposed changes in details and operational procedures.

During the week of February 16, 2009 ADFG posted a document on the Boards Support website detailing the Department's preferred options when the Board deliberates changes to the implementation plans. Some of the proposed changes involve major departures from past practices and deserve close review and scrutiny. Accordingly, the following summarizes the important issues in each of the programs and provides a short summary of each.

Unit 9D—Southern Alaska Peninsula Caribou Herd

Despite labeling Proposal 190 as issued only for public comment (this is the proposal mentioning use of carbon monoxide to euthanize wolves), the Department now requests the Board to authorize use of carbon monoxide to kill pups in dens if the den holes are too small to allow pup removal. This is a practice never employed previously by ADFG and deserves much public discussion and debate. By floating it for discussion in Proposal 190 but recommending that it be approved in an obscure website posting, the Department appears to be hiding it from public view.

The Department also recommends that the plan language be clarified to allow ADFG staff and the public ("agents of the state") to trap and shoot wolves near dens, and to specifically allow "denning." This dovetails with their plan to try to kill wolves in the area in spring before the pups are born or, if necessary, to continue killing during the denning season.

Unit 13—The Nelchina Basin

National Headquarters
1130 17th Street, N.W.
Washington, D.C. 20036-4604
tel 202.682.9400 | fax 202.682.1331

The background discussion admits that despite many years of liberal brown bear seasons and bag limits there has been no positive response in the moose population.

The Department recommends re-authorizing the predator control program for up to six more years.

The Department recommends that the Board authorize ADFG personnel using helicopters to shoot wolves that elude public aerial shooting in certain places during some years. This would be the first time since the first wolf control programs were approved in 2003 that helicopter shooting is employed.

The helicopter authorization would allow shooting wolves "...at any time during the control period..." which seems to allow shooting during summer or at dens.

Unit 16B—Upper Cook Inlet

The background discussion indicates that the control area for wolves and bears will remain unchanged but the bear control effort will be concentrated in 1/3 of the area and research will be initiated to evaluate effectiveness of bear reductions.

The Department is recommending that the Board authorize resident hunters to use helicopters for transport to access the area. This would be the first time that helicopters would be a legal means of transport for hunters in Alaska. Strict prohibitions on this have always been in effect, even to the extent of prohibiting rescue of hunters stranded by weather or other emergencies. Residents could use helicopters to check bait stations and shoot bears same-day-airborne. Shooting from the helicopter would not be legal.

The Department is also recommending that the Board authorize foot snares for residents to take black bears. This is a form of trapping which has been illegal for bears for decades. Residents could use helicopters to check snares with a 24-hour checking requirement.

The Department is also recommending that the Board extend the bear baiting season to run through the summer—the season would be April 15 to October 15. Defenders has commented previously on the problems associated with summer bear baiting including human safety concerns.

Perhaps the most controversial Department preferred option is to allow private citizens to shoot and retrieve wolves in this area with helicopters. This comes as a surprise and is not mentioned in any of the proposals before the Board. Again, posting this on an

obscure webpage at the 11th hour appears to be an effort by ADFG to hide it from public scrutiny. Surely, such a major departure from past practices deserves broad public notice and debate.

The Department also recommends clarifying language in the plan to allow nonresident bear hunters to hunt over a guide's baiting permit. Nonresidents would not receive predator control permits, but could receive baiting permits if hunting without guides.

As in Unit 13, the Department is requesting authorization to use Department staff in helicopters to take wolves not taken by private pilots in Unit 16B.

Unit 19A—Central Kuskokwim River

The Department proposes reducing the size of the wolf control area by 50% to concentrate control where it will be most effective along the major drainages. Past efforts in more remote, rugged areas have been ineffective.

ADFG is requesting authorization to take wolves with helicopters if the reduction efforts by private pilots don't accomplish program goals.

Unit 19D East—McGrath Area

The background discussion indicates that the bear control effort in the EMMA has been unsuccessful in reducing bears or benefiting moose. However, the Department does not recommend canceling the bear control program.

ADFG recommends extending the predator control program one year.

The Department recommends reducing the size of the wolf control area from 6,245 square miles to 4,636 square miles and focusing control near the villages in the unit. They also recommend establishing a new area—The 19D McGrath Village Wildlife Management Area—with its own moose population and harvest objectives. These would be 2,000-2,500 and 120-140, respectively. It is important to note that in 2000 when the original McGrath planning team devised a plan for Unit 19D East, ADFG biologists advised that 3,000-3,500 moose were necessary to provide sustainable harvests of 130-150 moose per year. The recommended objectives of the Department now are likely inadequate.

Again, the Department recommends that the Board authorize ADFG personnel in helicopters to take wolves not taken by public aerial shooting as necessary to accomplish program objectives.

Units 12 and 20E—Tok Area

The background discussion indicates that wolf and bear control efforts have thus far not benefited moose or caribou significantly in most of this area.

The Department recommends Board action to cancel the grizzly bear control program in this area and to eliminate the bear control area. We note that past research in this area demonstrated that bear predation on young moose calves was a major limiting factor for moose population growth. By failing to reduce bear predation on moose, the wolf reduction program will likely fail to significantly benefit moose or will take much longer to produce significant moose population growth. And it will shift focus entirely to reducing wolves rather than dealing with what is likely a more important predator in this area—the grizzly bear. We strongly recommended that the Board should explore creative options to encourage hunters in this area to harvest additional bears and to explore non-lethal methods of reducing bear predation on moose.

As with Unit 16B, the Department recommends that the Board authorize private pilots to use helicopters to shoot and retrieve wolves in this area. We should note that due to several factors including the remoteness of much of this area, relatively small numbers of wolves have been taken to date despite very large numbers estimated as present by ADFG. If the wolves are actually present and if helicopters are used by the public, vastly more wolves may be shot as a result.

ADFG recommends that the Board authorize Department personnel in helicopters to shoot wolves the escape from private pilots in order to meet program objectives.

In summary, several of the ADFG preferred options presented in these documents (including using carbon monoxide to kill young pups in dens and private pilots shooting wolves with helicopters) are highly controversial and deserving of much more public notice and debate. We are surprised that they were quietly posted on the Boards Support website only after the written public comment deadline on Board proposals for the March meeting had expired. It appears that this was a deliberate effort to hide controversial recommendations by the Department. We strongly recommend that the Board should postpone actions on all of the ADFG recommended changes to the predator control implementation plans until such time that the public has the opportunity to debate the wisdom of these drastic changes in public policy.

Lake Iliamna Fish &Game Advisory Committee

Randy Alvarez (Chairman)

Igiugig, Ak 99613

RC 38

Testimony to BOG February 27-March 9, 2009

Board members I thank you for the opportunity to express our concerns and comments, on those proposals affecting us. Our committee is made up of 9 representatives from 8 communities. The communities are Port Alsworth, Nondalton, Newhalen, Iliamna, Pedro Bay, Pope-Vanoy Landing, Kokhanok, and Igiugig. Our area of usage is units 9B, 9C, 17B, and 17C.

Starting with Proposals 42, 43, 44, and 45

Which deal with Brown Bears in Unit 9C. We are opposed to these proposals as they are asking to shorten or close the hunting season. At our advisory committee meeting February 2, 2009 at Igiugig, the ADF&G game biologist from King Salmon reported to us that there is no problem with the Brown Bear population in this area, he said that in 2007 he did an aerial survey of that area and counted 330 bears. Proposal 43 states that bear watching in this area got started about 1999 and in recent years they have been seeing less bears. We believe that bear watching started in this area because of the explosion of salmon returning, which resulted from the Kvichak River drainage being put into a conservation measure because of low salmon escapements. Commercial fishing was moved into the Naknek River to protect the Kvichak. The Alagnak River drainage wasn't experiencing any problems to escapement during this time so the escapements to the Alagnak River were the most on record, as much as 5.4 million when the escapement goal is about 400,000 . This concentrated the bears to Moraine, Funnel and Battle creeks to feed on the abundant surplus of salmon. I remember flying there and seeing Moraine and Funnel creeks packed solid with fish. In fact it happened that because of a hot summer with low water, approximately 200,000 fish died from the lack of oxygen. That number from the fisheries biologist that manages the Naknek/Kvichak salmon. The last 5 years the Kvichak has been coming back and there has been commercial fishing in the Kvichak district, which the Alagnak is part of, commercial fishing started out conservatively and has been allowed more and more every year. Consequently the Alagnak has been getting less

escapement and is resulting in Moraine and Funnel creeks getting closer to normal returns of salmon, but still well above average or what is needed for sustainability.

The ADF&G salmon forecast for 2009 is for the Kvichak to be almost 2 million more than last year and the Alagnak to be lower by about 1 million, which is about twice the required amount. Consequently we see less salmon in Moraine, Funnel and Battle creeks this coming year. More like pre 1999. This will cause the bears to be spread out and not as many to be in this area. This is what has happened and will continue as long as the Kvichak and Alagnak salmon runs are healthy and the escapements to the Kvichak and the Alagnak get back to normal.

Proposal 55

We support this proposal, it would change the harvest objective for the Mulchatna Caribou herd.

Proposal 57

We submitted this proposal. We are in support of this. It asks to close Mulchatna Caribou hunting to nonresidents in units 9, 17, 18 and 19. The problem is the extremely low large bull count. We considered proposing closing the bull harvest and leaving the season open to both residents and nonresidents.

Proposal 58

Change the winter moose season in unit 9 to one antlered bull from one bull. We support this proposal.

Proposal 59

We submitted this proposal. We are now opposed, and ask that it be withdrawn. We proposed that the moose season be opened 10 days earlier in the fall in unit 9B

Proposal 64 and 67

We are opposed to these proposals. They ask that wolf bag limits in units 9 and 17 be reduced by half. Our game biologist reported at our last advisory committee meeting that the population is much higher than the 350 wolf population that proposal 64 states. We feel that the wolf population is a lot more than 350 in unit 9 not counting unit 17.

Proposal 65, 68 and 69

We support these proposals, they ask to develop and implement predator control plans.

We submitted proposal 69, we would like to amend it to read units 9B and 17B instead of 9 and 17. As you know the North Peninsula Caribou Herd is beyond Tier II with no hunting allowed and the Mulchatna Herd in severe decline along with the bull count being about half of what it needs to be. Something needs to be done to get these two herds healthy again. We at least would like to see management plans that state what our moose and caribou populations counts need to be, minimum, and what would take place if a herd drops below that count.

Proposal 202

Brown Bear tag fee exemption

We support this proposal.

Proposal 206

Asks to establish an archery moose season for units 7, 9, 11, 13, 14, 15 and 16

We strongly oppose this proposal because September 20-30 would be during the peak of the rut and the meat would be uneatable. Any moose taken at this time would be wanton waste. As for a season in November that is during freeze-up and would be dangerous, besides we already have a December season.

Proposal 207

Asks to establish a youth hunt in December

We oppose this as we already have a December season. If the board wants to implement a December youth season we ask to leave unit 9 out.

Proposal 221

Same Day Airborne

We oppose this as it asks to extend the waiting period to land and shoot. Our protection officer said it would be hard to enforce. It would affect residents more than nonresidents as nonresidents usually book for a week.

Proposal 244

The Use of 223 Full Metal Jacket Bullets

We oppose this proposal, although it is aimed at units 1, 2, 3 and 4 it asks that big game may not be taken with 223 full metal jacket bullets. Wolves and wolverine are considered big game and the full metal jacketed bullet is the most common for them because they are cheapest and military ammo is readily available. Hunters need to realize that full metal jackets are not deer bullets and use appropriate bullets.

PROPOSAL 193

Establishment of a Controlled Use Area
On the South Side of Government Peak
(GMU 14A)

RC39

SUPPORT

1. The Alaska Dept. of Fish and Game assisted DNR in preparing the Hatcher Pass Management Plan and the 1989 Amendment to that plan. ADF& G "will use this plan as guidance when implementing its authority" (see attachment 1).

2. The Hatcher Pass Management Plan Amendment has 5 subunits (see attachment 2 & 3).

3. The recreational development guidelines for the Government Peak subunit A and B does not permit motorized trail development other than a snow machine trail from the Gold Mint Trail Head to the snow machine play area north of Fishhook Creek. ORV use is restricted to existing roads and trails. Permits are required for off trail use (see attachment 4).

4. The Mat-Su Borough has emplaced "no motorize use", signs at several access points along the south side of Government Peak in an effort to prevent illegal use.

5. Hunters should have easy access to this information so they can plan legal access to this hunting area. Including this controlled use area in the Annual Hunting Regulation Booklet will accomplish this (see attachment 5).

6. The Hillside subunit does allow "traditional motorized access for hunting" (see attachment 6). This area is to the west of the Government Peak subunit (see map at attachment 3).

Ed Strabel
27 February 2009

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

P.O. BOX 107005
ANCHORAGE, ALASKA 99510-7005
PHONE: (907) 561-2020

RICHARD THOMPSON 269-8559

The Commissioner of the Department of Natural Resources finds that the Hatcher Pass Management Plan meets the requirements of AS 38.04.065 and 11 AAC 55.010-.030 for land use plans and does hereby adopt it. The Department of Natural Resources will manage state lands within the planning area consistent with this plan.

Lennie Gorsuch — November 1989

Lennie Gorsuch, Commissioner
DEPARTMENT OF NATURAL RESOURCES

Date

The Alaska Department of Fish and Game assisted the Department of Natural Resources in preparing the Hatcher Pass Management Plan. We appreciate the opportunity to represent fish and wildlife habitat and harvest values during the development of the plan. The Department of Fish and Game will use this plan as guidance when implementing its authorities and when reviewing and commenting on proposed uses of state lands in the planning area.

Don W Collinsworth — 11·16·89

Don W. Collinsworth, Commissioner
ALASKA DEPARTMENT OF FISH AND GAME

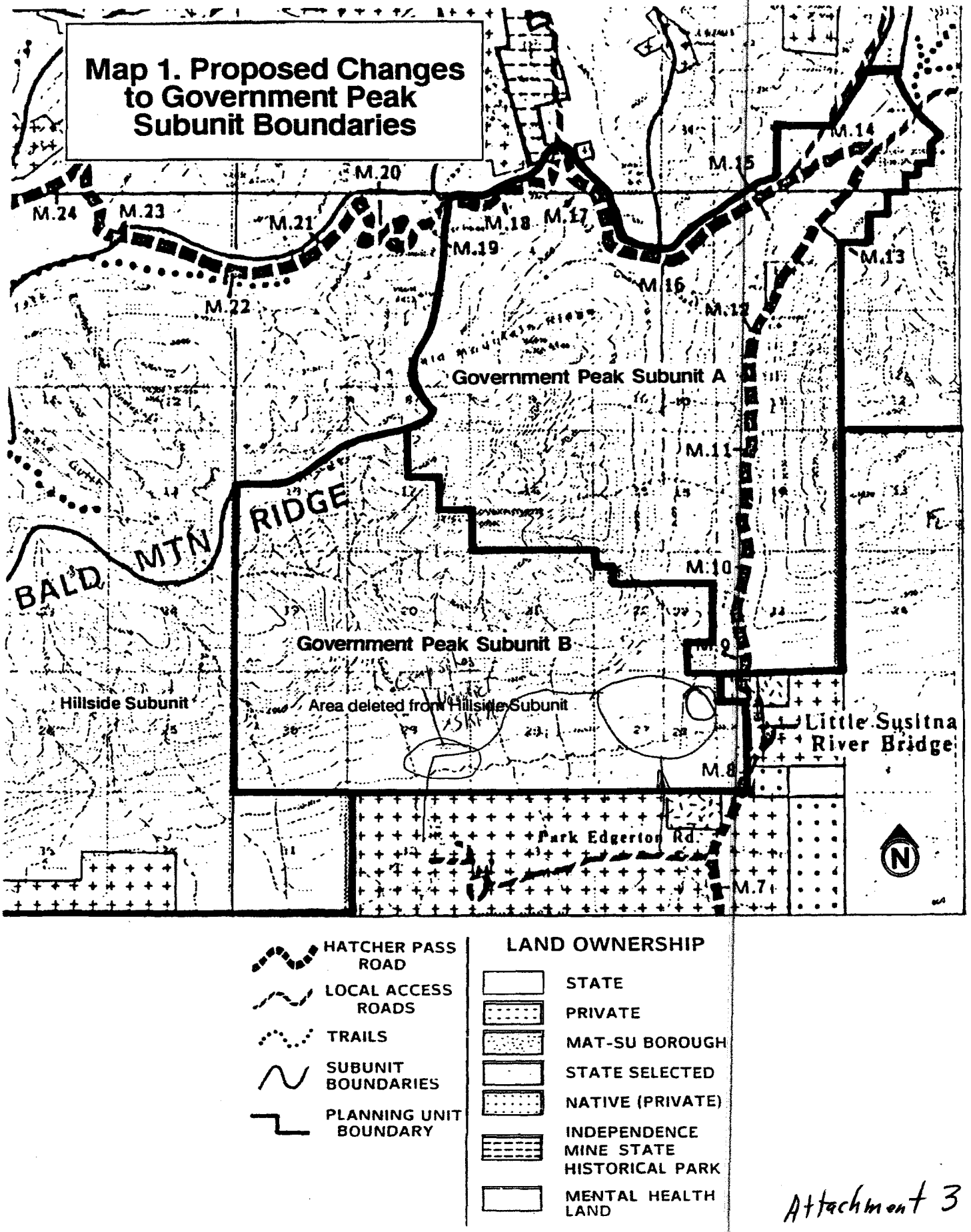
Date

Attachment 1

SUBUNITS

SUBUNITS

Attachment 2



Attachment 3

to stay close to the ski base. In order to allow and encourage the development of housing adjacent to the ski base facility, it is necessary to allow construction on steeper slopes.)

(7) Resort housing in Subunit B should not be located in the alpine zone (above the alder/willow line). The units should be clustered around a common open space, view, or recreational facility with pedestrian access to those facilities. In order to minimize environmental and visual impacts, the units should be located on slopes that are generally 15 percent or less unless location on a steeper slope is important to recreation design or to complete a cluster or focus (e.g. around the upper edge of the golf course).

(8) Resort housing may not be located within ¼ mile of the mapped location of the Castle Mountain fault zone (as shown on Figures 2 and 3 of DGGS Public Data File 88-39) unless a geologist or geo-technical engineer experienced in fault studies locates the fault planes by conducting detailed surficial mapping and trenching surveys across the fault zone. In that case, residential structures must be located a minimum of 50 feet from the fault planes.

(9) Resort housing may not be located within ¼ mile of Government Creek or the stream in the east ½ of Section 21 and the east ½ of Section 28, Township 19N, Range 1E, Seward Meridian. In addition, resort housing may not be located within the 1000-foot wide east-west greenbelt. See guideline 10 f, Fish and Wildlife, for the location of this greenbelt.

[i.]m. **Management of the Ski Area.** Prior to soliciting development proposals, DNR will evaluate the options available. It could be authorized under a lease from the Division of Land and Water Management or by concessionaire agreement with the Division of Parks and Outdoor Recreation. A third option would be to convey it to the Mat-Su Borough as part of their municipal selections and they in turn could convey development interests to the private sector.

n. **Recreational Development Guidelines**

(1) ORV Use. Vehicular travel is restricted to existing roads and trails. Permits are required for off road or off trail travel.

(2) Motorized Trail Use. Snowmachine trail development is limited to a connection from Subunit A base facilities to the Hatcher Pass snowmachine trail and snowmobile play area north of Fishhook Creek. Other motorized trai development is not allowed due to incompatibility with the tranquil resort setting non-motorized activities and wildlife use of the area.

(3) Trail Development and Management. It is recommended that the develope include a variety of nonmotorized trails within the lease site to serve both resor guests and local residents. The developer should consult with DNR's Divisior of Parks & Outdoor Recreation and other knowledgeable local groups (e.g. Nordic Ski Association, Hatcher Pass Outdoor Club, Mat-Su Borough Trail

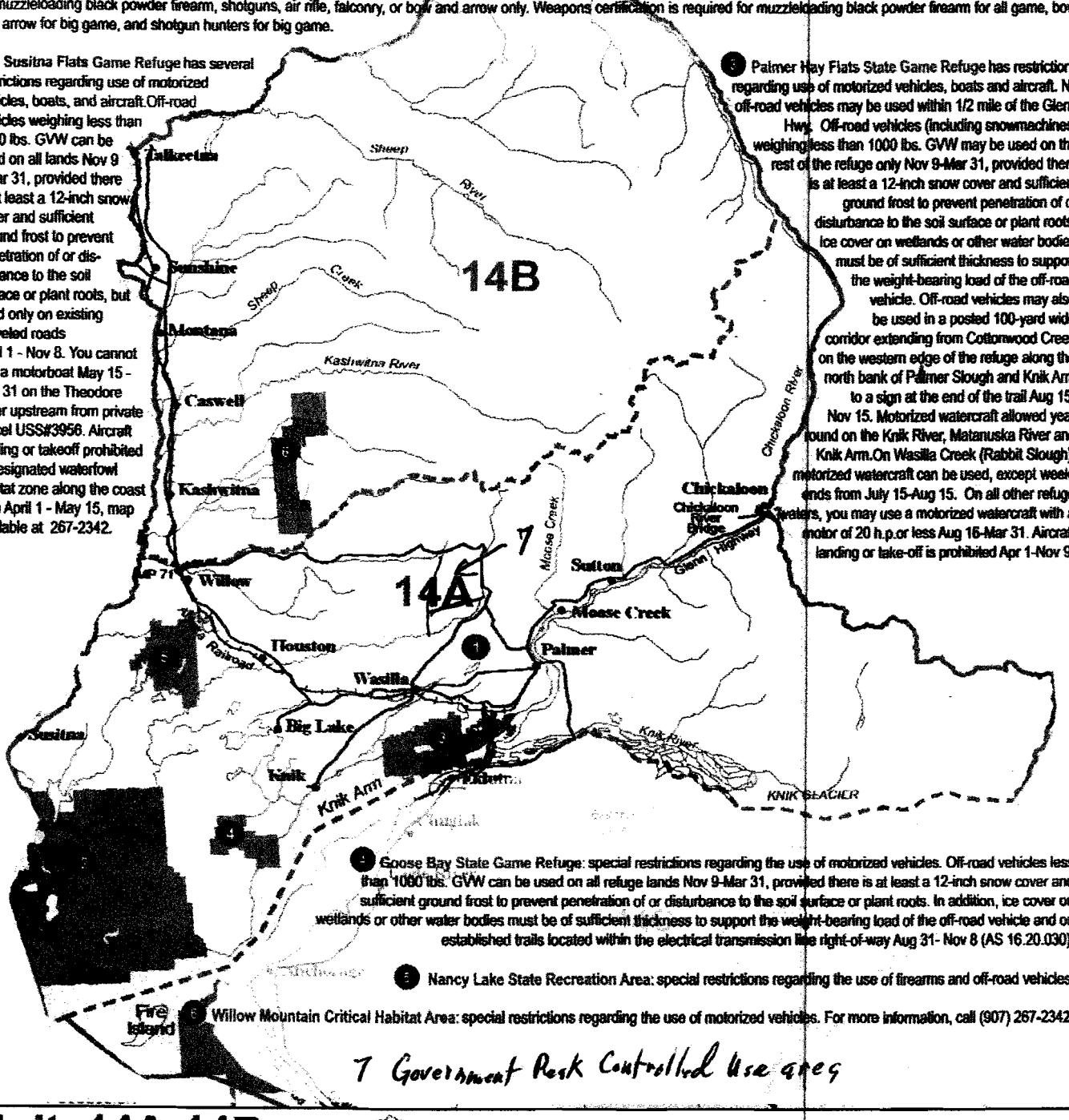
Attachment 4

State restricted areas:

1 Palmer-Wasilla Management Area: The portion of Unit 14A bounded by a line beginning at the intersection of the George Parks Hwy. and the Glenn Hwy., then east and north along the Glenn Hwy. to the Palmer Fishhook Rd., then west and north along the Palmer Fishhook Rd. to the Faulk Rd. intersection, then west along the road and section line to Tex Al Dr. and along Tex Al Dr. to the Wasilla Fishhook Rd., to Welch Rd., then west along Welch Rd. to the south bank of the Little Susitna River, then west along the south bank of the Little Susitna River to the bridge at North Shushana Dr., then south along N. Shushana Dr. to Shrock Rd., then west along Shrock Rd. to Church Rd., then south along Church Rd. to the George Parks Hwy., then west along the George Parks Hwy. to Vine Rd., then south along Vine Rd. to Knik-Goose Bay Rd., then north along Knik Goose Bay Rd. to Fairview Loop Rd., then south and east along Fairview Loop Rd. to the George Parks Hwy., then east along the George Parks Hwy. to the intersection with the Glenn Hwy.; the area is closed to hunting except that: Big game may be taken with a muzzleloading black powder rifle, shotguns with slugs and bow and arrow only, with weapon- specific certification. Small game and fur animals may be taken by muzzleloading black powder firearm, shotguns, air rifle, falconry, or bow and arrow only. Weapons certification is required for muzzleloading black powder firearm for all game, bow and arrow for big game, and shotgun hunters for big game.

2 Susitna Flats Game Refuge has several restrictions regarding use of motorized vehicles, boats, and aircraft. Off-road vehicles weighing less than 1000 lbs. GVW can be used on all lands Nov 9 - Mar 31, provided there is at least a 12-inch snow cover and sufficient ground frost to prevent penetration of or disturbance to the soil surface or plant roots, but used only on existing graveled roads April 1 - Nov 8. You cannot use a motorboat May 15 - Aug 31 on the Theodore River upstream from private parcel USS#3956. Aircraft landing or takeoff prohibited in designated waterfowl habitat zone along the coast from April 1 - May 15, map available at 267-2342.

3 Palmer Hay Flats State Game Refuge has restrictions regarding use of motorized vehicles, boats and aircraft. No off-road vehicles may be used within 1/2 mile of the Glenn Hwy. Off-road vehicles (including snowmachines) weighing less than 1000 lbs. GVW may be used on the rest of the refuge only Nov 9-Mar 31, provided there is at least a 12-inch snow cover and sufficient ground frost to prevent penetration of or disturbance to the soil surface or plant roots. Ice cover on wetlands or other water bodies must be of sufficient thickness to support the weight-bearing load of the off-road vehicle. Off-road vehicles may also be used in a posted 100-yard wide corridor extending from Cottonwood Creek on the western edge of the refuge along the north bank of Palmer Slough and Knik Arm to a sign at the end of the trail Aug 15-Nov 15. Motorized watercraft allowed year round on the Knik River, Matanuska River and Knik Arm. On Wasilla Creek (Rabbit Slough), motorized watercraft can be used, except weekends from July 15-Aug 15. On all other refuge waters, you may use a motorized watercraft with a motor of 20 h.p.or less Aug 16-Mar 31. Aircraft landing or take-off is prohibited Apr 1-Nov 9.



4 Goose Bay State Game Refuge: special restrictions regarding the use of motorized vehicles. Off-road vehicles less than 1000 lbs. GVW can be used on all refuge lands Nov 9-Mar 31, provided there is at least a 12-inch snow cover and sufficient ground frost to prevent penetration of or disturbance to the soil surface or plant roots. In addition, ice cover on wetlands or other water bodies must be of sufficient thickness to support the weight-bearing load of the off-road vehicle and on established trails located within the electrical transmission line right-of-way Aug 31- Nov 8 (AS 16.20.030).

5 Nancy Lake State Recreation Area: special restrictions regarding the use of firearms and off-road vehicles.

6 Willow Mountain Critical Habitat Area: special restrictions regarding the use of motorized vehicles. For more information, call (907) 267-2342.

7 Government Rest Controlled Use area

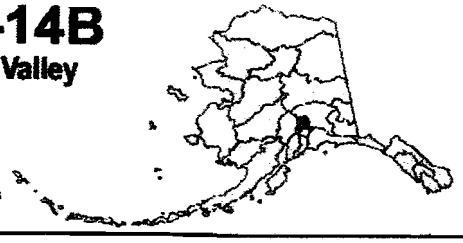
Unit 14A-14B

Matanuska-Susitna Valley

Region 2

0 3.5 7 14 Miles

N



Game Management Units / Special Management Areas

- Closed Areas
- Controlled Use Areas
- Management Areas
- State Refuges, Sanctuaries, & Critical Habitat Areas
- Other State Lands
- National Parks
- National Preserves & Other Federal Lands
- Unit Boundaries
- Unit Sub-Boundaries
- Roads
- Railroads

Attachment 5

5. **WATERSHED PROTECTION**

Bald Mountain Ridge provides watershed protection for private lands to the south of the management unit for residential and agricultural purposes. Thus, habitat enhancement, forestry, and grazing practices shall be such that they do not result in erosion or an increase in the rapidity of surface run-off.

6. **PUBLIC RECREATION**

a. **Density of trails** will be low to prevent moose harassment and to minimize the degree of change to this open space and habitat area. ADF&G will be consulted prior to authorization of the trail system.

b. **Seasonal restrictions** on certain types of recreational use in areas may be utilized where moose or bear concentrations occur to prevent bear/human or moose/human confrontations as recommended by ADF&G and DNR.

c. **Hunting access.** Traditional motorized access for hunting will continue unless an area is closed for a non-motorized trail system. In that event, equal or better access will be provided.

[d. **RECREATION AREA – EASTERN HILLSIDE:** THE PLAN RECOGNIZES STRONG LOCAL INTEREST IN ESTABLISHING SECTION III (SEE FIGURE 7, PAGE 222) AS A STATE RECREATION AREA. WHILE THIS AREA DOES NOT CURRENTLY MEET THE CRITERIA USED IN OTHER AREAS IN THE MANAGEMENT UNIT OF BEING AN INTENSIVELY USED AREA IN NEED OF ENFORCEMENT AND FACILITIES AND IS NOT PROPOSED FOR INCLUSION IN THE HATCHER PASS PUBLIC USE AREA, AT A FUTURE TIME RE-EVALUATION OF REGIONAL GROWTH PATTERNS, WATERSHED MANAGEMENT, AND RECREATIONAL NEEDS MAY DETERMINE THAT SUCH A DESIGNATION IS APPROPRIATE.]

No so for Gov't / park area

Attachment 5

Anchorage Advisory Committee

RC 40

Chairman Aaron Bloomquist
February 27, 2009

The Board of Game
Alaska Department of Fish and Game
PO Box 115526
Juneau, AK 99811

RE: Amendment to AC 16.05.407

Members of the Board of Game;

On February 3ed 2009, the full committee (13 members) of the Anchorage A/C voted unanimously to move by written request a petition to the Board of Game requesting support for amending AC 16.05.407 "Non residents hunting big game must be accompanied" for consideration and public deliberation at the upcoming meeting of the Board of Game meeting February 27- March 9, 2009.

In light of the purpose and duties of the Board of Game and the Commissioner of the Department of Fish and Games statutory charge to manage, protect, maintain, improve the wildlife resources of the state, is within the duties of the BOG to provide "support" for and advance the Anchorage A/C proposed amendment to AC 16.05.407.

Recently, just before the statewide hiring freeze was announced by Governor Palin, two key people; Corey Rossi, Assistant Commissioner for Abundance Management and Jennifer Yuhas Communication Director and department liaison for the Commissioner, were hired to enhance the statutory duties of office of the Commissioner of Fish and Game.

The timing of these hiring's make evident the Administration is committed to measures that enhance efficient and cost effective tools consistent with managing for abundance. Obviously, the Administration and the Department are best positioned to take what ever steps necessary to amend AC 16.05.407 invariable with current conservation concerns; especially in particular *areas* of concern.

As stated by Assistant Commissioner Rossi in his compass piece in the Anchorage Daily News February 21, 2009 "...While some techniques are more controversial than others, all are management tools and should be used properly."

The Anchorage A/C is of the opinion that our request for Board support of our petition to be sensibly 'less' than controversial than some proposals before the Board and represents a proper management tool.

Clearly, nothing is unforeseen or unexpected by any failure to lessen the threat to the abundance of prey populations in the areas of concern where a biologically allowable resource harvest has been found to exist.

Amending AC 16.05.407 now precludes further delay of a statutory action.

Such delays have already become significantly burdensome to the State. The state is forgoing tag fees and incurring other immeasurable actual costs associated with the need for predator control and the certain resources remain diminished in some areas of concern clearly defined by previous Board and Departments actions.

Proposed Action and Justification

Amending AC 16.05.407 "Non residents hunting big game must be accompanied"

It is the opinion of the Anchorage A/C to be entirely consistent with managing for abundance to encourage *unaccompanied* nonresident hunting of predators; particularly in areas of concern.

The Department and the BOG identified the following areas of specific concern as predator control areas. 201, 202, 301, 302, 303. In addition to those specific areas, and in an attempt to backstop the need for additional predator control programs in the future, the Department and the BOG

have focused the Departments authority to make 'exceptions' for '0' sum resident tag fees for grizzly and brown bears and liberalized resident brown/grizzly bear seasons and harvest bag limit regulations in other areas; all due to declining prey populations or the abundance or predator populations consistent with the intent of intensive management goals to manage prey species for abundance.

In addition to amending AC 16.05.407 to allow nonresident to hunt brown/grizzly bears unaccompanied the Anchorage A/C intends the amendment to apply to military and their dependents permanently stationed in Alaska. Military and their dependents permanently

stationed in Alaska and by way the proposed amendment should be permitted to hunt brown/grizzly bears in these game management units.

The Anchorage A/C request liberalized non-resident hunting (without a guide) may be authorized only in areas determined by the board and ADGF&G to have the need for greater brown bear harvest. All non-residents must pass an online safety course for hunting brown bear unaccompanied by guide to be facilitated by the Department.

The Anchorage A/C believes amendment of AC 16.05.407 fits squarely inside the definition of public trust and represents the maximum benefit to the people of Alaska.

- Nonresidents who have met Alaska's professional occupational standards of a 'registered' guide are not permitted to hunt brown/grizzly bear unless accompanied and under contract with a registered guide. In this case an 'assistant' guide who by definition has not met the standard of a 'registered' guide and may also be a 'nonresident' is 'guiding' a 'guide' who is a nonresident.

- Nonresidents hunt brown and grizzly bears throughout Alaska with residents that meet no other qualification other than being a resident and related to the nonresident hunter.

- Non-residents hunt other big game including black bears and in the presence of dangerous game; unaccompanied.

- Nonresidents and residents that meet no other qualification are obligated to be familiar with state conservation laws. Spike-fork, 50", 3 brow tines, 4 brow tines, 'bull' only, sows without cubs ect.

- Non-residents fish with bears, photograph bears, hike and camp with bears ect.; all either unaccompanied or in the presence of a 'guide', often without the 'guide' meeting any state occupational guide licensing standard whatsoever.

- Nonresidents participate in all sorts of outdoor wilderness and backcountry activities in Alaska. They do this regularly, often without guides and in all environments including; the natural hazards of rugged terrain and inclement weather.

AC 16.05.407 continues to encourage untold numbers of non-resident hunters to hunt moose, caribou and deer strictly due to the

additional costs of hunting brown/grizzly bears under contract of a 'registered guide'.

AC 16.05.407 continues to cost the State untold income in the way of nonresident brown/grizzly 'tag' fees and contributes to the imbalance of predator prey populations throughout some game management units where brown/grizzly bears are hunted.

Alaska is experiencing depletion of our prey species resources and it is not entirely due to predators.
The competition to exploit the remaining resources and opportunities has predictably escalated.

It is inconsistent to declare areas where stocks of critical concern are threatened and continue discouraging nonresidents from hunting bears unaccompanied.

Management for abundance and managing the resources generally must demand consistency.

Respectfully,

Aaron Bloomquist
Chairman, Anchorage Fish and Game Advisory Committee
Drafted By: Mike McCrary Anchorage AC Member

CC:
Commissioner Denby Lloyd
All Alaska A/C's
BGCSB
SFW-Alaska
APHA
AOC

PC 40

Anchorage Fish and Game Advisory Committee
Aaron Bloomquist, Chair
Jim Stubbs, Vice Chair
Wade Willis, Secretary

RC 41

2/17/2009

Governor Sarah Palin
Alaska Legislature
ADF&G Commissioner, Denby Lloyd
Boards of Fisheries and Game

RE: Deadlines for ADF&G Board Comments

The Anchorage Fish and Game Advisory Committee requests the Commissioner of ADF&G set policy that states: deadlines for Department comments to the Boards be at least two weeks before public/Advisory Committee comment deadlines. Department Comments have been coming later and later to the point that now, there are no comments and very little data presented to Advisory Committees for their consideration before the comment deadlines. Some area/regional biologists go out of their way to provide as much information as possible to Advisory Committees but many do not. Advisory Committees consist of mostly laymen and biological input is very valuable to make educated decisions for our constituents. Commercial Fisheries Division has been notoriously late with data and comments as long as many can remember and now the practice has spread to region 2 Wildlife Division as well. There are 80+ Advisory Committees statewide that are supposed to make educated recommendations to the Boards of Fisheries and Game on behalf of their respective communities. Many of the decisions needed to make these recommendations depend heavily on biological data and Department input. Advisory committees are, in many cases, the experts in the opinions of their community, local fish and game habits, and preferred methods, means, and uses. With proper biological advice, Advisory Committees can make sound decisions in the most public fish and game management system in the country.

Regards,

Aaron Bloomquist, Chair
Anchorage Fish and Game Advisory Committee
8807 Honeysuckle Street
Anchorage Alaska, 99502
907-982-2471
bloomya@hotmail.com

Anchorage Fish and Game Advisory Committee
Aaron Bloomquist, Chair
Jim Stubbs, Vice Chair
Wade Willis, Secretary

RC 42

2/17/2009

Governor Sarah Palin
Alaska Legislature
ADF&G Commissioner, Denby Lloyd
ADF&G Deputy Commissioner, Patrick Valkendurg
ADF&G Assistant Commissioner, Corey Rossi
ADF&G Wildlife Division Director, Doug Larson

RE: Intensive Management of Game Populations

The Anchorage Fish and Game Advisory Committee continues to support the Governors Abundance Management Agenda. Factual responses are needed in the face of mounting pressure from Anti-Hunting, Anti-Predator Control, and Anti-Alaskan interests. Many of the recent attacks and some responses have been largely fabrications or half-truths. We appreciate Governor Palin's strong response and commitment to improving Alaska's wild game resource. We urge, Governor Palin to continue educating outside interests of the importance of Alaska's wild food resource to the culture and well-being of Alaskans.

Regards,

Aaron Bloomquist, Chair
Anchorage Fish and Game Advisory Committee
8807 Honeysuckle Street
Anchorage Alaska, 99502
907-982-2471
bloomya@hotmail.com

Anchorage Fish and Game Advisory Committee
Aaron Bloomquist, Chair
Jim Stubbs, Vice Chair
Wade Willis, Secretary

PC 43

2/17/2009

Governor Sarah Palin
Alaska Legislature
ADF&G Commissioner, Denby Lloyd
ADF&G Deputy Commissioner, Patrick Valkendurg
ADF&G Assistant Commissioner, Corey Rossi
ADF&G Wildlife Division Director, Doug Larson
ADF&G Wood Bison Project Biologist, Bob Stevenson

RE: Wood Bison Transplant Program

The anchorage fish and game Advisory Committee has received extensive testimony over the last two year regarding the proposed re-introduction of wood bison to Interior Alaska. The committee continues to support the concept of reintroduction but has serious concerns about the potential Endangered Species Act ramifications. We will not support the program unless Alaska Wood Bison are exempt from ALL ESA status. Alaska has a very successful history of introduction of important game species (elk, deer, musk-ox, etc.) but no history with re-introducing of an animal extinct from the state currently listed as endangered under ESA (musk-ox were extinct but not listed as endangered). The detriment to development and the future economy of the state far outweigh the benefits unless a concrete solution to potential ESA listing can be found. We suggest postponing any release into the wild until a final decision is reached. If an unfavorable ruling is made by USFWS all bison currently in Alaska should be returned to Canada, sold as domestic stock, or donated to Alaska charities to feed the needy.

Regards,

Aaron Bloomquist, Chair
Anchorage Fish and Game Advisory Committee
8807 Honeysuckle Street
Anchorage Alaska, 99502
907-982-2471
bloomya@hotmail.com

STATE OF ALASKA

G.A.S.H. Advisory Committee

Ken Chase, Chairman
PO Box 41
Anvik AK 99558

RC 44

February 26, 2009

Dear Mr. Judkins and Board of Game Members

Our G.A.S.H Advisory Committee held a teleconference on 2-24-09 to unanimously support Proposal #238.

For many years -- including all through the Yukon-Innoko Moose Management Planning -- we have worked very hard on getting predator control in our area. We recommended the closure of the state winter hunt in 2004 to protect the cows, and we have been working to get predator control since then. We have seen fewer moose every year, especially around Grayling and Shageluk.

We are serious about wanting predator control so that the moose population does not decline further.

Ken Chase
Chairman.

RC 45

Kenny Barber

In my testimony I gave a number of wolverine in Chugach State Park as 79, what I meant was 49 wolverine.

February 26, 2009

Austin Ahmasuk
P.O. Box 127
Nome, AK 99762

RC 46

Alaska Board of Game
P.O. Box 115526
Juneau, AK 99811-5526

RE: BOG Proposal #244, Prohibiting FMJ bullets in all calibers statewide

Dear Alaska Board of Game,

Proposal #244 if implemented would outlaw an effective method and mean that has long been utilized by subsistence hunters and trappers in GMU 22. FMJ bullets are not designed to maim as the proposer indicates. They are designed for entirely different purposes related to firearm function and armor penetration. FMJ bullets are intended to kill despite the proposer's ill conceived notion that they are intended only to maim. The Hague Convention and its declaration against the use of soft point or hollow point bullets addressed "maiming" caused by soft point or hollow points during time of war.

FMJ bullets have lent themselves well for use in rural AK to take all manner of game. Maiming of game is an unfortunate circumstance of poor shot placement when using FMJ bullets and thus why it is incorrectly perceived as a lack of stopping power, when it actually is a case of poor shot placement with an FMJ bullet. If an animal is shot and not recovered it is impossible to determine what went wrong because one would not know if the animal was shot poorly or even shot at all. FMJ bullets in .22 caliber or any larger caliber are effective at breaking many of the bones of all large game in AK up to the size of 4,000 pound heavy boned & heavy skinned walrus which is the toughest and largest big game animal in the United States to kill. Conventional bullets are effective for the extensive tissue damage that can kill most big game species. However, extensive tissue damage is one of the reasons subsistence hunters and trappers do not use conventional soft point bullets. FMJ bullets are effective on all big game and do little pelt damage to furbearers, anyone who argues otherwise discounts the vast and credible experiences of rural hunters and trappers. Because firearms are legal trapping methods, prohibiting FMJ bullets on wolf and wolverine which are classified as big game would prohibit a long preferred bullet choice by rural hunters and trappers.

The proposer contends prohibiting FMJ bullets will result in efficient killing methods; nothing could be further from the truth. One way to kill an animals is by central nervous system damage. The most effective bullet for breaking bones that shield the central nervous system are FMJ bullets. Killing by massive hemorrhage or trauma to lungs or heart is certainly effective as the proposer indicates, but destroy internal organs that are also eaten.

Rural hunters and trappers must contend with extraordinarily high ammunition prices. It is not uncommon for conventional ammunition to be two to three times more expensive than military ball ammunition or FMJ ammunition. Hunters and trappers in other parts of the state have the luxury of low prices to fund hunting or trapping activities. In rural Alaska we do not have that luxury and if we are forced to purchase ammunition that is normally much higher priced it is likely that we will just become victims of a regulatory system unsympathetic to our needs or expertise.

The Alaska Board of Game must oppose proposal #244. I believe rural hunters and trappers have perceived the proposal as being so ridiculous that it could not possibly be adopted by the Alaska BOG. It is clear however that the Alaska Board of Game is giving the proposal some serious consideration because it has modified it to include all calibers statewide. Proposal #244 must not be adopted because the proposer has not disproven that FMJ bullets are ineffective for killing game. The proposer has only shown that poor shot placement is ineffective.

I consider myself a mild gun nut, I have never lost an animal in three decades of hunting and read as much information as I can about rifles. I reload, and shoot quite often. I hunt throughout the entire year and have a great deal of hunting and trapping experience going back to my childhood. We practice good marksmanship, good stalking and we understand the best way to save the most amount of meat is to shoot an animal along the cervical vertebrae of which there are seven vertebrate segments to choose from. A solid hit on any one of those segments will kill an animal quicker than any good lung or heart shot.

The debate concerning prohibiting FMJ bullets does not hold much water because they are strict adherents on both sides of the fence, both with equal and credible arguments. When used for the purpose of piercing bone and disrupting the central nervous system FMJ bullets are highly effective and destroy very little tissue, and is the quickest killing method. I have taken most of my big game such as walrus, polar bear, grizzly bear, moose, and caribou with .22 caliber centerfire rifles such as the .222 REM and .223 REM sometimes with FMJ's, other times with conventional soft points. I have never lost an animal and most have dropped where they stood like a sack of potatoes. Prohibiting rural hunter's from using FMJ bullets would be a bizarre regulation, with extraordinary enforcement problems, every bullet is potentially an FMJ bullet merely by reversing it. What of the bullets with homogenous construction (that are becoming more popular) that expand but yet are fully jacketed more akin to a "solid" but act like a conventional bullet? Most importantly if enacted, it would prohibit a method and mean of hunting required by rural hunters out of necessity and utilized with proficiency. **PLEASE DO NOT SUPPORT PROPOSAL #244.**

Thank you for your time and consideration.
Austin Ahmasuk

RC 47

Out of Session:
Legislative Information Office
P.O. Box 1630
Nome, AK 99762-1630
(907) 443-3707
(907) 443-2162 (Fax)

Alaska State Legislature

In Session:
State Capitol
Juneau, AK 99801-1182
(800) 597-3707
(907) 465- 3707
(907) 465-4821 (Fax)

SENATOR
DONALD C. OLSON

DISTRICT T

Alakanuk
Ambler
Anaktuvuk Pass
Atqasuk
Barrow
Brevig Mission
Browerville
Buckland
Chevak
Deering
Diomede
Elim
Emmonak
Gambell
Golovin
Hooper Bay
Kaktovik
Kiana
Kivalina
Kobuk
Kotlik
Kotzebue
Koyuk
Mountain Village
Noatak
Nome
Noorvik
Nuiqsut
Nunam Iqua
Pilot Station
Pitka's Point
Point Hope
Point Lay
St. Mary's
St. Michael
Savoonga
Scammon Bay
Selawik
Shaktoolik
Shishmaref
Shungnak
Stebbins
Teller
Unalakleet
Wainwright
Wales
White Mountain

February 27, 2009

Kristy Tibbles, Executive Director Board of Game
P.O. Box 115526
Juneau, AK 99801

Re: Proposal #244

Dear Executive Director Tibbles,

As a lifelong subsistence hunter and rural Alaskan, I would like to express my opposition to Proposal #244, which attempts to delegalize the use of full metal jacket ammunition for the taking of big game resources on state managed lands.

Full metal jacket ammunition is used extensively throughout rural Alaska. Hunters find that these bullets shoot faster, straighter, and stronger than other alternatives. This is especially important to rural subsistence hunters, who truly depend upon the hunt to provide food for their families, and try to make use of as much of the animal as possible. Straighter and swifter bullets help to ensure accurate shots and cleaner kills.

Supporters of Proposal #244 have argued that using full metal jacket ammunition causes an unnecessary amount of big game non-lethal wounding. While I agree that wounding loss is a serious issue for Alaska, I believe that poor hunting practices result in unintended wounding regardless of which type of bullets are used. Furthermore, a vast variety of bullets are sold, and it would be ineffective to try and identify all that should be prohibited for these specific purposes.

Perhaps a better solution to this problem would be to provide hunters with opportunities to learn about best hunting practices and protocol. If a hunter understands when and where to place a bullet, it is significantly less likely that he or she will strike an unintended target. Preparation, and not prohibition, should be the focus of our efforts.

I hope that the Board of Game takes these important points into consideration, and ultimately decides against enacting Proposal #244.

Sincerely,

Donald C. Olson

Western Interior Alaska Subsistence Regional Advisory Council
c/o Office of Subsistence Management
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
Phone: 1-(907)-456-0277 or 1-800-267-3997
Fax: 1-(907)-456-0208
E-mail: Vince_Mathews@fws.gov

RC 48

February 26, 2009

Cliff Judkins, Chair
Alaska Board of Game
Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, Alaska 99811-5526

Re: Draft Adaptive Plan for Intensive Management of Moose in Game Management Unit 21E related to Proposal 239

Dear Mr. Judkins:

The Western Interior Alaska Subsistence Regional Advisory Council endorsed the Draft Adaptive Plan for Intensive Management of Moose in Game Management Unit 21E (dated January 28, 2009). The Council reviewed the draft plan during its recent public meeting in Galena on February 18 – 19, 2009.

The Council remains supportive of the Yukon-Innoko Moose Management Plan and intensive management actions that provide a sustainable balance between prey and predator populations while providing a healthy ungulate population to meet subsistence needs. The subsistence needs for the rural residents of Unit 21E have gone unmet or require additional time and effort of the subsistence hunters. With the current high cost of fuel and the declining Chinook salmon returns, the Unit 21E villages need a healthy local moose population to provide their subsistence needs now and for future generations.

Thank you for the opportunity to share our endorsement of your intensive management plans for Unit 21E. If you have any questions, please contact me at 1-907-678-2007 or our coordinator, Vince Mathews (contact information in the letterhead).

Sincerely,

Jack Reakoff, Chair

cc: Peter J. Probasco, ARD Subsistence, Office of Subsistence Management
Geoff Beyersdorf, Bureau of Land Management
Bo Sloan, Refuge Manager, Innoko National Wildlife Refuge
Roger Seavoy, Area Biologist, Alaska Department of Fish and Game
Carl Jerue, Anvik Traditional Council Chief
David Maillelle, Grayling IRA Council Chief
Eugene Paul, Holy Cross Tribal Council Chief
Arnold Hamilton, Shageluk IRA Council Chief
Greg Roczicka, Yukon-Kuskokwim Delta Regional Advisory Council

Western Interior Alaska Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
Phone: 1-(907)-456-0277 or 1-800-267-3997
Fax: 1-(907)-456-0208
E-mail: Vince_Mathews@fws.gov

Duplicate did not RC

February 26, 2009

Cliff Judkins, Chair
Alaska Board of Game
Alaska Department of Fish and Game
Boards Support Section
P.O. Box 115526
Juneau, Alaska 99811-5526

Re: Draft Adaptive Plan for Intensive Management of Moose in Game Management Unit 21E related to Proposal 239

Dear Mr. Judkins:

The Western Interior Alaska Subsistence Regional Advisory Council endorsed the Draft Adaptive Plan for Intensive Management of Moose in Game Management Unit 21E (dated January 28, 2009). The Council reviewed the draft plan during its recent public meeting in Galena on February 18 – 19, 2009.

The Council remains supportive of the Yukon-Innoko Moose Management Plan and intensive management actions that provide a sustainable balance between prey and predator populations while providing a healthy ungulate population to meet subsistence needs. The subsistence needs for the rural residents of Unit 21E have gone unmet or require additional time and effort of the subsistence hunters. With the current high cost of fuel and the declining Chinook salmon returns, the Unit 21E villages need a healthy local moose population to provide their subsistence needs now and for future generations.

Thank you for the opportunity to share our endorsement of your intensive management plans for Unit 21E. If you have any questions, please contact me at 1-907-678-2007 or our coordinator, Vince Mathews (contact information in the letterhead).

Sincerely,

Jack Reakoff, Chair

cc: Peter J. Probasco, ARD Subsistence, Office of Subsistence Management
Geoff Beyersdorf, Bureau of Land Management
Bo Sloan, Refuge Manager, Innoko National Wildlife Refuge
Roger Seavoy, Area Biologist, Alaska Department of Fish and Game
Carl Jerue, Anvik Traditional Council Chief
David Maillelle, Grayling IRA Council Chief
Eugene Paul, Holy Cross Tribal Council Chief
Arnold Hamilton, Shageluk IRA Council Chief
Greg Roczicka, Yukon-Kuskokwim Delta Regional Advisory Council

2/26/09
9780 Carlson Road
Anchorage, Alaska
99507

RC 49

Rick Sinnot & Legislators/Mayor/Governor/Regulatory Commission
State of Alaska
Department of Fish and Game
P.O. Box 115526
Juneau, AK

Dear Mr. Sinnot:

Thank you for your letter of 2/25/09. I have a suggestion for solving the garbage problem in areas prone to attracting bear in the Anchorage area – thus making Anchorage safer for it's citizens. I would like to suggest that a LAW go into effect REQUIRING homeowners living in bear prone Anchorage areas to have either a bear-proof garbage can or bear-proof dumpster in order to have garbage service. You would obviously need to define the areas under this Law -- and work with the garbage companies to be able to enforce this Law through them. I called Alaska Waste (our garbage service provider) and talked to their Manager. He said they have both bear-proof dumpsters and cans available.

In our neighborhood, seven families rent a dumpster with a metal lid and bear bar from Alaska Waste for $169.70 (including pickup). That breaks down to $24.24 a month for each family. For the 96 gallon individual bear-proof can, the cost is $24/month (including pickup). I was told – THE NON-BEAR-PROOF CANS ARE THE SAME PRICE AS THE BEAR PROOF CANS! I asked the Manager of Alaska Waste why they don't just ONLY provide bear proof cans. He said the Regulatory Commission of Alaska regulates them and they can't do that at this point. I would like to submit that a concerted effort be made to get whatever change is necessary made through the Regulatory Commission so the above is possible without a huge tariff change cost to the Garbage companies. Possibly a Law passed would be sufficient?

Even with everyone's garbage in bear-proof dumpsters (in bear prone areas) – the abundance of moose (and moose calves) automatically cause bear to follow (even without the garbage problem). Along with salmon stocked creeks – bear are attracted – so garbage is only "one leg" of the problem.

In doing a major neighborhood survey, I find the bear problem has tremendously impacted people's lives negatively in the following ways:

- People aren't letting their kids out to play as much anymore. Whenever I go around the corner of my house in the summer, I've got to assume there will be a bear there at least once during the summer. During the day, bears have been not only on our property – but right up to our front and back entrances. Great place to let children and Grandkids play! If a door is accidentally left open – they could potentially also be in the house.

- People said they don't walk their dogs much anymore because of bear. Also much less use of bike and hiking trails.
- Some are not letting their kids walk to school now in fall and spring.
- You don't dare raise chickens, bees or goats (like we used to do 30-40 years ago when moose and bear were hunted more aggressively in the surrounding mountains).
- You don't dare raise a real organic garden using kitchen scraps and bonemeal in the compost. (Even putting kitchen scraps through a blender with water and burying it in the soil would still be a problem).
- Smoking fish outside attracts them.
- Having a freezer outside attracts them.
- BBQing in your own backyard is going to attract nearby bear.
- Bears seem to like to chase moving objects – does this mean our Grandkids can't even ride their bikes or run on the big circular driveway at our house – or anyone jog down our own street now?
- Anchorage has a responsible law that no dogs are to be running loose. Having bear multiply and running loose in our neighborhoods is comparable to having "pit bulls" running loose in the neighborhoods. Because bear have the potential to cause incredible harm, why do we have to wait until some tragedy happens?
- If someone is mauled on their own property (after having called Fish and Game – and they refuse to remove the bear from the neighborhood) – I would think the liability of the State would be very high. Many people don't have medical insurance and would need to sue the State for extremely expensive medical costs from a mauling – along with possible lifelong disfigurement, if not death in the first place.

If State officials were to dart a bear first, they could be killed or moved without having a wounded bear in the neighborhoods. I don't think individual people should be shooting at a bear in the neighborhoods either unless someone is being attacked. I WOULD THINK KEEPING AND REGULARLY MONITORING BEAR TRAPS PUT IN THE KNOWN WILDLIFE ANCHORAGE CORRIDORS WOULD BE VERY FEASIBLE AND SAVE A LOT OF TIME AND STATE FUNDS RATHER THAN TRYING TO HUNT DOWN AN ELLUSIVE BEAR!

THANK YOU for expanding the hunting in the Chugach Mountains! That should be greatly helpful, but I think requiring Bear Proof dumpsters and garbage cans – along with bear traps in the wildlife corridors -- are also needed for the bear that have made our neighborhoods their home.

Sincerely,

Sandra Kranich

Sandra Kranich

Cc: Michelle Toohey, Special Assistant, Lt. Gov.
Grant Hilderbrand, Regional Supervisor, ADF&G
Alaska State Legislators
Anchorage Mayor

RECEIVED
FEB 26 2009
BOARDS

RC 50

Alaska Board of Game
FAX:(907) 465-6094.

J.P."Jake" Jacobson
POB 1313 Kodiak,Ak.99615
Tel: 907/486-5253
E-mail: huntfish@ak.net

To all members of the Alaska Board of Game;

I have been asked to transmit two Proposals to you for consideration and, hopefully, adoption of the first. They are summarized below. Also, I have provided a few comments thereon.

***PROPOSAL 159 - 5 AAC 85.025. Hunting seasons and bag limits for caribou. *Modify the bag limit for caribou in Unit 8 as follows: ... ***

On February 17, 2009 the current regulations under Proposal 159 and Proposal 160 were discussed at a meeting of the Unit 8 Advisory Committee, and it was decided to recommend a modified version of the two as follows:

PROP 159/160 - Feral reindeer regulations - Amend and adopt (11-0)
- the KAC seeks management of the feral reindeer population for sustained yield (200 - 500 animals) in spite of Kodiak NWR disapproval. The proposed amendment closes same-day-airborne hunting,sets the bag limit at one caribou,& sets the season to be the same as the deer season -August 01-January 31.

I have been informed by reliable hunters that they have harvested on in Unit 8 some bull Reindeer with no testes in their scrotum, thereby making them bilaterally cryptrochid and sterile. I believe for this reason, as well as many others (tourism, subsistence & sport hunting), we must manage this now wild Reindeer herd for sustained yield. In addition to these reports pertaining to Reindeer, bilateral cryptorchidism afflicts more than 70% of male Sitka black-tailed deer on the Aliulik Peninsula of the southern end of Kodiak Island. Testes from most *cryptorchid* deer and also most seemingly normal deer from the Aliulik Peninsula examined in detail have tumors identical to those found in testes of young men with testicular cancer. Cryptorchism in any wild animal population might be a "canary in the coal mine". It seems imprudent to ignore this problem in deer and reindeer on the Kodiak Archipelago. Research to establish the cause could reassure citizens of Alaska that there is little or no risk for humans, but this likely would require funding from the State of Alaska. Crytorchism and testicular cancer are increasing the the human population in many countries. and we may benefit from studies of these animals.
It is my hope & expectation that in collaboration with the University of Alaska, Anchorage and Colorado State University, we may be able to determine the cause of this alarming developmental problem. Funding for research from the State of Alaska would allow continued & more complete pursuit of this unique and alarming situation,.
Therefore, I urge you all to support and pass the modified proposal.

***PROPOSAL 161 - 5 AAC 92.010. Harvest tickets and reports; and 85.030. Hunting seasons and bag limits for deer. ***
A new requirement for deer hunters in Unit 8 was proposed as Proposition 161. It was voted down (0-11), but is brought to your attention for reasons below.

This Proposal was for a Deer Harvest Report which, for the first time, would enable ADF&G personnel to learn the extent and locations where cryptorchid Sitka black-tailed deer are found in Unit 8. Available information is anecdotal, except for detailed information I

have gathered over the past 10 years which has served as the basis for several scientific papers on the extent and nature of the problem. I have been preparing samples of deer of both sexes, sterile & fertile, taken in GMU 8 for the past 10 years & have reported that 74% of the deer taken in one "hot zone" -for the past 5 years - have been sterile. The total sample number exceeds 330 animals.
Require a deer harvest report for Unit 8 with the following questions:

Proposed addition to Deer Harvest Report for GMU 8
I hunted deer--yes or no
I hunted___days in Unit 8 ___; near the following specific location_____
I killed a deer--yes or no
For each deer harvested:
Date of Kill___
Sex___; if male--antlers normal, non-typical or velvet, unit specific location
If male, scrotum -- YES or NO
testes -- 2, 1, or 0

As part of the discussion of this proposal at t the February 17, 2009 meeting of the Kodiak Fish & Game Advisory Committee, it was suggested that a brief trial of such a Harvest Report would be appropriate before formal adoption. To this end, Dr. Larry van Daele asked that
(1) the formal Harvest ticket I proposed be deferred for two years, on a statewide basis and:
(2) that in the meantime, he & I keep a gentlemen's agreement that he & I will design a short questionnaire to be distributed toGMU 8 deer hunters that will satisfy my request for this information. See above. I offered to pay for printing of these questionnaires and to organize Kodiak volunteers to assist in compilation of data generated by the questionnaires.

No formal action on this Proposal is requested at this time. However, it is anticipated that a similar Proposal for inclusion of information on scrotum and testes of deer shot in GMU 8 will be advanced no later than spring 2011, with modifications based on experience during the 2009 and 2010 hunting seasons.

Thank you for consideration of these requests. I can be reached for questions, etc. by telephone or e-mail during the period of the board meeting.

Sincerely,
Jake Jacobson, Kodiak

---------- END---------- Page 2 of 2 pages----------

ADVISORY COMMITTEE MINUTES Pg 1 of 13

RC 51

AC NAME: Central Peninsula

LOCATION (town): Nikiski

DATE (of meeting): 1-26-09

MEMBERS PRESENT: John McCombie, Steve Vanek, Dave Martin, Doug Blossom, Rich Mondor, Maf Fehl, Gary Delmen, Mike Schuster, Robert Clucas

MEMBERS ABSENT EXCUSED: Jeff Berger, Rick Vanek, Norbert Miller

MEMBERS ABSENT UNEXCUSED:

QUORUM PRESENT: YES ✓ **NO** ___

AGENCY STAFF PRESENT: Jeff Salinger

Time Meeting Called to Order: 7:05 PM

Old Business and New Business (See following pages)

Time Meeting Adjourned: 10:05 PM

Steve Vanek

Signature, Committee Secretary

pg 2 of 13 1-26-09

Central Peninsula Fish & Game Advisory Committee

Meeting Attendance Sign in Sheet

Name/Organization	Mailing Address City, Zip Code	Interests (optional - see below)	Email/Phone
Steve Vanek			
[illegible]			
[illegible]			
[illegible]			
Dave Brown			
[illegible]			
John McCarty			
Mike Schuster			
Gary Dieman			
Thomas McDonough	ADFG-Homer		
[illegible]	11	[illegible]	

Interest Groups: 1 - Trapping 2 - Sport Fishing 3 - Subsistence 4 - Hunting 5 - Commercial Fishing
6 - Photography 7 - Guiding 8 - Processing 9 - Personal Use 10 - Outdoorsperson
11 - Association/Corporation 12 - Conservationist

STATE OF ALASKA

Sarah Palin, Governor

Central Peninsula Fish & Game Advisory Committee

David Martin, Chair
PO Box 468
Clam Gulch, AK 99568

1-26-09

1 minutes were read and approved.

(2) letter from BoF in answer to our request to postpone board generated proposal #379 to regular cycle. #379 was postponed till 2011.

(3) our letter to the Governor about BOG memberships was read. No answer yet.

(4) & our letter to the Commissioner about removing Kenai Brown Bears from their classification as a species of special concern was read. No answer at this time.

(5) we ~~took~~ voted on Game Proposals.

VOTER RECORD/COMMENTS

Advisory Committee: Central Peninsula

Date: 1-26-09 Page 4 of 13 Proposal Packet Game Spring 2009

Use this form to record the votes and comments of members regarding Board of Fisheries and Board of Game proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a particular proposal does not pertain to their jurisdiction, it is not necessary for the committee to spend time on that proposal, just write "no action" in the Abstain column.

****

Proposal Number	Yes	No	Abstain	Summary of Discussion about this Proposal
#12	8	1		We support this management tool for this area and support the Dept. analyzing the winter 2008-09 mortality before issuing any antlerless permits
#117	0	9		Failed: Would not be able to get the money to do the studies for exploitation rates and thresholds of abundance. No conservation concerns for stock of sea ducks eg. up or down as they do naturally, the bag limit is adjusted accordingly.
#118	0	9		There is no data to document that the sandhill cranes in Unit 15C are a sub-population or a special species. There are no conservation concerns for cranes. No indication of depletion of cranes.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** ____ **OF** ____

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
#119	3	7		There in favor thought ~~the~~ the season would open Oct. 1 and only allow under water sets. This would allow some trapping before freeze up. Those opposed said to leave the season as is. They were not sure the pelts would be in their prime if the season opened earlier.
#120	0	9		A closer to beaver trapping in Unit 15C is unnecessary. The harvest of beaver is low and can not be used as an indicator of beaver population numbers. Number of trappers, price for pelts, weather etc. dictate the harvest numbers. There is no scientific or biological data to indicate a beaver decline.
#121	0	9		Unnecessary! The red fox is not targeted by trappers. The population has always been very small but has remained stable. The harvest has also been very small to the point of being insignificant.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 6 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
#122	0	9		There are no conservation concerns for marten. The data indicates that the marten populations are increasing. Populations fluctuate with available food and habitat
#123	0	9		There are no conservation concerns for wolverine. The harvest has been very consistent over the last 20 years of around 22 per year. There are also several areas where wolverines are not trapped in Unit 15.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 3-26-09 **PAGE** 7 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
124				Steve Vanek amended this to
	As	Amended:		read that the hide does not
				have to be brought in but the
	9	0	0	~~sex~~ evidence of sex has to
				be attached to the meat, Gary
				Hemond seconded
				Passed - 9 - 0 0
				It is important to the Department
				to have sex data so we
				wanted the sex to be determined
				but hide not necessary
125				Steve Vanek amended this ~~so~~ that
	as Amended:			black bears are reclassified
				as a fur bearer so that
	9	0	0	black bear hides can be sold,
				Amendment passed 9 - 0 - 0
126				Dany Blaszak amended from 3
	as amended:			bears to 2 bears to be taken
				~~anytime~~ annually anytime
	8	1	0	between Jan 1 and Dec 31
				with non-residents allowed only
				one during the same time
				Robert Chlarson seconded, ~~Passed~~ Failed
				2 yes ; 7 no . most wanted
				limit to remain at 3 per year.
				Mike Schuster amended this so annually
				means anytime between Jan 1 and Dec 31
				passed 7 - 1 - 0 - the one dissent think
				should pass.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 8 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
127	1	8	0	We opposed the extension of the baiting season.
128	9	0	0	We would like to have ~~Brown~~ Black Bear hides to be able to sell them.
130	No action			see #133
131	0	9	0	We oppose an archery season during the summer months. could be dangerous if a bear isn't killed.
132	No action			see #133
#133	9	0	0	This our proposal. We need more brown bear removal at this time.
134	as amended: 9	0	0	Gary Denmon amended this proposal to retain the April 1 - June 15 season and extend the fall season from Aug 20 to Nov. 30. Mike Schwaiter seconded. Passed 9-0

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 9 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
135	NO action			see #133, #134
136				
137				
138	No action			see #133, #134
139				
140				
141	0	9	0	We don't want a summer archery season - could be dangerous if bears wounded
142	9	0	0	we agree with the Department.
143	0	9	0	To complicated to have an agreement signed before submitting an application.
144	9	0	0	We support additional hunting opportunity.
#145	8	1	0	we feel this would helps stop illegal hunting. opposed felt it wasn't necessary.
146	(Conditional vote)			We are in favor of this only if there is a predator control program on Bears and wolves at the same time.
	9	0	0	

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 10 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
147	Conditional Vote			We support a hunting moratorium only if there is a predator control program at the same time.
	8	1	0	
148	0	9	0	We feel this would complicate the season, we don't think the rifle season should be closed to provide an archery season only.
149	as amended:			Doug Blossom amended this to state that this proposal would be supported only if there were also a predator control program at the same time, Steve Vanek seconded. Passed 9-0-0
	7	2	0	
				The opposed persons support predator control but wanted to hunt the spike/forks to feed their family

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 11 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
150	3	6	0	We didn't want more hunting in this area because the population is down due to predators. When the population is down, you don't increase hunting pressure. There needs to be predator control rather than increasing the harvest
151	1	8	0	We oppose the cow hunt now because we want a predator control program. It doesn't make sense to ask for predator control and then kill cow moose. We feel some moose will migrate out of this area and help to repopulate 15C.
152	8	1	0	There hasn't been a cow hunt here and probably won't be for awhile but we want to let it remain on the books.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 12 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
#153	9	0		The moose population, harvest cow/calf & bull/cow ratio is declining rapidly. Wolf numbers are increasing rapidly. The proactive approach is to implement wolf predator control before the moose population and harvest collapses completely.
#154	9	0		The moose population, harvest cow/calf & bull/cow ratio is declining rapidly. Predation by wolves and bears is out of control. We need to act now to reduce predation to a sustainable number before it is too late resulting in a natural crash and a very length recovery period.
#155	0	9		We don't need a special allotment for non-residents
#156	No	Action		This is a local issue so it is best left up to the wishes and input from those involved and affected.

VOTER RECORD/COMMENT

ADVISORY COMMITTE: Central Peninsula

DATE: 1-26-09 **PAGE** 13 **OF** 13

Board of Game **Comments for** Spring 2009

Please use this format to record the votes and comments of members regarding proposals. The boards are particularly interested in hearing the reasons why proposals are supported/opposed. If committee members believe a proposal does not pertain to their jurisdiction, it is not necessary to spend time on that proposal.

Proposal #	Support	Oppose	Abstain	Summary of Discussion (include minority view)
#157	9	0		This is housekeeping and common sense.
#183	9	0		We support this antlerless moose hunt. This is a necessary management tool to maintain a healthy population by controlling their numbers to meet the carrying capacity. There are no predators on the island except man. This is a classic example of how a moose population can flourish when there are no predators even with limited habitat.

MVFGAC Comments for 2/27/09-3/09/09 2009 BOG Meetings RC 52

- **Proposals 13, 111, 143, 223** (Motions passed by unanimous consent) – guide client agreement

  - We favor a guide-client agreement requirement for all draws hunt (or a second degree of kindred affidavit)
  - Guides can better predict their client numbers for next season
  - Application clearing-houses can be effectively eliminated from our draw system in this manner so non-residents' applications don't swamp the draw

- **Proposal 14** -(We passed it 14-0-1) limited # of drawing tags for non-residents

  - We favor a limited percentage of tags allotted for non-residents in draw hunts, #14 is ours and example of what we want , **10% or less** (14-17, 19, 203, 212-214)
  - We most often choose **no more than 10%** of tags to go to non-residents
  - We realize guided hunters with 10% of the tags often take 20-30% of the animals
  - However, we do want a limited number of guides in Alaska and we want them to have an opportunity to stay in business year after year, so guides should get some tags for most draw hunts, Proposal 15 -14C sheep hunt - our vote was 0-15 = we do not want to eliminate non-resident hunters or guides from Alaska hunting
  - We realize non-resident, guided hunters bring in funds to ADF&G, but please don't sell our wildlife for a few extra dollars.
  - Bottom line is: **Residents** of Alaska should get the **bulk** of drawing tags AND take the **bulk** of the harvest

- **Proposal 95** (We voted 12-0-1 in favor) Unit 13 moose season and bag limit

  - The Area Biologist estimates the harvestable surplus at 800 for next season
  - Only 700 were harvested in 2008; plenty of hunter reports of increasing population
  - An any-bull drawing permits in specific high bull-cow ratio areas seems like a wise way to add limited harvest
  - Proposals 97 & 99 (36" legal) were too likely to result in drastic increase in harvest
  - Proposal 98 – 3 brow tines moose are legal – voted slightly against as #1 choice - we felt this may be an option for resident before opening non-resident hunt
  - Unit 13 is most important moose hunting unit in our area, so even though numbers are creeping up and we voted to allow increased harvest, we prefer to err on the side of caution - if you allow a non-resident hunt

- **Proposals 75, 168, 189, 192, 190** (in favor of all) Support Predator Management

We support predator management in the same manner we support prey-species management. Done wisely and with the objective as healthy predator populations, that are not out of line with their food supply, this needs to be implemented as needed. Intensive management of predators is currently needed in many areas of Alaska.

-. **Proposal #180** -later moose seasons in 14A, 14B, & 16A

Our Committee submitted and supported proposal #180 which would shift the moose season in Units 14A, 14B, and 16A later. The intent of this proposal was to allow moose hunting to go later through September 25. ADF&G support for the season going later and still meeting bull to cow ratio goals was contingent on cutting days from the season. Thus days were cut from the early end of the season, and the archery season was proposed to shift later into this gap. (Proposals in the book and testimony before our Committee indicate archers would prefer to hunt later -- so this would accomplish that goal to some extent without robbing general late hunt opportunity).

In discussion before the Committee some public testimony and members of the Committee opposed the idea of shortening the general season, however the majority of the Committee agreed that providing a later season moose hunting opportunity, even if the general season had to be shortened somewhat, would be preferable to the present season dates.

Although the adjacent **Unit 16B** moose population has increased significantly under tier II only hunting and intensive predator management, we have reservations about opening up a general hunt this coming year. This unit is still under intensive predator management; our Area Biologist informed us the cow moose population is not increasing noticeably; and the increase in the bull population is the main reason for the population increase. We would prefer to wait another year or two to make sure all factions of the moose population are recovering before allowing unlimited moose hunting in this area.

- **Proposal 193** voted 0-10-0 against put closed area on Govt.Peak in regs
  Public vote was 1-21 against it also, mistake in our notes. Doesn't belong in regs.
- **Proposals 24-26** unanimous vote against all – close wolverine trapping in 14C Chugach State Park
  If you do close wolverine trapping, then rescind all restrictions placed on trappers in 14C-CSP at last BOG meeting, as Randy Zarnke of Trappers Association asked in his testimony
  -Proposal 84 unanimously against, do not give one group of hunters advantage over others, it will further divide hunters and cause more animosity.

RC53

PROPOSAL # 218
TOM LAMAL
MODIFY SHEEP SEASON DATES

Most of you probably remember my sheep proposal from last year.

I would first like to state, "this is not an Anti-Guide or Anti-Nonresident proposal. The intent is to greatly reduce conflict in a highly coveted area of hunting in Alaska. The guides have pressure to produce for their clients in these expensive hunts, and the resident is spending a lot of $ to get to remote areas and then has to compete against the guides infrastructure such as tent camps set up early in many of the drainages, planes, cabins, horses, ATV's, etc.

After reading your resumes and reading the newspaper, I see that many of you are or were involved in education and contribute to youth education. I facilitated the Hunter Ed. Programs in the Fairbanks School District for several years. A POSITIVE outdoor hunting experience for kids is our future! It is our responsibility to promote our hunting heritage and no one is going to develop a passion for ANYTHING if they feel crowded, in potential conflict, or wasting their time and hard earned dollars. This is all about a positive experience and a trophy ram would just be a bonus.

I purchased non-resident licenses in 3 states last year and put in for drawing permits in other states, and I don't mind paying the higher fees because I am hunting in someone else's backyard. In many states the hunting dates are different for resident and non-resident hunters and I am not eligible to hunt some species. Those states are taking care of the people who contribute to the economy all year long.

Non-resident sheep tags bring in about $230,000, which is less than half of caribou, and caribou is half of moose. To put this in perspective (non-resident sheep tags = 139 permanent fund checks).

Last year my proposal was denied, then passed and at the eleventh hour denied again. This year's proposal has addressed every concern you expressed last year. I sure some people will once again become very creative and find a reason why this proposal is a BAD IDEA. This should be a state wide proposal and hopefully you will pass it for Region II this spring, Region V this fall, and Region III next March and you will cover all the sheep areas. It would be a good idea to implement this in the OPEN areas of Region II this year and address the permit areas when you can take time to examine those individual permit units. I doubt if you'll be able to find a resident hunter who would be against having some time in the mountains with this reduced conflict. I had to adjust the dates to meet you concerns – please note that the non-resident has seven days with no residents in the field, so the resident is giving up a lot! I wish the resident wouldn't have to give up time in the mountains but the Board didn't want to add any hunting time to resident hunting dates. I know sheep populations are low but we are talking about full

curl rams and this is not going to take away our future sheep – predation is the big player in that arena. Nothing is perfect, but this will work and be appreciated by Alaskan's and hopefully keep our youth on board.

Your job is not easy and you face a lot of heat from different user groups, but the responsibility that goes with leadership is making those ethical and tough choices for Alaskans.

I wish this proposal was put into play 40 years ago. I'm over 60 with four knee surgeries so maybe this proposal won't do me any good, but I think it is a good choice for our young outdoor's people.

I believe F&G's & your mission statements support this proposal.

RC 54

AVCP

ASSOCIATION OF VILLAGE COUNCIL PRESIDENTS
P.O. BOX 219 • BETHEL, ALASKA 99559 • PHONE 543-3521

44TH ANNUAL CONVENTION
BETHEL, ALASKA OCTOBER 7-9, 2008

RESOLUTION 08-10-16

TITLE: REQUESTING THAT THE MOOSE MORATORIUM IN GAME MANAGEMENT UNIT 18 BE LIFTED

WHEREAS The Association of Village Council Presidents (AVCP) is the recognized tribal organization and non-profit Alaska Native regional corporation for its fifty-six member indigenous Native villages within Western Alaska and supports the endeavors of its member villages; and

WHEREAS AVCP fully supports its member villages in all aspects of their self-determination, health and well-being; and

WHEREAS The Alaska Natives living on their traditional homelands in the Yukon-Kuskokwim Delta continue to rely on the lands and waters for renewable subsistence resources; and

WHEREAS AVCP mandated a Moose Moratorium for a period of five years and/or until the population of the moose increases to an acceptable level; and

WHEREAS The U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game enforces the Moose Moratorium in Game Unit 18; and

WHEREAS The Alaska Natives who have traditional homelands since time immemorial in Game Management Unit 18 sacrificed the most due to the fact that they are unable to conduct subsistence hunts for moose in other areas because their limited financial resources do not allow them to purchase adequate fuel and/or the supplies needed to travel to areas where subsistence hunting of moose is allowed; and

WHEREAS Federal and State laws and regulations on subsistence conflict with traditional subsistence laws of the Alaska Natives.

NOW THEREFORE BE IT RESOLVED THAT all tribally enrolled members of the Federally recognized tribes residing throughout the Game Management Unit 18 be allowed the right to harvest moose effective immediately.

ADOPTED by the Association of Village Council Presidents during its Forty-fourth Annual Convention held at Bethel, Alaska, this 9th day of October, 2008, with a duly constituted quorum of delegates.

CERTIFIED:

Raymond J. Watson, Chairman

Myron P. Naneng, Sr., President

RC 55

Review

Demographic Side Effects of Selective Hunting in Ungulates and Carnivores

JOS M. MILNER,*†‡ ERLEND B. NILSEN,*† AND HARRY P. ANDREASSEN*

*Hedmark University College, Department of Forestry and Wildlife Management, N-2480 Koppang, Norway
†Centre for Ecological and Evolutionary Synthesis (CEES), Department of Biology, University of Oslo, P.O. Box 1066, Blindern, N-0316 Oslo, Norway.

Abstract: *Selective harvesting regimes are often implemented because age and sex classes contribute differently to population dynamics and hunters show preferences associated with body size and trophy value. We reviewed the literature on how such cropping regimes affect the demography of the remaining population (here termed* demographic side effects *). First, we examined the implications of removing a large proportion of a specific age or sex class. Such harvesting strategies often bias the population sex ratio toward females and reduce the mean age of males, which may consequently delay birth dates, reduce birth synchrony, delay body mass development, and alter offspring sex ratios. Second, we reviewed the side effects associated with the selective removal of relatively few specific individuals, often large trophy males. Such selective harvesting can destabilize social structures and the dominance hierarchy and may cause loss of social knowledge, sexually selected infanticide, habitat changes among reproductive females, and changes in offspring sex ratio. A common feature of many of the reported mechanisms is that they ultimately depress recruitment and in some extreme cases even cause total reproductive collapse. These effects could act additively and destabilize the dynamics of populations, thus having a stronger effect on population growth rate than first anticipated. Although more experimental than observational studies reported demographic side effects, we argue that this may reflect the quite subtle mechanisms involved, which are unlikely to be detected in observational studies without rigorous monitoring regimes. We call for more detailed studies of hunted populations with marked individuals that address how the expression of these effects varies across mating systems, habitats, and with population density. Theoretical models investigating how strongly these effects influence population growth rates are also required.*

Keywords: big game, population dynamics, selective harvesting, trophy hunting, wildlife exploitation, wildlife management

Efectos Demográficos Secundarios de la Cacería Selectiva en Ungulados y Carnívoros

Resumen: *Los regimenes de cosecha selectiva a menudo son implementados porque las clases de edad y sexo contribuyen distintamente a la dinámica de la población y los cazadores muestran preferencias asociadas con el tamaño corporal y el valor como trofeo. Revisamos la literatura sobre los efectos de esos regimenes de cosecha sobre la demografía del resto de la población (denominados aquí* efectos demográficos secundarios*). Primero, examinamos las implicaciones de la remoción de la mayor parte de una clase específica de edad o sexo. Tales estrategias de cosecha a menudo sesgan la proporción de sexos de la población hacia hembras y reducen la edad promedio de los machos, lo que consecuentemente puede retardar fechas de nacimiento, reducir la sincronía de nacimientos, retardar el desarrollo de la masa corporal y alterar la proporción de sexos de las crías. Segundo, revisamos los efectos secundarios asociados con la remoción selectiva de relativamente pocos individuos específicos, a menudo machos grandes. Tal cosecha selectiva puede desestabilizar las estructuras sociales y la jerarquía de dominancia y puede provocar la pérdida de conocimiento social, infanticidio seleccionado sexualmente, cambios de hábitat entre hembras reproductivas y cambios en la proporción de sexos de las crías. Una característica común de muchos de los mecanismos reportados es que, a fin de cuentas, deprimen el*

‡ *email jos.milner@hihm.no*
Paper submitted March 8, 2006; revised manuscript accepted June 14, 2006.

Conservation Biology Volume 21, No. 1, 36–47

DOI: 10.1111/j.1523-1739.2006.00591.x

reclutamiento y en algunos casos extremos causan un colapso reproductivo total. Estos efectos pueden actuar aditivamente y desestabilizar la dinámica de las poblaciones, por lo que tienen un mayor efecto que el esperado sobre la tasa de crecimiento poblacional. Aunque estudios más experimentales que de observación reportaron efectos demográficos secundarios, argumentamos que esto puede reflejar los sutiles mecanismos implicados, que pueden no ser detectados en estudios de observación sin regímenes de monitoreo rigurosos. Hacemos un llamado para la realización de estudios más detallados de poblaciones cazadas utilizando individuos marcados para abordar la variación de esos efectos en sistemas de apareamiento, hábitats y densidades poblacionales diferentes. También se requieren modelos teóricos que investiguen el impacto de estos efectos sobre las tasas de crecimiento poblacional.

Palabras Clave: caza deportiva, caza mayor, cosecha selectiva, dinámica poblacional, explotación de vida silvestre, gestión de vida silvestre

Introduction

One of the central aspects of conservation biology is the relationship between human exploitation and the conservation of exploited resources. Throughout the world terrestrial mammals are hunted for sport, subsistence, and to control population size (Festa-Bianchet 2003). Hunting thus provides a significant source of meat and income in rural communities and beyond. Nevertheless, there are numerous examples of populations being overharvested, and subsistence hunting may be one of the most urgent current threats to the persistence of species in tropical ecosystems (Robinson & Bennett 2000; Milner-Gulland & Bennett 2003). Over 30% (250 species) of mammals currently listed as endangered on the World Conservation Union (IUCN) Red List are threatened by overexploitation (Baillie et al. 2004). Of these, larger mammal species, especially ungulates and carnivores, are particularly targeted (Baillie et al. 2004; Fig. 1).

Although subsistence hunting may take a random sample of a population, in many other instances—particularly associated with sport hunting of ungulates and carnivores—economic demands, ecological knowledge, and hunter preferences have led to the implementation of selective harvesting regimes (e.g., Ginsberg & Milner-Gulland 1994; Solberg et al. 1999). Here the offtake is focused around predetermined sex and/or age classes or specific individuals. Such selective hunting will, in addition to the obvious direct effects of reducing the population size, also affect the demography of populations by altering age and sex structures (Ginsberg & Milner-Gulland 1994) and potentially disrupting social systems (Swenson et al. 1997). Although such effects have received far less attention than direct overharvesting, they are potentially equally undesirable (Festa-Bianchet 2003) and occur even when the overall offtake is not regarded as excessively high.

We sought to synthesize the current knowledge on how selective harvesting regimes affect the performance of populations. We considered the effects of hunting a large proportion of a selected sex and/or age class of the population, so affecting the age and sex structure of the remaining population and hunting specific individuals for trophies, so disturbing social structures and dominance hierarchies. We included recreational or sport hunting for meat and trophies, and poaching and population control where specific individuals or sex/age classes are targeted. We focused on ungulates and carnivores because, with the exception of a vast literature on size-selective exploitation of fish stocks and its consequences (see e.g., Law 2001), these are the groups for which most information regarding selective harvesting is available.

Consequences of Perturbing the Population Age and Sex Structure

Many mammalian populations are strongly structured by age and sex. Because survival rates typically differ among age and sex classes (Gaillard et al. 1998), populations of equal size but differing structures will have different temporal dynamics (Coulson et al. 2001) and will respond differently to stochastic environmental variation (Cameron & Benton 2004). Consequently, by perturbing population sex and age structure, selective harvesting affects population dynamics (Festa-Bianchet 2003).

Theoretically, the most productive populations are those with a female-biased sex ratio (Caughley 1977). Male-biased harvesting regimes have therefore been widely applied to ungulates in North America (McCullough 2001; Stalling et al. 2002), Scandinavia (Langvatn & Loison 1999; Sæther et al. 2004*b*), and in wildlife cropping schemes in Africa (Ginsberg & Milner-Gulland 1994). Even though a more balanced or slightly female-biased harvest is taken in many European countries (Milner et al. 2006), harvested ungulate populations invariably have mortality patterns that deviate significantly from those in unhunted populations (Ginsberg & Milner-Gulland 1994; Langvatn & Loison 1999). In particular, mortality rates of prime-aged adults, especially males, are considerably higher than in unhunted populations.

Male-biased harvesting regimes have led to severely biased sex ratios; for example, there are 0.05 adult males

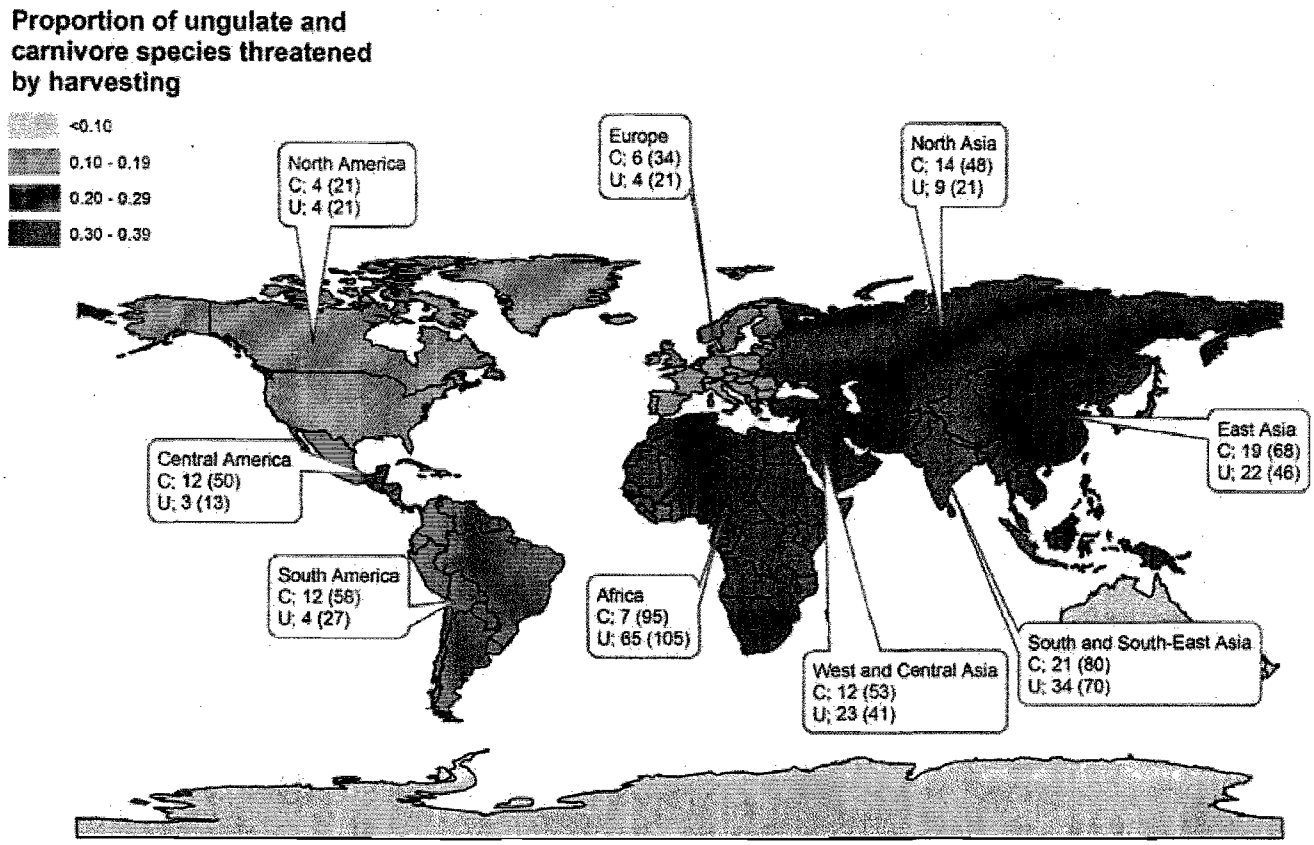


Figure 1. The number of ungulate (U) and carnivore (C) species registered as threatened (all threat categories) at least partly due to harvesting (IUCN 2004) relative to the total number (in parentheses) of ungulate and carnivore species evaluated in each region. Shading represents the approximate proportion of ungulate and carnivore species threatened. There are substantial differences among the regions with the highest proportion of threatened species (0.37) occurring in south and southeast Asia and west and central Asia.

per female in populations of both North American elk (if not provided, scientific names are in Table 1 or 2) (Noyes et al. 1996) and the central Asian saiga antelope (Milner-Gulland et al. 2003). In addition, the often high harvesting pressure on mature males for trophies results in harvested populations with lower average ages of males and fewer old males than unhunted populations (Langvatn & Loison 1999; Laurian et al. 2000; Apollonio et al. 2003). For example, 70% of all males in a Norwegian moose population are harvested by 3 years of age (Solberg et al. 1999).

In the following we discuss how sex- and age-specific hunting affects various demographic processes. We do not discuss genetic and evolutionary effects in detail because they have been reviewed recently (Harris et al. 2002; Festa-Bianchet 2003).

Effects on Reproduction

Although selective harvesting of males leads to female-biased adult sex ratios, this does not necessarily lead to a reduction in fecundity rate because most harvested game species have polygynous mating systems in which a single mature male is capable of inseminating many females (Ginsberg & Milner-Gulland 1994; Mysterud et al. 2002; but see Greene et al. 1998 for monogamous species). Consequently in many cases, recruitment rates are resilient to skewed sex ratios (Table 1) and may even increase because of higher proportion of females in the adult population (Solberg et al. 2000). But there may nonetheless be a sex-ratio threshold below which fecundity collapses. Indeed, if the offtake is strongly male-biased, population crashes due to reduced fecundity can occur at lower overall offtake rates than if a random harvest is taken (Ginsberg & Milner-Gulland 1994). This has been observed in saiga antelope at a ratio of between 0.025 and 0.009 males per female (Milner-Gulland et al. 2003), caribou (*Rangifer tarandus*) at a sex ratio of 0.08 (Bergerud 1974), elk populations with a sex ratio of 0.04 (Freddy 1987), and elephants with a sex ratio of 0.013 (Dobson & Poole 1998). In moose, even moderately, female-biased sex ratios (0.25–0.70) can affect the fecundity of primiparous females, although the fecundity of older females seems to be unaffected (Solberg et al. 2002).

Table 1. Demographic consequences of a selective-harvesting regime that creates a female-biased adult sex ratio and/or a young average age of males.

	Effect of harvesting		*Demographic consequence*[a]							
Species	*♀-biased sex ratio*	*reduced ♂age*	*fecundity rate*	*breeding/ birth date*	*birth synchrony*	*offspring sex ratio*	*offspring 1) survival 2) weight*	*young ♂ 1) survival 2) weight*	*adult ♀ condition*	*Reference*
Moose (*Alces alces*)	X		+							Solberg et al. 1999
	X		–[b]							Solberg et al. 2002
		X				<♂				Sæther et al. 2004
	X		0	–[c]	–		2) –	2) 0		Sæther et al. 2003
		X	0	–	0		2) –	2) 0		Sæther et al. 2003
	X							2) –		Garel et al. 2006
	X	X	0	0	0					Laurian et al. 2000
	X		0				2) –[d]			Taquet et al. 1999
	X		0							Courtois & Lamontagne 1999
Elk (*Cervus elaphus*)	X		–							Freddy 1987
		X	–[e]	–	–				0	Noyes et al. 1996
		X								Squibb 1985
	X		–							White et al. 2001
	X	X	0							Bender & Miller 1999
Red deer (*Cervus elaphus*)	X	X	0							Langvatn & Loison 1999
Fallow deer (*Dama dama*)		X		–	+					Komers et al. 1999
Mule deer (*Odocoileus hemionus*)	X		–							White et al. 2001
White-tailed deer (*Odocoileus virginianus*)		X	0	+[b]		<♂[e]				Ozoga & Verme 1985
Bighorn sheep (*Ovis canadensis*)		X	0	0			1) 0	1) 0	0	Singer & Zeigenfuss 2002
		X	0	0	0					Shackleton 1991
		X						1) –		Jorgenson et al. 1997
Dall sheep (*Ovis dalli*)		X	0					1) 0		Murphy et al.1990
		X	0	–				1) –		Singer & Zeigenfuss 2002
		X						1) –		Heimer et al. 1984
Caribou (*Rangifer tarandus*)	X		–							Bergerud 1974
Reindeer (*Rangifer tarandus*)	X		0	–	0		2) 0			Holand et al. 2003
		X	0	–	0		2) 0			Holand et al. 2003
	(X)[f]	(X)[f]			–	<♂[g]	2) –			Holand et al. 2006
	X							2) –[b]		Mysterud et al. 2003
Saiga antelope (*Saiga tatarica*)	X		–							Milner-Gulland et al. 2003

[a] *Key: 0, no effect; +, positive effect; –, negative effect.*
[b] *Primiparous females only, no effect in adult females.*
[c] *Skewed adult sex ratio had significantly stronger effect on calving date than young-male age structure.*
[d] *Offspring size measured by length of hind foot not body weight.*
[e] *Nonsignificant trend.*
[f] *A group of the females were inhibited from mating during their first cycle, thus conceiving in the second cycle. Simulates skewed sex ratio and/or male age structure.*
[g] *Sex ratio of calves conceived in second estrus.*
[h] *Increased weight loss during the rut.*

Many populations with low male-to-female ratios also tend to have a low mean male age, which may be a contributing factor to lower fecundity (Solberg et al. 2002). Nevertheless, even though it has been suggested that subadults show immature courtship behavior, are socially disruptive, and prolong the mating season (Squibb 1985; Shackleton 1991; Singer & Zeigenfuss 2002; Stalling et al. 2002), young males are nonetheless capable of achieving paternities successfully (Stevenson & Bancroft 1995; Hogg & Forbes 1997). It is less clear whether they are able to inseminate as many females as old males (Ginsberg & Milner-Gulland 1994). Overall, there is little clear evidence that a reduction in male age affects fecundity rate per se (Table 1). Rather, the literature points toward changes in parturition dates, birth synchrony, and offspring sex ratio with a reduction in male age.

Selective harvesting may also have indirect effects on recruitment through its influence on the mean age of adult females. For example, in an Norwegian moose population in which selective harvesting protects adult females, the resulting increase in average female age led to an increase in both calving rate and twinning rate (Solberg et al. 1999). In other situations, such as game ranching, cropping results in a general reduction in average female age and thus in an increased reproductive rate due to the absence of senescent individuals (Ginsberg & Milner-Gulland 1994).

Effects on Timing and Synchrony of Birth

Timing and synchrony of birth have important implications for demography because of their effects on offspring body weights and survival. Greater birth synchrony leads to higher survival in species with heavy predation of neonates (Sinclair et al. 2000), whereas late-born individuals often have lower survival (Clutton-Brock et al. 1987; Festa-Bianchet 1988) or delayed body mass development (Sæther et al. 2003; Nilsen et al. 2004; Holand et al. 2006). In female ungulates this may lead to a delay in onset of reproduction (Langvatn et al. 1996).

In both reindeer and moose calving is earlier when the adult sex ratio is even rather than female-biased (Holand et al. 2003, Sæther et al. 2003). In addition, timing of calving in moose can be delayed when the male population is restricted to yearlings (Sæther et al. 2003). Similarly, birth dates in fallow deer (Komers et al. 1999), timing of the rut in elk (Noyes et al. 1996), and median date of accepted mounts in Dall sheep (Singer & Zeigenfuss 2002) are all significantly earlier in groups or populations with mature males than when only young males are present, although other studies have shown no such effects (Table 1). Birth synchrony was greater in a moose population with an even sex ratio compared with a population in which the sex ratio was experimentally manipulated toward females (Sæther et al. 2003), whereas birth dates are more synchronous with increasing male age in elk (Noyes et al. 1996) but less synchronous in fallow deer (Komers et al. 1999). By contrast, no effects of male age on rutting behavior or the timing of the birth season were found in bighorn sheep (Shackleton 1991) or in a hunted moose population (Laurian et al. 2000).

Effects on Offspring Sex Ratio

In dimorphic and polygynous species birth size is more strongly correlated with fitness in males than in females (Kruuk et al. 1999). The Trivers-Willard model (Trivers & Willard 1973) predicts that mothers in good condition should therefore produce male offspring because this yields the highest fitness return (Sheldon & West 2004). Nevertheless, other factors such as male quality and timing of breeding may also influence natal sex ratio. For example, if females hesitate to mate with young males and thus conceive late, the model predicts that fitness would be maximized by producing females because late-born offspring generally have lower birth and autumn weights (Holand et al. 2006).

In an experimental study of a Norwegian moose population, a change in male age structure toward younger males led to a reduction in the proportion of male calves born (Sæther et al. 2004*b*), whereas manipulation of the adult sex ratio had no effect. Similarly, Holand et al. (2006) showed that reindeer conceived in the first estrus are more likely to be male, whereas second-estrus offspring are more likely to be female. They argue that a skewed sex ratio and young male age structure could result in fewer adult females conceiving during the first cycle due to their hesitation to mate with young males. A trend toward more male offspring being sired by older males than by yearling males has also been observed in white-tailed deer (Ozoga & Verme 1985).

Effects on Survival

Participation in rutting activities is energetically costly, and, consequently, winter survival rates of participating males are typically lower than for other individuals (Geist 1971; Stevenson & Bancroft 1995; Jorgenson et al. 1997). Subordinate males may engage in high-risk alternative mating tactics (Hogg & Forbes 1997) and may invest more heavily in reproductive activities when there is either an abundance of females relative to males or a paucity of prime-age males (Squibb 1985; Singer & Zeigenfuss 2002; Mysterud et al. 2003). One might therefore predict that young males will be more involved in the rut and suffer higher winter mortality rates in areas where heavy hunting of mature males occurs (Geist 1971; Murphy et al. 1990). Evidence for the so-called depressed survival hypothesis, however, is equivocal (Singer & Zeigenfuss 2002; Table 1). No effect is seen in Dall sheep populations in which young rams show adult mating behavior in the absence of mature males (Murphy et al. 1990) or in lightly hunted populations of desert bighorn sheep and bighorn

sheep (Singer & Zeigenfuss 2002). Higher mortality rates have been detected only among young rams in a heavily hunted Dall sheep population (Singer & Zeigenfuss 2002).

Where selective hunting leads to high adult mortality, populations tend to have a high proportion of juveniles and yearlings. Because overwinter survival of these classes is variable from year to year (Gaillard et al. 1998), such populations are more sensitive to winter mortality in harsh years than unhunted populations, leading to greater population variability (Cameron & Benton 2004; Gordon et al. 2004).

Effects on Body Weights

Another cost to young males participating in the rut is reduced body growth as resources are diverted to reproduction (Stearns 1992). In populations with few mature males, one might expect increased energy expenditure of young males participating in mating behavior to lead to greater weight loss during the rut. This is observed in male reindeer (Mysterud et al. 2003) and moose (Solberg & Sæther 1994; Garel et al. 2006). However, Sæther et al. (2003) found no such effect when mature male moose were removed from a population, although they found an indirect negative effect on calf body weight the following winter due to delayed parturition dates. Similarly, lower birth and autumn body weights occur in second-estrus offspring in moose (Schwartz & Becker 1994) and reindeer (Holand et al. 2003, 2006). Low mass at birth has implications for other life-history traits such as survival, age and body size at maturity, and lifetime reproductive success (Kruuk et al. 1999).

As a result of expending more energy in avoidance behavior, female fallow deer in an enclosure with only young males lost significantly more body weight than females enclosed with only mature males (Komers et al. 1999). Female white-tailed deer in a low-density hunted population significantly increased their daily movement and home range size in peak and late rut, apparently in response to low availability of adult males (Labisky & Fritzen 1998). By contrast, Singer and Zeigenfuss (2002) found no compelling evidence for any negative effects on ewe energetics of increased harassment of ewes by young rams in hunted mountain sheep populations.

Consequences of Removing a Few Targeted Individuals

Trophy hunting typically targets the largest males or those with impressive ornaments but is generally restricted to relatively few individuals. Nonetheless, a high proportion of individuals that qualify as trophy individuals may be removed each year (Coltman et al. 2003). Species subject to trophy hunting include large carnivores and large horn-, tusk-, or antler-bearing herbivores. Trophy hunting is usually associated with a considerable fee, making it an important tool for wildlife management and conservation programs, particularly in developing countries, where it offers potential benefits for rural economies (Festa-Bianchet 2003). Within Europe and North America, there is also considerable interest in the trophy hunting of some relatively common ungulate species that, are also hunted for meat or population control (Festa-Bianchet 2003; Milner et al. 2006).

In many mammals the largest individuals are also the oldest and, as such, play an important role in leading social groups that benefit from their greater experience. Nevertheless, these are often the same individuals that are typically targeted by trophy hunters because of their size. For example, in elephants, tusk size is related to age, and hunters or poachers focus their efforts on individuals with the largest tusks, including matriarchs (Dobson & Poole 1998). Older matriarchs have social discrimination abilities that are superior to those of young matriarchs, so enabling them to make more appropriate responses during encounters with other elephant groups (McComb et al. 2001). These factors and a greater knowledge of the distribution of resources may result in higher per capita reproductive success for female groups led by older individuals. Consequently, if groups rely on older members for their store of social knowledge, then whole populations may be affected by the removal of a few key individuals (McComb et al. 2001).

Among lions, the absence of males within a pride enables hyenas to drive females and subadults off their kills under certain circumstances, constituting a constant energy drain by forcing them to hunt more frequently (Cooper 1991). In populations where adult males are scarce, due, for example, to trophy hunting, cleptoparasitism by hyenas is likely to increase.

In most species managers assume that sport hunting for trophy males only reduces the overall population size when the rate of male removal is so high that not all females are impregnated. In many cases it is thought that sport hunting of males may even have a positive effect on population growth through compensatory density dependence (McLellan 2005; but see also Miller 1990). In monogamous species and species in which males provide parental care, however selective removal of even a modest number of adult males is predicted to have a stronger impact on population growth than random removals (Greene et al. 1998).

Effects on Juvenile Survival

Removal of trophy individuals, especially dominant males, can have far-reaching effects where male replacement is associated with infanticide. Sexually selected infanticide (SSI) can occur when a male gains increased mating success by killing dependent young he has not sired himself (Swenson 2003). By killing unrelated offspring a mature

Table 2. Demographic consequences of selective removal of a few specific individuals from a population.

	Effect of harvesting		*Demographic consequence*[a]				
Species	*removal dominant* ♂	*removal dominant* ♀	*fecundity rate*	*offspring sex ratio*	*offspring survival*	*adult* ♀ *condition*	*Reference*
Plains zebra (*Equus burchelli*)	X		–			–	Hack et al. 2002
Feral horses (*Equus caballus*)	X		–				Berger 1983
Shackleford Banks horses (*Equus caballus*)	X		–			–	Rubenstein 1986
Elephants (*Loxodonta africana*)	X		–				Dobson & Poole 1998
		X	–				McComb et al. 2001
Lion (*Panthera leo*)	X				–		Pusey & Packer 1994
	X			>♂			Smuts 1978
	X			>♂			Creel & Creel 1997
Brown bear (*Ursus arctos*)	X				–		Swenson et al. 1997
	X				0		Miller et al. 2003
	X		–				Wielgus & Bunnell 2000
	X		–[b]		(–)[b]		Stringham 1983
	X		–[b]		(–)[b]		McCullough 1981
	X				0		McLellan 2005

[a] *Key: 0, no effect; +, positive effect; –, negative effect.*
[b] *Reduced cub recruitment when adult males were removed, but effects on fecundity rate and offspring survival not distinguished.*

male can reduce the interbirth period and sire the next litter. Furthermore, because males tend to roam over larger areas than females (Nilsen et al. 2005), the turnover of one male can affect several females. For example, in root voles (*Microtus oeconomus*), high male turnover rates severely hamper population growth (Andreassen & Gundersen 2006). Male infanticide occurs primarily in primates, terrestrial carnivores, and some rodents.

Among bears, older males may limit the immigration of younger males (Rogers 1987). Therefore, increasing the mortality rate of old males can result in a higher immigration rate of younger, potentially infanticidal, males (Table 2). In Scandinavian brown bears survival rates of cubs are depressed in areas with high adult-male hunting offtake (juvenile survival 0.98 vs. 0.72 in unhunted and hunted populations, respectively; Swenson et al. 1997). A considerable body of evidence points toward infanticide as the cause of this (Swenson et al. 1997; Swenson 2003). In North American brown bear populations the evidence for SSI due to male turnover is still controversial (McCullough 1981; Stringham 1983; Wielgus & Bunnell 2000; Miller et al. 2003; McLellan 2005). Nevertheless, cases of SSI are extremely difficult to document in the field, and recent studies strongly support the SSI model and the adaptive value of SSI for male brown bears (Bellemain et al. 2006). In hunted black bear (*Ursus americanus*) populations with high male turnover rates, SSI is thought to cause high intraspecific juvenile mortality (LeCount 1987).

Sexually selected infanticide is also well documented in lions (Pusey & Packer 1994), and because trophy hunting is expected to increase the rate of male takeovers, excessive trophy hunting could limit recruitment through the negative effects of infanticide on cub survival (Whitman et al. 2004). Although trophy hunting increases the risk of population extinction, quite extensive trophy hunting could be sustained as long as only old males are targeted (Whitman et al. 2004).

Rare cases of SSI have been documented in some herbivore species (captive red deer: Bartos & Madlafousek 1994; hippopotamus [*Hippapotamus amphibious*]: Lewison 1998; captive plains zebra [*Equus burchelli*]: Pluhacek & Bartos 2005). Although the evidence is somewhat circumstantial, this suggests that similar effects could arise in ungulates under some conditions where trophy hunting for adult males takes place.

Effects on Reproduction

In situations where SSI is not documented the removal of a few adult males may nonetheless have an impact on demography through other mechanisms. For example, when comparing two North American grizzly bear populations, Wielgus and Bunnell (2000) found that reproductive rates were suppressed in the hunted compared with the unhunted population (Table 2). These differences were caused by mature females avoiding food-rich areas inhabited by potentially infanticidal immigrant males (sexual segregation), forcing them to use suboptimal habitats (Wielgus & Bunnell 2000). Subsequent modeling exercises show that this has a strong negative effect on the population growth rate and thus increases the risk of population extinction (Wielgus et al. 2001).

Equids often show highly developed multilevel social organization. Harem-forming feral horses and plains zebras are vulnerable to social instability and a high turnover of harem males (Hack et al. 2002). The selective removal of harem stallions can lead to increased stress levels, reduced grazing time, and loss of body condition in females

subject to harassment from intruding males, resulting in induced abortion (Berger 1983) and lower female reproductive success (Rubenstein 1986). Male takeovers in feral horses led to abortion due to forced copulation in 80% of females <6 months pregnant and due to other stress factors in a further 10% (Berger 1983). Females were subsequently reinseminated by new males resulting in a reduced interbirth interval and genetic investment of rival males.

As with the selective hunting of specific age and sex classes, the selective removal of individuals could also affect other birth characteristics. For example, lion populations in which males are hunted, rear a higher proportion of male than female cubs (Smuts 1978; Creel & Creel 1997). According to the sex-allocation theory (Charnov 1982), this could compensate for a high turnover of adult males (Packer & Pusey 1987) but reduces the number of lions that can be sustainably harvested before the availability of females becomes limiting (Greene et al. 1998).

Synthesis and Conclusions

Our review shows that when selective harvesting perturbs the sex or age structure in such a way that the mating system is disrupted, the fecundity and survival of certain sectors of the population and the offspring sex ratio may all be affected. The removal of even a few targeted individuals could have similar consequences. Nevertheless, the evidence for the occurrence of such unintended demographic side effects is somewhat equivocal (Tables 1 & 2), being more common in experimental than observational studies. We believe this arises because such effects are often subtle, indirect, and sometimes involve time lags (Fig. 2). Changes such as shifts in calving date or offspring sex ratio are difficult to detect without detailed monitoring programs, and there is currently a lack of long-term studies of marked individuals in hunted populations (Festa-Bianchet 2003). This limits our understanding of how and when these demographic effects are expressed

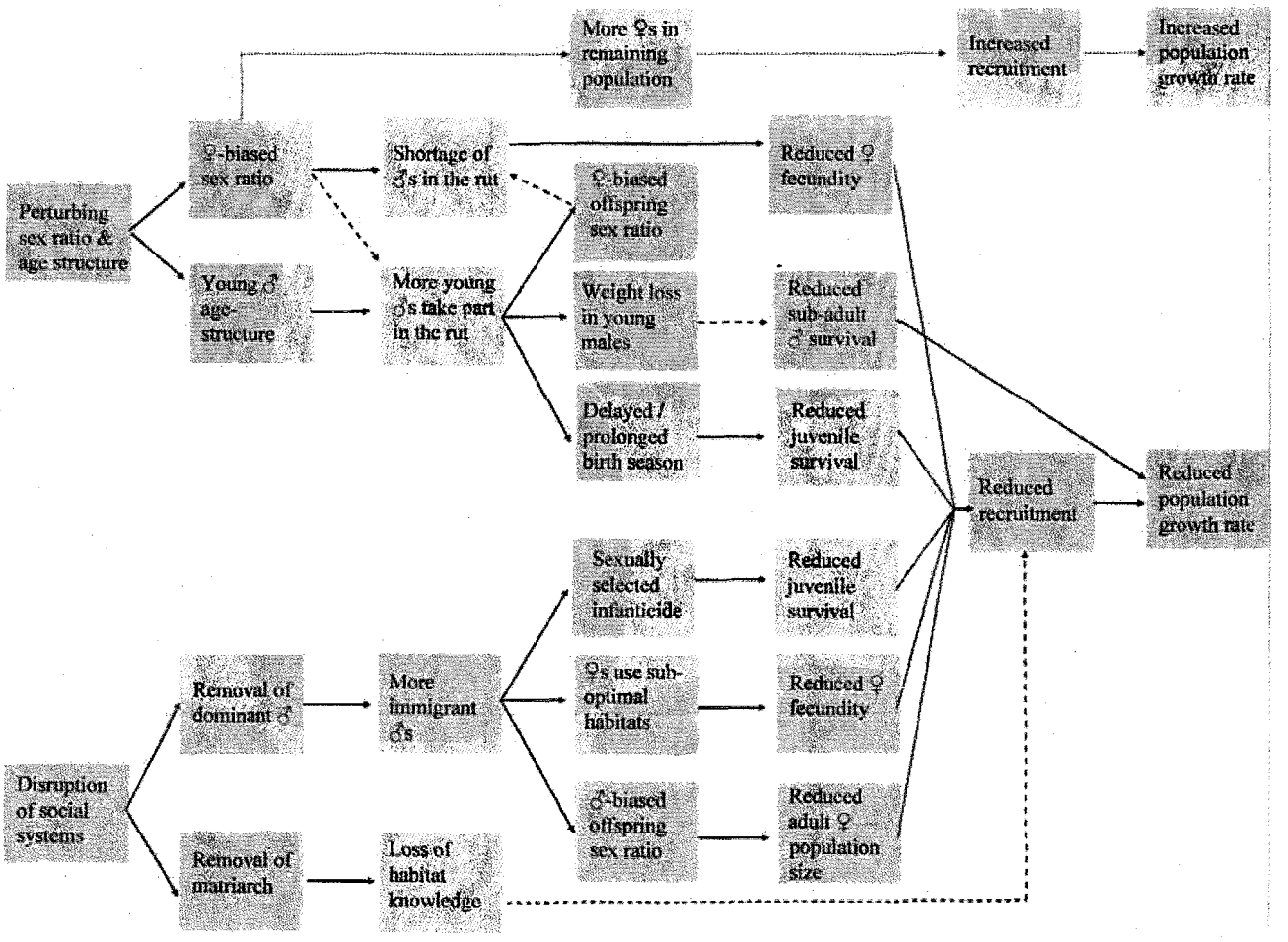


Figure 2. Schematic model of some of the processes and indirect pathways by which selective harvesting may affect population growth rate. Solid lines are mechanisms and effects that are well documented, and dashed lines indicate effects that are less well documented. The dotted lines indicate the path by which selective harvesting can increase population growth rate.

across different mating systems, habitat types, and population densities.

Many of the processes triggered by selective harvesting indirectly reduce the recruitment of new individuals, thereby potentially reducing the population growth rate (Fig. 2). Recruitment is depressed because females hesitate to mate with young males (e.g., Holand et al. 2006), ovulation is delayed in the absence of stimulation from mature males (e.g., McComb 1987; Komers et al. 1999), or, more rarely, there are insufficient males for all females to be mated (e.g., Milner-Gulland et al. 2003). Conception rates can be limited by spatial (Mysterud et al. 2002) and social (Greene et al. 1998) factors influencing access to mates and by a physical limit to the number of females each male can inseminate (Ginsberg & Milner-Gulland 1994). Although there are clearly differences between monogamous and polygynous mating systems in the ratio of adult males to females necessary for all females to be mated, within polygynous species differences in female group size (solitary individuals, small social groups, or large harems) and male mating behavior (e.g., tending, lekking, or harem holding) also influence access to mates. In addition, mate access may vary within species because group size differs with habitat type (Hewison et al. 1998). Extrapolation of adult sex ratios from domestic populations is not advisable. Generally, daily sperm production, sperm density, and absolute sperm numbers are directly related to testes size (Møller 1989), and most domestic animals have large testes for their body weight (Ginsberg & Milner-Gulland 1994). Under intense competition between males, sperm depletion can occur before the end of the rut, even in species with relatively large testes (Preston et al. 2001).

Although the mechanisms by which selective harvesting could affect population demography are relatively well documented (Fig. 2), the extent to which they affect population growth is still poorly understood (e.g., Wielgus et al. 2001; Whitman et al. 2004). Because the sensitivity of population growth rate to recruitment is generally lower than its sensitivity to adult female survival (Gaillard et al. 2000), demographic side effects that depress recruitment may not have as strong an effect on population growth rate as the direct harvesting of adult females. Nevertheless, because many of these effects are likely to act additively (Fig. 2), they may nonetheless reduce the population growth rate more than first anticipated. Although good estimates are lacking for many parameters, conceptual models would be helpful in suggesting when demographic side effects might start to limit population growth and in guiding empirical data collection.

The occurrence of demographic side effects of selective harvesting has implications for the performance of population viability analyses (PVA). In many of the most commonly used PVA software programs there is an implicit assumption that sex does not matter as long as the number of adult males is ≥ 1 (Brook et al. 2000). Nevertheless, estimated extinction probabilities are affected by both population sex ratio and mating system (Ginsberg & Milner-Gulland 1994; Sæther et al. 2004*a*). In addition, for small populations, demographic stochasticity in the sex ratio could have a direct negative effect on mean population growth rate (Sæther et al. 2004*a*). If the abundance of one sex is particularly low, chance events could result in that sex being limiting in certain years. This would be especially important in small, harvested populations and in more abundant populations when the sex ratio is close to the threshold where these effects become important.

Selective harvesting regimes can have destabilizing effects on populations. The young age structure of harvested populations results in less-stable dynamics due to high stochasticity in juvenile survival (e.g., Gordon et al. 2004). Furthermore, if late-born offspring enter the winter with lower body weights (e.g., Holand et al. 2006), they are more likely to be affected by random climatic variation (Festa-Bianchet 1988), which, together with reduced birth synchrony, could result in large interannual fluctuations in juvenile survival. In addition, in species with SSI, the effect of male removal on population growth rate is hard to predict because it depends on the number of offspring killed by immigrant males. In a Scandinavian bear population Swenson et al. (1997) estimated that the removal of one male was equivalent to the removal of 0.5–1.0 females, depending on the extent to which the immigrant male killed the cubs in the area. In such situations harvesting juveniles and females will have more predictable effects.

In response to the demographic side effects discussed here and the evolutionary consequences of selective harvesting (Harris et al. 2002; Festa-Bianchet 2003), wildlife managers are advised to implement harvesting regimes that mimic natural mortality patterns more closely. Because natural mortality is typically higher among juveniles and old individuals (Gaillard et al.1998), these groups should be targeted (Ginsberg & Milner-Gulland 1994), although this may conflict with economic considerations in some areas (Festa-Bianchet 2003; Milner et al. 2006). Applying a minimum age threshold is a possibility for trophy males if a reliable assessment of age can be made independently from trophy phenotype, which may be well developed at a young age in high-quality males (Whitman et al. 2004). An additional approach would be to consider the timing of the harvest. Currently many temperate ungulates are hunted during the breeding season. If the harvest is delayed until after the rut, older males have the opportunity to breed and could be harvested at the time of year when their reproductive value is lowest (Kokko et al. 2001). In lions the optimal time for hunting a pride male would be as his cubs become independent (Whitman et al. 2004). In this way, and by following natural pride take over intervals, infanticide can be minimized.

We are now starting to understand the mechanisms by which undesirable side effects of selective hunting occur,

but much less is known about when they occur and the extent to which they affect population growth. To be able to make firmer predictions about the effects on population growth and viability, both large-scale empirical manipulations of harvesting regimes and theoretical studies, including simulation modeling, are urgently needed. Because most of the effects discussed here operate through recruitment, monitoring recruitment and juvenile sex ratios should be standard routines for managers, in addition to assessment of total population size. In addition, stronger emphasis should be put on the timing of the harvest. Until the importance of the mechanisms triggered by selective harvesting discussed here are more clearly understood, we urge managers to be cautious in their use of nonrandom harvesting strategies.

Acknowledgments

We thank the Norwegian Research Council for funding J.M.M. and E.B.N. (project 156367/530). Furthermore, we thank colleagues at Hedmark University College for valuable discussions and A.J. Loveridge, M. Festa-Bianchet, and an anonymous referee for helpful comments.

Literature Cited

Andreassen, H. P., and G. Gundersen. 2006. Male turnover reduces population growth: an enclosure experiment on voles. Ecology **87**:88–94.

Apollonio, M., B. Bassano, and A. Mustoni. 2003. Behavioral aspects of conservation and management in European mammals. Pages 157–170 in M. Festa-Bianchet and M. Apollonio, editors. Animal behavior and wildlife conservation. Island Press, Washington, D.C.

Baillie, J. E. M., C. Hilton-Taylor, and S. N. Stuart. 2004. 2004 IUCN red list of threatened species. A global species assessment. World Conservation Union, Gland, Switzerland, and Cambridge, United Kingdom.

Bartos, L., and J. Madlafousek, 1994. Infanticide in a seasonal breeder—the case of red deer. Animal Behaviour **47**:217–219.

Bellemain, E., J. E. Swenson, and P. Taberlet. 2006. Mating strategy in relation to sexually selected infanticide in a nonsocial carnivore: the brown bear. Ethology **112**:238–246.

Bender, L., and P. J. Miller. 1999. Effects of elk harvest strategy on bull demographics and herd composition. Wildlife Society Bulletin **27**:1032–1037

Berger, J. 1983. Induced abortion and social factors in wild horses. Nature **303**:59–61.

Bergerud, A. T. 1974. Rutting behaviour of the Newfoundland caribou. Pages 395–435 in V. Geist and F. Walther, editors. The behaviour of ungulates and its relation to management. World Conservation Union, Morges, Switzerland.

Brook, B. W., M. A. Burgman, and R. Frankham. 2000. Differences and congruencies between PVA packages: the importance of sex ratio for predictions of extinction risk. Conservation Ecology **4**: http://www.ecologyandsociety.org/vol4/iss1/art6/.

Cameron, T. C., and T. G. Benton. 2004. Stage-structured harvesting and its effects: an empirical investigation using soil mites. Journal of Animal Ecology **73**:996–1006.

Caughley, G. 1977. Analysis of vertebrate populations. John Wiley & Sons, Chichester, United Kingdom.

Charnov, E. 1982. The theory of sex allocation. Princeton University Press, Princeton, New Jersey.

Clutton-Brock, T. H., M. Major, S. D. Albon, and F. E. Guinness. 1987. Early development and population dynamics in red deer. I. Density-dependent effects on juvenile survival. Journal of Animal Ecology **56**:53–67.

Coltman, D. W., P. O'Donoghue, J. T. Jorgenson, J. T. Hogg, C. Strobeck, and M. Festa-Bianchet. 2003. Undesirable evolutionary consequences of trophy hunting. Nature **426**:655–658.

Cooper, S. M. 1991. Optimal hunting group-size—the need for lions to defend their kills against loss to spotted hyaenas. African Journal of Ecology **29**:130–136.

Coulson, T., E. A. Catchpole, S. D. Albon, B. J. T. Morgan, J. M. Pemberton, T. H. Clutton-Brock, M. J. Crawley, and B. T. Grenfell. 2001. Age, sex, density, winter weather, and population crashes in Soay sheep. Science **292**:1528–1531.

Courtois, R., and G. Lamontagne. 1999. The protection of cows: its impacts on moose hunting and moose populations. Alces **35**:11–29.

Creel, S., and N. M. Creel. 1997. Lion density and population structure in the Selous Game Reserve: evaluation of hunting quotas and offtake. African Journal of Ecology **35**:83–93.

Dobson, A., and J. Poole. 1998. Conspecific aggregation and conservation biology. Pages 193–208 in T. Caro, editor. Behavioural ecology and conservation biology. Oxford University Press, Oxford, United Kingdom.

Festa-Bianchet, M. 1988. Birthdate and survival in bighorn lambs (*Ovis canadensis*). Journal of Zoology **214**:653–661.

Festa-Bianchet, M. 2003. Exploitative wildlife management as a selective pressure for life-history evolution of large mammals. Pages 191–210 in M. Festa-Bianchet and M. Apollonio, editors. Animal behavior and wildlife conservation. Island Press, Washington, D.C.

Freddy, D. J. 1987. The White River elk herd: a perspective 1960–85. Wildlife technical publication. Colorado Division of Wildlife, Fort Collins.

Gaillard, J.-M., M. Festa-Bianchet, and N. G. Yoccoz. 1998. Population dynamics of large herbivores: variable recruitment with constant adult survival. Trends in Ecology & Evolution **13**:58–63.

Gaillard, J.-M., M. Festa-Bianchet, N. G. Yoccoz, A. Loison, and C. Toïgo. 2000. Temporal variation in fitness components and population dynamics of large herbivores. Annual Review of Ecology and Systematics **31**:367–93.

Garel, M., E. J. Solberg, B. E. Sæther, I. Herfindal, and K. A. Hogda. 2006. The length of growing season and adult sex ratio affect sexual size dimorphism in moose. Ecology **87**:745–758.

Geist, V. 1971. Mountain Sheep, a study in behavior and evolution. University of Chicago Press, Chicago.

Ginsberg, J. R., and E. J. Milner-Gulland. 1994. Sex-biased harvesting and population-dynamics in ungulates—implications for conservation and sustainable use. Conservation Biology **8**:157–166.

Gordon, I. J., A. J. Hester, and M. Festa-Bianchet. 2004. The management of wild large herbivores to meet economic, conservation and environmental objectives. Journal of Applied Ecology **41**:1021–1031.

Greene, C., J. Umbanhowar, M. Mangel, and T. Caro. 1998. Animal breeding systems, hunter selectivity and consumptive use in wildlife conservation. Pages 271–305 in T. Caro, editor. Behavioural ecology and conservation biology. Oxford University Press, Oxford, United Kingdom.

Hack, M. A., R. East, and D. I. Rubenstein. 2002. Status and Action Plan for the Plains Zebra (*Equus burchellii*). Pages 43–60 in P. D. Moehlman, editor. Equids: zebras, asses and horses. World Conservation Union (IUCN) Species Survival Commission Equid Specialist Group, IUCN, Gland, Switzerland.

Harris, R. B., W. A. Wall, and F. W. Allendorf. 2002. Genetic consequences of hunting: what do we know and what should we do? Wildlife Society Bulletin **30**:634–643.

Heimer, W. E., S. M. Watson and T. C. Smith. 1984. Excess ram mortality in a heavily hunted Dall sheep population. Symposium Northern Wild Sheep & Goat Council **4**:425–432.

Hewison, A. J. M., J.-P. Vincent, and D. Reby. 1998. Social organisation of European roe deer. Pages 189–219 in R. Andersen, P. Duncan, and J. D. C. Linnell, editors. The European roe deer: the biology of success. Scandinavian University Press, Oslo.

Hogg, J. T., and S. H. Forbes. 1997. Mating in bighorn sheep: frequent male reproduction via a high-risk "unconventional" tactic. Behavioral Ecology and Sociobiology **41**:33–48.

Holand, Ø., K. H. Roed, A. Mysterud, J. Kumpula, M. Nieminen, and M. E. Smith. 2003. The effect of sex ratio and male age structure on reindeer calving. Journal of Wildlife Management **67**:25–33.

Holand, Ø., A. Mysterud, K. H. Røed, T. Coulson, H. Gjøstein, R. B. Weladji, and M. Nieminen. 2006. Adaptive adjustment of offspring sex ratio and maternal reproductive effort in an iteroparous mammal. Proceedings of the Royal Society B **273**:293–299.

IUCN (World Conservation Union). 2004. 2004 IUCN Red List of threatened species. IUCN, Gland, Switzerland. Available from http://www.iucnredlist.org (accessed February 2006).

Jorgenson, J. T., M. Festa-Bianchet, J.-M. Gaillard, and W. D. Wishart. 1997. Effects of age, sex, disease, and density on survival of Bighorn sheep. Ecology **78**:1019–1032.

Komers, P., B. Birgersson, and K. Ekvall. 1999. Timing of estrus in fallow deer is adjusted to the age of available mates. The American Naturalist **153**:431–436.

Kokko, H., J. Lindström, and E. Ranta 2001. Life histories and sustainable harvesting. Pages 301–322 in J. D. Reynolds, G. M. Mace, K. H. Redford, and J. G. Robinson, editors. Conservation of exploited species. Cambridge University Press, Cambridge, United Kingdom.

Kruuk, L. E. B., T. H. Clutton-Brock, K. E. Rose, and F. E. Guinness. 1999. Early determinants of lifetime reproductive success differ between the sexes in red deer. Proceedings of the Royal Society B **266**:1655–1661.

Labisky, R. F., and D. E. Fritzen. 1998. Spatial mobility of breeding female white-tailed deer in a low-density population. Journal of Wildlife Management **62**:1329–1334.

Langvatn, R., S. D. Albon, T. Burkey, and T. H. Clutton-Brock. 1996. Climate, plant phenology, and variation in age at first reproduction in a temperate herbivore. Journal of Animal Ecology **65**:653–670.

Langvatn, R., and A. Loison. 1999. Consequences of harvesting on age structure, sex ratio, and population dynamics of red deer *Cervus elaphus* in central Norway. Wildlife Biology **5**:213–223.

Laurian, C., J. P. Ouellet, R. Courtois, L. Breton, and S. St-Onge. 2000. Effects of intensive harvesting on moose reproduction. Journal of Applied Ecology **37**:515–531.

Law, R. 2001. Phenotypic and genetic changes due to selective exploitation. Pages 323–342 in J. D. Reynolds, G. M. Mace, K. H. Redford, and J. G. Robinson, editors. Conservation of exploited species. Cambridge University Press, Cambridge, United Kingdom.

LeCount, A. L. 1987. Causes of black bear cub mortality. International Conference on Bear Research and Mangement **7**:75–82.

Lewison, R. 1998. Infanticide in the hippopotamus: evidence for polygynous ungulates. Ethology, Ecology & Evolution **10**:277–286.

McComb, K. 1987. Roaring by red deer stags advances the date of oestrus in hinds. Nature **330**:648–649.

McComb, K., C. Moss, S. M. Durant, L. Baker, and S. Sayialel. 2001. Matriarchs as repositories of social knowledge in African elephants. Science **292**:491–494.

McCullough, D. R. 1981. Population dynamics of the Yellowstone grizzly bear. Pages 173–196 in C. W. Fowler and T. D. Smith, editors. Dynamics of large mammal populations. John Wiley & Sons, New York.

McCullough, D. R. 2001. Male harvest in relation to female removals in a black-tailed deer population. Journal of Wildlife Management **65**:46–58.

McLellan, B. N. 2005. Sexually selected infanticide in grizzly bears: the effects of hunting on cub survival. Ursus **16**:141–156.

Miller, S. D. 1990. Impact of increased bear hunting on survivorship of young bears. Wildlife Society Bulletin **18**:462–467.

Miller, S. D., R. A. Sellers, and J. A. Keay. 2003. Effects of hunting on brown bear cub survival and litter size in Alaska. Ursus **14**:130–152.

Milner, J. M., C. Bonenfant, A. Mysterud, J.-M. Gaillard, S. Csányi, and N. C. Stenseth 2006. Temporal and spatial development of red deer harvesting in Europe—biological and cultural factors. Journal of Applied Ecology **43**:721–734.

Milner-Gulland, E. J., and E. L. Bennett. 2003. Wild meat: the bigger picture. Trends in Ecology & Evolution **18**:351–357.

Milner-Gulland, E. J., O. M. Bukreevea, T. Coulson, A. A. Lushchekina, M. V. Kholodova, A. B. Bekenov, and I. A. Grachev. 2003. Reproductive collapse in saiga antelope harems. Nature **422**:135.

Møller, A. P. 1989. Ejaculate quality, testes size and sperm competition in primates. Journal of Human Evolution **17**:479–488.

Murphy, E. C., F. J. Singer, and L. Nichols. 1990. Effects of hunting on survival and productivity of Dall sheep. Journal of Wildlife Management **54**:284–290.

Mysterud, A., T. Coulson, and N. C. Stenseth. 2002. The role of males in the dynamics of ungulate populations. Journal of Animal Ecology **71**:907–915.

Mysterud, A., O. Holand, K. H. Roed, H. Gjostein, J. Kumpula, and M. Nieminen. 2003. Effects of age, density and sex ratio on reproductive effort in male reindeer (*Rangifer tarandus*). Journal of Zoology **261**:341–344.

Nilsen, E. B., J. D. C. Linnell, and R. Andersen. 2004. Individual access to preferred habitat affects fitness components in female roe deer *Capreolus capreolus*. Journal of Animal Ecology **73**:44–50.

Nilsen, E. B., I. Herfindal, and J. D. C. Linnell. 2005. Can intra-specific variation in carnivore home-range size be explained using remote-sensing estimates of environmental productivity? Écoscience **12**:68–75.

Noyes, J. H., B. K. Johnson, L. D. Bryant, S. L. Findholt, and J. W. Thomas. 1996. Effects of bull age on conception dates and pregnancy rates of cow elk. Journal of Wildlife Management **60**:508–517.

Ozoga, J. J., and L. J. Verme. 1985. Comparative breeding behavior and performance of yearling vs. prime-age white-tailed bucks. Journal of Wildlife Management **49**:364–372.

Packer, C., and A. E. Pusey. 1987. Intrasexual cooperation and the sex ratio in African lions. The American Naturalist **130**:636–642.

Pluhacek, J., and L. Bartos. 2005. Further evidence for male infanticide and feticide in captive plains zebra, *Eqfuus burchellt*. Folia Zoologica **54**:258–262.

Preston, B. T., I. R. Stevenson, J. M. Pemberton, and K. Wilson. 2001. Dominant rams lose out by sperm depletion. Nature **409**:681–682.

Pusey, A. E., and C. Packer. 1994. Infanticide in lions: consequences and counterstrategies. Pages 277–299 in S. Parmigiani, and F. S. vom Saal, editors. Infanticide & parental care. Harwood Academic, London.

Robinson, J. R., and E. L. Bennett 2000. Hunting for sustainability in tropical forests. Columbia University Press, New York.

Rogers, L. L. 1987. Effects of food-supply and kinship on social behavior, movements, and population growth of black bears in Northeastern Minnesota. Wildlife Monographs **97**:1–72.

Rubenstein, D. I. 1986. Ecology and sociality in Horses and Zebras. Pages 282–302 in D. I. Rubenstein and R. W. Wrangham, editors. Ecological aspects of social evolution. Princeton University Press, Princeton, New Jersey.

Sæther, B.-E., E. J. Solberg, and M. Heim. 2003. Effects of altering sex ratio structure on the demography of an isolated moose population. Journal of Wildlife Management **67**:455–466.

Sæther, B. E., S. Engen, R. Lande, A. P. Moller, S. Bensch, D. Hasselquist, J. Beier, and B. Leisler. 2004*a*. Time to extinction in relation to mating system and type of density regulation in populations with two sexes. Journal of Animal Ecology **73**:925–934.

Sæther, B.-E., E. J. Solberg, M. Heim, J. E. Stacy, K. S. Jakobsen, and R. Olstad. 2004*b*. Offspring sex ratio in moose *Alces alces* in relation to paternal age: an experiment. Wildlife Biology **10**:51–57.

Schwartz, C. C., and E. F. Becker. 1994. Growth of moose calves conceived during the first versus second estrus. Alces **30**:91–100.

Shackleton, D. M. 1991. Social maturation and productivity in bighorn sheep: are young males incompetent? Applied Animal Behaviour Science **29**:173–184.

Sheldon, B. C. and S. A. West. 2004. Maternal dominance, maternal condition, and offspring sex ratio in ungulate mammals. The American Naturalist **163:**40–54.

Sinclair, A. R. E., S. A. R. Mduma, and P. Arcese. 2000. What determines phenology and synchrony of ungulate breeding in Serengeti? Ecology **81:**2100–2111.

Singer, F. J., and L. C. Zeigenfuss. 2002. Influence of trophy hunting and horn size on mating behavior and survivorship of mountain sheep. Journal of Mammalogy **83:**682–698.

Smuts, G. L. 1978. Effects of population reduction on the travels and reproduction of lions in Kruger National Park. Carnivore **1:**61–72.

Solberg, E. J., and B.-E. Sæther. 1994. Male traits as life-history variables: annual variation in body mass and antler size in moose (*Alces alces*). Journal of Mammalogy **75:**1069–1079.

Solberg, E. J., B.-E. Sæther, O. Strand, and A. Loison. 1999. Dynamics of a harvested moose population in a variable environment. Journal of Animal Ecology **68:**186–204.

Solberg, E. J., A. Loison, B.-E. Sæther, and O. Strand. 2000. Age-specific harvest mortality in a Norwegian moose *Alces alces* population. Wildlife Biology **6:**41–52.

Solberg, E. J., A. Loison, T. H. Ringsby, B.-E. Sæther, and M. Heim. 2002. Biased adult sex ratio can affect fecundity in primiparous moose *Alces alces*. Wildlife Biology **8:**117–128.

Squibb, R. C. 1985. Mating success of yearling and older bull elk. Journal of Wildlife Management **49:**744–750.

Stalling, D. H., G. J. Wolfe, and D. K. Crockett. 2002. Regulating the hunt. Pages 749–791 in D. E. Toweill and J. W. Thomas, editors. North American elk. Ecology and management. Smithonian Institution Press, Washington, D.C.

Stearns, S. C. 1992. The evolution of life histories. Oxford University Press, Oxford, United Kingdom.

Stevenson, I. R., and D. R. Bancroft. 1995. Fluctuating trade-offs favour precocial maturity in male Soay sheep. Proceedings of the Royal Society B **262:**267–275.

Stringham, S. F. 1983. Roles of adult males in grizzly bear populations. International Conference on Bear Research and Mangement **5:**140–151.

Swenson, J. E. 2003. Implications of sexually selected infanticide for the hunting of large carnivores. Pages 171–189 in M. Festa-Bianchet and M. Apollonio, editors. Animal behavior and wildlife conservation. Island Press, Washington, D.C.

Swenson, J. E., F. Sandegren, A. Söderberg, A. Bjärvall, R. Franzén, and P. Wabakken. 1997. Infanticide caused by hunting of male bears. Nature **386:**450–451.

Taquet, M., J.-P. Ouellet, R. Courtois, and C. Laurian. 1999. Does unbalanced sex ratio in adult moose affect calf size in the fall? Alces **35:**203–211.

Trivers, R. L., and D. E. Willard. 1973. Natural selection of parental ability to vary the sex ratio of offspring. Science **179:**90–92.

White, G. C., D. J. Freddy, R. B. Gill, and J. H. Ellenberger. 2001 Effect of adult sex ratio on mule deer and elk productivity in Colorado. Journal of Wildlife Management **65:**543–551.

Whitman, K., A. M. Starfield, H. S. Quadling, and C. Packer. 2004. Sustainable trophy hunting of African lions. Nature **428:**175–178.

Wielgus, R. B., and F. L. Bunnell. 2000. Possible negative effects of adult male mortality on female grizzly bear reproduction. Biological Conservation **93:**145–154.

Wielgus, R. B., F. Sarrazin, R. Ferriere, and J. Clobert. 2001. Estimating effects of adult male mortality on grizzly bear population growth and persistence using matrix models. Biological Conservation **98:**293–303.