SELKIRK ECOSYSTEM PROJECT

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Study I: Selkirk Mountains Grizzly Bear Ecology

Study II: Selkirk Mountains Caribou Transplant

Study III: Grizzly Bear Enforcement and Education Project

by

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SELKIRK MOUNTAINS GRIZZLY BEAR ECOLOGY

STUDY I: SELKIRK MOUNTAINS GRIZZLY BEAR ECOLOGY

ABSTRACT

Grizzly bear (*Ursus arctos horribilus*) recovery efforts in the Selkirk Ecosystem in 2006 continued the shift from a research project to management, including educational/public awareness efforts, sanitation issues, and bear/human interactions. Two grizzly bears were captured in the Round Prairie area located between the Selkirk and Cabinet-Yaak ecosystems. One bear moved from the Yaak ecosystem and is currently denned in the Selkirks, crossing the Kootenai Valley north of Copeland. This is the first confirmed direct movement from one ecosystem to the other. No known human-caused mortalities occurred within the recovery zone, however, 3 human-caused grizzly bear mortalities were confirmed within 10 miles of the Selkirk ecosystem and an additional death is suspected. All mortalities were north of the recovery zone in British Columbia (B.C.). Grizzly bears sightings were numerous and widespread in 2006. Results from a BC study using DNA resulted in a population estimate of 33 bears for the portion of the ecosystem north of B.C. highway 3. Bears appear to be expanding their range to the south into the Pack River. Bear sightings are becoming more numerous in areas where grizzly bears have been known to exist in past.

INTRODUCTION

Grizzly bears (*Ursus arctos horribilus*), once numerous throughout the central and western United States, were thought to number approximately 50,000 in the early 1800's (U.S. Fish and Wildlife Service 1982, 1993). However, the distribution and numbers of grizzly bears were drastically reduced with westward human expansion and development in the 1800's and into the early and mid-1900's. In response to the decline, as well as increased national awareness of the impact humans were having on native wildlife populations, the bear was listed under the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (USFWS) in 1975. At the time of listing bears were distributed in 5 populations estimated at a total of 800-1,000 bears (U.S. Department of the Interior 1975). Populations exist today in the Greater Yellowstone Ecosystem, Glacier National Park and the northern continental divide, and portions of northwestern Montana, northern Idaho, and northeastern and western Washington.

The ESA listing resulted in significant management changes within designated recovery zones, including changes in hunting seasons, road management on public land, food and garbage storage requirements, and changes in grazing permits, among other things. While many of these changes were controversial, they resulted in increasing grizzly bear populations in some of the recovery zones. Grizzly bear delisting is proposed for the Yellowstone ecosystem and delisting is proceeding in the Northern Continental Divide ecosystem.

Grizzly bears appear to be increasing in the Selkirk ecosystem as well. Sightings by the public and agency personnel are now more common than they were 15 or 20 years ago. Some of this apparent increase may be due to increasing awareness of grizzly bears, the willingness of people to report grizzly bear sightings, and more people using the forests. However, sightings have increased in areas where there are lower road densities which have resulted in fewer people in these areas. Additionally, new sighting are occurring in areas that have had a continual presence of people for many years. This indicates a possible increase in both numbers and the range of grizzly bears within the Selkirk ecosystem.

These conditions require a shift in research and management direction. Initially, research focused on basic population questions, such as determining distribution of grizzly bears, home range characteristics and activity patterns, and population parameters, including age structure, mortality and natality.

Current research must include the human dimension of grizzly bear management. This is not to say that the population is secure because it still exists at fairly low numbers. It is more a

recognition of an expanding population and the need to address bear/human interactions that did not occur in the past. In this report we present a summary of grizzly bear recovery activities from January – December 2006. Criteria used to measure recovery efforts are reported in Appendix A. Major funding for this project is provided by the USFWS through Section 6 of the ESA.

STUDY AREA

The Selkirk Mountains Grizzly Bear Ecosystem (SMGBE) represents approximately 6% of the total occupied grizzly bear range remaining within the conterminous 48 states. It encompasses 5,700 km^2 of the Selkirk Mountains of northeastern Washington, northern Idaho, and southern British Columbia (B.C). (Figure. 1). Approximately 47% lies in B.C. with the remainder in the U.S. Land ownership in B.C. is 65% crown (public) land and 35% private. Land ownership in the U.S. portion is approximately 80% federal, 15% state, and 5% private.

Elevation on the study area ranges from 540 to 2,375 m. Weather patterns are typical of the Pacific maritime-continental climate, with long winters and short summers. A majority of the precipitation falls during winter, with a second peak in spring.

Study area vegetation is dominated by various forested types. Major tree species include subalpine fir (*Abies lasiocarpus*), Englemann spruce (*Picea engelmannii*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*). Dominant shrub species include alder (*Alnus* spp.), fool's huckleberry (*Menziesia ferruginea*), mountain ash (*Sorbus scopulina*), and huckleberry (*Vaccinium* spp.).

Historically, wildfire was the primary disturbance factor in the Selkirk Mountains. Recently, the Trapper Peak (6,000 ha) and Sundance (9,000 ha) fires of 1967 produced large seral shrubfields. Timber management and recreation are currently the principal land uses.

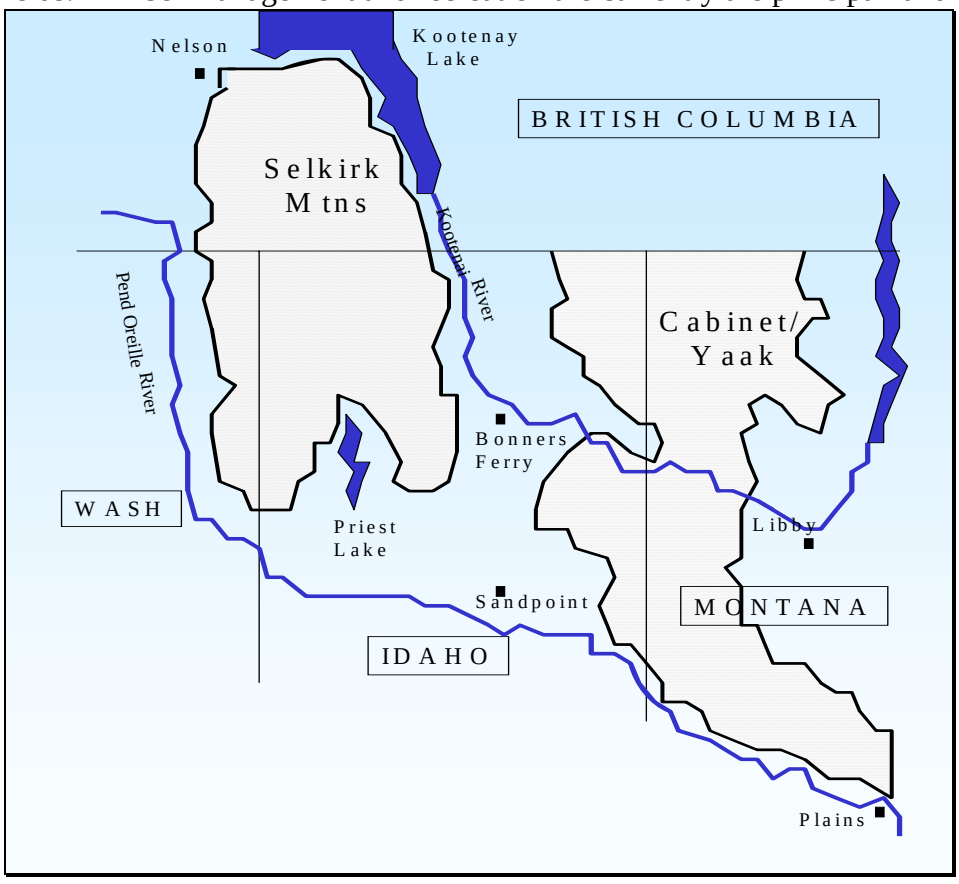

Figure 1. Selkirk Mountains and adjacent Cabinet-Yaak Ecosystems.

TRAPPING / MANAGEMENT ACTIONS

An extensive trapping effort for both black (*Ursus americanus*) and grizzly bears was conducted in the Copeland / Round Prairie area located between the Selkirk and Cabinet-Yaak ecosystems. This trapping effort was related to new highway construction and the possible effects on resident wildlife, including black and grizzly bears. All bears over 80 pounds that were captured were fitted with GPS collars. Two grizzly bears were trapped in 2006 (Table 1).

Table 1. Grizzly bears captured in the SMGBE, 2006.

Bear ID	Age/ Sex	Weight (lbs)	Est. Age[a]	Date	Comments
5381	Subadult Male	180	3	6/6/06	Research capture related to Copeland Highway project, GPS collar placed on animal.
103	Subadult Male	225	3	6/23/06	Research capture related to Copeland Highway project, GPS collar placed on animal.

[a] Ages are estimated from tooth wear. Ages will be determined using counts of annual cementum layers.

MONITORING AND MOVEMENTS

The radio-marked grizzly bears were located at least once a week (weather and aircraft availability dependent). With few exceptions all locations were obtained from the air using a Cessna 182. Locations were determined using directional antennas mounted on the wing struts and connected to an isolator switch box inside the plane. Once the bear was located, coordinates were determined using an on-board GPS unit.

Both radio-collared bears made significant movements. The bear that was collared as part of the B.C. highway study in the Yaak ecosystem crossed the Kootenai Valley north of the Copeland area and moved into the Selkirks. He was located as far south as the Roman Nose area before he localized in the Myrtle and Burton Creek drainages. He is currently denned in the upper portion of Myrtle Creek.

The other subadult male was originally trapped on the south side of Highway 95 in Round Prairie. He crossed the highway and spent much of the summer near the U.S./B.C. border in the Mission Creek drainage. He eventually crossed the highway from the north to the south and was located in the Hellroaring Creek drainage, the original capture drainage. Denning location is unknown as I have not been able to locate the bear after November.

MORTALITIES

There were no known human-caused grizzly bear moralities in the U.S. portion of the ecosystem in 2006. There were 3 known and 1 likely grizzly bear deaths in or near the B.C. portion of the ecosystem. Two yearlings were killed in the Blewett area, west of Nelson, B.C. In the same incident an adult female was wounded and likely died as a result, although her death is not certain. Another bear was killed near Procter, B.C.

RESOURCE SELECTION FUNCTION ANALYSIS

A graduate student is currently working at the University of Idaho to complete the resource selection function analysis. Most of the work so far has been to gather base layers for the Selkirk and Cabinet-Yaak ecosystems, both north and south of the international border. The intent of the analysis is to develop seasonal habitat models that will aid in grizzly bear

management decisions. Anticipated completion date of this analysis is spring or summer 2007.

POPULATION ESTIMATION STUDY

Michael Proctor (B.C. consultation biologist) conducted a DNA-based hair snare project in 2005. He sampled the Selkirk ecosystem north of B.C. highway 3. He sampled 4 times throughout the summer with 1 sample point within a 5x5 km grid superimposed over the study area. Dr. Proctor's population estimate for this area, based on multiple mark-recapture analysis, was 33 bears (M. Proctor, personal communication).

I intend to duplicate this study in a portion of the ecosystem in the U.S. Concurrently, Dr. Proctor will sample the portion of the ecosystem in B.C. that was unsampled in the prior study (that portion south of Highway 3 and north of the U.S./B.C. border). That will result in a population estimate for a significant portion of the ecosystem. Because of budget constraints, the entire ecosystem cannot be sampled. Further, data analysis will likely be postponed until 2008, again due to budget constraints.

PUBLIC OUTREACH AND KOOTENAI VALLEY RESOURCE INITIATIVE

Public outreach is a very important aspect of grizzly bear recovery. The current information/education program has been in place for many years and has increased the awareness and understanding of grizzly bear recovery efforts. Another opportunity for community outreach occurred when a local group was formed to address local resource issues. The Kootenai Valley Resource Initiative (KVRI) was formed as a result of a joint powers agreement with the Kootenai Tribe of Idaho, Boundary County, and the city of Bonners Ferry. These entities formed a broad-based group of people whose goal is to become involved in resource-based issues that affect the community. The group initially focused on water-based issues, such as sturgeon recovery, a burbot recovery strategy, and water quality issues. However, the group has since added other resource issues, including the formation of a grizzly bear subcommittee.

The grizzly bear subcommittee's goals are 1) to become more informed on grizzly bear related issues; and 2) to seek opportunities for the community to become involved in these issues. To date the focus of the group has to become more informed regarding grizzly bear ecology and life history as well as past and present research, management, and recovery activities. It is now at the stage where the subcommittee is looking for grizzly bear related projects to become involved in. Topics that have been identified include the development of an educational brochure that will be made available to the community, becoming involved in road management decisions with the U.S. Forest Service (USFS), sponsoring a booth at the Boundary County fair regarding bears and sanitation issues, and possibly sponsoring grizzly bear education workshops for the community.

DISCUSSION

The grizzly bear recovery effort in the Selkirks has largely shifted to a management as opposed to a research effort. This reflects several aspects of the effort, including an apparent increase in the number of bears, or at least an increase in the number of grizzly bear / human interactions. Sanitation and education are 2 important activities that can address these bear/human interactions and can also address human-caused mortalities, an issue throughout the grizzly bear's range.

Results from the population estimation study will allow for a statistically-based estimate for a large portion of the ecosystem. While a population estimate is important, it will not allow for a population trend estimate without duplicating this study in the future. Costs are significant but may come down if DNA analysis procedures drop.

The formation of the KVRI may allow significant progress in addressing public awareness, education, understanding of the issues, and ultimately a broad-based community effort related to grizzly bear recovery. Because the KVRI represents a broad segment of the local population it can allow access into segments of the population that was not previously accessible. Ultimately it will be the community's attitudes regarding grizzly bear recovery that will determine the fate of the grizzly bear in the Selkirks and Cabinet/Yaak ecosystems.

MANAGEMENT RECOMMENDATIONS

1) **Complete Resource Selection Function (RSF) analysis of grizzly bear distribution. Identify needs (i.e. GIS data layers) and obtain info.** This is currently being addressed and will be completed in 2007.

2) **Address sanitation concerns in and around the recovery zone.** Work with private and local governments to address sanitation issues that could contribute to increased bear/human encounters. Progress was made during 2005 with the installation of bear-resistant containers at a resort on Priest Lake. Other sanitation problems are being addressed in the Bonners Ferry area. Continued attention to the aspect of grizzly bear recovery will reduce the likelihood of bear mortalities associated with such encounters and will increase human safety.

3) **Conduct DNA sampling to monitor the Selkirk population.** Dr. Micheal Proctor has been using this technique in adjacent areas in B.C.. It is a labor-intensive approach that requires significant pre-season planning. However, the result is a statistically-based population estimate that can be repeated through time. Field work will be conducted in the summer of 2007. Due to the expense of analyzing the collected hair, the analysis may have to wait until 2008.

4) **Continue community educational and outreach programs.** Community involvement and acceptance of the grizzly bear recovery program is key to its long-term success. The formation of the KVRI may greatly enhance the ability to reach out to the community regarding grizzly bear recovery and management efforts.

5) **Complete annual recovery status report.** The annual recovery status report will be completed to measure and evaluate recovery activities.

LITERATURE CITED

Layser, E. 1978. Grizzly bears in the southern Selkirk mountains. Northwest Science 52:77-91.

Heisey, D. M., and T. K. Fuller. 1985. Evaluation of survival and cause-specific mortality rates using telemetry data. Journal of Wildlife Management 49:668-674.

Hellgren, H. C., D. W. Carney, N. P. Garner, and M. R. Vaughn. 1988. Use of breakaway cotton spacers on radio-collars. Wildlife Society Bulletin 16:216-218.

Stoneburg, R. P., and C. J. Jonkel. 1966. Age determination of black bears by cementum layers. Journal of Wildlife Management 30:411-414.

U.S. Department of the Interior. 1975. Endangered and threatened wildlife and plants: determination of threatened status for the grizzly bear: final rule. 50 CFR Part 17, Federal Register. July 28, 1975. Vol. 40. Page 31736.

U.S. Fish and Wildlife Service. 1982. Grizzly bear recovery plan. U.S. Fish and Wildlife Service, Washington, D.C., USA

U.S. Fish and Wildlife Service. 1993. Grizzly bear recovery plan. Missoula, Montana, USA

Zager, P. 1983. Grizzly bears in Idaho's Selkirk Mountains; an update. Northwest Science 57:299-309.

APPENDIX A. DELISTING CRITERIA

Annual Selkirk recovery zone grizzly bear population and known human-caused mortality data based on 1993 grizzly bear recovery plan criteria from known, human-caused mortalities, minimum unduplicated counts of females with cubs, and distribution of females with young.

YEAR	ANNUAL FWC'S	ANNUAL ADULT FEMALE MORTALITY	ANNUAL ALL FEMALE MORTALITY	ANNUAL TOTAL MORTALITY	4% TOTAL MORTALITY LIMIT[1]	30% ALL FEMALE MORTALITY LIMIT[1]	TOTAL MORTALITY 6 YEAR AVERAGE	FEMALE MORTALITY 6 YEAR AVERAGE
1995	1	0	1	2	0	0		
1996	1	0	0	1	0	0		
1997	1	0	0	1	0	0		
1998	1	0	0	1	0	0		
1999	1	0	0	3	0.4	0.1		
2000	2	0	0	0	0.6	0.2	1.3	0.2
2001	2	0	0	1	0.8	0.2	1.2	0.0
2002	0	1	2	6	0.6	0.2	2.0	0.3
2003	1	1	3	4	0.2	0.1	2.5	0.8
2004	1	0	0	1	0.2	0.1	2.5	0.8
2005	1	0	0	1	0.2	0.1	2.3	0.8
2006	0	1	2	4	0.2	0.1	3.0	1.2

[1] The current mortality goal is zero known human-caused mortalities.

2006 status of the Selkirk Ecosystem in relation to the demographic recovery targets:

	TARGET	2006 STATUS
Females w/cubs (6-yr avg)	≥6.0	0.8
Mortality limit (4% of minimum estimate)	0	3.0
Female mortality limit (30% of total mortality)	0	1.2
Distribution of females w/young	7 of 10 BMUs	4 of 10 BMUs

[1]Myrtle, Sullivan-Hughes, Long-Smith, and Kalispell-Granite BMUs were occupied by family groups in 2006.

APPENDIX B. Status of all captured grizzly bears in the Selkirk Mountains, 1997-2006.

Bear ID	Sex	Capture Date[a]	Capture Location[b]	Age[c]	Status	Comments
01	M	8/98	Trapper Ck, ID	1	Unknown	Dropped collar soon after trapping
02	M	8/98	Bugle Ridge, ID	9	Unknown	Drop collar 5/00
03	M	6/99	Beaver Ck, ID	7	Unknown	Lost radio contact, ear tag transmitter
04	F	6/99	Cow Ck, ID	1	Unknown	Drop ear tag transmitter 7/99, now ID# 27
05	F	6/99	Cow Ck, ID	5	Unknown	Drop ear tag transmitter 10/99
06	F	7/99	Cultus Ck, BC	10	Unknown	Drop ear tag transmitter 8/99
07	F	7/99	Elmo Ck, BC	11	Dead	Conspecific mortality 8/01, Porcupine Ck
08	M	8/99	Next Ck, BC	11	Unknown	Drop ear tag transmitter 11/99
10	M	7/00	Cow Ck, ID	2	Unknown	Lost signal in den, winter 2001-02
12	M	7/00	Cow Ck, ID	4	Unknown	Drop collar 8/01 in Pack River
15	F	7/00	Cow Ck, ID	3	Unknown	Shed collar 9/00
17	M	5/01	Goose Ck, ID	2	Dead	Management capture, sibling of 19, human kill in BC, May 2002
19	M	5/01	Goose Ck, ID	2	Dead	Management capture, sibling of 17, human kill in Idaho, Oct 2002
21	F	8/01	Trapper Ck, ID	11	Unknown	Originally #1000, new ear tags, with 3 2-yr olds in 2003, drop collar 8/02
23	F	8/01	Trapper Ck, ID	1	Unknown	Ear tags only, not collared due to size
26	M	6/02	West Side, ID	3	Unknown	Management capture in grain shed, lost signal 5/03
27	F	8/02	Grass Ck, ID	3	Unknown	Originally ID#4, new ear tags, lost contact summer 2004
28	M	8/02	Grass Ck, ID	2	Unknown	Offspring of #21, drop collar 10/03
29	F	8/02	Grass Ck, ID	4	Unknown	Lost contact summer 2004
30	F	5/03	Highland Flats, ID	2	Dead	Management control, Salmo, BC, 10/03
31	M	5/03	West Creston, BC	3	Dead	Hunter kill, BC, Spring 2005
32	M	9/04	Nordman, BC	7	Unknown/likely dead	Management capture, released in Grass Ck, lost contact with bear in 9/04, likely human caused mortality
33	F	7/05	Miller Mtn, ID	4	Dead	Sanitation problem, BC, killed spring 2006
103	M	6/06	Hellroaring Ck, ID	3	Alive	Originally caught in BC, moved to Selkirks summer 07
1029	F	6/97	Cow Ck, ID	5	Unknown	Mother of 04, 10; collar failure 12/03
1032	M	5/97	Corn Ck, BC	16	Dead	Management capture, drop collar 8/97, depredation kill in BC 11/99
5381	M	6/06	Hellroaring Ck,	3	Alive	Moved north of highway then back south.

			ID			Den site unknown as of 2/07
9809	F	6/98	Cow Ck, ID	10	Unknown	Drop collar 4/01, 1st litter 2000 – 1 cub
9810	M	6/98	Cow Ck, ID	9	Dead	Drop ear tag trans 8/99; human-caused mortality late 1999

[a] Initial capture date.
[b] Initial capture location.
[c] Age at initial capture

STUDY II: SELKIRK MOUNTAINS CARIBOU RECOVERY EFFORTS

ABSTRACT

The woodland caribou (*Rangifer tarandus caribou*) winter census continues to show a stable but low number of caribou in the Selkirk ecosystem for the past 5 years. This is encouraging if only for the past record of declining numbers in the previous years. The likelihood of this population's long-term viability at these levels is certainly very low. Further augmentation efforts will likely be required to maintain this population through time. A province-wide recovery effort in British Columbia may have wide-reaching implications for caribou throughout their range.

INTRODUCTION

Historically, woodland caribou (*Rangifer tarandus caribou*) ranged over much of the northern tier of the United States (U.S. Fish and Wildlife Service 1985, 1993). By the early 1980s, their U.S. distribution had been reduced to a small herd of 25-30 animals inhabiting the Selkirk Mountains of northern Idaho, northeastern Washington, and southern British Columbia (Scott and Servheen 1985). Habitat modification, overharvest, disease, and predation have been suggested as reasons for population declines throughout North America (Peterson 1966, Anderson 1971, Trainer 1973, Bergerud 1974, 1988).

Servheen (1989) and Compton et al. (1990) reported results on the 3 translocation efforts (1987, 1988, and 1990) involving 60 total caribou as described under the Selkirk Mountains Caribou Herd Augmentation (U.S. Forest Service 1985). Past reintroductions in North America (Klein 1964, Leader-Williams 1980, Bergerud and Mercer 1989) suggested augmentation as a viable method of "recovering" the Selkirk population. Bergerud and Mercer (1989) reported that presence of the meningeal worm (*Parelophostrongylus tenuis*) and/or wolves (*Canis lupus*) resulted in failures of reintroductions in the eastern U.S. The meningeal worm is not known to exist within the Selkirks (Foreyt and Compton 1991). Although sightings of wolves and/or wolf sign are relatively common in the Selkirks, the "population" is currently believed to be composed of single transients and therefore not considered to pose a significant impediment to caribou recovery at this time.

Major funding for this project is from Section 6 of the Endangered Species Act through the U.S. Fish and Wildlife Service (USFWS). Additional support is provided by U.S. Forest Service (USFS), Idaho Department of Fish and Game (IDFG), Washington Department of Fish and Wildlife (WDFW), B.C. Ministry of Environment (BCMOE), B.C. Ministry of Forests (BCMOF), and Idaho Department of Lands (IDL).

STUDY AREA

The study area, approximately 5,700 km^2, includes the Selkirk Mountains of northeastern Washington, northern Idaho, and southern British Columbia. The study area boundaries are similar to the grizzly bear recovery zone (Figure 1, page 3), except that the grizzly bear recovery zone includes low elevation areas. The defined caribou recovery zone includes only those areas above 1,372 m in elevation. Approximately 2,700 km^2 (47%) lies within B.C. with 3,000 km^2 (53%) under U. S. jurisdiction. The U.S. portion includes the Salmo-Priest Wilderness, portions of the Colville and Idaho Panhandle National Forests, IDL holdings, and scattered private parcels. Physiography is characterized by long, steep-sloped drainages. Evidence of past glaciation includes U-shaped valleys, cirque basins, and numerous mountain lakes. Elevations range from 540 to 2,375 m. The Pacific maritime-continental climate is characterized by long winters and short summers with the majority of precipitation occurring during the winter followed by a second peak in spring.

WINTER CENSUS

The winter of 2005/06 had a normal snowpack. Idaho SNOTEL sites reported near 100% snowpack throughout the Idaho panhandle. Good flying conditions were not common, however, and the caribou flights were fairly spread out through February, March, and April.

Fixed Wing Portion of the Census

Tim Layser (USFS, Priest Lake) conducted most of the fixed-wing flying in the U.S. portion of the ecosystem in conjunction with mapping efforts of snowmobile use areas. Wayne Wakkinen conducted the fixed-wing flying in the B.C. portion of the ecosystem. The helicopter portion of the survey was conducted by the B.C. Ministry of Environment and Columbia Basin Fish and Wildlife Compensation Program (BFWCP) personnel.

The U.S. portion of the ecosystem was flown 10 and 24 February and 13 March with a total of 14 hours in the fixed wing. One animal was detected in the northeastern corner of Washington. This was later verified as a radio-collared male. No other animals were detected in the U.S. portion of the ecosystem.

Nine hours were spent surveying the B.C. portion of the ecosystem. Wakkinen flew a significant part of the B.C. portion of the ecosystem on 20 March. The area south of the Elmo and Sheep Creek drainages to the B.C./U.S. border was covered. Thirty-four caribou were observed and tracks of a small group of 2-3 individuals was detected but no animals were seen. Six of 7 radiocollars that remain in the ecosystem were accounted for. A male that was detected on a telemetry flight 2 weeks earlier was not located. Wakkinen was able to survey the remaining portion of the ecosystem on April 4. The area north of Sheep Creek and Elmo Creek to the west arm of Kootenay Lake was surveyed at this time. No animals were detected during this portion of the survey.

The same pilot was used for all fixed-wing flights. Snow and light conditions during all flights was good to excellent. At times old tracks were visible but they were normally distinguishable from fresh tracks.

Table 1. Results of the fixed-wing portion of the 2006 Selkirk Mountains woodland caribou survey.

Location	gROUP SIZE	Comments
Upper Summit Ck, BC	20, including 3 radio collars	B.C.
Wood Peak / Kootenay Mtn	Tracks of 2-3 animals, no radio collars	B.C.
Next Ck, BC	7, including 1 radio collar	B.C.
Muskrat Ck, BC	6, including 1 radio collar	B.C.
S. Salmo R headwaters	1 radio collared animal	U.S.
TOTAL	**34 animals seen, tracks of 2-3 more and 1 radio-collar missed**	

Helicopter Portion of the 2006 Census

The helicopter portion of the census was conducted on 1 April 2006 with a total of 1.5 hours flying. There were 3 observers on board, G. Mowat, J. Gwilliam, and R. Clarke. Weather conditions were excellent with high overcast skies and fresh snow within the previous 2 days.

We concentrated our search efforts to those locations where Wakkinen observed caribou within the B.C. portion of the ecosystem on 20 March. Unfortunately the flight was 11 days after the fixed wing flight which allowed for significant movement of animals. We also flew areas where caribou had been observed on past telemetry flights. We observed 29 caribou and tracks and fresh beds of an additional 9 animals. We observed 27 animals on Curtis Lake and we suspect that this group was a combination of the Carolina Creek and Next Creek groups observed by Wakkinen.

Table 2. Results from the helicopter portion of the 2006 Selkirk Mountains woodland caribou survey.

Location	gROUP SIZE	Comments
Curtis Lake	27 including 5 calves	BC
King Lake	1	BC
N of Elmo Creek	1	BC
Total	**29 animals seen, beds and tracks of 9 more in Muskrat Cr.**	

Age classification: During the helicopter portion of the census a group of 27 caribou were observed on Curtis Lake. It was estimated that there were 3 calves in the group, but we did not approach the group closely in order to minimize disturbance. Further examination of a photo taken at the time suggested at least 5 calves in the group (Figure 1). No calves were seen with the other 2 animals observed that day.

Comparison with past surveys: Recent past surveys reported 34, 34, 41, 33, and 35 caribou in 2000, 2001, 2003, 2004, and 2005, respectively. The 2003 survey appears an anomaly and reexamination of the data indicates that a group might have split up and been double counted during the fixed-wing portion of the survey. Only 29 animals were accounted for during the helicopter flight. Weather conditions during this portion of the survey were poor, but there was no chance to re-survey before snow conditions deteriorated. The 2003 helicopter survey can certainly be considered a minimum count for the B.C. portion of the ecosystem. One additional animal was in the U.S. portion of the ecosystem, resulting in a minimum count of 31 in 2003.

Conclusion: The 2006 survey was similar to previous counts. Most caribou were located in B. C. north of B.C. Highway 3, results that are consistent with past surveys. The count this year showed a slight increase over past surveys. Survey conditions were generally good, but weather limitations resulted in the survey being spread out over several months, which is not an ideal situation. The calf ratio was higher than the past 3 years, and it approached the numbers observed in the 1996 to 2002 counts.

Table 3. Results of woodland caribou winter censuses, Selkirk Mountains, 1997-2006.

Year	Area	# Adults	# Calves	% Calves	Area Total	Grand Total
1997[b]	U.S.	7	2	22	9	39
	B.C.	25	5	17	30	
1998[c]	U.S.	---	---	---	31	45
	B.C.	---	---	---	14	
1999[d]	U.S.	---	---	---	6	48
	B.C.	---	---	---	42	
2000	U.S.	2	1	33	3	34
	B.C.	26	5	16	31	
2001	No census conducted due to winter conditions – low snowpack					
2002	U.S.	2	0	0	2	34
	B.C.	23	9	28	32	
2003	U.S.	1	0	0	1	41
	B.C.	27[e]	3[e]	10	40	
2004	U.S.	3	0	0	3	33
	B.C.	28[e]	2[e]	7	30	
2005	U.S.	--	--	--	2	35[f]
	B.C.	--	--	--	33	
2006	U.S.	---	---	---	1[h]	34-37[h]
	B.C.	---	---	---	33[h]	
	B.C.-heli	24[g]	5[g]	17[g]		29-38[g]

[a] Known incomplete count (tracks of a small group [2-4] detected but animals not observed during helicopter flight).
[b] Includes 19 animals released in 1996.
[c] Includes 13 animals released in 1997.
[d] Includes 11 animals released in 1998.
[e] Classification flight did not include a total count.
[f] Not a complete census. Must be considered a minimum population.
[g] Based on helicopter count which was an incomplete count .
[h] Based on a complete fixed wing survey.

Figure 1. Group of 27 caribou seen on Curtis Lake in upper Next Creek. Five calves were identified in this group.

CARIBOU SURVIVAL CALCULATIONS

Annual Survival Rates

Augmentations have been used as a tool to help recovery of woodland caribou in the Selkirk ecosystem. IDFG and WDFW, in conjunction with counterparts in B.C., have captured animals from several source populations in B.C. and released these animals in the Selkirk ecosystem in an effort to increase the population. All animals were radio-collared and monitored. We are thus able to calculate survival rates on these animals.

A total of 103 animals were captured as part of this recovery effort. Six releases of animals took place over 13 years (1987:24 animals, 1988: 24, 1990: 12, 1997: 19, 1998: 13, and 1999: 11). Animals have been monitored, primarily by aerial telemetry, since their release. All collars were fitted with a mortality sensor, allowing us to obtain timing or mortalities. We have obtained over 8,000 telemetry locations from which to calculate annual survival rates.

I used a Pollock staggered entry design to calculate annual survival rates for all caribou since the first release. Twelve-month survival rates were calculated from April – March. This coincides with the timing of releases during the augmentation effort and also coincides with a seasonal shift from late-winter to spring habitats. The year was broken into monthly intervals for the staggered entry design.

Annual survival rates showed significant variation, but there was no discernible pattern in survival rates across the time span that was analyzed. Survival rates were as high as 100% in

some years (1995, 2002, 2004, 2005), but very low in some years prior to or following the high years (0.41 in 1996; 0.60 in 2003). These results are likely a function of small sample sizes and reflect the large influence that a few animals can have.

The weighted average survival rate for the span of this analysis was 0.78. Rates in this range typically represent a population in decline. Annual survival rates in the range of 0.85 are typically thought to represent a stable population for most woodland caribou.

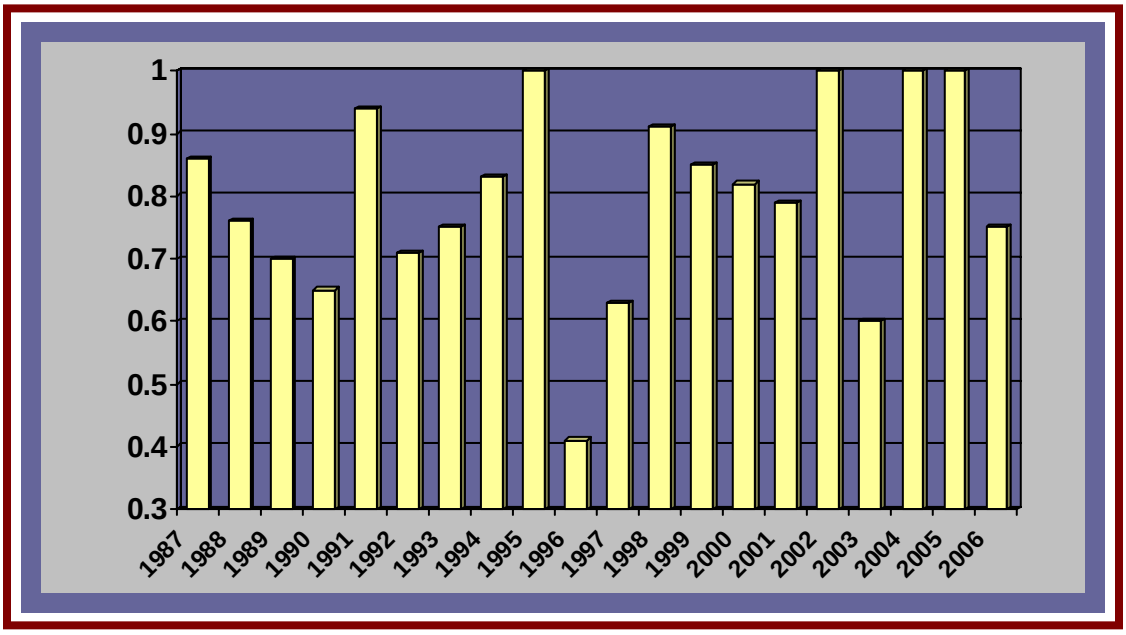

Figure 2. Annual survival rates for augmented caribou (1987-2006).

Survial by Tenure

A concern in all augmentation efforts relates to the effect the capture, handling, and transport process may have on the animals. Additionally, concerns surround the influence of releasing animals unfamiliar with an area and the effect on their survival rate.

We were able to examine these issues by calculating survival rates based on “tenure”, that is, how long the transplanted animals were in the ecosystem and what their survival rates were. I calculated first year (April – March) and subsequent year survival rates for all caribou involved in the augmentation effort. I used the Pollock staggered entry model for annual survival calculations and coded animals as either Tenure 1 (within a year of their release) or Tenure 2+ (all subsequent data on the animal) (Figure 3).

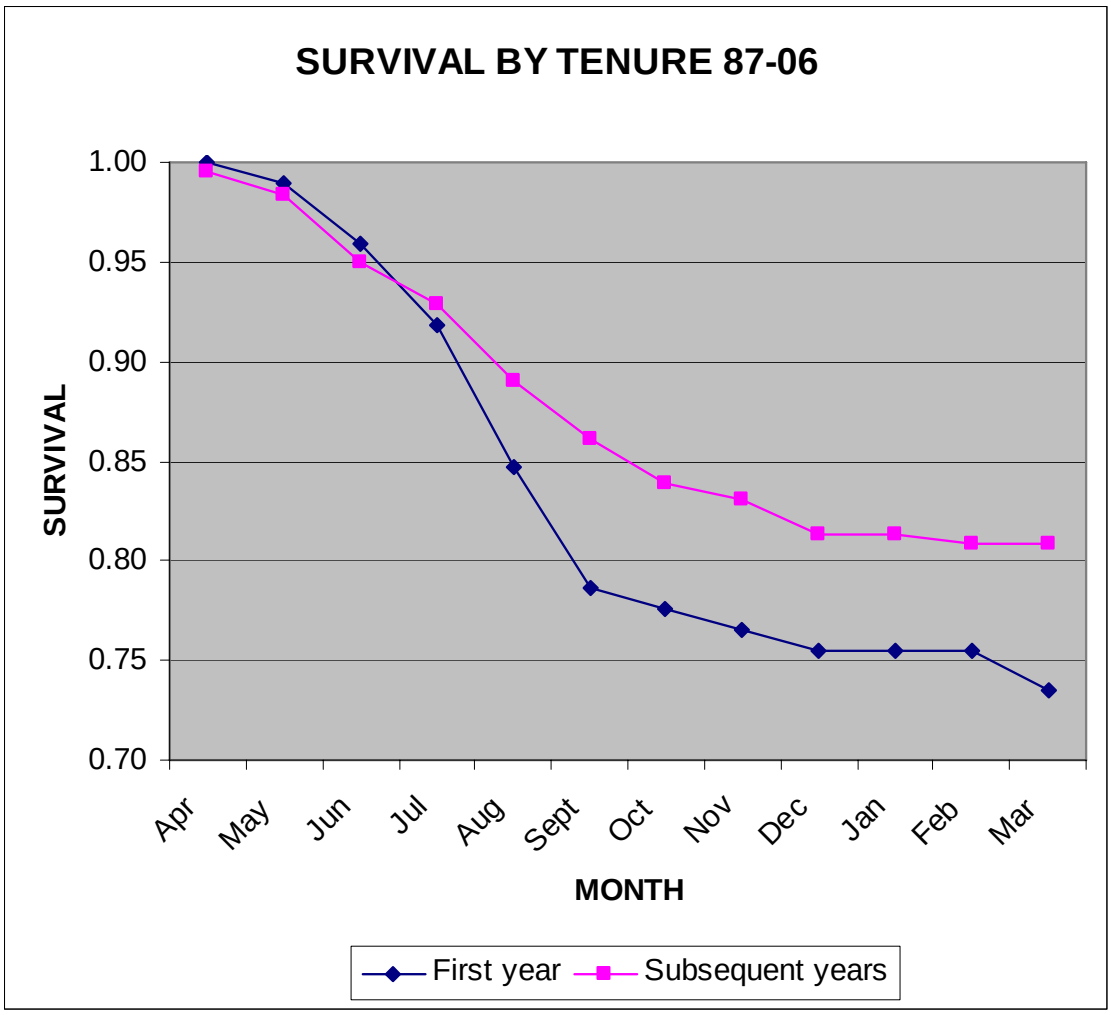

Figure 3. Survival rates of caribou based on tenure (1987-2006).

Survival rates for Tenure 1 and Tenure 2+ caribou appeared to be similar for the first 3-4 months (April through July) but then began to diverge in August. This would indicate that acute capture myopathy was not affecting caribou immediately following release into the Selkirks. Survival rates began to diverge in August. This is when caribou deaths, primarily due to cougars, have typically increased.

MATERNITY PEN FENCING

Some woodland caribou populations suffer very high calf mortality in the first 3-4 weeks of life. In response to this, maternity pens have been used in an effort to increase calf survival and assist population recovery (Citation). The intent of the maternity pen is to protect both the mother and calf from predation. Pregnant females are captured in late winter and held for a month following parturition. Maternity pens are made of road fabric cloth hung from trees. The fence acts as an enclosure for caribou as well as a method to keep predators out.

Maternity pens have recently been successfully used in the Chisana herd on the border of B.C. and Alaska (Citation). Terrain there is fairly flat with relatively little snowfall. The Selkirk ecosystem has more rugged terrain, more trees, and more snowfall. Before consideration of maternity pens as a method to help recover the Selkirk caribou population, there needed to be an evaluation of the logistics of building and maintaining a fence.

On 24 October 2006 a multi-agency crew, lead by the B.C. Ministry of Environment, constructed a short maternity pen fence near Kootenay Pass. The fence was constructed of 12' wide highway underlayment fabric (Figure 4). Two different types of fabric were used for evaluation – woven and unwoven.

The fence will be checked periodically throughout the winter to see if it is practical to install the fence prior to snowfall, in preparation for a winter capture event (Figure 5).

Figure 4. Trial maternity pen fence near Kootenay Pass, British Columbia.

Figure 5. Snow conditions in December 2006 at trial maternity pen.

DISCUSSION

The winter census continues to show a stable but low number of caribou in the Selkirk ecosystem for the past 5 years. This is encouraging if only for the past record of declining numbers in the previous years. The likelihood of this population's long-term viability at these levels is certainly very low. Further augmentation efforts will likely be required to maintain this population through time.

However, the fact that the population has stabilized indicates that some of the factors that resulted in downward trends have been addressed. Mountain lions numbers appear to be down, at least as indicated by hunter harvest levels. This may be allowing caribou numbers to stabilize. The predation issue is still based on habitat variables, however, which will require a long-term approach.

Winter recreation levels have greatly increased in the past 10 years. Increasing numbers and improved technology of snowmobiles are resulting in increased potential for interactions with caribou. This is a situation that must be addressed to prevent uncontrolled expansion into caribou range to the point of detriment for caribou.

Decisions made in B.C. regarding the future direction of caribou recovery efforts in the province will certainly affect options in the U.S. For example, decisions regarding future augmentations into the Selkirks will have long-term affects on caribou recovery effort in the Selkirk ecosystem. It is important that the U.S. remain involved in and aware of B.C. caribou

recovery decisions.

An excellent source for information on woodland caribou, current research, and related links is available through the International Mountain Caribou Technical Committee's website at www.imctc.com. Another excellent source of caribou information is a compendium located on the website of the Columbia Mountains Institute of Applied Ecology, www.cmiae.com. The Columbia Mountain Institute of Applied Ecology also sponsors events such as an expert panel to discuss caribou / predator / prey relationships in the Revelstoke area.

RECOMMENDATIONS

1) Continue the annual winter census. This measure of the caribou population in the Selkirks gives managers the best information on distribution, population size, and population trend for the money. Given the broader caribou recovery efforts in B.C., it is important to continue the census in the Selkirks to see where it fits into the larger recovery effort.

2) Participate with B.C. management and recovery efforts. B.C. has undertaken a province-wide recovery effort for woodland caribou, or mountain caribou as they refer to this ecotype. Actions taken in B.C., including in the B.C. portion of the Selkirks, will likely have farther reaching consequences for woodland caribou throughout their range than effort taken alone in the U.S, portion of the ecosystem. Therefore, it is important to maintain our involvement in that recovery process. Augmentation efforts have likely prevented the extirpation of caribou from the Selkirks. Continued augmentation may be necessary to prevent this in the future. Augmentations by B.C.. into the B.C. portion of the ecosystem are the most efficient method to place caribou in the ecosystem. Because any augmentation effort will benefit recovery efforts throughout the ecosystem, coordination and participation with efforts on the U.S. side of the border should continue.

3) Integrate caribou management with other species concerns. The USFS is currently rewriting their forest plan that addresses the needs of all species on the forest. The USFS and USFWS are also involved in a lawsuit regarding winter recreation. As a result, they are developing a winter recreation strategy that addresses the needs of caribou, grizzly bears, lynx, and wolverine. Access management for grizzly bears may affect the ability to manage for caribou. Fire access must be considered when determining which roads should remain in a driveable state. Gates retain some management flexibility while road obliteration reduces that flexibility. Given that any action can have multiple effects on several species, it is important to consider all species when making decisions regarding caribou.

LITERATURE CITED

Anderson, R.C. 1971. Neurologic disease in Reindeer (*Rengifer tarandus caribou*) introduced into Ontario. Canadian Journal of Zoology 49:159-166.

Bergerud, A. T. 1974. Decline of caribou in North America following settlement. Journal of Wildlife Management 38:757-770.

Bergerud, A. T. 1988. Caribou declines in central and southern British Columbia. Pages 201-225 *in* Proceedings of Caribou Research and Management in British Columbia. R. Page, ed. B.C. Ministry of Forestry, Research Branch. WHR-27, B.C. Ministry of Environment, Wildlife Branch, WR-41. Victoria, British Columbia, Canada.

Bergerud, A. T., and W .E. Mercer. 1989. Caribou introductions in eastern North America. Wildlife Society Bulletin 17:111-120.

Compton, B. B., P. Zager, and L. Allen-Johnson. 1990. Selkirk Mountains Caribou Transplant, October 1989 - September 1990. Annual Report, Threatened and Endangered Species Project E-7-1. Idaho Department of Fish and Game, Boise, Idaho, USA.

Cooper, S. V., D. E. Neiman, R. S. Steele, and D. W. Roberts. 1987. Forest habitat types of northern Idaho: a second approximation. U.S.D.A. Forest Service General Technical Report INT-236.

Crawford, R. C., and M. D. Scott. 1985. Habitat verification – physical and habitat description of the Selkirk caribou study area. Unpublished report to the Supervisor's office, Idaho Panhandle National Forest. Idaho Department of Fish and Game, Boise, Idaho, USA.

Foreyt, W. J., and B. B. Compton. 1991. Survey for meningeal worm (*Parelaphostrongylus tenuis*) and ear mites in white-tailed deer from northern Idaho. Journal of Wildlife Diseases 27:716-718.

Leader-Williams, N. 1980. Population dynamics and mortality of reindeer introduced into South Georgia. Journal of Wildlife Management 44:640-657.

Peterson, R. L. 1966. The mammals of Eastern Canada. Oxford Press, Toronto, Canada.

Servheen, G. L. 1989. Selkirk Mountains caribou transplant: October 1987-September 1988. Idaho Department of Fish and Game, Job Progress Report.

Trainer, D. O. 1973. Caribou mortality due to the meningeal worm (*Parelaphostrongylus tenuis*). Journal of Wildlife Diseases 9:376-378.

U.S. Fish and Wildlife Service. 1985. Selkirk Mountain caribou management plan. Portland, Oregon, USA.

U.S. Fish and Wildlife Service. 1993. Recovery Plan for woodland caribou in the Selkirk Mountains. Portland, Oregon, USA.

U.S. Forest Service. 1985. Selkirk Mountains caribou herd augmentation: a cooperative interagency plan. USDA Forest Service, Idaho Panhandle National Forest, Coeur d'Alene, Idaho, USA.

Warren, C., J. M. Peek, G. L. Servheen, and P.Zager. 1996. Habitat use and movements of two ecotypes of translocated caribou in Idaho and British Columbia. Conservation Biology 10:547-553.

STUDY III. GRIZZLY BEAR ENFORCEMENT AND EDUCATION PROJECT

ABSTRACT

The goal of the Grizzly Bear Enforcement and Education Project is to reduce human-caused mortalities of grizzly bears in the Selkirk and Cabinet/Yaak Ecosystems in Idaho, assisting with the recovery and ultimately the delisting of grizzly bears as a threatened species. Extensive field patrols are conducted throughout the spring, summer, and fall. Field contacts serve to educate all user groups on grizzly bear identification, natural history, and conflict avoidance strategies. Field patrols act as an enforcement deterrent, help prevent and detect road closure violations, and permit the collection of information that might prove useful in solving grizzly bear poachings. Field contacts also build a one-on-one relationship with people using grizzly bear habitat, provide information on human activities within the recovery zone, and help to gather information on human-grizzly bear encounters. A comprehensive educational program is conducted during the winter months to teach grizzly bear biology, identification, and methods for coexisting with bears. No grizzly bear shootings were detected within the Selkirk Ecosystem of Idaho during 2006. Several past cases remain under investigation.

INTRODUCTION

Since the arrival of European man in western North America, the grizzly bear (*Ursus arctos horribilis)* has been eliminated from 99% of its original range in the contiguous United States (Herrero 1985). Consequently, the species was classified as "threatened" under the Endangered Species Act (ESA) in 1975. With the exception of national parks, the illegal killing of grizzlies is a major source of mortality throughout their range (Peek et al. 1987). Knick and Kasworm (1989) observed that during 1983-1987, illegal shootings were the only known cause of grizzly deaths in the Idaho panhandle and suggested that maintaining a viable population was dependent on curtailing shooting mortality.

The U.S. Fish and Wildlife Service (USFWS) and the Idaho Department of Fish and Game (IDFG) provide principal funding for this project. Additional funding has been provided through generous grants from: the Idaho Department of Lands and Mr. Ripley Comegys. Past contributors include: the U.S. Forest Service (USFS), the National Fish and Wildlife Foundation, the Owen's Foundation for Wildlife Conservation, Riley Creek Lumber Company, Vital Ground, Mr. Keith Johnson, and the Woodland Park Zoo.

In the following report, I have summarized my activities for 2006 and offer recommendations for 2007.

PROJECT AREA

Although I attempted to devote time to all Grizzly Bear Management Units (GBMU's) within Idaho, effort was concentrated in the Long-Smith and Blue-Grass GBMU's in the Selkirk Mountains - areas with frequent bear sightings and telemetry relocation's of radio-collared grizzlies.

METHODS

Most grizzly bear poachings occur during legal hunting seasons for other species (Knick and Kasworm 1989). In the Selkirk and Cabinet/Yaak Ecosystems, humans have killed a minimum of 50 grizzly bears since 1982 – the majority of which occurred during big-game hunting seasons (Table 1). Enforcement patrols and in-field educational efforts are therefore a high priority during these periods.

Where possible, I contacted backcountry recreationists and discussed grizzly bear natural

history, identification, management, and methods for minimizing bear/human conflicts. Many contacts were made behind closed gates or on trails either by hiking or using a mountain bike. Depending on the type of recreationist and their level of interest, I distributed various informational pamphlets and cards. Bear identification signs were posted in all drainage's within recovery areas and the location and description of all vehicles recorded. All gates were physically monitored for violations. When radio-collared bears frequented particularly vulnerable areas, extra patrol effort was directed to those locations.

From December to April, the project's emphasis shifted from enforcement to information and education (I&E) with an aggressive program designed to heighten the public's awareness about bears. Public presentations were prepared and delivered emphasizing grizzly bear ecology, identification, and conflict avoidance techniques. Presentations were given at public and private schools (K-12), rod and gun clubs in Idaho, and hunter education classes. Presentations focused foremost on grizzly bear identification and strategies for conflict avoidance. Shoot or don't shoot slide presentations were shown with pictures of grizzly and black bears to emphasize the importance of proper bear identification. Bear biology, management, and goals of the Grizzly Bear Recovery Plan were also taught.

RESULTS

Since the inception of this program in 1989, local conservation officers agree that public awareness concerning grizzly bears has increased significantly. The project continues to reach more than 3,000 people every year, teaching them how to coexist with grizzlies and how to identify bears. Enforcement patrols provide a deterrent to bear poachings and help enforce the USFS road closure program, helping provide secure habitat for Selkirk grizzly bears.

Enforcement Activities (Totals)

Hours spent on law enforcement patrols	733
Hunting and fishing licenses checked	366
Security gates checked	390
Hunters, hikers, campers, and fishermen contacted in the field	1,832
Citations issued	49
Written warnings issued	21

Patrol Methods (Totals)

Miles of 4x4 pickup truck patrol conducted	22,000
Miles of foot patrol conducted	136
Check stations performed	9

Information and Education Activities (Totals)

Hours spent on I&E	210
Presentations given	54
People attending grizzly bear presentations	1,415
Number of schools given presentations	4

Management Activities (Totals)

Hours spent on management	18

Miscellaneous

In addition to enforcement patrols and educational activities, other duties relating to grizzly bear management were performed. These included:

1. Working with the USFS on road management in the grizzly bear recovery zones.

2. Coordinating enforcement activities between different agencies in the recovery areas to insure coverage of key areas during critical periods.

3. Monitoring the movement of marked bears with portable radio telemetry equipment.

4. Conducted case investigations in the shooting deaths of several grizzly bears.

5. Attending interagency meetings concerning grizzly bear and caribou recovery in the United States.

6. Attending law enforcement training sessions sponsored by the IDFG.

7. Assisted with bear trapping efforts.

8. Created grizzly bear identification displays for local fairs and gun shows.

DISCUSSION

Maintaining a high public profile seems an effective law enforcement strategy and will be continued in the future. I will continue to place field camps in close proximity to vital spring and fall grizzly habitats during black bear (*Ursus americanus*) hunting seasons to maximize field contacts with the public. The best location for a field camp is Boundary Creek Wildlife Management Area because the Smith Creek drainage continues to be core habitat for the Idaho Selkirk population of grizzlies. We will vigorously investigate all grizzly bear killings as they occur.

Although trapping and radio-collaring grizzly bears can be dangerous for both humans and bears (Craighead 1979), telemetry has proven to be an invaluable tool for detecting illegal killings and successfully prosecuting poachers. In fact, of all known grizzly killings in recent years, most were first discovered through radio telemetry (W. Wakkinen, IDFG, personal communication). Because most grizzly poachings occur during legal hunting seasons for other species (Knick and Kasworm 1989), additional resources should be allocated for monitoring radio-collared bears during those times.

Of the thousands of personal contacts that I made during 2006, few individuals openly expressed negative attitudes towards grizzlies or bear management. When they did, however, the most commonly voiced concerns were: 1) gates or road management, 2) fear of grizzlies, and 3) economic impacts from management policies. I believe that a strong public relations effort will help alleviate these concerns. Therefore, I will continue to deliver presentations focusing on grizzly ecology and backcountry techniques in bear country, targeting campground visitors and local clubs during summer months and schools in fall and spring. The ability of black bear hunters to correctly identify their targets before shooting will continue to be of primary importance in 2007.

As grizzlies recover throughout the ecosystem, managing depredating bears is becoming a major focus of the project. Working with landowners – particularly on low elevation spring range – will be vital to the long-term success of grizzly bear recovery. Tolerance for the bears

can be achieved through swift management actions coupled with a concerted educational effort.

RECOMMENDATIONS

1. Publish articles on grizzly bears in local British Columbia newspapers just prior to spring and fall hunting seasons.

2. Release newspaper articles on grizzly bear behavior and identification throughout northern Idaho and northeastern Washington.

3. Continue updated grizzly bear presentations in public and private schools, rod and gun clubs, and hunter education classes during winter and to state and federal campgrounds in summer months. Presentations will include an updated slide show relevant to the Selkirk and Cabinet/Yaak ecosystems. The use of visual aids such as grizzly hides, radio-collars, and portable receivers add significantly to the effectiveness of presentations. The acquisition of a full body mount stuffed grizzly bear has proven tremendously popular with the public throughout the Panhandle.

4. Work to build strong relationships with educators of Bonner and Boundary counties - especially in the communities of Sandpoint, Priest River, Priest Lake, Bonners Ferry, Clark Fork, and Moyie Springs.

5. Continue extensive enforcement patrols during spring and fall hunting seasons, maximizing the number of field contacts. Provide the information necessary for the users of grizzly bear areas to make sound decisions concerning bear identification and conflict avoidance.

6. Work within our own agency and with USFS officers to insure a continuous enforcement presence in the lower elevations of the Smith Creek and Boundary Creek drainages during spring bear season.

7. Prioritize, by season, field patrols in areas most likely to have human-grizzly bear encounters.

   a. Boundary Creek
      Low elevations: spring bear/ late fall big game
   b. Smith Creek
      Low elevations: spring bear/ late fall big game
      Mid-high elevations: early mule deer/ fall big game
   c. Cow Creek
      Low elevations: spring bear
      Mid-high elevations: early mule deer/ fall big gamed.
   d. Grass Creek
      Mid-high elevations: early mule deer/ fall big game
   e. West Fork Cabins
      : Summer
   f. Hidden Lake
      : Summer
   g. Trapper Creek
      Low elevations: spring bear

Mid-high elevations: early mule deer/ fall big game

h. Hughes Meadows
: Spring bear/fall big game

i. Gleason Meadows
: Spring bear

j. Bismarck Meadows
: Spring bear

k. Cedar Creek
Mid-high elevations: early mule deer/ fall big game

l. Continental Mine
High elevations: summer mule deer/ fall big game

m. Kalispell-Granite Grizzly Bear Management Unit
: Spring bear

n. Two Mouth Creek
High elevations: summer

o. Lion Creek
High elevations: summer

p. Canuck Basin
Mid-high elevations: fall big game

q. Grouse Creek
Mid-high elevations: fall big game

r. Trestle Creek
Low elevations: spring bear
Mid elevations: summer
High elevations: fall big game

s. Moose Lake
: Summer

t. Lightning Creek
Mid-high elevations: summer/fall big game

u. Scotchman Peak I & II
: Fall big game

ENFORCEMENT EFFORT FOR WOODLAND CARIBOU (*Rangifer tarandus caribou*)

Since 1986, 4 woodland caribou are known to have been shot illegally during deer season (3 in Idaho and 1 in Washington). Consequently, after the close of the fall black bear season, I concentrated my efforts on contacting deer hunters in areas where caribou might have been encountered. I discussed caribou identification, natural history and management with all hunters that I met, and distributed caribou identification cards and pamphlets.

In 1994, the USFS implemented an area closure on the Selkirk crest to protect woodland caribou from possible harassment by snowmachine users. In 2006, this closure was greatly expanded following a federal judges ruling in an environmental lawsuit. During the winter months, I will continue to assist with enforcing the closure by contacting snowmachine users throughout the Selkirks to discuss caribou management and biology and distribute maps of the area closure.

For 2007, enforcement patrols will focus on caribou protection during deer season. Snowmachine patrols will continue during the winter months.

Woodland Caribou Management Activities (Totals)

Hours spent on caribou related work.....38

RECOMMENDATIONS

1. Coordinate with USFS officers to patrol security closure trailheads and boundaries during peak snowmachine periods.

2. Work with local snowmachine clubs to educate users of the closure and elicit their assistance to report breaches of the closure.

3. Publish informative articles in local newspapers concerning the closure.

4. Publish informative articles on caribou identification and recovery efforts in local newspapers prior to hunting seasons.

5. Distribute pamphlets and brochures on caribou recovery to the public at north Idaho county fairs and during contacts made in the field.

LITERATURE CITED

Craighead, F.C. 1979. Track of the grizzly. Sierra Club Books, San Francisco, California, USA.

Herrero, S. 1985. Bear attacks - their causes and avoidance. Lyons and Burford, Publishers, New York, New York, USA.

Knick, S.T., and W. Kasworm. 1989. Shooting mortality in small populations of grizzly bears. Wildlife Society Bulletin 17:11-15.

Peek, J.M., M.R. Pelton, H.D. Picton, J.W. Schoen, and P. Zager. 1987. Grizzly bear conservation and management: a review. Wildlife Society Bulletin 15:160-169.

Table 1. Known human-caused grizzly bear mortalities, Selkirk Mountains recovery zone, 1987-2006

Mortality Date	Tag #	Sex	Age	Zone	Location	Mortality Cause	<500 Meters from Open Road
Spring 1987	1005[1]	M	10.5	Selkirk	Wall Mtn, BC	Human, Poaching	Unk
Autumn 1987	962[1]	M	7.5	Selkirk	Trapper Creek, ID	Human, Poaching	No
Autumn 1988	1085[1]	F	3.5	Selkirk	Cow Creek, ID	Human, Mistaken Identity	No
Spring 1988	None	M	Unk	Selkirk	Hunting mortality BC Unit 4-7	Human, Hunting	Unk
Summer 1989	1044[1]	F	20+	Selkirk	Laib Creek, BC	Natural, Conspecific	No
Autumn 1990	1042	F	3.5	Selkirk	Maryland Creek, BC	Human, Poaching	Yes
1990	None	M	Unk	Selkirk	Non-hunting mortality BC Unit 4-8	Human, Management	Yes
Summer 1992	None	M	Unk	Selkirk	Lost Creek, BC	Human, Management	Yes
Autumn 1992	1015	F	12.5	Selkirk	Monk Creek, BC	Human, Self Defense	No
Spring 1993	None	M	Unk	Selkirk	Hunting mortality BC Unit 4-7	Human, Hunting	Unk
Autumn 1993	867[1]	F	15.5	Selkirk	Willow Creek, WA	Human, Poaching[3]	No
Autumn 1993	867-93a[1]	Unk	0.5	Selkirk	Willow Creek, WA	Human, Poaching[3]	No
Autumn 1993	867-93b[1]	Unk	0.5	Selkirk	Willow Creek, WA	Human, Poaching[3]	No
1993	None	M	Unk	Selkirk	Non-hunting mortality BC Unit 4-8	Human, Management	Yes
Spring 1994	None	M	Unk	Selkirk	Hunting mortality BC Unit 4-7	Human, Hunting	Unk
Spring 1994	13	M	AD	Selkirk	Hunting mortality BC Unit 4-20[2]	Human, Hunting	Unk
Spring 1995	None	F	1.5	Selkirk	Boundary Creek, ID	Human, Unknown	Yes
Autumn 1995	1100[1]	M	2.5	Selkirk	Granite Pass, WA	Human, Mistaken Identity	Yes
Autumn 1996	1022	M	2.5	Selkirk	Boswell, BC	Human, Management	Yes
Autumn 1997	None	M	1.5	Selkirk	Salmo, BC	Human, Management	Yes
Spring 1998	1023	M	4.5	Selkirk	Hunting mortality BC Unit 4-26[2]	Human, Hunting	Unk
Summer 1998	None	M	3.5	Selkirk	Usk, WA	Human, Under investigation	Yes
Autumn 1999	9810	M	10	Selkirk	Smith Creek, ID	Human, Under Investigation	Unk
Autumn 1999	None	M	22	Selkirk	Wyndell, BC	Human, Management	Yes
Autumn 1999	1032	M	18	Selkirk	Procter, BC	Human, Management	Yes
Autumn 2001	None	M	Unk	Selkirk	Cottonwood Creek, BC	Human, Management	Yes
Spring 2002	17	M	3.5	Selkirk	Nelway, BC	Human, Depredation	Yes
Autumn 2002	None	F	Ad	Selkirk	Blewett, BC	Human, Under Investigation[2]	Yes
Autumn 2002	None	Unk	1	Selkirk	Blewett, BC	Human, Under Investigation[2]	Yes
Autumn 2002	None	Unk	1	Selkirk	Blewett, BC	Human, Under Investigation[2]	Yes
Autumn 2002	None	Unk	1	Selkirk	Blewett, BC	Human, Under Investigation[2]	Yes
Autumn 2002	19	M	3.5	Selkirk	Lamb Creek, ID	Human, Under Investigation[3]	Yes
Spring 2003	None	Unk	Unk	Selkirk	Apple Orchards lower Smith Ck	Human, Under investigation	Yes
Summer 2003	30	F	2.5	Selkirk	Salmo, BC	Human, Management	Yes
Autumn 2003	None	F	Ad	Selkirk	Blewett, BC	Human, Under Investigation[2]	Yes
Autumn 2003	None	F	1	Selkirk	Blewett, BC (offspring of above)	Human, Under Investigation[2]	Yes
Spring 2004	None	M	Ad	Selkirk	Hughes Meadows	Human, Under Investigation	Yes
Autumn 2004	32	M	7	Selkirk	Nordman / Bismark Meadows	Human, Under Investigation	Unk
Spring 2005	31	M	5	Selkirk	East of Creston, BC	Human, Hunting season	Unk
Spring 2005	None	Unk	Unk	Selkirk	E. Fk. Priest River	Likely human caused	Unk
Spring 2006	None	Unk	Ad	Selkirk	Procter, BC	Sanitation (?)	Yes
Fall 2006	None	Unk	Yrlng	Selkirk	Blewett, BC	Sanitation(?)	Yes
Fall 2006	None	Unk	Yrlng	Selkirk	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	F	Ad	Selkirk	Blewett, BC	Sanitation (?)	Yes

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