

SELKIRK ECOSYSTEM PROJECT

January 2008 - December 2008

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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TABLE OF CONTENTS

STUDY I: SELKIRK MOUNTAINS GRIZZLY BEAR ECOLOGY	1
ABSTRACT.....	1
INTRODUCTION	1
STUDY AREA	2
TRAPPING / MANAGEMENT ACTIONS.....	3
MORTALITIES.....	4
POPULATION ESTIMATION STUDY	4
SANITATION-RELATED ACTIVITIES.....	4
PUBLIC OUTREACH AND KOOTENAI VALLEY RESOURCE INITIATIVE.....	5
DISCUSSION.....	5
MANAGEMENT RECOMMENDATIONS	6
LITERATURE CITED	6
APPENDICES	8
STUDY II: SELKIRK MOUNTAINS CARIBOU RECOVERY EFFORTS.....	11
ABSTRACT.....	11
INTRODUCTION	11
STUDY AREA	12
METHODS	12
RESULTS	14
Fixed-wing survey.	14
Helicopter census.....	14
Age classification.....	15
Comparison with past surveys.	15
CONCLUSION.....	15
DISCUSSION.....	16
RECOMMENDATIONS.....	17
ACKNOWLEDGEMENTS.....	18
LITERATURE CITED	18
STUDY III. GRIZZLY BEAR ENFORCEMENT AND EDUCATION PROJECT	20
ABSTRACT.....	20
INTRODUCTION	20

TABLE OF CONTENTS (Continued)

PROJECT AREA20
METHODS21
RESULTS21
DISCUSSION25
RECOMMENDATIONS25
LITERATURE CITED27

LIST OF TABLES

Table 1. Grizzly bears captured in the Selkirk Mountains Grizzly Bear Ecology, 2008.....3
Table 2. Items, number, and location of bear-resistant dumpsters, trash cans, and food storage lockers placed in and around the Selkirk ecosystem, 2008.....4
Table 3. 2008 South Selkirks winter census results.....15
Table 4. Results of woodland caribou winter censuses, Selkirk Mountains, 1999-2008.16
Table 5. Known human-caused grizzly bear mortalities, Selkirk Mountains recovery zone, 1989-2008.....22

LIST OF FIGURES

Figure 1. Selkirk Mountains and adjacent Cabinet-Yaak ecosystems.....3
Figure 2. Flight lines and caribou locations from the 2008 census.13

Study I: Selkirk Mountains Grizzly Bear Ecology

Abstract

An excellent huckleberry crop in 2008 alleviated many of the bear/human interactions that were observed in 2007. No known mortalities of grizzly bears occurred in the U.S. portion of the ecosystem in 2008. An adult grizzly bear was shot and killed in a sanitation-related incident near Salmo, B.C.

Significant gains were made relative to food storage and sanitation issues in 2008. A \$47,000 grant from the National Wildlife Federation and the Defenders of Wildlife allowed for the purchase and installation of bear-resistant garbage cans and dumpsters at 2 state parks on the east side of Priest Lake and the purchase and installation of bear-resistant food storage lockers at remote camp sites on Upper Priest Lake. A grant from the U.S. Fish and Wildlife Service (USFWS) allowed for a fencing project to be completed at a county dumpster site. Bear-resistant trash cans were also made available to several private resorts on Priest Lake.

A short helicopter flight was conducted in September in an attempt to identify grizzly bears in the shrubfields of the Selkirks. The flight was largely unsuccessful, with only 1 grizzly being identified.

DNA hair samples ($n = 1,272$) that were collected in 2007 are now at the Wildlife Genetics Lab in Nelson, B.C. Results will be available in 2009. An attempt will be made to estimate the grizzly bear population in the sampled area through a mark/recapture estimation technique.

Introduction

Grizzly bears (*Ursus arctos horribilis*), once numerous throughout the central and western United States, were thought to number approximately 50,000 in the early 1800s (USFWS 1982, 1993). However, the distribution and numbers of grizzly bears were drastically reduced with westward human expansion and development in the 1800s and into the early and mid-1900s. In response to the decline, as well as increased national awareness of the impact humans were having on native wildlife populations, the grizzly bear was listed under the Endangered Species Act (ESA) by the USFWS in 1975. At the time of listing, grizzly bears were distributed in 5 populations estimated at a total of 800-1,000 bears (U.S. Dept. 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 sightings 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 2008. 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 Ecology represents approximately 6% of the total occupied grizzly bear range remaining within the conterminous 48 states. It encompasses 5,700 km² of the Selkirk Mountains of northeastern Washington, northern Idaho, and southern British Columbia (B.C.) (Figure 1). Approximately 47% lies in B.C. while 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 lands.

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.

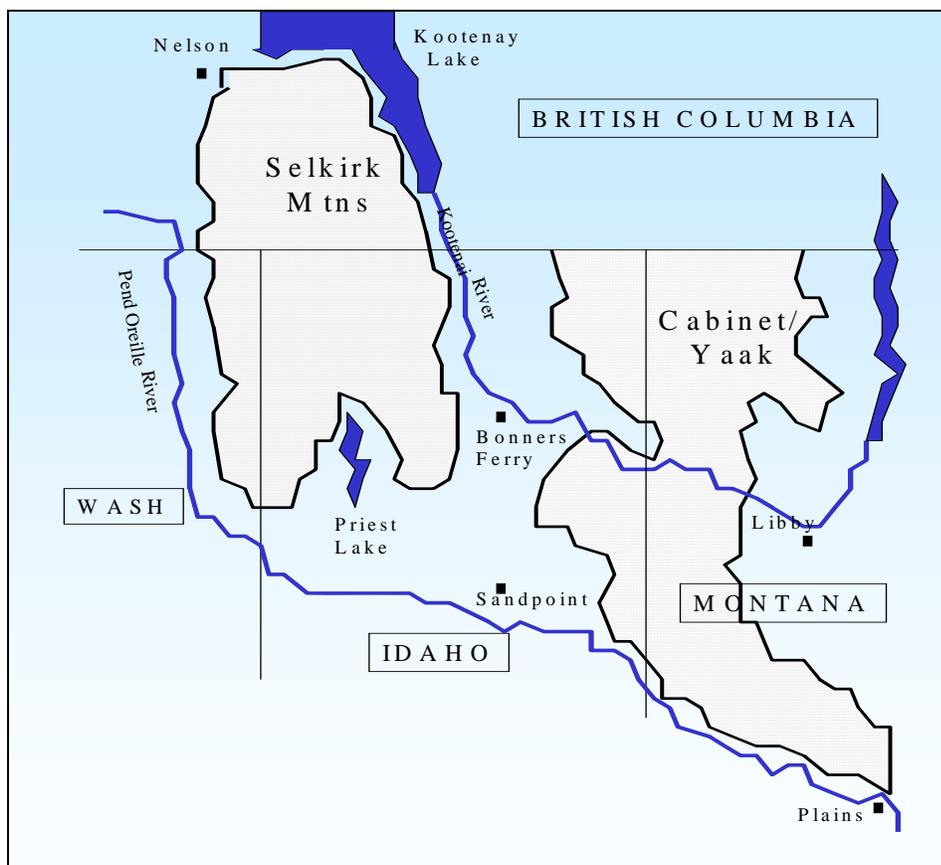


Figure 1. Selkirk Mountains and adjacent Cabinet-Yaak ecosystems.

Trapping / Management Actions

No grizzly bears were trapped or monitored in the U.S. portion of the ecosystem. Five grizzly bears were trapped and fitted with radio collars in the B.C. portion of the ecosystem (Table 1). Trapping was conducted by B.C. personnel. All captures were for research purposes. No management actions (trapping, releases, removals) were taken in 2008 relative to grizzly bears.

Table 1. Grizzly bears captured in the Selkirk Mountains Grizzly Bear Ecology, 2008.

Bear ID	Age / Sex	Weight (lbs)	Estimated Age ^a	Date	Capture Location
138	Subadult Female	220	3	5/20/08	Corn Creek
144	Adult Male	450	19	6/16/08	Next Creek
150	Adult Female	156	6	6/21/08	Elmo Creek
151	Adult Female	180	19	6/23/08	Cultus Creek
155	Adult Male	370	15	6/27/08	Next Creek

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

Mortalities

There was 1 known grizzly bear mortality in the Selkirk ecosystem in 2008. An adult male bear (18+ yrs old) that was captured in 2007 near Leach Lake, B.C. was killed near Salmo on September 28 by a citizen when the bear came into his backyard. The shooting was investigated by B.C. enforcement personnel, and citations were issued. The bear was attracted to a burn pile and garbage site near the residence.

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, pers. comm.).

A similar 5x5 km grid system was developed in the portion of the ecosystem south of B.C Highway 3. Fifty grids were sampled 3-4 times and 1,272 hair samples were collected. DNA is currently at the Wildlife Genetics lab in Nelson, B.C., for analysis. Results from the DNA extraction will be available in summer 2009.

Sanitation-related Activities

A \$47,000 grant from the National Wildlife Federation and Defenders of Wildlife, combined with other agency money, allowed the purchase of 10 bear-resistant dumpsters, 38 trash cans, and 22 food storage boxes. These were placed in and around the Selkirk ecosystem (Table 2). Bear-resistant containers were placed where persistent black bear and/or grizzly bear problems have been noted in the past. The installation of the bear-resistant dumpsters and trash cans will reduce future problems with both species of bears.

The food storage boxes were installed at 4 remote camp sites on Upper Priest Lake. An Eagle Scout candidate installed the boxes as part of his Eagle Scout requirements.

Table 2. Items, number, and location of bear-resistant dumpsters, trash cans, and food storage lockers placed in and around the Selkirk ecosystem, 2008.

Item	Number	Location
6 yd Dumpster	7	Indian Head State Park
Trash Can	12	Indian Head State Park
6 yd Dumpster	3	Lions Head State Park
Trash Can	6	Lions Head State Park
Food Storage Locker	10	Dispersed campsites, Upper Priest Lake
Trash Can	10	Elkins Resort
Food Storage Locker	12	To be placed at dispersed campsites in 2008, Priest Lake
Trash Cans	10	4-6 to be placed on Priest Lake Experimental Forest in 2008, others as needed

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 goal is 1) to become more informed on grizzly bear related issues; and 2) to seek opportunities for the community to become involved in these issues.

KVRI submitted a grant proposal through TransCanada, a company with a natural gas pipeline running through Boundary County. The company has a public outreach program that includes educational grants. KVRI was awarded \$4,000 for the purpose of obtaining another full-size taxidermist mount of a grizzly bear that will be used for educational purposes. The Idaho Department of Fish and Game (IDFG) obtained the bear that was killed near Salmo. The hide is currently at a taxidermist and the skull is being cleaned. The mount and skull will be available for use in mid-2009.

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 Kootenai Valley Resource Initiative 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. **Address sanitation concerns in and around the recovery zone.** The lethal control of the subadult male in 2007 highlights the need for continued sanitation work in and around the Selkirk Ecosystem. While progress has been made through efforts such as the fencing of county dumpster sites, much more work is needed to address sanitation needs, especially on private lands. The \$47,000 grant allowed for significant progress on sanitation issues in the Priest Lake area, however, there is still much to be accomplished.
2. **Complete analysis of DNA samples.** Completion of this will yield a population estimate for a large portion of the Selkirks. Anticipated completion date: summer 2009.
3. **Investigate the use of remote cameras to document grizzly bears.** Remote cameras have been used to document many species. Cameras placed in key places throughout the ecosystem may provide valuable information relative to the recovery criteria (females w/cubs, distribution of family groups). Cameras are relatively cheap and labor could be provided through cooperation with other agencies (primarily U.S. Forest Service [USFS]) and within the normal duties associated with other field work.
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.

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Appendices

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.

The ability to monitor the population has declined due to funding limitations and the reduction in the trapping and radiocollaring activities in the Selkirk Ecosystem.

Year	Annual FWCs	Annual Adult Female Mortality	Annual All Female Mortality	Annual Total Mortality	4% Total Mortality Limit ^a	30% All Female Mortality Limit ^a	Total Mortality 6-year Average	Female Mortality 6-year Average
1995	1	0	1	2	0.0	0.0		
1996	1	0	0	1	0.0	0.0		
1997	1	0	0	1	0.0	0.0		
1998	1	0	0	1	0.0	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
2007	0	2	2	3	0.0	0.0	3.3	1.5
2008	0	0	0	1	0.0	0.0	2.5	1.2

^a The current mortality goal is zero known human-caused mortalities.

2008 status of the Selkirk Ecosystem in relation to the demographic recovery targets:

	Target	2008 Status
Females w/cubs (6-yr avg.)	≥6.0	0.5
Mortality limit (4% of minimum estimate)	0	2.5
Female mortality limit (30% of total mortality)	0	1.2
Distribution of females w/young	7 of 10 BMUs	4 of 10 BMUs

^a Myrtle, Sullivan-Hughes, Long-Smith, and Kalispell-Granite BMUs were occupied by family groups in 2008.

Appendix B. Status of all captured grizzly bears in the Selkirk Mountains, 1999-2008.

Bear ID	Sex	Capture Date ^a	Capture Location ^b	Age ^c	Status	Comments
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	Dead	Radio failure summer 2004, vehicle collision on Hwy 3 summer 2007
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 2007
5381	M	6/06	Hellroaring Ck, ID	3	Unknown	Moved to Molybdenite Mtn, WA, dropped collar fall 2007
Kirk	M	4/07	Leach Lake, BC	19+	Dead	Human kill, sanitation, Salmo, BC, 9/08
5394	M	8/07	Priest Lake, ID	2	Dead	Management removal, 10/08
132	F	9/07	Cultus Ck, BC	4	Alive	Research capture
7005	M	10/07	Grandview, Priest Lake, ID	6	Alive	Denning west of Snowy Top, BC
138	F	5/08	Corn Ck, BC	3	Alive	Research capture
144	M	6/08	Next Ck, BC	19	Unknown	Research capture
150	F	6/08	Elmo Ck, BC	6	Alive	Research capture
151	F	6/08	Cultus Ck, BC	19	Alive	Research capture
155	M	6/08	Next Ck, BC	15	Alive	Research capture

^a Initial capture date.

^b Initial capture location.

^c Age at initial capture

Study II: Selkirk Mountains Caribou Recovery Efforts

Abstract

A complete survey of the South Selkirk caribou recovery area was conducted by fixed-wing aircraft in March 2008. This survey included both the U.S. and B.C. portions of the Selkirks and was conducted to identify areas that contained caribou. Three caribou were located in the U.S. during this survey. All other caribou and caribou tracks were located in B.C. Following recommendations from the 2007 survey, the fixed-wing flights were followed immediately by a helicopter survey to count and classify caribou. The South Selkirks contained a minimum of 46 caribou in 2008 – 43 in B.C. and 3 in the U.S. Recruitment was low; 5 calves were identified, resulting in a recruitment level of 11% (5 of 46 caribou).

A comprehensive analysis of home range characteristics, inter-seasonal movements, site fidelity, and corridor modeling was initiated in 2008. A final report will be available in early 2009.

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 (USFS 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 (*Parelaphostrongylus 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 USFWS. Additional support is provided by USFS, IDFG, Washington Department of Fish and Wildlife, B.C. Ministry of Environment, B.C. Ministry of Forests, and Idaho Department of Lands (IDL).

Study Area

The study area, approximately 5,700 km², 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 2), 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 km² (47%) lies within B.C. with 3,000 km² (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 winter followed by a second peak in spring.

Winter Census

Methods

Standard survey protocols for mountain caribou (Resources Inventory Committee, 2002) were followed. Attempts are made to conduct flights within a few days of a new snowfall so that recent tracks are visible but older tracks are covered up. The census was conducted with fixed-wing flights contouring near treeline (1,800 – 2,100 m elevation) over all suitable caribou habitat within the study area, followed by a helicopter flight as soon as possible after to classify caribou into calves / adults (Wakkinen et. al.1996). With both flights, caribou tracks are followed until sighted unless the tracks descend into dense mature trees and are lost from view. All flight routes are recorded using standard GPS track recording technology. High resolution (3000 X 2008 pixel) photos of the groups of caribou are taken with a Nikon D50 digital SLR camera with a Nikon 70 – 300 mm zoom telephoto vibration reduction lens when possible. Photos were later analyzed on a computer monitor to verify classification.

A Cessna 182 with 1 observer in addition to the pilot was used for the fixed-wing portion of the census and a Bell 206 Jet Ranger with 3 observers in addition to the pilot was used for the helicopter portion.

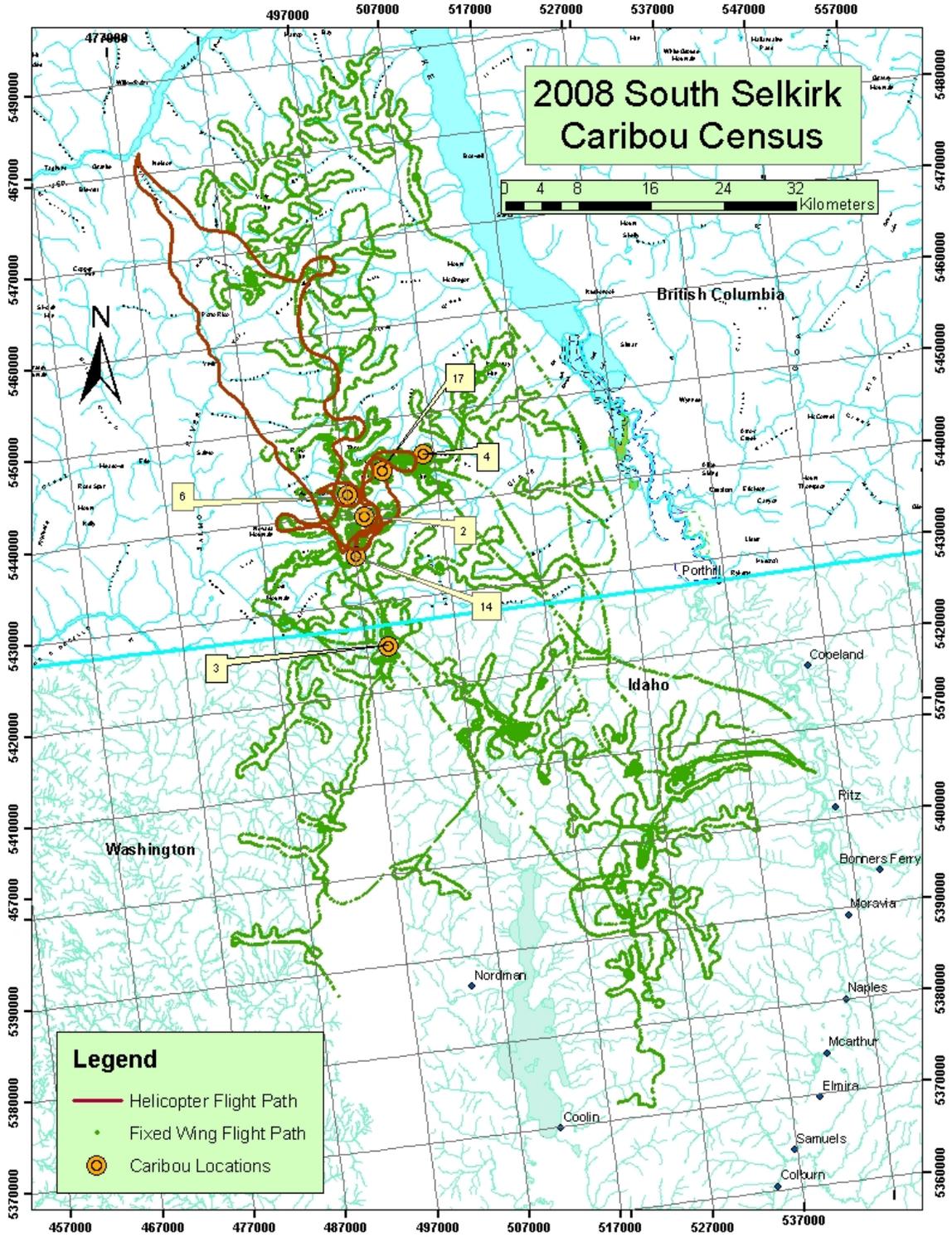


Figure 2. Flight lines and caribou locations from the 2008 census. Group sizes are noted near each location. The helicopter flight line is a hand drawn approximation as the GPS unit used for flight tracking had a bad day.

Results

Fixed-wing survey. The fixed-wing portion of the census was conducted on March 5, 6, 7, 13, 24, and 25, 2008. Wayne Wakkinen, IDFG biologist, was present on all flights. All fixed-wing flying was conducted from the Bonners Ferry, Idaho, airport and used the same airplane and pilot. The 6 individual flights totaled 21.9 hours for a cost of \$4,818 (US\$); \$4,909 (CAN\$).

Peripheral areas within the South Selkirks were surveyed during the flights on March 5, 6, and 7. This included areas in the extreme northern portion of the ecosystem and most of the area within the U.S. These are areas where no caribou have been sighted during recent winter surveys (5-7 years). No caribou were detected in these areas. Flights on March 13 and 24 covered areas where caribou were detected in recent surveys (5-7 years). Due to the time period between these 2 flights, most of the area surveyed on March 13 was re-surveyed on March 24.

Groups of caribou were located in the North Fork of Summit Creek, Bayonne Creek, Bluebird Creek, and Little Snowy Top. Four of 5 functional radio collars were detected. However, these collars are all from the 1998 augmentation and are 10 years old. The signal from several of the collars is very weak, so it is unknown if the 1 missing collar represents a caribou that was missed or if the radio collar failed.

Of the 4 groups located from the plane, 1 group of 3 caribou was located in the U.S. The flight on March 25 confirmed the presence of these caribou. All other caribou were located north of B.C. Highway 3. No population count was conducted for the fixed-wing portion of the survey, based on recommendations from the 2007 census. A total count was only conducted during the helicopter portion of the survey.

Snow and light conditions were variable during the fixed-wing flights. Excellent conditions existed on March 5, 6, 7, and 25. At times, old caribou tracks were visible but distinguishable from fresh tracks. Windy conditions, fresh snow, and low light hampered the fixed-wing flight on March 24, but given the limited time window in which to conduct the survey, the decision was made to fly even under these conditions. Weather conditions caused the delay in the survey between March 13 and 24.

Helicopter census. The helicopter portion of the census was conducted on the afternoon of March 25, a few hours after the fixed-wing survey. Wind and light conditions had improved from the morning. Snow had fallen the day before and subsequent tracks were in good condition. The helicopter was based out of Nelson, B.C.; this portion of the survey took 2.5 hours at a cost of approximately \$2,800 (CAN\$). Areas where caribou were spotted a few hours earlier from the fixed-wing survey were surveyed first. Some of the caribou had moved several kilometers in that time so tracks were followed until the groups of caribou were found. A total of 43 caribou were observed in 5 different groups (Table 3). All tracks appeared to be associated with observed groups. Five calves were observed, which was confirmed by close examination of the digital photos in the office. Adequate photos of one group were not obtained due to forest cover; however, observers were confident that no calves were present in that group. Three of 5 functional radio collars were detected. Attempts were not made to find the group of 3 caribou in the U.S. portion of the habitat that were observed from the fixed-wing flight. The GPS unit used

for flight tracking did not work well. The helicopter flight route illustrated in Figure 2 is an approximation of the flight route.

Table 3. 2008 South Selkirks winter census results.

Location	Group Size	Comments
Stagleap Park	14, including 1 collar	1 calf
Carolina Ck	2 adults	0 calves
Bayonne ck	17, no collars	4 calves
Curtis Lake	6 adults	0 calves
Bluebird Ck	4 adults, including 2 collars	0 calves
Little Snowy Top	3 adults, including 1 collar	0 calves
Total	46 animals observed, 1 radio collar unaccounted for	All animals located in B.C. except Little Snowy Top group (U.S.)

Age classification. During the helicopter portion of the census, 5 calves were identified. Recruitment is estimated to be 11% (5 of 46 animals).

Comparison with past surveys. Recent past surveys reported 34, 41, 33, 35, 34-37, and 43-44 caribou in 2002, 2003, 2004, 2005, 2006, and 2007, respectively (Table 4). The count this year showed a slight increase over past surveys and is the highest total count since 1999. The reported number in 2003 of 41 is likely the result of some double counting during the survey and therefore should not be considered an accurate number (Wakkinen, pers. comm.).

Conclusion

The 2008 survey showed a slight increase from previous counts and is the fifth year in a row of surveys showing a slowly increasing population. Most caribou were located in British Columbia north of B.C. Highway 3, results that are consistent with past surveys. Survey conditions were generally adequate but not always ideal. Weather required the fixed-wing portion to be conducted over a 3-week period (March 5-25). The helicopter portion was conducted the afternoon of March 24, immediately following the fixed-wing flight on the same day. The fixed-wing flight on March 25 re-surveyed the area where the group of 3 caribou was found in the U.S. to confirm their presence. Recruitment continues to be quite low, averaging 11% over the previous 5 surveys (range 7-17%).

The snowpack for 2007-2008 was slightly above normal. Idaho Panhandle SNOTEL sites reported 108% year-to-date precipitation and 119% snow water equivalent on April 3, 2008. The closest British Columbia Snow Pillow sites (Redfish Creek and Moyie Mountain) recorded snow water equivalents of 114% and 131% of average, respectively. The weather station at Kootenay Pass on Highway 3 recorded a maximum snow depth of 3.35 m on March 30, 2008, which is 131% of the previous year's maximum snow depth of 2.57 m recorded in the same location on March 1, 2007, and the fifth highest snow pack since 1980.

Table 4. Results of woodland caribou winter censuses, Selkirk Mountains, 1999-2008.

Year	Recruitment (% calves)	Area Total (US/BC)	Grand Total
1999 ^a		6/42	48
2000	18%	3/31	34
2001	No census due to low snowpack		
2002	26%	2/32	34
2003	10%	1/40	41
2004	7%	3/30	33
2005		2/33	35 ^b
2006 fixed-wing		1/33	34-37
2006 helicopter	17%		29-38
2007 fixed-wing		2/42-43	43-44
2007 helicopter	9%		43
2008 ^c	11%	3/43	46

^a 11 animals released in late winter 1998.

^b Not a complete census. Must be considered a minimum count.

^c Combination fixed-wing/helicopter survey

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 lion 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 British Columbia 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 efforts 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 British Columbia, it is important to continue the census in the Selkirks to see where it fits into the larger recovery effort.
- 2) **Participate with British Columbia management and recovery efforts.** British Columbia 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 efforts 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 British Columbia 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 which 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. The IDL is also developing management alternatives for caribou.

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 drivable 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.

- 4) **Complete movement analysis report.** A comprehensive analysis of telemetry data was initiated in 2008. The resulting report will describe home range characteristics, inter-seasonal movements, seasonal site fidelity, and corridor modeling for caribou within the Selkirk Ecosystem. The results of this report will provide information for land managers to consider when developing management plans or other activities within caribou habitat.

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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. As the grizzly population recovers, dealing with depredating bears and the associated landowner conflicts has also become a major focus. IDFG responded to 1 spring grizzly bear depredation and 2 during fall. No illegal grizzly bear shootings were detected within the Selkirk Ecosystem of Idaho during 2008.

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 USFWS and IDFG provide principal funding for this project. Additional funding has been provided through generous grants from: IDL, Forest Capital, Inc., and Mr. Ripley Comegys. Past contributors include: the 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.

Project Area

Although attempts are made to devote time to all Grizzly Bear Management Units (GBMUs) within Idaho, efforts were concentrated in the Long-Smith, Blue-Grass, and Kalispell-Granite GBMUs in the Selkirk Mountains. Special emphasis was also placed patrolling IDL property located in the Trail Creek drainage within the Grouse GBMU.

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 5). Enforcement patrols and in-field educational efforts are therefore a high priority during these periods.

Where possible, IDFG contacted backcountry recreationists and discussed grizzly bear natural history, identification, management, and methods for minimizing bear/human conflicts. Many contacts were made while hiking behind closed gates or on trails. Depending on the type of recreationist and their level of interest, various informational pamphlets and cards were distributed. Bear identification signs were posted in all drainages within recovery areas, and the location and description of all vehicles were 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). Public presentations were prepared and delivered emphasizing grizzly bear ecology, identification, and conflict avoidance techniques. An aggressive I&E program designed to heighten the public’s awareness about bears was conducted during the winter months. 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 road closure program, helping provide secure habitat for Selkirk grizzly bears.

Enforcement Activities (Totals)

Law enforcement hours.....	1,007
Hunting and fishing licenses checked.....	634
Security gates checked.....	335
Hunters, hikers, campers, and fishermen contacted in the field	897
Citations issued	58
Written warnings issued.....	40

Table 5. Known human-caused grizzly bear mortalities, Selkirk Mountains recovery zone, 1989-2008.

Mortality Date	Tag #	Sex	Age	Location	Mortality Cause	<500 m from Open Road
Summer 1989	1044	F	20+	Laib Creek, BC	Natural, Conspecific	No
Autumn 1990	1042	F	3.5	Maryland Creek, BC	Human, Poaching	Yes
1990	None	M	Unknown	Non-hunting mortality BC, Unit 4-8	Human, Management	Yes
Summer 1992	None	M	Unknown	Lost Creek, BC	Human, Management	Yes
Autumn 1992	1015	F	12.5	Monk Creek, BC	Human, Self Defense	No
Spring 1993	None	M	Unknown	Hunting mortality BC, Unit 4-7	Human, Hunting	Unknown
Autumn 1993	867	F	15.5	Willow Creek, WA	Human, Poaching	No
Autumn 1993	867-93a	Unknown	0.5	Willow Creek, WA	Human, Poaching	No
Autumn 1993	867-93b	Unknown	0.5	Willow Creek, WA	Human, Poaching	No
1993	None	M	Unknown	Non-hunting mortality BC, Unit 4-8	Human, Management	Yes
Spring 1994	None	M	Unknown	Hunting mortality BC, Unit 4-7	Human, Hunting	Unknown
Spring 1994	13	M	Adult	Hunting mortality BC Unit 4-20	Human, Hunting	Unknown
Spring 1995	None	F	1.5	Boundary Creek, ID	Human, Unknown	Yes
Autumn 1995	1100	M	2.5	Granite Pass, WA	Human, Mistaken Identity	Yes
Autumn 1996	1022	M	2.5	Boswell, BC	Human, Management	Yes
Autumn 1997	None	M	1.5	Salmo, BC	Human, Management	Yes
Spring 1998	1023	M	4.5	Hunting mortality BC Unit 4-26	Human, Hunting	Unknown
Summer 1998	None	M	3.5	Usk, WA	Human, Under Investigation	Yes
Autumn 1999	9810	M	10	Smith Creek, ID	Human, Under Investigation	Unknown
Autumn 1999	None	M	22	Wyndell, BC	Human, Management	Yes
Autumn 1999	1032	M	18	Procter, BC	Human, Management	Yes
Autumn 2001	None	M	Unknown	Cottonwood Creek, BC	Human, Management	Yes
Spring 2002	17	M	3.5	Nelway, BC	Human, Depredation	Yes
Autumn 2002	None	F	Adult	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unknown	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unknown	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unknown	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	19	M	3.5	Lamb Creek, ID	Human, Under Investigation	Yes
Spring 2003	None	Unknown	Unknown	Apple Orchards lower Smith Creek	Human, Under investigation	Yes
Summer 2003	30	F	2.5	Salmo, BC	Human, Management	Yes
Autumn 2003	None	F	Adult	Blewett, BC	Human, Under Investigation	Yes
Autumn 2003	None	F	1	Blewett, BC (offspring of above)	Human, Under Investigation	Yes
Spring 2004	None	M	Adult	Hughes Meadows	Human, Under Investigation	Yes

Table 5. Continued.

Mortality Date	Tag #	Sex	Age	Location	Mortality Cause	<500 m from Open Road
Autumn 2004	32	M	7	Nordman / Bismark Meadows	Human, Under Investigation	Unknown
Spring 2005	31	M	5	East of Creston, BC	Human, Hunting season	Unknown
Spring 2005	None	Unknown	Unknown	East Fork Priest River	Likely human caused	Unknown
Spring 2006	None	Unknown	Adult	Procter, BC	Sanitation (?)	Yes
Fall 2006	None	Unknown	Yearling	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	Unknown	Yearling	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	F	Adult	Blewett, BC	Sanitation (?)	Yes
Summer 2007	29	F	Adult	Kootenay Pass, Hwy 3, BC	Vehicle collision	Yes
Fall 2007	1000	F	Adult	Pass Creek Pass, WA	Human, Illegal, Mistaken ID (?)	Yes
Fall 2007	5394	M	Subadult	Priest River, ID	Sanitation, Habituation	Yes
Fall 2008	Kirk	M	Adult	Salmo, BC	Sanitation	Yes

Patrol Methods (Totals)

Miles of 4x4 pickup truck patrol conducted	22,000
Miles of foot patrol conducted	270
Check stations performed	10

Information and Education Activities (Totals)

Hours spent on I&E	170
Total presentations given	49
People attending grizzly bear presentations.....	1,269
Number of schools given presentations	10
Hunter education classes given presentations.....	4

Management Activities (Totals)

Hours spent on management.....	69
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Emphasis Patrols on Idaho Department of Lands Property

Since entering a cooperative law enforcement agreement with IDL, the Sandpoint District conservation officers have placed special emphasis on patrolling property managed by IDL. Enforcement efforts produced the following results during 2008.

Security gates checked.....	408
Citations issued on IDL property	21
Warnings issued on IDL property.....	2
Gate violations detected.....	47

Miscellaneous

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

1. Worked with USFS on road management in grizzly bear recovery zones.
2. Worked with IDL on road management within grizzly bear recovery zones.
3. Monitored the movement of marked bears with portable radio telemetry equipment.
4. Participated in the grizzly bear subcommittee of the Kootenai Valley Resource Initiative.
5. Attended interagency meetings concerning grizzly bear recovery in the United States.

6. Attended law enforcement training sessions sponsored by IDFG.
7. Assisted with grizzly bear depredation resolution and trapping efforts.

Discussion

Maintaining a high public profile seems an effective law enforcement strategy and will be continued in the future. Bismarck Meadows patrol cabin will continue to be used during black bear hunting seasons to maximize field contacts with the public. All grizzly bear killings will be vigorously investigated as they occur.

Of the thousands of personal contacts made during 2008, few individuals openly expressed negative attitudes toward 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. It is believed that a strong public relations effort will help alleviate these concerns. Therefore, we 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 2009.

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. During spring 2008, a pair of subadult grizzlies obtained unsecured food at home sites located in the Upper Pack River drainage. IDFG contacted numerous landowners explaining conflict avoidance strategies and attempted unsuccessfully to trap and relocate the pair which ultimately left on their own. During fall 2008, an adult male grizzly, which we trapped and relocated for depredating in 2007, returned to the Coolin and Nordman areas and again depredated on unsecured food. Numerous landowner contacts were made, but attempts to recapture this bear were not successful.

Recommendations

1. Release newspaper articles on grizzly bear identification and conflict avoidance strategies throughout northern Idaho and northeastern Washington.
2. Continue grizzly bear presentations in public and private schools, rod and gun clubs, and hunter education classes during winter. 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.

3. 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.
4. Continue extensive enforcement patrols during spring and fall hunting seasons, maximizing the number of field contacts. Provide the information necessary for users of grizzly bear areas to make sound decisions concerning bear identification and conflict avoidance.
5. Work within our own agency, and with USFS officers to ensure a continuous enforcement presence in the lower elevations of the Smith Creek and Boundary Creek drainages during spring bear season.
6. 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 game
 - 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 GBMU
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

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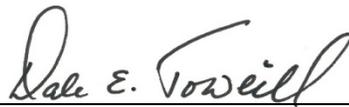
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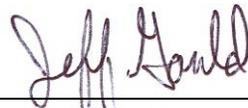
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