NORTHERN CONTINENTAL DIVIDE ECOSYSTEM

GRIZZLY BEAR POPULATION MONITORING TEAM

ANNUAL REPORT - 2007

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Monitoring Team Cooperators:

Montana Fish, Wildlife & Parks

U.S. Fish and Wildlife Service

U.S. Forest Service

U.S. Geological Service

National Park Service, Glacier National Park

Blackfeet Indian Reservation

Confederated Salish and Kootenai Tribes

Montana Department of Natural Resources and Conservation

Foothills Model Forest, Alberta

British Columbia Ministry of Forests

Prepared By:

Richard Mace, FWP
Tonya Chilton, FWP

This annual report summarizes data collection efforts to date. It is not a peer-reviewed document, and data summaries and interpretations are subject to change.

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Cover Photo: Grizzly bear capture near Granite Park, Glacier National Park, 2007
FWP photo

ABSTRACT

An interagency effort to monitor the population trend of grizzly bears in the Northern Continental Divide Ecosystem (NCDE) of Montana was initiated in 2004. The goal of this long-term program is to estimate population trend by monitoring the survival and reproductive rates of radio-instrumented female grizzly bears. Since 2004, the team has captured and monitored 57 female grizzly bears in the U.S. and Canada for Trend Monitoring ("Trend"). Seven new Trend females were captured in 2007. Including management bears and bears captured for other research purposes, 70 individual bears were radio-monitored in 2007. Thirty-five of these 70 were Trend females. These 70 individuals were well distributed throughout the NCDE and included multiple age classes. We have obtained approximately 57 telemetry-years of data on adult females and 16 years of data on subadult females. Based on the distribution of female home ranges, the Glacier National Park capture zone has been under-sampled to date, while the Swan/Mission zone has been over-sampled. Ten Trend females have died since 2004, 2 of which occurred in 2007. Both mortalities occurred within several hundred meters of forest roads, but no bullets or bullet fragments were found upon x-ray examination. In 2007, we monitored the fate of 29 male grizzly bears, 6 of which died. Six management females were monitored with no reported mortality. We recorded 24 known/probable and man-caused mortalities of grizzly bears in the NCDE during 2007. Forty-six percent of these deaths were due to either vehicle collisions (n = 5) or train collisions (n = 5).

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Core Team Members:
D. Carney, Blackfeet Tribe
T. Chilton, FWP
S. Courville, CSKT
J. Jonkel, FWP
K. Kendall, USGS
R. Mace, FWP
M. Madel, FWP
T. Manley, FWP
B. McLellan, British Columbia Ministry of Forests
G. Olson, FWP
G. Stenhouse, Foothills Model Forest, Alberta
J. Waller, NPS
E. Wenum, FWP

Additional Support in United States:
B. Adams, NPS
R. Altop, NPS
L. Anderson**,** FWP
J. Blake, NPS
P. Brown, FWP
C. Cameron, NPS
A. Costel
P. Downey, NPS
D. Elwood, NPS
R. Goldhirsch, NPS
T. Graves, U. Montana
D. Hoerner, Hoerner Aviation
A. Kleinefelter
R. Holtop, NPS
R. Jenkins, NPS
S. Lahr, NPS
M. Long, FWP
B. Lonner, FWP
K. Lynch, NPS
A. Macleod, USGS
N. Merz, MTDNRC
C. Miller, NPS
G. Moses, NPS
J. Paugh, FWP
S. Praether ,NPS
T. Reed
H. Reich, Contract Biologist, FWP
D. Reich, Contract Biologist, FWP
L. Roberts, FWP
H. Stabbins, Plum Creek Timber Co.
J. Stetz, USGS
P. Webster, NPS
R. Wiesner, FWP
B. Wollenzien, NPS

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J. Cranston, Foothills Model Forest, Alberta
J. DeHerrera USFS; D. Mucklow, USFS; H. Rivera, USFS
J. Potter, NPS
J. Williams, FWP
C. Barbouletos, USFS
M. Johnson, Defenders of Wildlife

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I. INTRODUCTION/STATEMENT OF NEED

The grizzly bear *(Ursus arctos horribilis*) occupies over 6 million wilderness and nonwilderness acres in the Northern Continental Divide Ecosystem (NCDE) of western Montana. Notable regions within this ecosystem include Glacier National Park and the Bob Marshall wilderness complex. Grizzlies were listed as Threatened under the Endangered Species Act in 1975 for lack of biological information on its population status and habitat requirements. The NCDE is believed to have the largest population in the lower 48 states, although the number of bears is unknown at present. In 2004, fieldwork was completed that should provide an estimate of population size using DNA extracted from hair samples collected throughout the NCDE. Results of this work are expected in 2008.

Managers and the public agree that information on both population size and trend is needed. Having estimates of size and trend will greatly improve our collective knowledge of grizzly bear ecology and provide more measurable and precise information with which to judge the status of the grizzly population in the NCDE. Therefore, Montana Fish, Wildlife & Parks (MFWP), in cooperation with other state and federal agencies, has initiated a program to monitor the population trend of grizzly bears in the NCDE. The purpose of this long-term program is to monitor the vital population parameters of grizzly bears by assessing the survival and reproductive rates, as well as trend. This will be accomplished by radio-monitoring female grizzly bears. This report summarizes our findings after 4 years of study.

II. PROGRAM OBJECTIVES

Over time, the monitoring team plans to conduct the following activities, in which the lead responsibility for implementation and reporting will be assigned to appropriate agencies. The ultimate responsibility of the monitoring team is to collect life history and habitat data on grizzly bears in western Montana and summarize findings in a comprehensive annual report. Major monitoring categories will initially include:

Population Monitoring

1. Population size reporting and updates
2. Population trend monitoring
3. Grizzly bear distribution (females/young)
4. Mortality
5. Genetic diversity

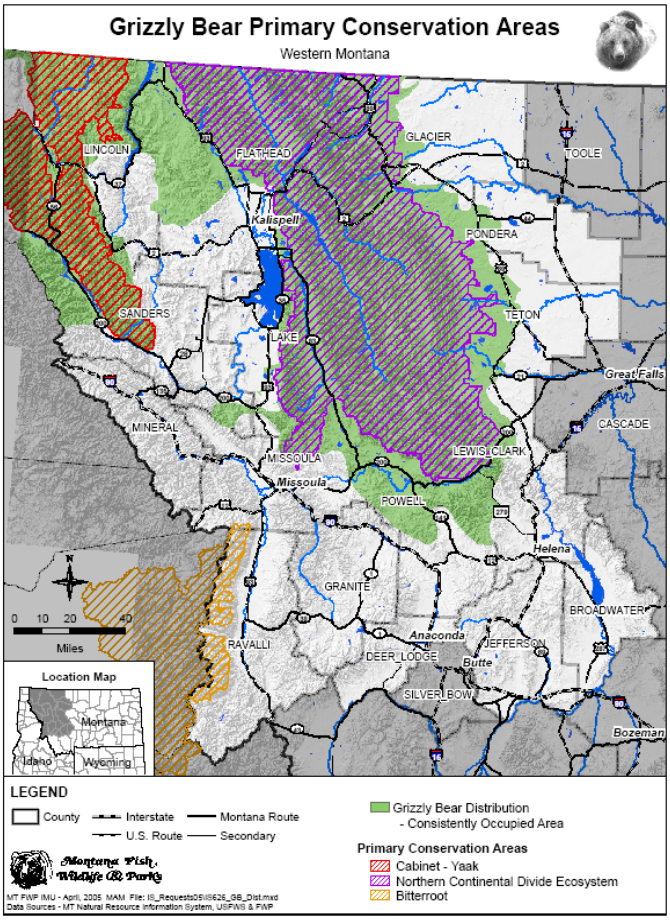
Habitat Monitoring

1. Secure habitat and motorized access route density
2. Developed sites (nonprivate)
3. Livestock allotments
4. Habitat effectiveness and habitat value (CEM)
5. Private land development
6. Habitat connectivity
7. Conflict management

III. GEOGRAPHIC SCOPE OF MONITORING PROGRAM

Primary monitoring emphasis for grizzly bear populations and their habitat will be placed within the designated NCDE Recovery Zone (U. S. Fish and Wildlife Service, 1993) and surrounding portions of Montana, British Columbia, and Alberta. As resources permit, monitoring will be expanded to include the remaining portions of northwest Montana (Fig.1) where grizzly bear occupancy is expected (Dood et al. 2006)

Fig. 1. Western Montana habitats where population and habitat monitoring for grizzly bears is envisioned (from Dood et al. 2006).



IV. METHODS

Delineation of Study Bears and Capture Methods

Female grizzly bears were captured, radio-instrumented, and monitored throughout the NCDE and into southern British Columbia and Alberta, Canada. Capture effort was density-distributed; more collars were placed in areas with higher grizzly bear density. The relative density of bears across the NCDE was determined using data from the USGS ecosystem-wide DNA study conducted in 2004 (see web site http://www.nrmsc.usgs.gov/research/beardna.htm). From these data, capture zones for the NCDE were established in a Delphi fashion using broad-scale geographic and administrative boundaries (Fig. 2). The population of grizzly bears in the NCDE intermixes with grizzly bears in Canada.

We used the methods of Schwartz et al. (2006) to delineate study bears. Adult or subadult females first captured and radioed at a research site were termed "study animals." Females first captured and radioed at a conflict site by bear managers were members of a "conflict" subsample. A conflict bear could become a study bear if later captured at a research site. Conversely, study animals captured at a conflict site retained their place as a study bear if wearing a functional radio collar at time of conflict capture. Study bears whose collars failed or fell off and were later captured at a conflict site were reclassified as members of the conflict subsample. Nontarget females captured at conflict sites were considered members of the conflict subsample.

Grizzly bears were captured using leg-hold snares, culvert traps, and in some instances were free-ranged over bait. Beginning in 2007, we used remote-controlled door openers for culvert traps in the backcountry of Glacier National Park. Winch and remote

controllers were obtained from Bwieagle, Inc. (www.bwieagle.com). We used the 38-2000INT-HP-WINCH and the Air-Eagle SR PLUS 2.4 GHz transmitter Model Number 36-1300 for these traps. These transmitters successfully opened aluminum culvert trap doors at a distance of 180 m. Road-killed deer and other lures were used to attract bears to sites.

From 2004 through 2006, bears were immobilized using either Ketamine/ Rompun® (ketamine HCL/xylazine HCL) or Telazol® (tiletamine HCL/zolazepam HCL). Beginning in 2007, we began using the combination of Telazol® and Medetomidine, with atipamezole as the antagonist. We used drug dosages as per Kreeger et al. (2002). All bears were micro-chipped. Morphological measurements were taken on each bear. Cotton spacers and mortality sensors were used on all radio collars. Tooth (Stoneberg and Jonkel 1966) and hair samples were taken for age estimation and DNA genotyping, respectively. Adult bears were considered to be those $\geq$ 5 years of age.

Grizzly bears were fitted with 1 of 3 types of radio collars, depending on body size and geographic location. Very high frequency (VHF) collars (Telonics, Inc. Mod 500) having a battery life of approximately 5 years were placed on subadult females (<100 lbs) and adult bears living in front-country areas. Female grizzly bears in Glacier National Park and wilderness areas were fitted with Argos GPS (Telonics, Inc. TGW-3580) collars to minimize over-flights. These Argos collars were programmed to obtain a GPS fix every 6 hours (000, 600, 1200, and 1800 GMT). Some females were fitted with Telonics store-on-board generation III GPS collars (TGW-3500) to gather specific information on habitat selection.

Capture success measured how successful field crews were at capturing bears in an area and was based on the number of sites where snares/culverts were set and the number of nights that capture sites were operational. Each operational capture site, regardless of how many snares/culverts were deployed, constituted a "capture night." The sum of capture nights (effort), divided by the number of grizzly bears captured was termed "capture success." Beginning in 2005, we began using digital cameras at many capture sites in an effort to optimize captures of female grizzly bears. Often, cameras were placed at potential capture sites before either snares or culverts were set, in an effort to ascertain which bear species and sex was visiting sites. In this fashion, we have increasingly reduced the number of nontarget captures and the number of days that snares and culverts are set for capture. With increased use of these cameras, the capture success statistic will become less applicable.

Telemetry

The location of each collared bear was determined at least once per month, as possible, using fixed-wing aerial telemetry. In addition, whenever possible, ground locations were determined by triangulation. Locations from bears fitted with Argos GPS collars were downloaded daily from the Argos web site. During the bears' active season, we also monitored the status of each bear's mortality sensor to determine if the bear was alive. Home range polygons (100%) were constructed for each bear using the minimum convex polygon method (Mohr 1947).

Mortality

Mortality censors on radio-collars indicated when a collar had either been prematurely cast by a study bear or when a bear had died. Bears whose collars were on

mortality were promptly investigated by field crews to ascertain whether the bear had died or simply dropped its collar and to document cause of death whenever possible. Necropsies were most commonly conducted in the field, and relevant tissue and hair samples were collected for laboratory analyses. We used a metal detector or x-ray technology to ascertain whether dead bears had been shot. Except for arduous backcountry situations, whole carcasses were retrieved from the field and sent to the FWP or USFWS laboratories for analyses.

Researchers and managers completed a mortality form describing the specifics of each mortality in the NCDE. These reports were entered into an interagency database for coordination among agencies. Terminology for mortalities followed those in Cherry et al. (2002, Table 1).

Fig. 2. Desired distribution of 30 radio-instrumented female grizzly bears in the NCDE by capture zone. Distribution of collared bears was based upon results of NCDE-wide DNA surveys during the June session of 2004.

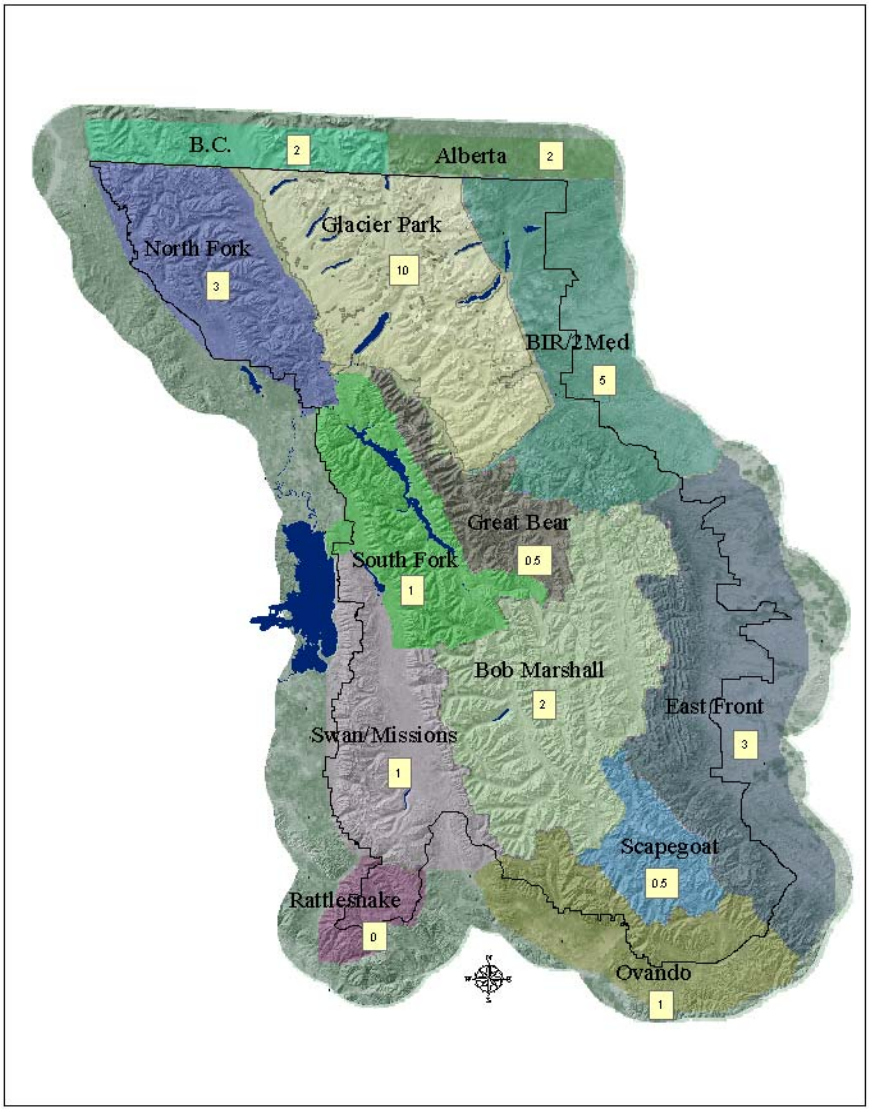


Table 1. Terms and definitions used to classify the cause, certainty, and discovery of grizzly bear mortalities (from Cherry et al. 2002).

Terms	Definitions
Cause of Mortality	
Natural	Positively or reasonably attributed to natural cause.
Human-caused	Positively or reasonably attributed to humans.
Undetermined	Cause could not be determined.
Under Investigation	Cause of mortality is has not been positively determined. Laboratory work, to ascertain cause, is ongoing.
Certainty of Mortality	
Known	A carcass or parts to substantiate death.
Probable	Strong evidence to indicate mortality, but no carcass recovered. Included cases where evidence indicates severe wounding, and observations suggest the bear displayed abnormal behavior.
Possible	Some presumptive evidence of mortality, but no prospects for validation. Includes defense-of-life situations where shots were fired (no evidence of significant wounding was found). Hearsay evidence of poaching or malicious death is included here.
Unresolved	Pulse rate and stationary location of a transmitter indicated a cast-off collar or mortality, and transmitters could not be retrieved due to location (i.e., cliff, log-jam in river) or failure; bear never recaptured, so fate was unresolved.
Unexplained	Premature failure of a working transmitter occurred that could not logically be attributed to expected battery life; bear never recaptured, so loss was unexplained.
Discovery of Mortality	
Reported	Mortality of an instrumented or noninstrumented bear discovered without the aid of telemetry.
Unreported	Mortality of an instrumented bear discovered due to telemetry and not reported by the public.
Unexplained	Premature failure of radio collar that could not be attributed to battery life. Bear never encountered again.

V. RESULTS

Research Captures, 2004-2007

Grizzly bears have been captured since 2004 for population Trend Monitoring. Although females are the focus of the research, males were inadvertently captured as well. In 2004, 24 individual grizzly bears were captured, 15 (63%) of which were female (Table 2). Forty individuals were captured in 2005, of which 23 (58%) were female. Forty-seven individuals were captured 56 times in 2006. In 2007, 7 of 20 (35%) individuals captured were female. In total, 57 individual female grizzly bears have been captured and radio-monitored in the first 4 years of monitoring in the U.S. and Canada (Table 3). The generalized geographic distribution of female grizzly bears is shown in Fig. 3. A map of capture locations since 2004 is given in Fig. 4. Across the NCDE, we averaged 1 grizzly bear capture per 23 trap nights (Table 4). However, our use of digital cameras at bait sites makes this statistic less applicable (see capture methods). A list of bears captured for population monitoring is given in Appendix A.

In cooperation with the National Park Service, 3 culvert traps were placed within Glacier National Park via helicopter in 2007. These traps were placed near Granite Park, in Harrison Creek, and in the Waterton Valley near Pass Creek. Female #093619344 was captured at the Granite Park site during the autumn, and female #081605772 was captured in the Waterton Valley during the spring. No bears were captured in Harrison Creek during a short spring 2007 effort.

Capture teams were also deployed into the wilderness areas of the NCDE during 2007 via horses. A 10-day effort was conducted in the Great Bear Wilderness (1 July-10 July). A second effort was conducted in the Danaher Basin area of the Bob Marshall

Table 2. The number of grizzly bear captures and recaptures in the NCDE for population Trend Monitoring, 2004-2007. Data include Canadian captures.

Capture Year	Sex/age Class	Number Individuals	Number Recaptures	Row Total
2004[a]	Female	15	1	16
2004	Male	9	0	9
2004 Total		24	1	25
2005	Female	23	2	25
2005	Male	17	3	20
2005 Total		40	5	45
2006	Female	13	5	18
2006	Male	34	4	38
2006 Total		47	9	56
2007	Female	7	5	12
2007	Male	13	2	15
2007 Total		20	7	27
TOTAL	Female	58	13	71
TOTAL	Male	73	9	82

[a] Includes one adult female captured in 2003 but not monitored until 2004.

Table. 3. Number of new female Trend Monitoring females captured each year. A total of 57 individual females have been captured to date.

	Number of new individual female grizzly bears captured			
Year	2004	2005	2006	2007
Number new captures	15	22	13	7

Fig. 3. Geographic distribution of 57 radio-instrumented female grizzly bears captured for Trend Monitoring. Females monitored in 2007 are shown in red. Yellow dots represent bears monitored in previous years. Bear locations are generalized.

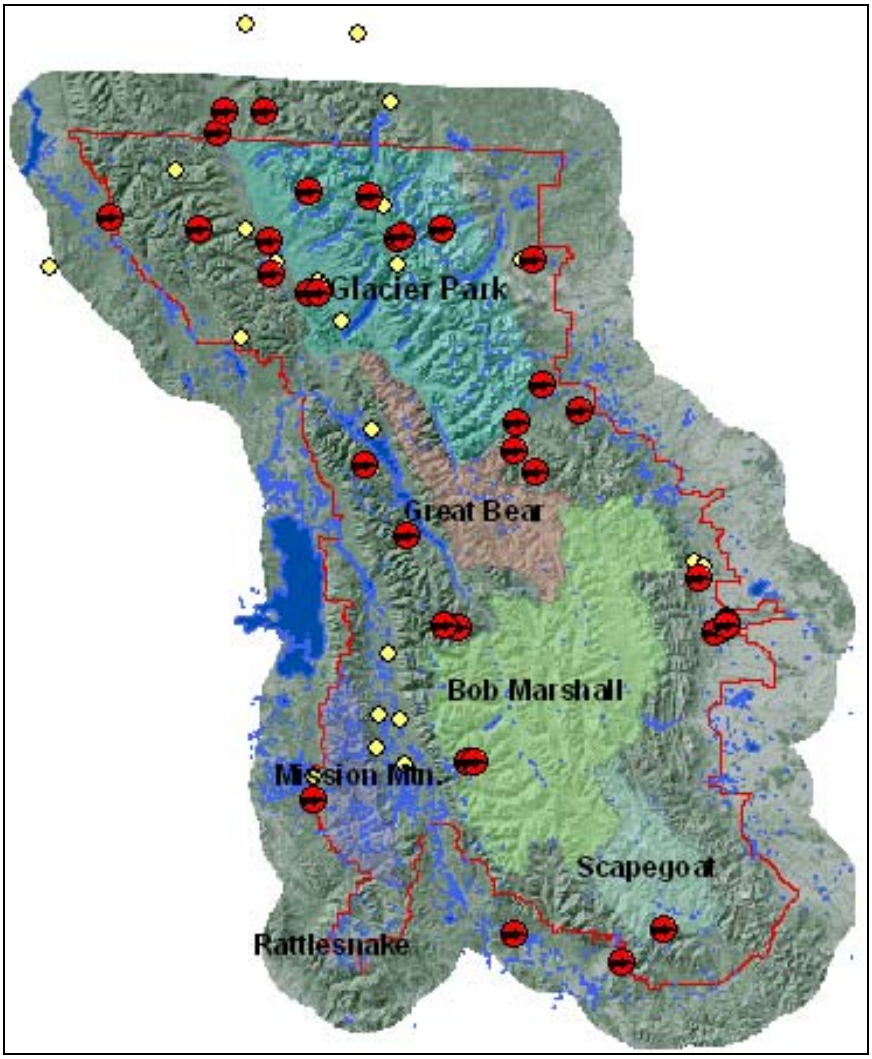
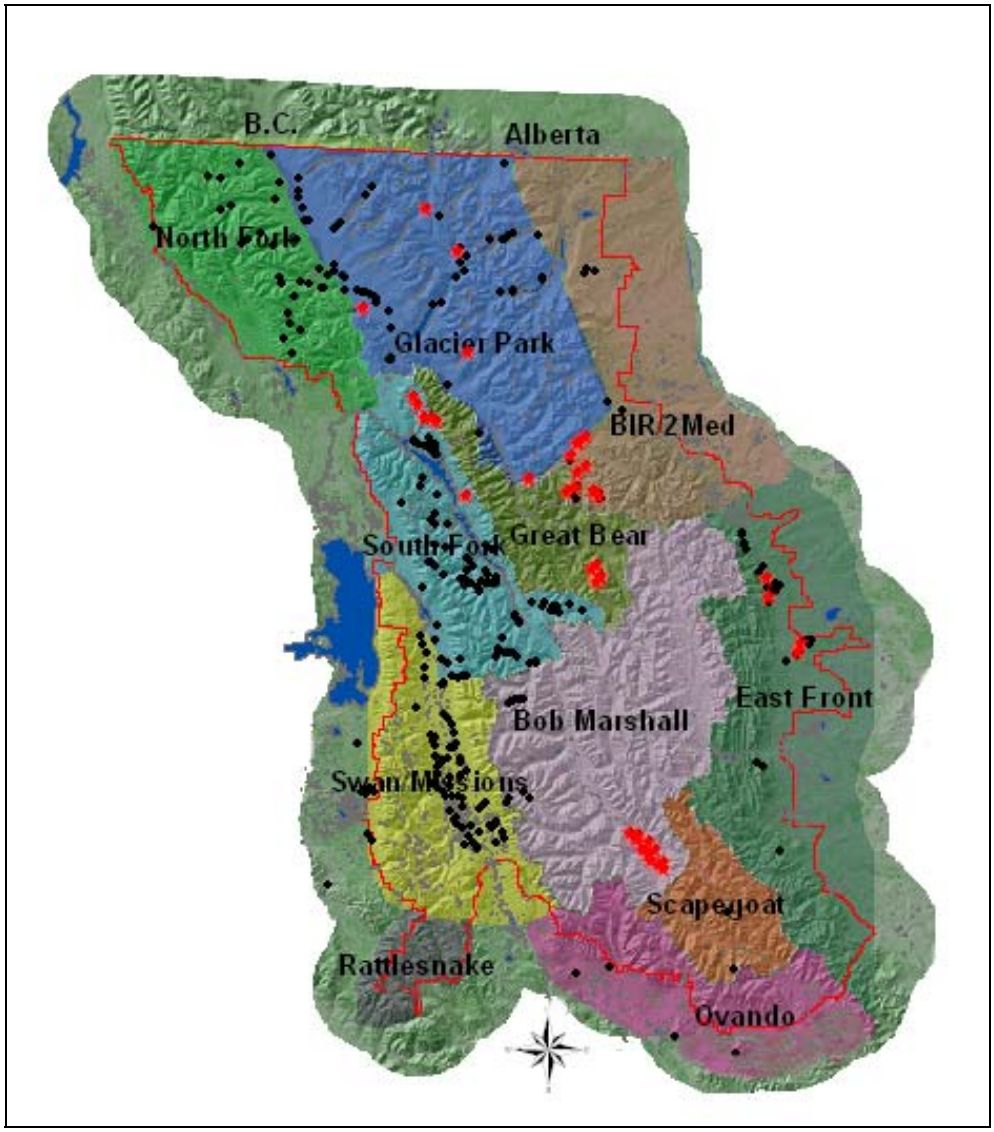


Fig. 4. Capture site locations in the NCDE, 2004-2007. Red stars represent capture sites used in 2007.



Wilderness (14 July- 22 July). A third snare-line was established from 7 October-17 October in the Basin Creek area of the Bob Marshall. No grizzly bears were captured in these wilderness efforts.

Management and Other Grizzly Captures, 2004-2007

Each year, grizzly bears were captured in the NCDE for purposes other than Trend Monitoring. The majority of these captures were for management purposes. Not all of these bears, especially attendant young, were radioed. In 2007, 27 additional bears were captured in the Ecosystem (Table 5). A list of the bears captured for management reasons is given in Appendix B.

Number of Bears Radio-Monitored Each Year in the NCDE

Each year, grizzly bears were captured and radio-instrumented for several purposes. These include captures for Trend Monitoring, for management, and for other research purposes. The sample of total radioed bears in the NCDE has increased annually since 2004, from 53 individuals to 70 in 2007 (Table 6).

In addition to the 35 female grizzly bears monitored for population Trend work in 2007, the study team also followed the fate of 35 grizzly bears radioed for reasons other than Trend during the year, for a total of 70 grizzly bears monitored in 2007. This sample included 29 males and 6 females (Table 6). These 70 radio-instrumented bears were well distributed throughout the NCDE (Fig. 5).

Table 4. Capture effort and success by capture zone, 2004-2007. Does not include Canadian captures.

Capture zone	Capture nights	Total captures	Capture success
Glacier Park	616	29	21.24
South Fork	656	16	41.0
North Fork	300	17	17.6
Swan/Missions	799	17	47.0
East Front	142	24	5.9
Great Bear	82	0	0
Blackfeet/Two Medicine[a]	131	18	7.3
Ovando	19	2	9.5
Scapegoat	26	2	13.0
Bob Marshall	185	3	61.6
All Zones	2956	128	23.0

[a] Approximate number of trap nights

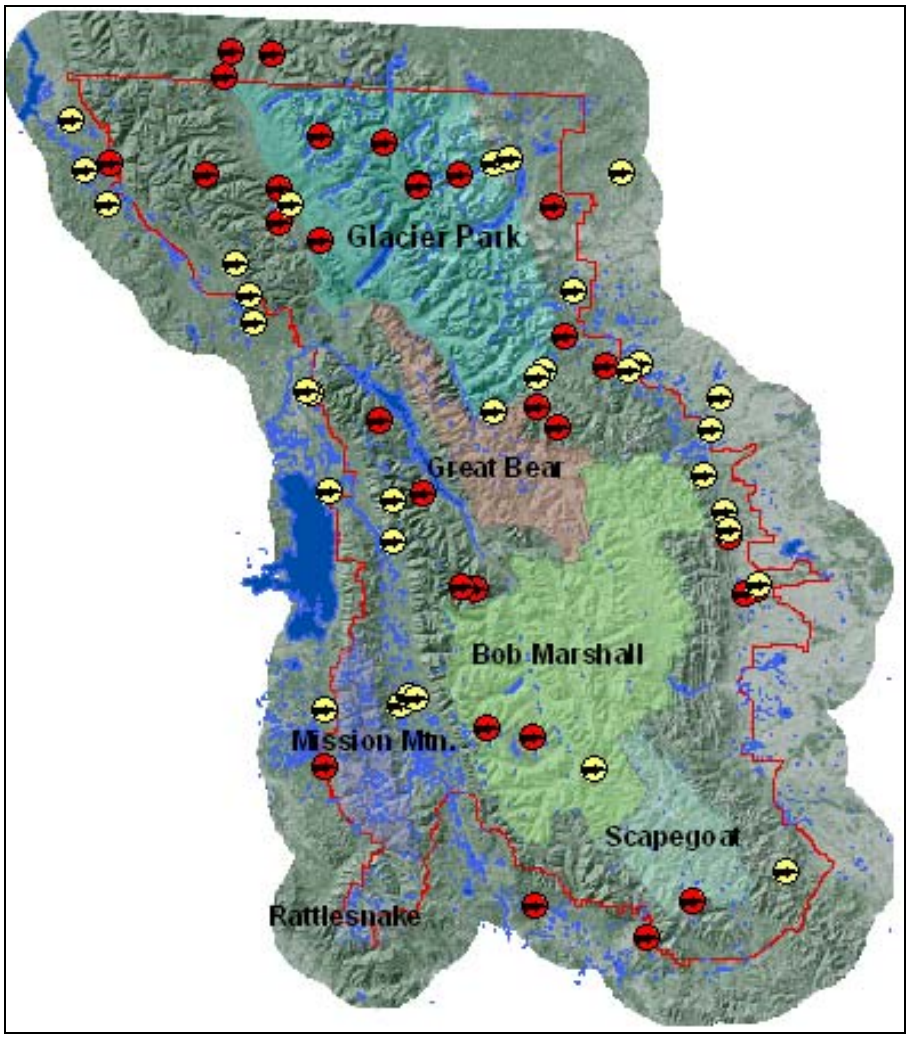
Table 5. Capture of grizzly bears in the NCDE for purposes other than Trend Monitoring. This includes captures for management, augmentation to the Cabinet-Yaak Ecosystem, or other research efforts, 2004-2007. Not all individuals were radio-collared.

	Number of Individual Bears Captured for Other Purposes (total recaptures)			Total # Individuals
Year	Subadult or Adult Female	Attendant young	Independent Males	
2004	15 (20)	12(15)	15(24)	42
2005	8(8)	4(4)	8(9)	20
2006	5(5)	2(2)	13(19)	20
2007	4(5)	5(7)	18(22)	27

Table 6. Total radioed sample of grizzly bears in the NCDE, 2004-2007.

Year	Radioed Males (mgmt and research)	Radioed Mgmt Females	Radioed Trend Females	Total Number Bears
2004	18	20	15	53
2005	14	9	31	54
2006	19	7	34	60
2007	29	6	35	70

Fig. 5. Distribution of 70 radio-instrumented grizzly bears monitored in the NCDE during 2007. Red dots depict Trend Monitoring females. Yellow dots depict male and female bears radioed for other research or management purposes. Locations are generalized.



Annual Fate of Trend Monitoring Females

Fifteen female grizzly bears were radio-monitored in the U.S. portion of the NCDE and in Canada during 2004 (Table 7). Eleven of 15 (73%) females survived the year or until censored (Table 7). Three trend females died in 2004 (Tables 7/8), all in the Swan Valley area (#s 84625548, 37885843, and 84623296). A brief description of these deaths is given in Table 8.

We monitored the fate of 31 female grizzly bears in 2005 (Table 7). Twenty-nine of 31 (94%) females survived either the entire year of 2005 or until censoring. The mortality of one adult female was classified as capture-related (Table 7). One adult female was classified as a probable mortality in 2005. The radio collar from this female (#84623110), who had 3 cubs of the year, was found under a bridge under suspicious circumstances; no carcass was found (Table 8).

Thirty-four females were radio-monitored in 2006 (Table 7). Thirty-one of 34 (91%) females survived the year or until censoring. Three (9%) females died in 2006. Female #s 76553352 and 82024327 were illegally killed during the year, and the partial remains of female #76589366 were found (Table 8). Cause of death could not be determined in this third case.

We monitored 35 Trend females during 2007 (Table 7). Thirty-three (94%) of these females survived until year's end or until their collars failed. Both Trend bears that died in 2007 lived in the Whitefish Mountain Range in the North Fork Flathead River drainage (#s 81577636 and 84624383, Table 8). The carcasses of both bears were found near open forest roads.

The approximate number of radio-years of telemetry data collected since 2004 is given in Table 9. For females and their offspring, the study team has gathered approximately 119 years of data for all age-classes combined. Approximately 39% of this total effort was for attendant young. We have obtained approximately 57 years of data on adult females and 16 years of survival data on subadult females.

Annual Fate of Non-Trend Grizzly Bears

Along with Trend bears, management females and their young were monitored each year in the NCDE. The number of management bears monitored annually varied from a high of 35 in 2004 to a low of 16 in 2006 (Table 10). Since 2004, 10 mortalities of radioed females, and 10 attendant young have been documented.

In 2007, we documented an interesting movement by a relocated female grizzly bear and her 3 female yearlings. This bear (#81567088) was captured on 9/25/2007 and released into the Coal Creek drainage of the North Fork Flathead River the following day (Fig. 6). Over the course of the next 3 weeks, the family traveled over 205 km, including a foray into Canada. On 10/12/2007, she dropped her collar on the outskirts of Coram, Montana.

Table 7. Fate of Trend Monitoring female grizzly bears and their attendant young, 2004-2007. Data include bears in the United States and Canada.

Year	Radioed Female Survived	Radioed Female Died	Radioed Female Censored	Young Alive	Young Died	Young Censored/ Unknown	Young Alive to Dispersal
2004	11	3	1	4	3	1	2
2005	19	2	10	8	3	2	2
2006	28	3	3	13	4	2	0
2007	25	2	8	13	4	10	5

Table 8. Summary of Trend Monitoring female mortalities in the NCDE, 2004-2007.

Bear Avid Number	Date of Death	Geographic Area	Cause
37885843	5/26/2004	Swan Valley	Mistaken Id, bullet found.
84625548	8/17/2004	Swan Valley	Unknown cause. No bullet found.
84623296	7/8/2004	Swan Valley	Unknown cause. No bullet found. Near houses the night before.
84623110	9/14/2005	North Fork Flathead	Probable death. Collar found under bridge. Collar not cut. 3 cubs of year.
84628889	9/30/2005	North Fork Flathead	Capture mortality.
76553352	7/20/2006	Swan Valley	Illegal kill.
82024327	9/11/2006	North Fork Flathead	Illegal kill. Bullet found.
76589366	9/28/2006	Hungry Horse Reservoir	Unknown cause. No carcass found. Hair and radio only.
81577636	8/18/2007	North Fork Flathead	Unknown. Near road. No bullet found. Broken pelvis. Had 2 cubs of year.
84624383	Late Nov. 2007	North Fork Flathead	Unknown cause. Bear found 150 yds from road. No bullet found.

Home Range and Telemetry

Minimum convex polygons (MCPs) were constructed for each radioed female to ascertain the extent to which bears occupied our capture zones. Home ranges for 57 individuals were constructed (Fig. 7).

To date, we have monitored 18 female grizzly bears that extensively used habitats within Glacier National Park, Montana. We have obtained approximately 6,400 locations from these individuals, most of which are locations (Fig. 8).

We were interested in assessing how well our sampling of females to date corresponded to the desired distribution of bears based on our preestablished capture zones (Fig. 2). We constructed MCPs for each female and determined the proportion of each bear's home range in each capture zone. This proportion was then compared to the desired proportion of radios as outlined in the program's study design (Mace 2005). Results suggest that in the past 3 years, some capture zones were over-sampled, while others were under-sampled. The Glacier National Park capture zone was the most notably under-sampled capture zone to date (Table 11); 19% of all home range areas

occur in Glacier National Park, while the desired distribution is 32%. Conversely, the Swan/Missions capture zone was over-sampled (13% actual vs. 3% desired).

Table 9. Radio years of telemetry data for Trend Monitoring females and their attendant young, 2004-2007.

Age Class	Radio Years/year				Total
	2004	2005	2006	2007	
Attendant young (both sexes)	7.9	7.9	11.0	19.8	46.6
Subadult female	1.4	3.8	5.8	4.8	15.8
Adult female	7.9	14.0	14.3	20.3	56.5
Total	17.2	25.7	31.1	44.9	118.9

Table 10. Annual fate of male and female grizzly bears and attendant young that were monitored in the NCDE, but were not a part of the Trend Monitoring sample, 2004-2007.

Year	Radioed Male Survive	Radioed Male Died	Radioed Male Censor/ Unknown	Radioed Female Survived	Radioed Female Died	Radioed Female Censored	Young Alive	Young Died	Young Censored/ Unknown	Total Bears Monitored
2004	9	3	6	9	7	4	5	7	3	53
2005	5	4	5	4	3	2	6	2	0	31
2006	11	4	4	6	0	1	6	0	1	33
2007	16	6	7	5	0	1	5	1	4	45

Fig 6. Movements of relocated female (#81567088) and her 3 female yearlings subsequent to release. This family moved over 205 kms during a 3-week period.

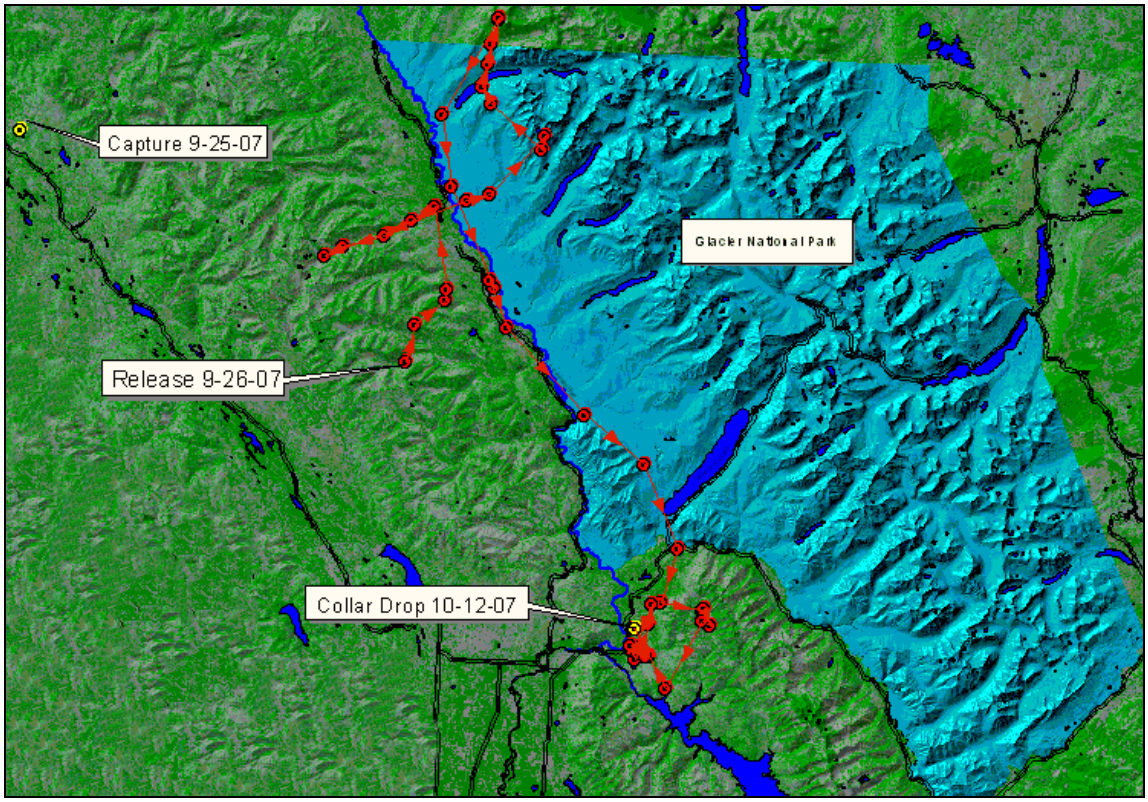


Fig. 7. Minimum convex polygon home ranges for 57 female grizzly bears monitored in the NCDE, Alberta, and British Columbia, 2004-2007. Red dots represent females with too few telemetry points for home range estimation.

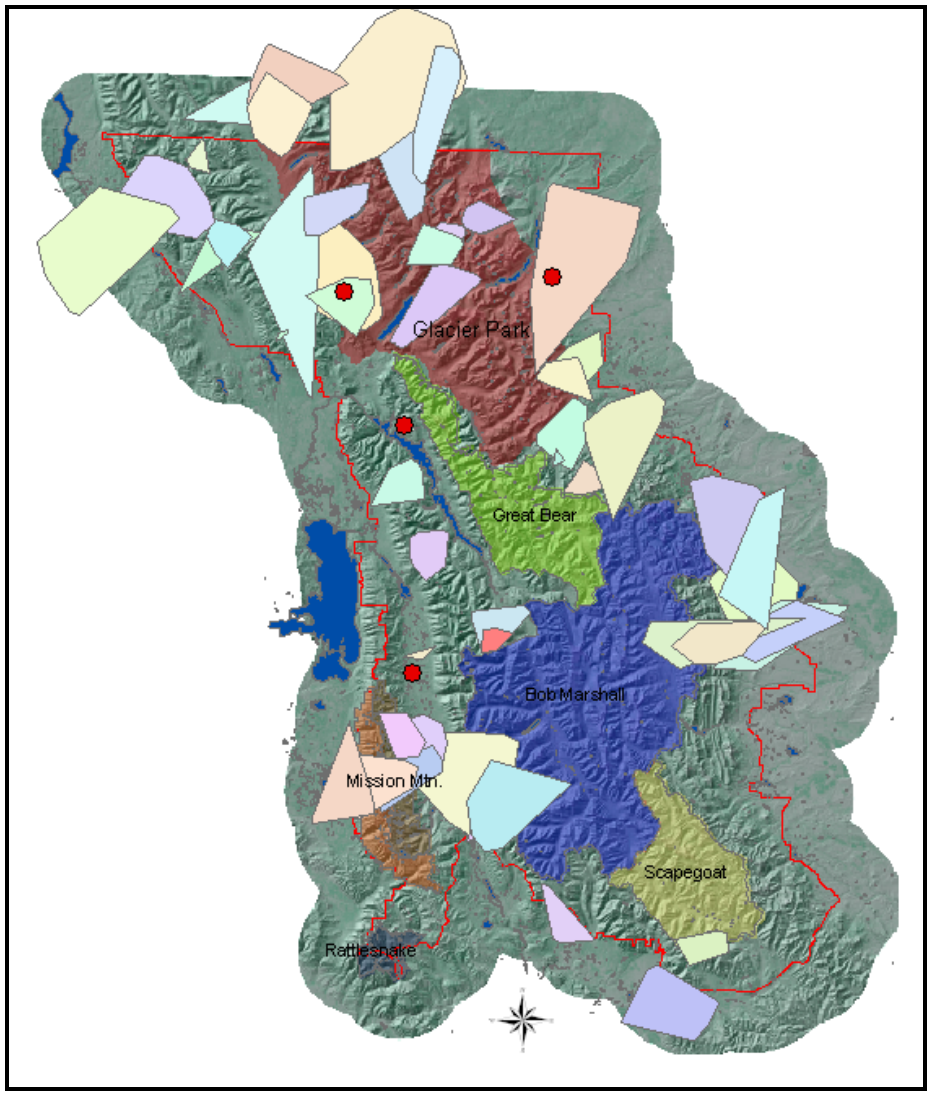
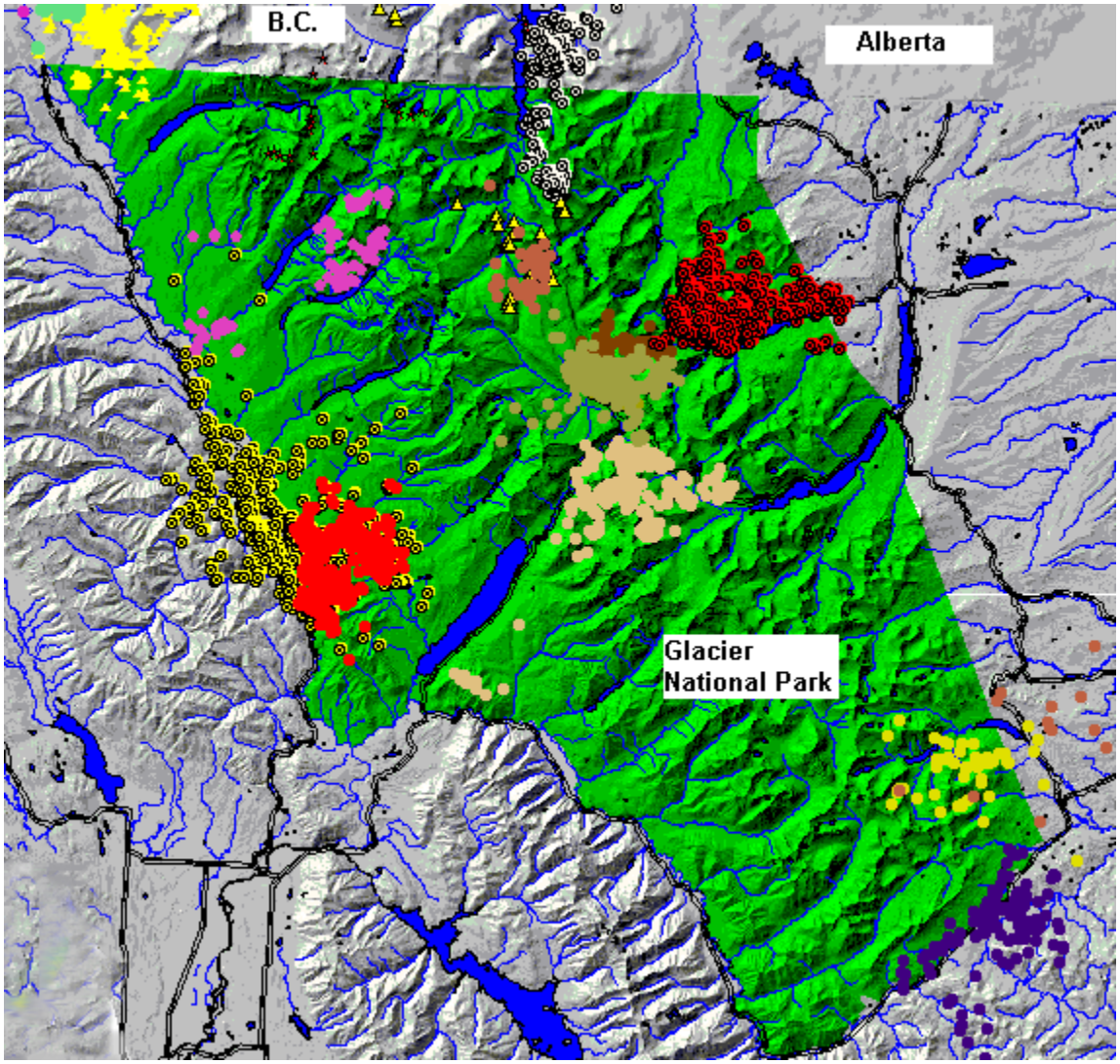


Fig. 8. Telemetry locations from 18 Trend Monitoring females utilizing habitats within Glacier National Park, Montana, 2004-2006.



Grizzly Bear Reproduction and Cub Mortality

The number of adult females radioed for Trend Monitoring has varied each year from 10 in 2004 to a high of 27 in 2005 (Table 12). In 2007, we monitored 16 litters from a total of 24 adult females. These 16 litters had a minimum of 32 young at heel. Of these 32 young, 4 (12.5%) were known to have died during the year. Two of these deaths were cubs of the year of Trend female #81577636 from the North Fork Flathead River. The other 2 deaths were cubs of female #205 along the Rocky Mountain East Front. The reproductive history of each adult female is given in Appendix D.

Grizzly Bear Mortalities in the NCDE, 2007

Grizzly bear mortalities in the NCDE during 2007 are summarized in Appendix E. In 2007, 26 mortalities were tallied for the ecosystem (Fig. 9). However, 24 of these mortalities were classified as being man-caused, had a certainty of known or probable, and were within 10 miles of the NCDE Recovery Zone. These 24 mortalities constitute the official federal mortality list. Forty-six percent of these 24 deaths were adult bears (Table 13). Five cub mortalities were tallied. Vehicle and train collisions were a major cause of grizzly bear mortality in 2007. Of the 24 deaths, 25% were from automobiles, and 21% were from train collisions (Table 13).

Grizzly Use of the Salish Mountain Range

Since 2004, we have documented 4 radioed grizzly bears utilizing habitats between the NCDE and the CYE recovery areas. Movement maps of these bears were given in Mace and Chilton (2007). During 2007, FWP personnel kept track of grizzly bear observations in this area by local citizens. We tallied 12 credible observations, some of which were females, during the year (Fig. 10, Table 14).

Table 11. Distribution of grizzly bear minimum convex polygon home ranges relative to capture zones for the NCDE. Comparisons are made between the actual percent of home ranges and the desired distribution of radioed samples.

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Capture Zone	Actual Percent of All Home Range in Capture Zone (%)	Desired Distribution of Bears (%)
Alberta	2.0	6.0
Glacier Park	19.0	32.0
Ovando	5.0	3.0
Bob Marshall	5.0	6.0
East Front	13.0	10.0
North Fork	14.0	10.0
Blackfeet Tribe	10.0	16.0
British Columbia	7.0	6.0
Swan/Missions	13.0	3.0
Scapegoat	1.0	2.0
Great Bear	0.0	2.0
South Fork	10.0	3.0

Table 12. The number of attendant young of Trend Monitoring females from 2004 through 2007.

Year	Number Adult Females	Status	n	Total Young
2004	10	No young 1 cub 2 yearlings 2 3-yr-olds 2 cubs 3 cubs	5 1 1 1 1 1	10
2005	27	No young 1 cub 2 cubs 3 cubs 1 yearling 2 yearlings 2 2-yr-olds unk, but cubs	17 0 1 1 4 2 1 1	Minimum of 16
2006	26	No young 1 cub 2 cubs 3 cubs 2 yearlings unk	15 1 4 2 3 1	Minimum of 21
2007	24	No young 1 cub 2 cubs 3 cubs 1 yearling 2 yearlings 3 yearlings 2 2-yr-olds unk	5 1 7 1 1 3 1 2 3	Minimum of 32

Table 13. Cause of 24 man-caused mortalities in the NCDE, 2007. Table includes only man-caused, known, and probable mortalities within 10 miles of the federal Recovery Zone.

Sex/Age Class	Manage-ment	Train	Self Defense	Illegal	Mistaken Id	Vehicle	Unk	Orphaned	Total
Subadult Male	1	4	0	0	0	1	0	0	6
Adult Female	0	1	2	1	0	1	1	0	6
Adult Male	1	0	0	1	1	2	0	0	5
Subadult Female	0	0	0	0	0	0	1	0	1
Cub	0	0	0	0	0	2	2	1	5
Unk Age Male	0	0	1	0	0	0	0	0	1
Total	2	5	3	2	1	6	4	1	24

Fig. 9. The locations of grizzly bear mortalities, 26 in the NCDE during 2007. Twenty-four of these mortalities met the official rule-set for reported mortalities. The outer red line is the federal Recovery Zone boundary.

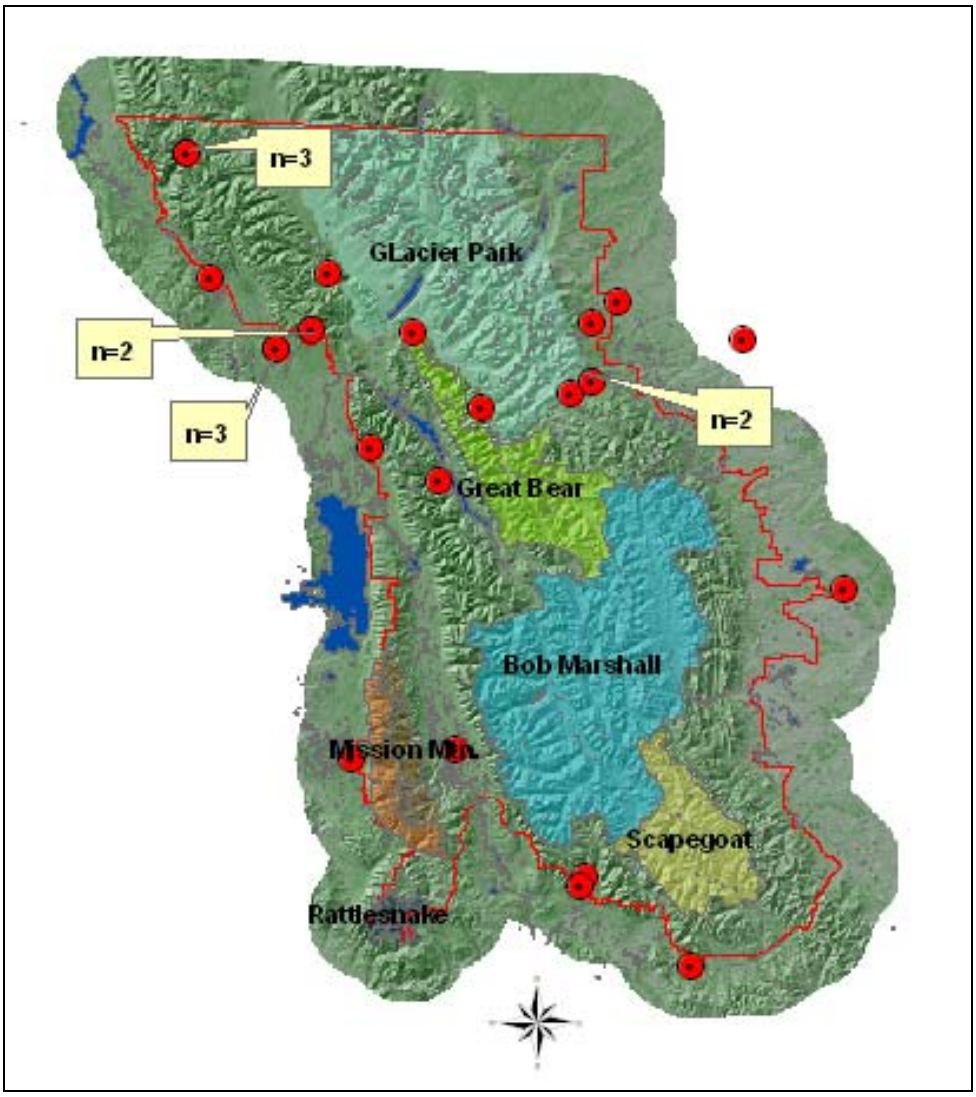

Fig. 10. Miscellaneous observations of grizzly bears in the Salish Mountains, between the NCDE and the Cabinet-Yaak ecosystems, 2007. The description of each observation is given in Table 13. Locations are generalized.

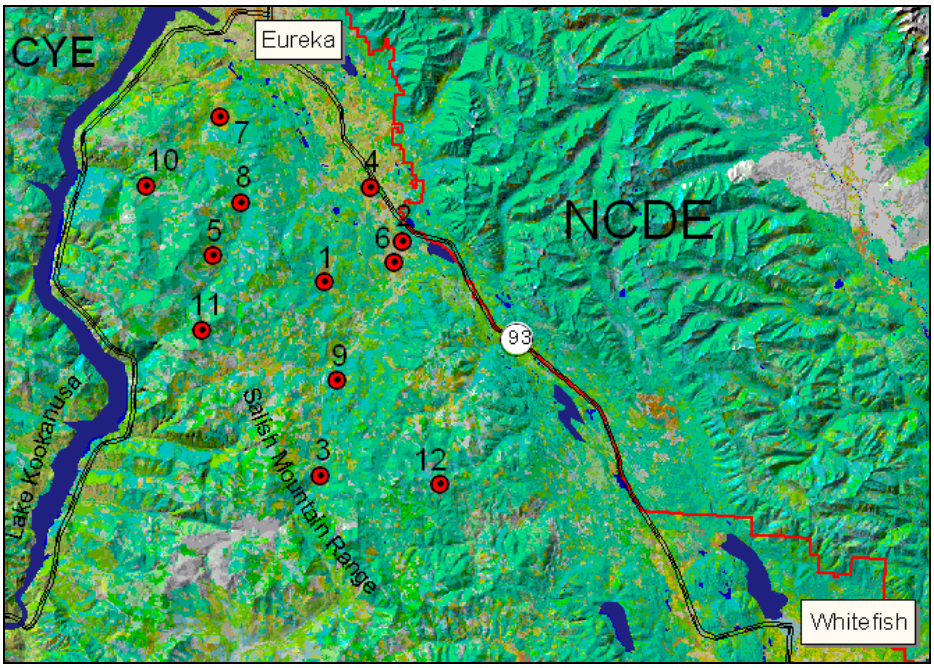

Table 14. Miscellaneous grizzly bear observations in the Salish Mountain Range, 2007. Observations collected by T. Thier, FWP Wildlife Biologist.

Observation #	Date	Description
1	5/21	Carl Hammond (Trego) said he has a very large grizzly frequenting his property 4 miles up Edna Creek.
2	5/22	Tanya Dickinson called and said she saw a 2-3-year-old grizzly on the Ant Flat Rd. south of Dan Smith's place. It was fairly dark colored and not too afraid of people watching it. A number of other people also reported seeing the same bear.
3	6/12	Lynn and I watched and photographed a young grizzly feeding on a deer carcass at Twin Meadows.
4	6/17	Arlie Burk said that Jim Broderick (Eureka) had a female grizzly with 2 cubs chase his truck down the road by Dry Lake.
5	8/17	Ted North said he saw a small-to-medium-sized grizzly this morning just above Lydia Creek in Pinkham Creek.
6	9/5	Amy Truman (Trego) called and said that she saw a young grizzly cross the road by Mac McCurry's this morning, just south of the Trego School.
7	9/15	Scott Brandos (Pinkham Creek) reported that a female grizzly with cubs got into his apple trees the night before in Slick Gulch. The young bears were probably yearlings.
8	9/16	Craig Phillips (Trego) said he saw a female grizzly with a single cub in Still Creek. This is about 6 miles from the above report.
9	9/25	RC Peters (Trego) called and said he saw a female grizzly with 2 cubs near his residence in Butcher Creek yesterday.
10	9/28	Annie Dueker called and said 2 hunters were followed by a grizzly from Sutton Creek over ridge and back to Flat Creek 2 days ago. The bear was very vocal the whole time.
11	10/1	Arlie Burk (Eureka) said that Jack Burk and Dave Vogelman (Eureka) ran into a female grizzly with 2 small cubs on 9/28 in the head of Sterling Creek while bow hunting. The female was small and thin. Although close, she was not aggressive.
12	10/21	A hunter reported seeing a large grizzly on the divide between Martin and Alder Creeks.

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Appendix A. Summary of female grizzly bear captures in the NCDE and Canada, for Population Trend Monitoring, 2004-2007. BC = British Columbia, BIR = Blackfeet Indian Reservation, FIR = Flathead Indian Reservation, CSKT = Confederated Salish and Kootenai Tribes.

Year	Bear Id	Capture Date	Bear Type	Country	Area	Fate 2004	Fate 2005	Fate 2006	Fate 2007
2004	38052875	05/20/2004	research female	US	Swan Valley	alive	censor		
2004	84529290	04/20/2004	research female	US	Swan Valley	alive	censor		
2003	648	08/18/2003	research female	US	Salish	alive	censor		
2004	84625548	04/21/2004	research female	US	Swan Valley	DEAD			
2004	37885843, 84628512	04/27/2004	research female	US	Swan Valley	DEAD			
2004	84623296	05/16/2004	research female	US	Swan Valley	DEAD			
2004	84528858	06/09/2004	research female	US	N.F.Flathead	alive	censor		
2004	84525082	09/15/2004	research female	US	Glacier Park	alive	censor		
2004	51072381	04/28/2004	research female	US	East Front	censor			
2004	84623110	10/13/2004	research female	US	N.F.Flathead	alive	Probable_DEAD		
2004	84625525	09/16/2004	research female	US	Glacier Park	alive	alive	alive	censor
2004	238		research female	Canada	BC	alive	alive	alive	alive
2004	233		research female	Canada	BC				
2006	233	09/04/2006	research female	Canada	N.F.Flathead		alive	alive	censor
2004	132353547	05/02/2004	research female	Canada	Alberta	alive	censor		
2004	132335546	05/07/2004	research female	Canada	Alberta	alive			
2004	132335546	10/27/2004	research female	Canada	Alberta	alive			
2005	132335546	04/30/2005	research female	Canada	Alberta		alive		
2005	76553865	05/15/2005	research female	US	East Front		alive	alive	alive
2002	205	10/14/2002	mgmt female	US	East Front				
2005	205	05/15/2005	research female	US	East Front		alive	alive	censor
2005	51071845	05/15/2005	research female	US	East Front		alive	alive	censor

2005	51605816	05/13/2005	research female	US	East Front		alive	censor	
2005	84623066	04/28/2005	research female	US	East Front				
2005	84623066	05/04/2005	research female	US	East Front		alive	alive	censor
2005	51586884	05/28/2005	research female	US	Ovando		alive	alive	censor
2004	67006850	09/23/2004	mgmt female	US	BIR				
2005	67006850	05/26/2005	research female	US	N.F.Flathead				
2007	67006850	09/02/2007	research female	US	N.F.Flathead	alive	alive	alive	alive
2005	71814874	06/01/2005	research female	US	BIR		alive	alive	alive
2005	72023614	05/31/2005	research female	US	BIR		alive	censor	
2005	71816812	06/22/2005	research female	US	BIR		censor		
2005	72113035	07/07/2005	research female	US	BIR		censor		
2006	72113035	05/12/2006	research female	US	BIR			alive	alive
2005	79050043	06/10/2005	research female	US	S.F.Flathead		alive	alive	alive
2005	84524018	06/25/2005	research female	US	middle fork		alive	alive	alive
2005	76361015	06/24/2005	research female	US	Glacier Park		alive	alive	alive
2005	76560093	06/22/2005	research female	US	Glacier Park		censor		
2005	51561597	08/08/2005	research female	US	Scapegoat		alive	alive	alive
2005	84523288	09/07/2005	research female	US	N.F.Flathead		alive	alive	alive
2005	84624383	09/09/2005	research female	US	Glacier Park				
2006	84624383	09/17/2006	research female	US	Glacier Park				
2007	84624383	09/28/2007	research female	US	N.F.Flathead			alive	DEAD
2005	84628889	09/23/2005	research female	US	N.F.Flathead		DEAD		
2005	76615038	09/24/2005	research female	US	Glacier Park		alive	alive	alive
2005	23813296	09/26/2005	research female	US	Glacier Park		censor		
2006	79110541	05/12/2006	research female	US	Glacier Park				
2006	79110541	09/15/2006	research female	US	Glacier Park				
2007	79110541	09/10/2007	research female	US	Glacier Park				
2007	79110541	09/13/2007	research female	US	Glacier Park			alive	alive

2005	4077420c51	05/26/2005	research female	US	FIR				
2006	4077420c51	05/14/2006	research female	US	CSKT			censor	
2006	81577636	05/15/2006	research female	US	N.F.Flathead			alive	DEAD
2006	76553352	06/02/2006	research female	US	Swan Valley			DEAD	
2006	71868109	06/01/2006	research female	US	BIR			alive	alive
2006	76584107	06/11/2006	research female	US	CSKT			alive	censor
2006	76589366	06/26/2006	research female	US	S.F.Flathead			DEAD	
2005	263	09/26/2005	research female	Canada	Flathead				
2006	263	06/23/2006	research female	Canada	Flathead			alive	alive
2006	76613125	08/12/2006	research female	US	S.F.Flathead			alive	alive
2006	82024327	09/07/2006	research female	US	N.F.Flathead			DEAD	
2006	76600783	09/23/2006	research female	US	S.F.Flathead			alive	alive
2006	81886333	09/23/2006	research female	US	S.F.Flathead			alive	alive
2006	81602889	10/08/2006	research female	US	Bob Marshall			alive	alive
2006	81603277	10/15/2006	research female	US	Bob Marshall			alive	alive
2007	93585538	05/21/2007	research female	US	Middle fork				censor
2007	76570875	05/24/2007	research female	US	Middle fork				alive
2007	51597096	05/23/2007	research female	US	East Front				alive
2007	81605772	06/13/2007	research female	US	Glacier Park				alive
2007	51571800,64028820	06/20/2007	research female	US	South end				alive
2007	93619344	09/20/2007	research female	US	Glacier Park				
2007	93619344	09/23/2007	research female	US	Glacier Park				alive
2007	93639873	09/27/2007	research female	US	Glacier Park				alive

Appendix B. Management bear captures in the NCDE, 2004-07. BIR = Blackfeet Indian Reservation, FIR = Flathead Indian Reservation.

Year	Bear I d	Capture Date	Sex	Type of Bear	Area	Fate 2004	Fate 2005	Fate 2006	Fate 2007
2003	232996344	08/21/2003	F	mgmt female	Glacier Park	alive	censor		
2004	34375517	08/21/2003	F	mgmt female	BIR	alive			
2004	51085276	05/18/2004	F	mgmt female	BIR	censor			
2004	51593054	05/18/2004	F	mgmt female	BIR	censor			
2004	37887572, 81630006	08/25/2004	F	mgmt female	Flathead Valley	alive			
2004	84625280	08/26/2004	F	mgmt young	Flathead Valley	alive			
2006	37887572, 81630006	09/24/2006	F	mgmt female	Flathead Valley			alive	
2006	81580095	09/24/2006	F	mgmt young	Flathead Valley			alive	
2006	81639835	09/24/2006	F	mgmt young	Flathead Valley			alive	
2007	37887572, 81630006	09/17/2007	F	mgmt female	Flathead Valley				
2007	37887572, 81630006	10/11/2007	F	mgmt female	Flathead Valley				alive
2007	81580095	09/17/2007	F	mgmt young	Flathead Valley				
2007	81639835	09/17/2007	F	mgmt young	Flathead Valley				
2007	81580095	10/11/2007	F	mgmt young	Flathead Valley				
2007	81639835	10/11/2007	F	mgmt young	Flathead Valley				
2004	84529806	10/11/2004	F	mgmt female	N.F.Flathead	alive	alive	alive	alive
2004	84623883	10/11/2004	F	mgmt young	N.F.Flathead	DEAD			
2004	84624095	10/11/2004	F	mgmt young	N.F.Flathead	DEAD			
2004	84383813	10/11/2004	F	mgmt young	N.F.Flathead	DEAD			
2005	53323794	07/28/2005	F	mgmt female	Glacier Park		alive	censor	
2004	23518519	05/23/2004	F	mgmt female	Middle Fork	alive			
2004	38051794	05/27/2004	F	mgmt young	Middle Fork	DEAD			
2004	23518519	09/08/2004	F	mgmt female	Middle Fork	alive			
2005	23518519	10/06/2005	F	mgmt female	Middle Fork		DEAD		
2005	none	10/05/2005	F	mgmt young	Middle Fork		DEAD		

2005	none	10/05/2005	F	mgmt young	Middle Fork		DEAD		
2004	51566878	10/24/2004	F	mgmt female	Middle Fork	alive			
2004	84382811	10/24/2004	F	mgmt young	Middle Fork	unk			
2005	51566878	09/14/2005	F	mgmt female	East Front		DEAD		
2004	37605609	10/25/2004	F	mgmt female	Swan Valley	alive	DEAD		
2005	38100864	10/22/2005	F	mgmt female	Swan Valley		alive	alive	
2005	81770822	10/22/2005	M	mgmt young	Swan Valley		alive		
2005	96597530	10/22/2005	M	mgmt young	Swan Valley		alive		
2004	38047294, 84524096	07/22/2004	F	mgmt female	Fortine	DEAD			
2004	84381861	07/22/2004	F	mgmt young	Fortine	DEAD			
2004	84516308	07/22/2004	F	mgmt young	Fortine	DEAD			
2004	84383870	08/28/2004	F	mgmt female	Middle Fork	DEAD			
2004	84623527	08/28/2004	F	mgmt young	Middle Fork				
2004	84623527	09/30/2004	F	mgmt young	Middle Fork	DEAD			
2004	84623539	08/28/2004	M	mgmt young	Middle Fork				
2004	84623539	09/30/2004	M	mgmt young	Middle Fork	DEAD			
2005	34270060	05/24/2005	F	mgmt female	BIR				
2005	71552097	05/24/2005	F	mgmt female	BIR				
2004	22	09/17/2004	F	mgmt female	East Front	DEAD			
2004	51561278	09/17/2004	F	mgmt female	East Front	DEAD			
2003	34259287, 34259592	08/29/2003	F	mgmt female	BIR				
2004	34259287, 34259592	08/17/2004	F	mgmt female	BIR	DEAD			
2004	none	08/17/2004	M	mgmt young	BIR	DEAD			
2004	none	08/17/2004	F	mgmt young	BIR	DEAD			
2003	84626296	10/14/2003	F	mgmt female	Fortine				
2004	84626296	07/01/2004	F	mgmt female	N.F.Flathead				
2004	84626296	08/02/2004	F	mgmt female	N.F.Flathead	DEAD			

2004	84528778	09/21/2004	F	mgmt female	Swan Valley				
2004	84528778	09/29/2004	F	mgmt female	Swan Valley				
2004	84528778	10/04/2004	F	mgmt female	BIR	DEAD			
2005	84626290	09/30/2005	F	augmentation female	N.F.Flathead		augmentation		
2006	41503d5a16	05/29/2006	F	mgmt female	FIR			censor	
2006	81542363	08/17/2006	F	mgmt female	South Fork			augmentation	
2006	82018000	09/12/2006	F	mgmt female	Flathead Valley			alive	alive
2006	72121834	09/21/2006	F	mgmt female	BIR			alive	alive
2007	76313032	05/28/2007	F	mgmt female	FIR				alive
2007	64054290	09/06/2007	F	mgmt female	South end				
2007	81567088	09/25/2007	F	mgmt female	Trego				censor
2007	81562048	09/27/2007	M	mgmt young	Trego				
2007	93558362	09/26/2007	M	mgmt young	Trego				
2007	93550102	09/26/2007	F	mgmt young	Trego				
2004	84626881	09/24/2004	M	mgmt male	Swan Valley				
2004	84626881	10/22/2004	M	mgmt male	Swan Valley	DEAD			
2004	51272050	05/04/2004	M	mgmt male	East Front				
2004	51310617	05/04/2004	M	mgmt male	East Front				
2004	84626074	07/13/2004	M	mgmt male	Flathead Valley	alive	DEAD		
2004	84383560	07/08/2004	M	mgmt male	Swan Valley	alive			
2004	84383560	08/07/2004	M	mgmt male	Swan Valley	alive	DEAD		
2005	79090808	09/22/2005	M	mgmt male	Bob Marshall		alive	alive	unresolved
2005	84629365	05/12/2005	M	mgmt male	Middle Fork		DEAD		
2004	51299051	10/06/2004	M	mgmt male	East Front		DEAD		
2004	51273314	09/11/2004	M	mgmt male	East Front	alive			
2005	51273314	06/05/2005	M	mgmt male	East Front		DEAD		
2004	51303813	04/28/2004	M	mgmt male	East Front				

2003	84379069	10/14/2003	M	mgmt male					
2004	84379069	07/01/2004	M	mgmt male	N.F.Flathead	alive			
2004	84379069	08/02/2004	M	mgmt male	N.F.Flathead	DEAD			
2003	38043533	09/13/2003	M	mgmt male	Fortine				
2003	38043533	10/05/2003	M	mgmt male	Whitefish				
2004	38043533	07/26/2004	M	mgmt male	Flathead	UNRESOLVED			
2004	84524536	07/30/2004	M	mgmt male	Flathead	unk			
2004	84524536	08/19/2005	M	mgmt male	Columbia Falls	DEAD			
2004	254	05/31/2004	M	mgmt male	East Front	UNRESOLVED			
2004	24595039	09/17/2004	M	mgmt male	East Front	alive			
2005	293	04/30/2005	M	mgmt male	East Front		unk		
2005	72018558	08/21/2005	M	mgmt male	BIR		unresolved		
2004	51585311	06/21/2004	M	mgmt male	BIR				
2004	28585610	06/24/2004	M	mgmt male	BIR				
2006	72098344	04/14/2006	M	mgmt male	BIR			alive	alive
2006	81583847	06/16/2006	M	mgmt male	N.F. Flathead			DEAD	
2006	82033566,84629588	09/01/2006	M	mgmt male	Marian				
2006	82033566,84629588	09/19/2006	M	mgmt male	Whitefish			alive	DEAD
2007	71537785	04/08/2007	M	mgmt male	BIR				DEAD
2007	81258126	04/28/2007	M	mgmt male	BIR				
2007	28582609	04/30/2007	M	mgmt male	BIR				unresolved
2006	72088084	09/01/2006	M	mgmt male	Glacier Park				
2007	72088084	05/11/2007	M	mgmt male	BIR				censor
2007	81891531	05/19/2007	M	mgmt male	Flathead Valley				alive
2007	82024836	05/20/2007	M	mgmt male	Middle Fork				alive
2007	34265368	07/11/2007	M	mgmt male	BIR				alive
2007	82024121	08/08/2007	M	mgmt male	Flathead Valley				

2007	82024121	09/12/2007	M	mgmt male	Trego				alive
2007	97777564	10/18/2007	M	mgmt male	East Front				alive
2007	82023820	09/12/2007	M	mgmt male	Swan Valley				
2007	82023820	10/08/2007	M	mgmt male	Swan Valley				alive
2007	81552264	09/15/2007	M	mgmt male	Swan Valley				alive
2007	82025350	09/14/2007	M	mgmt male	Swan Valley				DEAD
2007	93572867	09/19/2007	M	mgmt male	Swan Valley				alive
2005	48324259	04/23/2005	M	other research male	Swan Valley		censor		
2005	4077515970	06/17/2005	F	other research female	FIR		DEAD		
2005	415051031	05/13/2005	F	other research male	FIR		censor		

Appendix C. Summary of male grizzly bear annual survival in the NCDE, 2004-2007. Data are from management and research males wearing radio collars.

Bear Id	Bear Type	Age class	Country	Area	Fate 2004	Fate 2005	Fate 2006	Fate 2007
5761	research male	adult	US	Swan Valley	censor			
193	research male	adult	US	Swan Valley	censor			
84525021	research male	adult	US	Swan Valley	censor			
84525524	research male	adult	US	S.F.Flathead	alive	alive	censor	censor
84374365	research male	adult	US	S.F.Flathead	alive	alive	alive	unk
76316585	research male	adult	US	East Font		alive	alive	alive
67296863	research male	subadult	US	East Front	alive	censor		
81576580	augmentation male	adult	US	N.F.Flathead		censor		alive
81596581	mgmt male	subadult	US	N.F.Flathead			DEAD	
81774014	mgmt male	subadult	US	BIR			DEAD	
76600112	research male	subadult	US	East Front			censor	
76614342	research male	subadult	US	East Front			alive	censor
51589351	research male	subadult	US	East Front			unk	
76554835	research male	subadult	US	East Front			DEAD	
63615794	research male	subadult	US	Swan Valley			censor	
81552593	augmentation male	adult	US	N.F.Flathead			alive	alive
81631088	augmentation male	adult	US	N.F.Flathead			alive	censor
81580106	augmentation male	adult	US	N.F.Flathead			alive	alive
53594886	research male	subadult	US	BIR			alive	alive
37860849	research male	adult	US	Middle Fork	alive	alive	alive	DEAD
51272543	research male	subadult	US	East Font				alive
51304876	research male	subadult	US	East Font				alive
51368573	research male	subadult	US	East Font				DEAD
81770822	mgmt male	subadult	US	Swan Valley				DEAD
84626881	mgmt male	subadult	US	Swan Valley	DEAD			

84626074	mgmt male	subadult	US	Flathead Valley	alive	DEAD		
84383560	mgmt male	subadult	US	Swan Valley	alive	DEAD		
79090808	mgmt male	adult	US	Bob Marshall		alive	alive	unk
84629365	mgmt male	adult	US	Middle Fork		DEAD		
51299051	mgmt male	subadult	US	East Front	alive	DEAD		
51273314	mgmt male	yrling	US	East Front	alive			
84379069	mgmt male	subadult	US	N.F.Flathead	DEAD			
38043533	mgmt male	subadult	US	Flathead Valley	unk			
84524536	mgmt male	subadult	US	Flathead Valley	DEAD			
254	mgmt male	adult	US	East Front	unk			
24595039	mgmt male	subadult	US	East Front	alive			
72018558	mgmt male	subadult	US	BIR		unk		
72098344	mgmt male	subadult	US	BIR			alive	alive
81583847	mgmt male	subadult	US	N.F. Flathead			DEAD	
82033566, 84629588	mgmt male	subadult	US	N.F. Flathead			alive	DEAD
71537785	mgmt male	adult	US	BIR				DEAD
28582609	mgmt male	adult	US	BIR				unk
72088084	mgmt male	subadult	US	BIR				censor
81891531	mgmt male	subadult	US	Flathead Valley				alive
82024836	mgmt male	subadult	US	Middle Fork				alive
34265368	mgmt male	adult	US	BIR				alive
82024121	mgmt male	subadult	US	N.F. Flathead				alive
97777564	mgmt male	subadult	US	East Front				alive
82023820	mgmt male	adult	US	Swan Valley				alive
81552264	mgmt male	adult	US	Swan Valley				alive
82025350	mgmt male	adult	US	Swan Valley				DEAD
93572867	mgmt male	subadult	US	Swan Valley				alive
48324259	other research male	adult	US	Swan Valley		censor		
415051031	other research male	subadult	US	FIR		censor		

Appendix D. Reproductive history of Trend Monitoring females and management females in the NCDE, 2004-2007.

Bear Id	Bear Type	Number Young per Year			
		2004	2005	2006	2007
38052875	research female	2 yrlings	2 2yrolds		
84529290	research female	none	unk but cubs		
648	research female	1 cub	1 yrling		
84625548	research subadult female	none			
37885843, 84628512	research subadult female	none			
84623296	research subadult female	none			
84528858	research female	unk	none		
84525082	research female	unk	none		
51072381	research subadult female	none			
84623110	research female	none	3 cubs		
84625525	research female	unk	none	none	
238	research female	3 cubs	none	1 cub	
233	research female	2 3yrolds	none	none	
132353547	research female	2 cubs	1 yrling		
132335546	research subadult female	none	none		
76553865	research female		none		2 cubs
205	research female		2 yrlings		2 cubs
51071845	research subadult female		none		
51605816	research female		2 yrlings	none	
84623066	research female		none	2 cubs	2 cubs
51586884	research female		1 yrling		unk
67006850	research subadult female		none	none	none
71814874	research female		none	none	unk
72023614	research female		none	2 cubs	

71816812	research female		none		
72113035	research subadult female		none		
79050043	research female		none	none	none
84524018	research female		none	none	3 cubs
76361015	research female		none	2 cubs	2 yrlings
76560093	research female		none		
51561597	research female		none	unk	unk
84523288	research female		2 cubs	2 yrlings	2 2yrolds
84624383	research subadult female		none	none	none
84628889	research female		none		
76615038	research female		none	none	2 cubs
23813296	research female		1 yrling		
79110541	research female			none	1 cub
4077420c51	research subadult female		none	none	
81577636	research female			2 yrlings	2 cubs
76553352	research female			none	
71868109	research female			2 yrlings	2 2yrolds
76584107	research female			3 cubs	3 yrlings
76589366	research subadult female			none	
263	research subadult female			none	
76613125	research female			none	2 cubs
82024327	research female			none	
76600783	research female			1 cub	1 yrling
81886333	research female			none	none
81602889	research female			2 cubs	2 yrlings
81603277	research subadult female			none	
93585538	research subadult female				none
76570875	research female				none

51597096	research subadult female				
81605772	research female				none
51571800, 64028820	research female				2 yrlings
93619344	research female				none
93639873	research female				2 cubs
232996344	mgmt female	2 yrlings			
34375517	mgmt female	none			
51085276	mgmt subadult female	none			
51593054	mgmt subadult female	none			
37887572, 81630006	mgmt female	2 yrlings		2_cubs	2 yrlings
84529806	mgmt female	3 cubs		2 cubs	2 yrlings
53323794	mgmt female		2 yrlings		
23518519	mgmt female	1 2yrold	2 cubs		
51566878	mgmt female	1 cub			
37605609	mgmt female	none	none		
38100864	mgmt female		2 cubs	2 yrlings	2 2yrolds
38047294, 84524096	mgmt female	2 cubs			
84383870	mgmt female	2 cubs			
34270060	mgmt subadult female				
71552097	mgmt subadult female				
22	mgmt subadult female				
51561278	mgmt subadult female				
34259287, 34259592	mgmt female	2 cubs			
84626296	mgmt subadult female				
84528778	mgmt subadult female	none			
84626290	mgmt female		none		
41503d5a16	mgmt female			1 yrling	

81542363	mgmt subadult female			none	
82018000	mgmt female			none	
72121834	mgmt female			none	1 cub
76313032	mgmt female				none
64054290	mgmt subadult female				none
81567088	mgmt female				3 yrlings
4077515970	other research female		2 cubs		

Appendix E. Summary of grizzly bear mortalities in the NCDE, 2007.

Date	Avid #	Tag	Sex	Age	Cause	Certainty	Discovery
04/09/2007			M	SA	Train	Known	Reported
04/09/2007			F	Ad	Train	Probable	Reported
04/09/2007			M	SA	Train	Known	Reported
05/05/2007	024817360, 038066560		M	Ad	Mistaken Id	Known	Reported
06/18/2007[a]	37860849		M	Ad	Illegal	Known	Reported
06/22/2007	81770822		M	SA	Mgmt	Known	Reported
06/25/2007[b]			Unk	COY	Vehicle	Possible	Reported
07/16/2007			F	Ad	Vehicle	Known	Reported
08/18/2007			Unk	COY	Undetermined	Probable	Unreported
08/18/2007	81577636		F	Ad	Undetermined	Known	Unreported
08/18/2007			Unk	COY	Undetermined	Probable	Unreported
09/07/2007			F	Ad	Illegal	Known	Reported
09/07/2007			M	Unk	Self defense	Probable	Reported
09/09/2007	51368573	4274	M	SA	Vehicle	Known	Reported
09/12/2007			M	COY	Vehicle	Known	Reported
09/21/2007			M	Ad	Illegal	Known	Reported
09/27/2007	81603078		M	SA	Train	Known	Reported
10/09/2007	82025350		M	Ad	Vehicle	Known	Reported
10/17/2007		187	M	Ad	Vehicle	Known	Reported
10/23/2007	82033566		M	SA	Train	Known	Unreported
10/23/2007			F	Ad	Self defense	Known	Reported
10/23/2007			Unk	COY	Orphaned	Known	Reported
10/24/2007	71537785		M	Ad	Mgmt	Known	Reported
10/24/2007			F	COY	Vehicle	Known	Reported
11/03/2007			F	Ad	Self defense	Known	Reported
11/15/2007	84624383		F	SA	Undetermined	Known	Reported

[a] This mortality was >10 miles from the NCDE Recovery Zone boundary. Does not count in official records.

[b] Possible mortalities do not count in official records.