

# 2014 Wyoming Grizzly Bear Job Completion Report



**Wyoming Game and Fish Department  
Large Carnivore Section  
July 1, 2015**

**Authors:**

Clint Atkinson, Dan Bjornlie, Kyle Bales, Mike Boyce, Justin Clapp, Colby Clark,  
Brian DeBolt, Luke Ellsbury, Zach Gregory, Anders Johnson, Dusty Lasseter, Ken Mills, Dan  
Thompson, Bob Trebelcock, Zach Turnbull, and Jason Wilmot

# TABLE OF CONTENTS

INTRODUCTION.....	3
POPULATION MONITORING – TRAPPING SUMMARY.....	3
SUMMARY OF OBSERVATION FLIGHTS.....	5
MOTH SITE USE BY GRIZZLY BEARS.....	8
RELEVANT PUBLICATIONS.....	14
FEDERAL FUNDING - SECTION 6 NARRATIVE.....	17
CONFLICT MANAGEMENT.....	20
CONFLICT VERIFICATION AND REPORTING.....	26
GRIZZLY BEAR MORTALITIES.....	30
BEAR WISE COMMUNITY REPORT.....	30
ADDITIONAL INFORMATION AND EDUCATION EFFORTS.....	39

## **INTRODUCTION**

This completion report summarizes grizzly bear work that was completed by the Wyoming Game and Fish Department's (Department) Large Carnivore Section (LCS) and regional personnel during 2014. In the past, this information was included in multiple reports that were not readily available to agency personnel, the legislature or the public. This report allows the Department to present information pertaining to grizzly bears in Wyoming in one document so which available to all interested parties.

## **POPULATION MONITORING – TRAPPING SUMMARY**

Annual trapping of grizzly bears has traditionally been labeled as “research” even though it was considered part of the annual monitoring needed to adequately manage grizzly bears. This activity is similar to annual monitoring programs that the Department completes to manage other species, including big game and trophy game. In addition, data collected during annual monitoring activities has been used for various research projects, and more importantly to answer relevant population level questions as they arise.

Data on grizzly bear survival and reproduction, biological samples, and animal locations collar locations are vital components of the overall population monitoring program. This information provides data necessary to ensure that we can accurately monitor the status of grizzly bear populations and maintain recovery goals per the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area.

In order to maintain a representative sample of the overall population, trapping crews systematically trap areas within known grizzly bear distribution, moving among trap sites annually. Once collars are deployed in a specific area, crews will move to another area; this occurs throughout the active period of bears, however much of the collaring efforts for monitoring purposes cease once ungulate hunting seasons are initiated in northwest Wyoming (usually on or around September 1 depending on the specific location of trapping). The following bullets summarize trapping efforts over the course of 2014.

### **North Fork of the Shoshone River**

Trapping began in the North Fork Shoshone River drainage area on May 6, 2014. Six trap sites were set; 3 snares set via horseback in the Elk Fork drainage and 3 culvert traps set along the North Fork Shoshone River drainage to the west. All traps, baits, scent lures, and other equipment were removed from sites by May 23, 2014. Trapping area warning and closure signs were removed by June 12, 2014. Seven grizzly bears were captured a total of 8 times and radio collars were placed on 5 of them.

- GB 369, 5/7/14 and 5/18/14, Cougar Creek and Elk Fork, adult male, tags and samples, radio collared with GPS
- GB 772, 5/11/14, Elk Fork, adult male, tags and samples, radio collared with GPS
- GB 773, 5/11/14, Cougar Creek, adult female, tags and samples, radio collared with GPS

- GB 644, 5/15/14, North Fork Shoshone River, adult male, tags and samples, radio collared with GPS
- GB 774, 5/17/14, North Fork Shoshone River, adult male, tags and samples, radio collared with VHF
- G194, 5/22/14, North Fork Shoshone River, adult male, tags and samples, not radio collared
- G195, 5/23/14, North Fork Shoshone River, adult male, tags and samples, not radio collared

### **Sunlight/Crandall**

Trapping began in the Sunlight/Crandall area on June 2, 2014. Seven trap sites were set; 3 snares and 4 culvert traps. All traps, baits, scent lures, and other equipment were removed from sites by June 13, 2014. Trapping area warning and closure signs were removed on June 19, 2014. Three grizzly bears were captured a total of 4 times and radio collars were placed on 2 of them.

- GB 778, 6/7/14, Sunlight Creek, adult male, tags and samples, radio collared with VHF
- G196, 6/9/14 and 6/11/14, Deadman Bench and Reef Cr, subadult male, tags and samples, not radio collared
- GB 779, 6/12/14, Reef Cr, subadult female, tags and samples, radio collared with GPS

### **Upper Green/Union Pass**

Trapping began in the Upper Green on July 1, 2014. Ten trap sites (7 culvert, 3 snare) were set in the area. All traps, baits, scent lures, and other equipment were removed from sites on or before August 1, 2014. Trapping area warning and closure signs were removed on August 4, 2014. One grizzly bear was captured and a GPS radio transmitter was placed on the bear.

- GB 785, 7/28/14, Long Meadow, adult male, tags and samples, radio collared with GPS collar

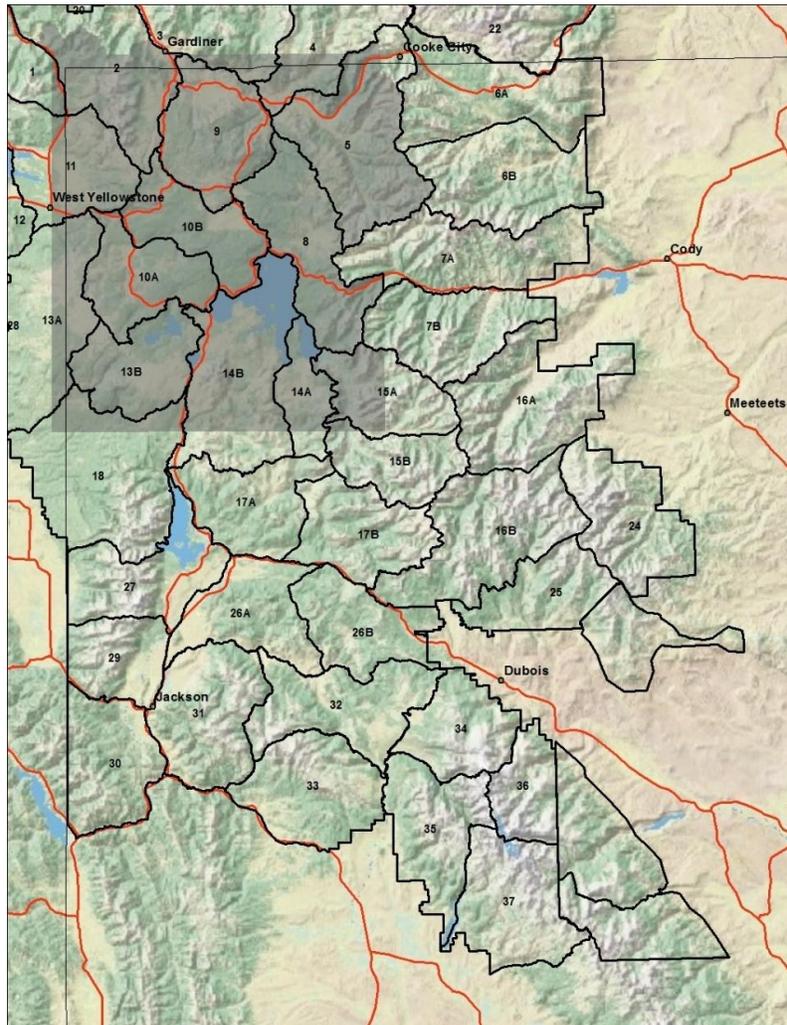
### **Wind River Reservation**

Trapping on the Wind River Reservation began on August 7, 2014. Four trap sites (2 culvert, 2 snare) were set in the area. All traps, baits, scent lures, and other equipment were removed from sites on August 22, 2014. Trapping area warning and closure signs were removed on August 25, 2014. One grizzly bear was captured and a GPS radio transmitter was placed on the bear. This was the first grizzly bear captured on this side of the Wind River Reservation and will add valuable information on movements and habitat use as grizzly bears occupy this region of the Reservation and surrounding areas.

- GB 788, 8/13/14, Kirkland Park, subadult male, tags and samples, radio collared with GPS collar

## MONITORING – GRIZZLY BEAR OBSERVATION FLIGHTS

The Department employs the use of observation flights in order to monitor the population and estimate abundance. In 2014, the Grizzly Bear Observation Units (GBOUs) in the southern portion of the Greater Yellowstone Ecosystem (GYE; Figure 1) were only flown once due to efforts to reduce flight time and the low sightability of grizzly bears in these areas. This round was conducted in June to maximize the potential for observations in these units. One exception to this were GBOU 26A and 26B, which were flown once in June and once in July due to higher numbers of grizzly bears in these areas. The remaining GBOUs were flown twice, once each in July and August. Observations during Round 1 (including June flights) were slightly higher than 2013, with 224 total grizzly bears observed compared to 208 in 2013 (Table 1). Near normal snowfall and snowmelt in the winter of 2013-14 again created favorable conditions for army cutworm moths to colonize some traditional sites in talus slopes, particularly in the eastern GBOUs in Wyoming. The number of females with cubs-of-year ( $F_{\text{coy}}$ ) groups observed in Round 1 was the same as that of 2013, with 23 observed (Table 1).



**Figure 1.** Grizzly Bear Observation Units (GBOUs).

**Table 1.** Composition of grizzly bears observed in Round 1 during 2014 observation surveys in Wyoming.

Date	Unit	Females with COY			Females with Yearlings			Females with 2 Year Olds			All Other Grizzly Bears	Total No. Bears Observed
		# of COY	# of Yrlngs	# of 2 Yr Olds	# of COY	# of Yrlngs	# of 2 Yr Olds	# of COY	# of Yrlngs	# of 2 Yr Olds		
7/12	6A	0	0	0	0	0	0	0	0	0	0	0
7/10	6B	0	1	0	0	3	0	0	0	0	9	21
7/12	7A	4	3	1	3	1	0	0	0	0	8	38
7/19	7B	1	1	0	1	0	0	0	0	0	13	20
7/8	15A	0	3	0	0	1	0	0	0	0	4	16
7/9	15B	0	0	1	1	0	0	0	0	0	5	11
7/14	16A	1	1	0	1	1	0	0	0	0	19	29
7/15	16B	1	2	0	0	2	0	0	0	0	16	30
7/17	17A	0	2	0	0	0	0	0	0	0	3	9
7/18	17B	0	0	0	0	0	0	0	0	0	1	1
7/13	24	0	0	0	0	1	0	0	0	0	39	42
7/16	25	0	1	0	1	0	0	0	0	0	1	7
6/11	26A	0	0	0	0	0	0	0	0	0	0	0
6/10	26B	0	0	0	0	0	0	0	0	0	0	0
6/20	29	0	0	0	0	0	0	0	0	0	0	0
6/12	30	0	0	0	0	0	0	0	0	0	0	0
6/15	31	0	0	0	0	0	0	0	0	0	0	0
6/20	32	0	0	0	0	0	0	0	0	0	0	0
6/18	33	0	0	0	0	0	0	0	0	0	0	0
6/17	34	0	0	0	0	0	0	0	0	0	0	0
6/16	35	0	0	0	0	0	0	0	0	0	0	0
6/19	36	0	0	0	0	0	0	0	0	0	0	0
6/16	37	0	0	0	0	0	0	0	0	0	0	0
All Areas		7	14	2	7	9	0	0	0	0	118	224

Again, with the exception of GBOUs 26A and 26B, during the second round of flights in 2014 only the northern GBOUs were flown. Comparing units between Round 1 and Round 2 survey efforts, the number of grizzly bears observed was markedly higher than in Round 1 of 2014. Abundant army cutworm moths and late summer moisture at high elevations created favorable conditions during Round 2, which resulted in 326 grizzly bears observed during Round 2 of 2014 compared to 241 in 2013. The number of  $F_{\text{COY}}$  groups observed during Round 2 flights ( $n = 22$ ) was similar to those seen in 2013 ( $n = 24$ ) (Table 2).

**Table 2.** Composition of grizzly bears observed in Round 2 during 2014 observation surveys in Wyoming.

Date	Unit	Females with COY				Females with Yearlings			Females with 2 Year Olds			All Other Grizzly Bears	Total No. Bears Observed
		# of COY				# of Yrlngs			# of 2 Yr Olds				
		1	2	3	4	1	2	3	1	2	3		
8/14	6A	0	0	0	0	0	0	0	0	0	0	0	0
8/14	6B	0	1	0	0	1	2	1	0	0	0	11	26
8/15	7A	0	1	2	0	3	3	0	0	0	0	6	32
8/11	7B	0	3	1	0	1	3	0	0	0	0	13	37
8/12	15A	0	0	0	0	1	1	0	0	0	0	6	11
8/13	15B	0	0	0	0	0	1	0	0	1	0	5	11
8/16	16A	0	4	3	0	1	3	1	0	0	0	22	61
8/19	16B	0	4	1	0	0	2	0	0	0	0	24	46
8/18	17A	0	0	0	0	0	0	0	0	0	0	4	4
8/17	17B	0	0	0	0	0	0	0	0	0	0	1	1
8/7	24	0	0	1	0	2	2	0	0	0	1	47	65
8/20	25	0	0	0	0	0	0	0	0	0	0	4	4
7/11	26A	0	0	0	0	0	0	0	0	0	0	2	2
7/12	26B	0	0	0	0	0	0	0	0	0	0	0	0
All Areas		0	13	8	0	9	17	2	0	1	1	145	300

It should be noted that these data should not be used independently to determine grizzly bear population status or trends in the number of  $F_{\text{coy}}$  groups. Not all  $F_{\text{coy}}$  groups observed will count toward the population estimate until they have been analyzed to determine whether they are unique (non-duplicate) sightings.



## MONITORING – MOTH SITE USE BY GRIZZLY BEARS

**Taken from:** *Grizzly Bear Use of Insect Aggregation Sites Documented from Aerial Telemetry and Observations* (Dan Bjornlie, Wyoming Game and Fish Department; and Mark Haroldson, Interagency Grizzly Bear Study Team)

Army cutworm moths (*Euxoa auxiliaris*) were first recognized as an important food source for grizzly bears in the GYE during the mid 1980s (Mattson et al. 1991b, French et al. 1994). Early observations indicated that moths, and subsequently grizzly bears, showed specific site fidelity. These sites are generally high alpine areas dominated by talus and scree adjacent to areas with abundant alpine flowers. Such areas are referred to as “insect aggregation sites.” Since their discovery, numerous grizzly bears have been counted on or near these aggregation sites due to excellent sightability from a lack of trees and simultaneous use by multiple grizzly bears.

Complete tabulation of grizzly bear presence at insect sites is extremely difficult. Only a few sites have been investigated by ground reconnaissance and the boundaries of sites are not clearly known. In addition, it is likely that the size and location of insect aggregation sites fluctuate from year to year with moth abundance and variation in environmental factors such as snow cover.

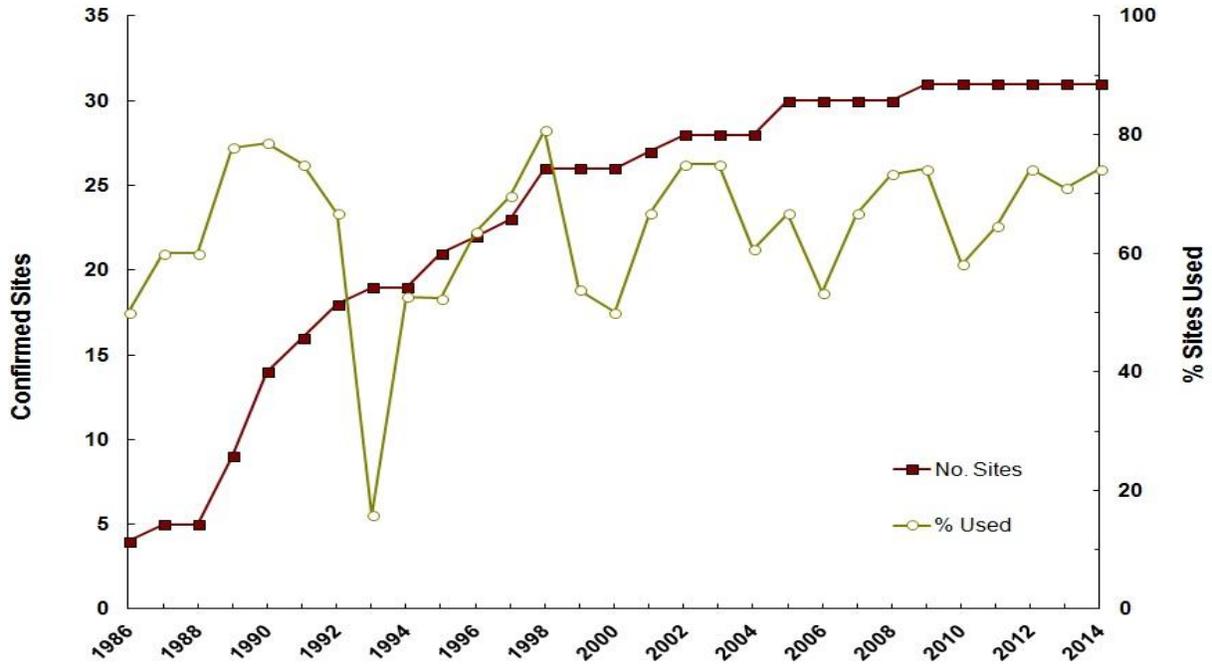
Since 1986, when insect aggregation sites were initially included in aerial observation surveys, our knowledge of these sites has increased annually. Our techniques for monitoring grizzly bear use of these sites have changed in response to this increase in knowledge. Prior to 1997, we delineated insect aggregation sites with convex polygons drawn around locations of bears seen feeding on moths and buffered these polygons by 500 m. However, this technique overlooked small sites due to the inability to create polygons around sites with fewer than 3 locations. From 1997-99, the method for defining insect aggregation sites was to inscribe a 1-km circle around the center of clusters of observations in which bears were seen feeding on insects in talus/scree habitats (Ternent and Haroldson 2000). This method allowed trend in grizzly bear use of sites to be annually monitored by recording the number of grizzly bears documented in each circle (i.e., site).

A new technique was developed in 2000 (D. Bjornlie, Wyoming Game and Fish Department, personal communication) that delineates sites by buffering only the locations of grizzly bears observed actively feeding at insect aggregation sites by 500 m to account for error in aerial telemetry locations. The borders of the overlapping buffers at individual insect sites are dissolved to produce a single polygon for each site. These sites are identified as “confirmed” sites. Because these polygons are only created around feeding locations, the resulting site conforms to the topography of the mountain or ridge top where grizzly bears feed and does not include large areas of non-talus habitat that are not suitable for cutworm moths. Locations from the grizzly bear location database from July 1 through September 30 of each year are then

overlaid on these polygons and enumerated. The technique to delineate confirmed sites developed in 2000 substantially decreased the number of sites described compared to past years in which locations from both feeding and non-feeding grizzly bears were used. Therefore, annual analysis for this report is completed for all years using this technique. Areas suspected as insect aggregation sites but dropped from the confirmed sites list using this technique, as well as sites with only one observation of an actively feeding bear or multiple observations in a single year, are termed “possible” sites and will be monitored in subsequent years for additional observations of actively feeding grizzly bears. These sites may then be added to the confirmed sites list. When possible sites are changed to confirmed sites, analysis is done on all data back to 1986 to determine the historic use of that site. Therefore, the number of grizzly bears using insect aggregation sites in past years may change as new sites are added, and data from this annual report may not match that of past reports. In addition, as new actively feeding bear observations are added along the periphery of existing sites, the polygons defining these sites increase in size and, thus, more overlaid locations fall within the site. This retrospective analysis brings us closer each year to the “true” number of grizzly bears using insect aggregation sites in past years.

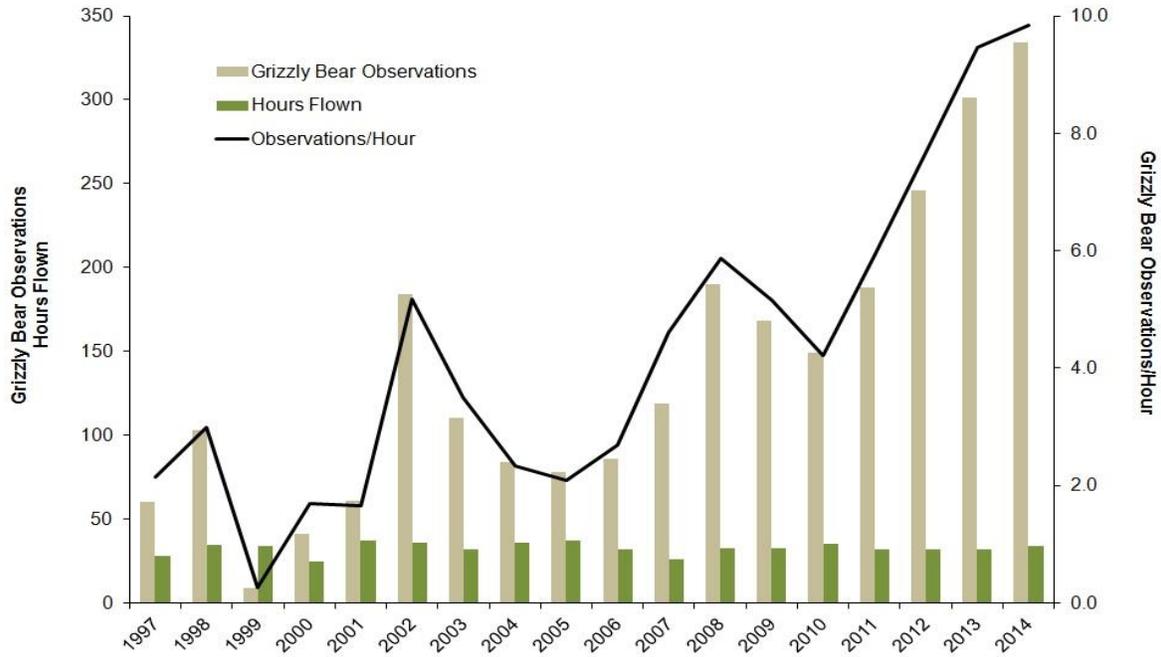
Analysis of grizzly bear use of confirmed sites in 2014 resulted in the merging of 10 previously separate sites into 3 confirmed sites as site boundaries grew together. In addition, there were multiple observations of actively feeding grizzly bears on 2 possible sites. One of these sites was reclassified to confirmed while the other was merged with a nearby confirmed site. An observation of an actively feeding grizzly bear at a new location resulted in an additional possible site. The new confirmed sites, merging confirmed sites, and the new possible site produced 31 confirmed sites and 15 possible sites for 2014.

The percentage of confirmed sites with documented use by grizzly bears varies from year to year, suggesting that some years have higher moth activity than others (Figure. 2), often due to variable snow conditions. In 1993, a year with unusually high snowpack, the percentage of confirmed sites used by grizzly bears (Figure. 2) and the number of observations recorded at insect sites were very low. In all other years, the percentage of insect aggregation sites used by grizzly bears fluctuated between 50 and 80% and in 2014 remained above 70% for the third consecutive year (Fig. 2). The total number of grizzly bear observations or telemetry relocations at sites in 2014 ( $n = 351$ ) was the highest recorded since moth site monitoring began.



**Figure 2.** Annual number of confirmed insect aggregation sites and percent of those sites at which either telemetry relocations of marked grizzly bears or visual observations of unmarked grizzly bears were recorded, Greater Yellowstone Ecosystem, 1986-2014.

The increasing trend is still apparent when only grizzly bears observed during regularly-conducted observation flights (Tables 1 and 2) are included. Because effort, as measured by hours flown, in the bear management units containing all known insect aggregation sites has remained very consistent since 1997, the increase suggests an increase in the number of grizzly bears using insect aggregation sites, especially since 2010 (Figure. 3). The recent increase in reported observations of grizzly bears using insect aggregation sites from a few ground-based observers and the advent of GPS collars with satellite technology providing near real-time transmission of locations has resulted in the need to censor these locations to prevent a bias in comparisons to previous years.



**Figure 3.** Graphical representation of grizzly bear observations in relation to overall flight time and grizzly bear observations/hour of flight.

**Table 3.** The number of confirmed insect aggregation sites in the Greater Yellowstone Ecosystem annually, the number used by grizzly bears, and the total number of aerial telemetry relocations and ground or aerial observations of grizzly bears recorded at sites during 1986-2014.

Year	Number of confirmed moth sites <sup>a</sup>	Number of sites used <sup>b</sup>	Number of aerial telemetry relocations	Number of aerial observations
1986	4	2	6	5
1987	5	3	5	10
1988	5	3	10	31
1989	9	7	9	44
1990	14	11	9	78
1991	16	12	12	168
1992	18	12	6	107
1993	19	3	1	2
1994	19	10	1	29
1995	21	11	7	39
1996	22	14	21	67
1997	23	16	17	83
1998	26	21	11	181
1999	26	14	24	156
2000	26	13	47	95
2001	27	18	23	127
2002	28	21	30	251
2003	28	21	9	163
2004	28	17	2	133
2005	30	20	15	191
2006	30	16	13	145
2007	30	20	19	160
2008	30	22	13	176
2009	31	23	6	164
2010	31	18	1	131
2011	31	20	8	158
2012	31	23	14	248
2013	31	22	24	293
2014	31	23	11	340
Total			374	3775

<sup>a</sup> The year of discovery was considered the first year a telemetry location or aerial observation was documented at a site. Sites were considered confirmed after additional locations or observations in a subsequent year and every year thereafter regardless of whether or not additional locations were documented.

<sup>b</sup> A site was considered used if  $\geq 1$  location or observation was documented within the site during July through September of that year.

The Interagency Grizzly Bear Study Team (IGBST) maintains an annual list of unduplicated females observed with. Since 1986, 1015 initial sightings of unduplicated females with COY have been recorded, of which 285 (28.1%) have occurred at (within 500 m,  $n = 269$ ) or near (within 1,500 m,  $n = 16$ ) insect aggregation sites (Table 2). In 2014, 21 of the 50 (42.0%) initial sightings of unduplicated females with COY were observed at insect aggregation sites, significantly higher than the 5-year mean of 20.1% from 2009-2013 (Table 3).

Survey flights at or near (within 1,500 m) insect aggregation sites contribute to the count of unduplicated females with COY; however, it is typically low, with a 10-year mean of 12.9 initial sightings/year since 2005 (Table 3). If these sightings are excluded, a similar trend in the annual number of unduplicated sightings of females with COY is still evident, suggesting that other factors besides observation effort at insect aggregation sites are responsible for the increase in sightings of females with COY.



*Grizzly bears on moth aggregation sites*

## RELEVANT PUBLICATIONS

Personnel with the Department's Large Carnivore Section were authors of multiple peer-reviewed research papers on grizzly bear ecology that were published in 2014, these were included in the 2013 Grizzly Bear JCR, however were technically published during this year's reporting period and are therefore included here. These publications are examples of peer reviewed data to demonstrate grizzly bear recovery in Wyoming:

### **Whitebark pine, population density, and home-range size of grizzly bears in the Greater Yellowstone Ecosystem**

Daniel D. Bjornlie<sup>1</sup>, Frank T. van Manen<sup>2</sup>, Michael R. Ebinger<sup>3</sup>, Mark A. Haroldson<sup>2</sup>, Daniel J. Thompson<sup>1</sup>, Cecily M. Costello<sup>3</sup>

<sup>1</sup>*Large Carnivore Section, Wyoming Game and Fish Department, Lander, Wyoming, United States of America*

<sup>2</sup>*U.S. Geological Survey, Northern Rocky Mountain Science Center, Interagency Grizzly Bear Study Team, Bozeman, Montana, United States of America*

<sup>3</sup>*University of Montana, College of Forestry and Conservation, Missoula, Montana, United States of America*

Changes in life history traits of species can be an important indicator of potential factors influencing populations. For grizzly bears (*Ursus arctos*) in the Greater Yellowstone Ecosystem (GYE), recent decline of whitebark pine (WBP; *Pinus albicaulis*), an important fall food resource, has been paired with a slowing of population growth following two decades of robust population increase. These observations have raised questions whether resource decline or density-dependent processes may be associated with changes in population growth. Distinguishing these effects based on changes in demographic rates can be difficult. However, unlike the parallel demographic responses expected from both decreasing food availability and increasing population density, we hypothesized opposing behavioral responses of grizzly bears with regard to changes in home-range size. We used the dynamic changes in food resources and population density of grizzly bears as a natural experiment to examine hypotheses regarding these potentially competing influences on grizzly bear home-range size. We found that home-range size did not increase during the period of whitebark pine decline and was not related to proportion of whitebark pine in home ranges. However, female home-range size was negatively associated with an index of population density. Our data indicate that home-range size of grizzly bears in the GYE is not associated with availability of WBP, and, for female grizzly bears, increasing population density may constrain home-range size.

*PlosOne* 9(2): e88160. (doi:10.1371/journal.pone.0088160).

## Methods to estimate distribution and range extent of grizzly bears in the Greater Yellowstone Ecosystem.

Daniel D. Bjornlie<sup>1</sup>, Daniel J. Thompson<sup>1</sup>, Mark A. Haroldson<sup>2</sup>, Charles C. Schwartz<sup>2</sup>, Kerry A. Gunther<sup>3</sup>, Steven L. Cain<sup>4</sup>, Daniel B. Tyers<sup>5</sup>, Kevin L. Frey<sup>6</sup>, Bryan C. Aber<sup>7</sup>

<sup>1</sup>*Large Carnivore Section, Wyoming Game & Fish Department, 260 Buena Vista, Lander, WY 82520, USA*

<sup>2</sup>*U.S. Geological Survey, Northern Rocky Mountain Science Center, Interagency Grizzly Bear Study Team, 2327 University Way, Suite 2, Bozeman, MT 59715, USA*

<sup>3</sup>*Bear Management Office, Yellowstone Center for Resources, Yellowstone National Park, P.O. Box 168, Yellowstone National Park, WY 82190, USA*

<sup>4</sup>*National Park Service, Grand Teton National Park, P.O. Box 170, Moose, WY 83012, USA*

<sup>5</sup>*U.S. Forest Service, 2327 University Way, Suite 2, Bozeman, MT 59715, USA*

<sup>6</sup>*Bear Management Office, Montana Fish Wildlife and Parks, 1400 South 19<sup>th</sup> Avenue, Bozeman, MT 59718, USA*

<sup>7</sup>*Idaho Department of Fish & Game/U.S. Forest Service, 3726 Highway 20, Island Park, ID 83429, USA*

**ABSTRACT** The distribution of the Greater Yellowstone Ecosystem grizzly bear (*Ursus arctos*) population has expanded into areas unoccupied since the early 20th century. Up-to-date information on the area and extent of this distribution is crucial for federal, state, and tribal wildlife and land managers to make informed decisions regarding grizzly bear management. The most recent estimate of grizzly bear distribution (2004) utilized fixed-kernel density estimators to describe distribution. This method was complex and computationally time consuming and excluded observations of unmarked bears. Our objective was to develop a technique to estimate grizzly bear distribution that would allow for the use of all verified grizzly bear location data, as well as provide the simplicity to be updated more frequently. We placed all verified grizzly bear locations from all sources from 1990 to 2004 and 1990 to 2010 onto a 3-km × 3-km grid and used zonal analysis and ordinary kriging to develop a predicted surface of grizzly bear distribution. We compared the area and extent of the 2004 kriging surface with the previous 2004 effort and evaluated changes in grizzly bear distribution from 2004 to 2010. The 2004 kriging surface was 2.4% smaller than the previous fixed-kernel estimate, but more closely represented the data. Grizzly bear distribution increased 38.3% from 2004 to 2010, with most expansion in the northern and southern regions of the range. This technique can be used to provide a current estimate of grizzly bear distribution for management and conservation applications.

*Wildlife Society Bulletin. 38:182–187; (doi:10.1002/wsb.368).*

## **Influence of whitebark pine decline on fall habitat use and movements of grizzly bears in the Greater Yellowstone Ecosystem**

Cecily M. Costello<sup>1,\*</sup>, Frank T. van Manen<sup>2</sup>, Mark A. Haroldson<sup>2</sup>, Michael R. Ebinger<sup>1</sup>, Steven L. Cain<sup>3</sup>, Kerry A. Gunther<sup>4</sup> and Daniel D. Bjornlie<sup>5</sup>

<sup>1</sup>*University of Montana, College of Forestry and Conservation, Missoula, Montana, United States of America*

<sup>2</sup>*U.S. Geological Survey, Northern Rocky Mountain Science Center, Interagency Grizzly Bear Study Team, 2327 University Way, Suite 2, Bozeman, MT 59715, USA*

<sup>3</sup>*National Park Service, Grand Teton National Park, P.O. Box 170, Moose, WY 83012, USA*

<sup>4</sup>*Bear Management Office, Yellowstone Center for Resources, Yellowstone National Park, P.O. Box 168, Yellowstone National Park, WY 82190, USA*

<sup>5</sup>*Large Carnivore Section, Wyoming Game & Fish Department, 260 Buena Vista, Lander, WY 82520, USA*

**ABSTRACT** When abundant, seeds of the high-elevation whitebark pine (WBP; *Pinus albicaulis*) are an important fall food for grizzly bears (*Ursus arctos*) in the Greater Yellowstone Ecosystem. Rates of bear mortality and bear/human conflicts have been inversely associated with WBP productivity. Recently, mountain pine beetles (*Dendroctonus ponderosae*) have killed many cone-producing WBP trees. We used fall (15 August–30 September) Global Positioning System locations from 89 bear years to investigate temporal changes in habitat use and movements during 2000–2011. We calculated Manly–Chesson (MC) indices for selectivity of WBP habitat and secure habitat ( $\geq 500$  m from roads and human developments), determined dates of WBP use, and documented net daily movement distances and activity radii. To evaluate temporal trends, we used regression, model selection, and candidate model sets consisting of annual WBP production, sex, and year. One-third of sampled grizzly bears had fall ranges with little or no mapped WBP habitat. Most other bears (72%) had a MC index above 0.5, indicating selection for WBP habitats. From 2000 to 2011, mean MC index decreased and median date of WBP use shifted about 1 week later. We detected no trends in movement indices over time. Outside of national parks, there was no correlation between the MC indices for WBP habitat and secure habitat, and most bears (78%) selected for secure habitat. Nonetheless, mean MC index for secure habitat decreased over the study period during years of good WBP productivity. The wide diet breadth and foraging plasticity of grizzly bears likely allowed them to adjust to declining WBP. Bears reduced use of WBP stands without increasing movement rates, suggesting they obtained alternative fall foods within their local surroundings. However, the reduction in mortality risk historically associated with use of secure, high-elevation WBP habitat may be diminishing for bears residing in multiple-use areas.

*Ecology and Evolution, Volume 4, Issue 10: pages 2004-2018*

**FEDERAL FUNDING – SECTION 6**

	<p><b>ENDANGERED SPECIES</b></p> <p><b>SECTION 6 FUNDING PROPOSAL FY15</b></p> <p><b>PROGRAM NARRATIVE STATEMENT</b></p> <p><b>WYOMING</b></p> <p><b>E-1-95</b></p>
---	---

Title:	Grizzly Bear Recovery and Conservation
Total Cost:	\$100,000 (\$70,000 USFWS and \$25,000 WGFD match) - This includes temporary personnel, salaries, supplies, travel, surveys, and education efforts.
Time Period:	July 1, 2014 – June 30, 2015
Project Leader:	Dan Thompson, Large Carnivore Section Supervisor 260 Buena Vista Dr., Lander, WY, 82520
Location:	The program area encompasses all areas within the state of Wyoming in the Yellowstone Ecosystem outside of Yellowstone and Grand Teton National Parks. Additional activities may be completed within Yellowstone and Grand Teton National Parks in conjunction with the National Parks. Coordination also occurs between the WGFD and appropriate National Forests, Bureau of Land Management, U.S. Fish and Wildlife Service, and state lands as required.
Need:	<p>The Department's grizzly bear program involves research and management projects designed to determine various population characteristics and habitat use of grizzly bears in the Wyoming portion of the Yellowstone Ecosystem and to manage grizzly bear/livestock and grizzly bear/human interactions. Management programs are directed towards monitoring the grizzly bear population trend through observation flights that define the distribution of grizzly bears within bear management units (BMUs), document females with cubs of the year, and detailed monitoring of radio-collared individuals to assess important movement, seasonal habitat use, food selection, and survival estimates.</p> <p>Due to the long-lived, wide-ranging characteristics of grizzly bears, adequate information is needed for sound management decisions. Additional data will be needed to show trends in grizzly bear activities associated with road construction, timber management, mineral development, general development, and cattle grazing in the southern BMUs, especially in areas outside the recovery area which are presently occupied by grizzly bears.</p>

	<p>The state currently funds one seasonal trap personnel; however, additional funds are requested for 1 additional person to assist in trapping grizzly bears and conducting surveys to document distribution and expansion of the population into the Wyoming Range and the southern portions of the Wind River Range. The state will fund the necessary training, supplies, travel, vehicles, and other associated equipment for these positions.</p> <p>Priority conflict efforts include responding to all bear conflict complaints. All known mortalities are investigated in cooperation with the U.S. Fish and Wildlife Service-Law Enforcement. Bears involved in conflicts will be trapped, relocated, or removed as required depending on site-specific situations. Grizzly bear/human conflict management will continue to be a high priority during recovery and management of the Yellowstone area grizzly bear population. Conflict management is essential toward reducing human-caused bear mortalities and maintaining public support of recovery efforts.</p> <p>Section 6 funds are needed to assist with local working groups that assist with public awareness of bear safety and conflict prevention issues. Section 6 funding has previously been used to offset some of the costs for radio collars and aerial surveys, including telemetry flights to determine grizzly bear locations. Without section 6 funding, manpower, population and habitat data collection, and response rates to manage nuisance grizzly bears would be decreased. Previous allocations of Section 6 funds have not adequately covered the costs of the above items, which may hinder data collection to assure that monitoring is completed as described in the Yellowstone Grizzly Bear Conservation Strategy (CS). In addition as the Greater Yellowstone grizzly bear population continues to expand, personnel are required to adequately respond to situations in a timely fashion, as well as making sure the manpower is available to efficiently and safely conduct work activities in sometimes strenuous or dangerous conditions. Additional funds are required to assure that aerial relocation schedules can be maintained.</p>
Objectives:	<ol style="list-style-type: none"> <li>1) Assist the Interagency Grizzly Bear Study Team (IGBST) in determining food habits, habitat use, distribution, population trend, allowable mortality thresholds, and other important parameters for grizzly bears within the southern BMUs,</li> <li>2) Provide comparative data to that already gathered by the IGBST, Idaho, and Montana,</li> <li>3) Manage bear/human interaction, bear/livestock interaction and mortality data specific for each BMU to aid state and federal managers in minimizing human caused mortalities and grizzly bear conflicts.</li> <li>4) Continue to provide important information and educational efforts to assist with bear conservation and safety issues, distribute information to hunters and</li> </ol>

	<p>other publics on bear safety, support a section on “Hunting in Bear Country” in statewide Hunter Education efforts, and continue to conduct numerous workshops on how to live safely in areas occupied by bears.</p>
<p>Expected Results:</p>	<p>The goal of this program is to capture and radio-collar grizzly bears to provide an even distribution of radio-collared grizzly bears and to enhance annual life history data of grizzly bears occupying new regions of the Yellowstone Ecosystem outside the Recovery Area. Without this data, survival rates by age and sex will be compromised as data will only be available from a portion of the ecosystem.</p> <p>Observation flights are a key component of the annual data collection scheme. Section 6 funding would assure that adequate coverage of all occupied habitat is surveyed. New techniques may be investigated as warranted to test timing and frequency of these flights. Results would assist in providing a more accurate estimate of females with COY that is used to establish the population estimate. These funds will assure that data collection is consistent across the entire ecosystem, which is required to accurately assess the status of several population parameters.</p> <p>These funds will also assure that conflicts between grizzly bears and humans will be managed in a timely and consistent process. The number of conflicts continues to increase in Wyoming’s portion of the ecosystem. The carcass management program was developed to assist with conflict reduction, through removal of attractant and increasing public tolerance for grizzly bears.</p> <p>With additional funding, the Department’s Information and Education efforts can be increased to assure that larger segments of the public are contacted to increase their awareness of how to recreate and live in occupied grizzly bear habitat.</p>

**FINANCIAL REQUEST:**

	<b>TOTAL</b>	<b>FEDERA</b>	<b>STATE</b>
Contracts: Aerial Telemetry & Observation Flights, Carcass Management Program	\$20,000	\$15,000	\$5,000
Field Supplies: Radio Collars, Supplies, Travel, Repairs	\$ 33,500	\$23,500	\$10,000
Personnel: (AWEC/Temp personnel)	\$34,000	\$24,000	\$10,000
Information/Education: Supplies	\$7,500	\$7,500	
<b>TOTAL:</b>	<b>\$95,000</b>	<b>\$70,000</b>	<b>\$25,000</b>

## **GRIZZLY BEAR CONFLICT MANAGEMENT**

### Introduction

Human-grizzly bear interactions and conflicts in Wyoming are typically a result of grizzly bears seeking unnatural foods in association with people and property, close encounters with humans, or when grizzly bears kill livestock. The number and location of human-bear conflicts is influenced by unsecured unnatural attractants (e.g. human foods and garbage), natural food distribution and abundance, grizzly bear numbers and distribution, and human and livestock use patterns on the landscape.

The management technique of capturing grizzly bears in areas where they may come into conflict with people and relocating them to remote locations is a common practice throughout the world. Relocating bears achieves several social and conservation functions: (a) reduces the chance of property damage, livestock damage, or human interactions in areas where the potential for conflict is high; (b) reduces the potential for grizzly bears to become food conditioned and/or human habituated which often results in destructive and/or dangerous behaviors; (c) allows grizzly bears the opportunity to forage on natural foods and remain wary of people; and (d) could prevent removing grizzly bears from the population which may be beneficial in meeting population management objectives.

The Department relocates and removes black and grizzly bears as part of routine management operations. The decision to relocate or remove a bear is made after considering a number of variables including age and sex of the animal, behavioral traits, health status, physical injuries or abnormalities, type of conflict, severity of conflict, known history of the animal, human safety concerns, and population management objectives. Grizzly bears are relocated in accordance with state and federal law, regulation, and policy.

In 2005 the Wyoming Legislature created Wyoming Statute §23-1-1001 as follows:

(a) Upon relocating a grizzly bear or upon receiving notification that a grizzly bear is being relocated, the department shall provide notification to the county sheriff of the county to which the grizzly bear is relocated within five (5) days of each grizzly bear relocation and shall issue a press release to the media and sheriff in the county where each grizzly bear is relocated;

(b) The notice and press release shall provide the following information:

- (i) The date of the grizzly bear relocation;
- (ii) The number of grizzly bears relocated; and
- (iii) The location of the grizzly bear relocation, as provided by commission rule and regulation;

(c) No later than January 15 of each year the department shall submit an annual report to the Joint Travel, Recreation, Wildlife, and Cultural Resources Interim committee. The annual report shall include the total number and relocation area of each grizzly bear relocated during

the previous calendar year. The department shall also make available the annual report to the public.

Subsequently, the Wyoming Game and Fish Commission promulgated Chapter 58 to further direct the implementation of W.S. §23-1-1001 as follows:

Section 1. Authority. This regulation is promulgated by authority of W.S. §23-1-1001.

Section 2. Regulation. The Wyoming Game and Fish Commission hereby adopts the following regulation governing notification to the County Sheriff and the media of grizzly bear relocations in the State of Wyoming. This regulation shall remain in effect until modified or rescinded by the Commission.

Section 3. Definitions. For the purpose of this regulation, definitions shall be as set forth in Title 23, Wyoming Statutes and the Commission also adopts the following definitions:

(a) "County Sheriff" means the County Sheriff's Office in the county where a grizzly bear is relocated.

(b) "Location of the grizzly bear relocation" means the proper name of the drainage in which a grizzly bear is relocated and the estimated number of miles from the relocation site to the nearest municipality, topographical feature or geographic location.

(c) "Provide a press release" means the department shall provide to the County Sheriff and the media in the county in which a grizzly bear is relocated, a press release including the location of the grizzly bear relocation, number of grizzly bears relocated, date of the relocation and the reason the grizzly bear was relocated.

Section 4. Notification of relocation.

(a) Upon relocating a grizzly bear or upon receiving notification that a grizzly bear is being relocated, the department shall notify the County Sheriff of the date, number of grizzly bears relocated, the location of the grizzly bear relocation and the reason of the relocation via direct telephone conversation, written or electronic correspondence, or personal contact within five (5) days of the date of the relocation. The department shall provide a press release to the County Sheriff and the media in the county where a grizzly bear is relocated of the date, number of grizzly bears relocated, the location of the grizzly bear relocation and the reason of the relocation within five (5) days of the date of relocation of any grizzly bear.

Section 5. Savings Clause. If any provision of this regulation is held to be illegal or unconstitutional, such a ruling shall not affect other provisions of this regulation which can be given effect without the illegal or unconstitutional provision; and, to this end the provisions of this regulation are severable.

WYOMING GAME AND FISH COMMISSION  
**By: Linda Fleming, President**  
**Dated: July 12, 2005**

## **CONFLICT MANAGEMENT – CAPTURE, HANDLING, AND RELOCATION**

During 2014, Department personnel captured 22 grizzly bears in 23 capture events in an attempt to prevent or resolve conflicts (Figure 4). Most captures were lone grizzly bears, but 2 family groups (one female with a cub and one with 2 yearling siblings) were also captured. Twelve (55%) of the 23 capture events occurred in Sublette County, seven (29%) in Park County, two (8%) in Hot Springs County, one (4%) in Fremont County, one (4%) in Teton County.

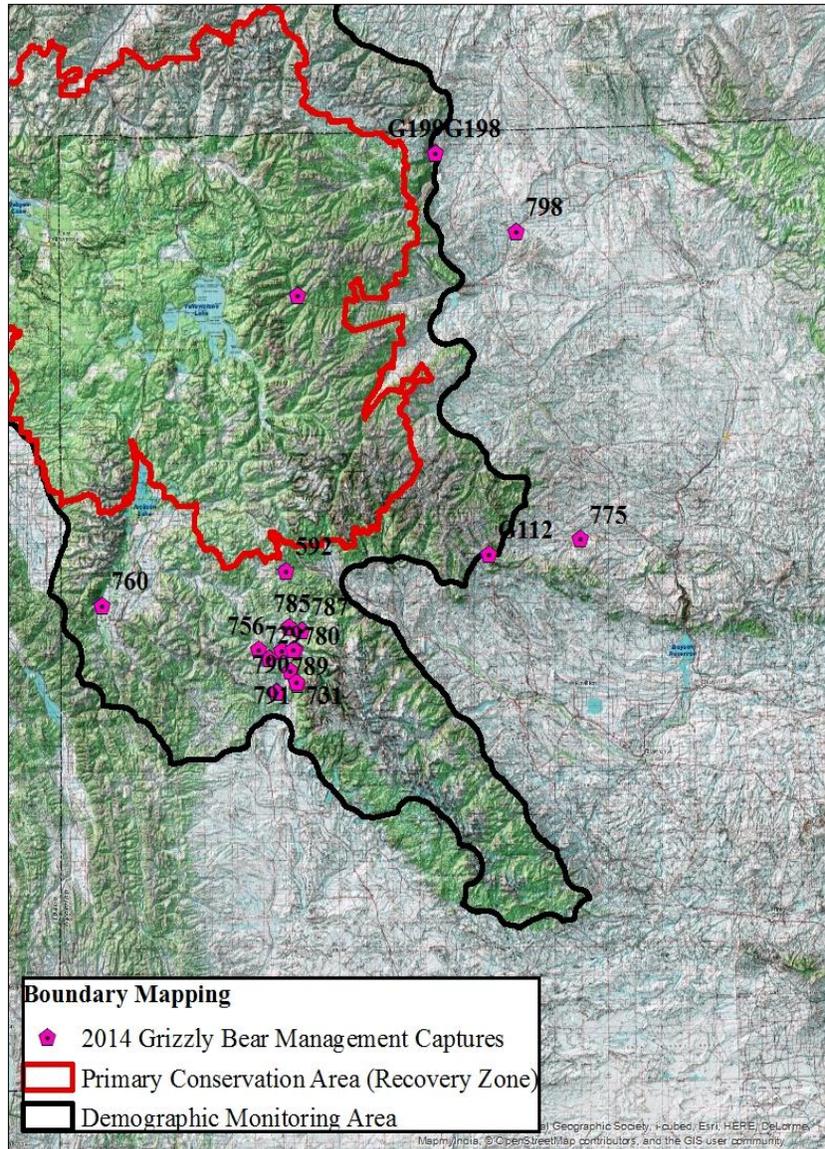
Of the 23 capture events, 16 captures were a result of bears killing livestock, primarily cattle. One management capture was a non-target yearling released on site in Sublette County. The remaining 6 bears were captured for exhibiting habituated behavior and being in close proximity to people. All relocated grizzly bears were released on U.S. Forest Service lands in or adjacent to the Grizzly Bear Recovery Zone (RZ), also known as the Primary Conservation Area. Of the 16 relocation events, 12 (75%) bears were released in Park County, and 4 (25%) were released in Teton County (Table 4).

Six of the 23 capture events resulted in the removal of grizzly bears from the population by agency personnel through lethal removal or live placement. These grizzly bears were removed due to a history of previous conflicts, a known history of close association with humans, or they were deemed unsuitable for release into the wild (e.g. orphaned cubs, poor physical condition, or human safety concern).

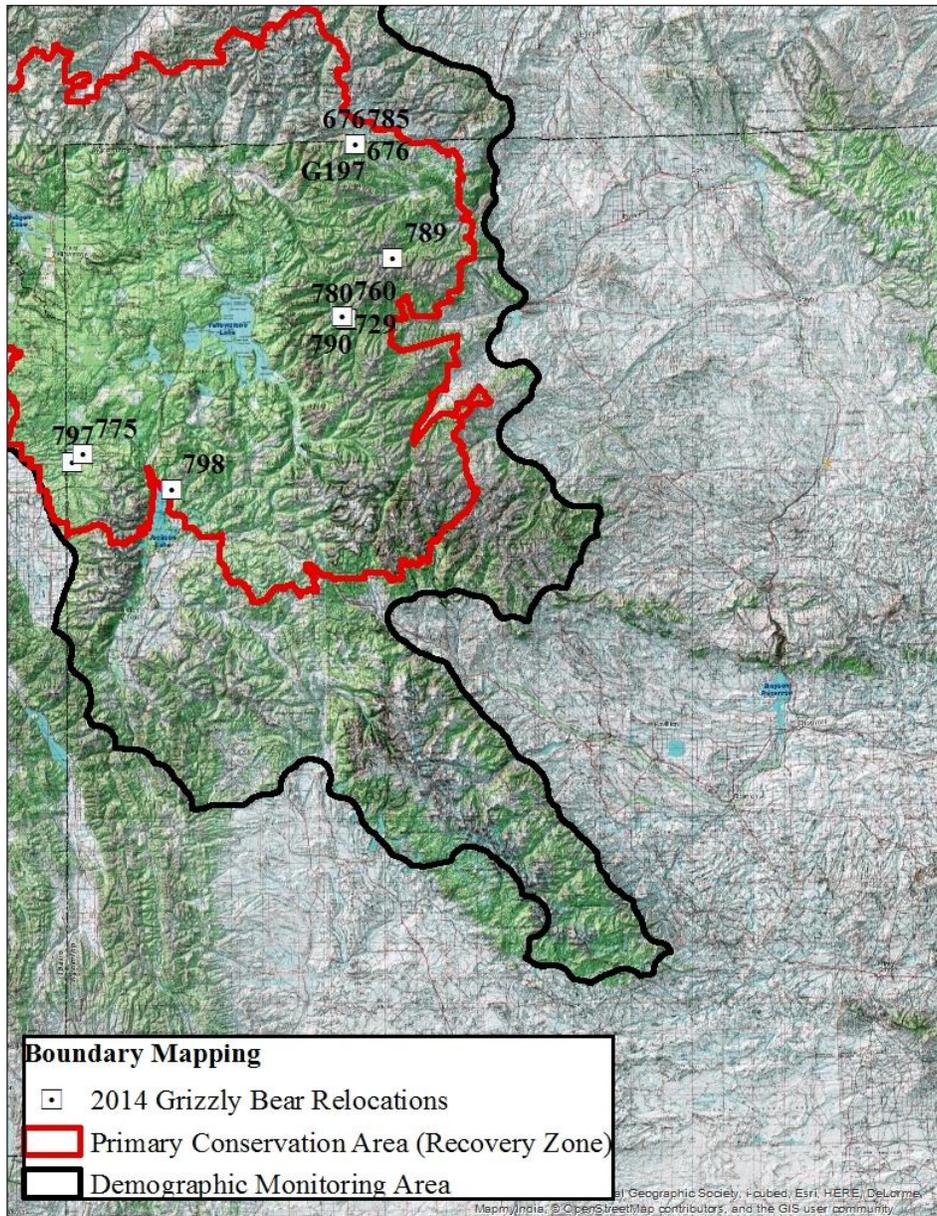
All independent grizzly bears greater than 2 years old that were relocated were fitted with a radio-telemetry collar ( $n = 13$ ) to track their movements after release. Attempts to obtain locations on marked animals via aerial telemetry were made approximately every 10–14 days as part of standard monitoring techniques throughout the ecosystem. As per Wyoming Statute, within 5 days of releasing a grizzly bear, the County Sheriff was notified by e-mail and a press release was distributed to all local media contacts in the county where the grizzly bear was released. The media release contained information on the location of the grizzly bear release, the number of grizzly bears relocated, the date of the relocation, and the reason the grizzly bear was relocated (Table 4).

### Notification to the County Sheriff and the Media

Within 5-days of releasing a grizzly bear, the County Sheriff was notified by e-mail and a press release was distributed to all local media contacts in the county where the grizzly bear was released. The media release contained information on the location of the grizzly bear release, the number of grizzly bears relocated, the date of the relocation and the reason the grizzly bear was relocated (Table 4).



**Figure 4.** Management capture locations ( $n = 23$ ) for grizzly bears captured, relocated, released, or removed in 2014. Grizzly bears with “G” in front of their number were marked but not wearing radio collars upon release typically because they were too young to be collared. Grizzly bears identified with “NA” were grizzly bears removed from the population without being given an identification number. The “unk” label is the yearling non-target capture released on site.



**Figure 5.** Release locations ( $n = 16$ ) for grizzly bears captured, relocated, or released on site in conflict management efforts 2013. Grizzly bears with “G” in front of their number were marked but not wearing radio collars upon release typically because they were too young to be collared.

**Table 4.** Capture date, grizzly bear identification number (ID), capture county, relocation site, release county, and reason for capture for all 2014 grizzly bear conflict management captures ( $N = 27$ ) in Wyoming.

Date	ID	Capture county	Relocation Site	Release County	Reason For Capture
5/19/2014	775	HOT SPRINGS	GIBSON MEADOWS - Targhee National Forest	TETON	RELOCATED FOR SHEEP DEPREDATION
7/2/2014	780	SUBLETTE	MORMON CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
7/12/2014	729	SUBLETTE	5 MILE CREEK- Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
7/23/2014	756	SUBLETTE			REMOVED FOR KILLING MULTIPLE CATTLE
7/26/2014	676	SUBLETTE	FOX PARK - Shoshone National Forest	PARK	RELOCATED FOR SHEEP DEPREDATION
7/27/2014	G197	SUBLETTE	FOX PARK - Shoshone National Forest	PARK	RELOCATED FOR SHEEP DEPREDATION
8/2/2014	G112	HOT SPRINGS			REMOVED FOR CATTLE DEPREDATION
8/8/2014	787	SUBLETTE	ON SITE		NONTARGET AT DEPREDATION SITE. RELEASED ON SITE
8/14/2014	789	SUBLETTE	SUNLIGHT CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
8/27/2014	731	SUBLETTE			REMOVED FOR CATTLE DEPREDATIONS
8/27/2014	790	SUBLETTE	MORMON CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATIONS
9/7/2014	791	SUBLETTE	FIVE MILE CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
9/8/2014	785	SUBLETTE	FOX CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION

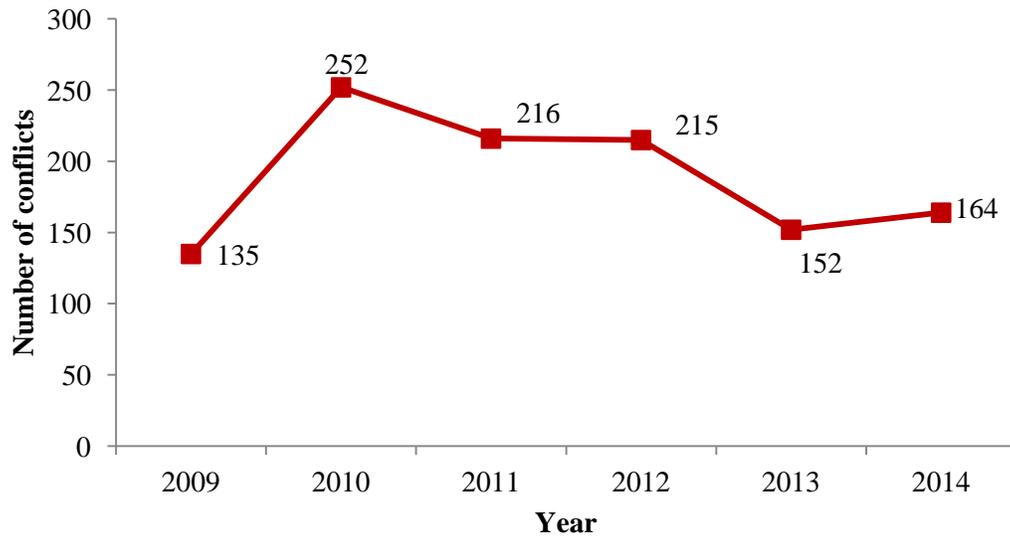
Date	ID	Capture county	Relocation Site	Release County	Reason For Capture
9/22/2014		PARK			FREQUENTING A GUEST RANCH, UNAFRAID OF PEOPLE, REMOVED TO THE POCA TELLO ZOO
9/30/2014	G198	PARK	5 MILE CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
9/30/2014	G199	PARK	5 MILE CREEK - Shoshone National Forest	PARK	RELOCATED FOR CATTLE DEPREDATION
10/4/2014	797	SUBLETTE	SQUIRREL MEADOWS- Caribou- Targhee National Forest	TETON	RELOCATED FOR CATTLE DEPREDATION
10/8/2014	798	PARK	BAILEY CREEK,- Bridger-Teton National Forest	TETON	RELOCATED FOR DAMAGING FRUIT TREES/BIRDFEEDERS, GETTING GRAIN AND CLOSE TO PEOPLE
10/10/2014	760	TETON	5-MILE CREEK - Shoshone National Forest	PARK	CAPTURED FOR FREQUENTING RESIDENTIAL AREAS
10/26/2014	760	PARK			REMOVED FOR CONFLICT HISTORY, HABITUATION, AND CLOSE ASSOCIATION TO PEOPLE AND DEVELOPED AREAS
10/28/2014	724	PARK			REMOVED FOR CONFLICT HISTORY AND CLOSE ASSOCIATION TO PEOPLE AND DEVELOPED AREAS
11/3/2014	G200	PARK	LOST LAKE - Bridger-Teton National Forest	TETON	RELOCATED FOR BEING IN CLOSE PROXIMITY TO RESIDENCES AND DAMAGING A CORN FIELD

## CONFLICT MANAGEMENT – CONFLICT VERIFICATION AND REPORTING

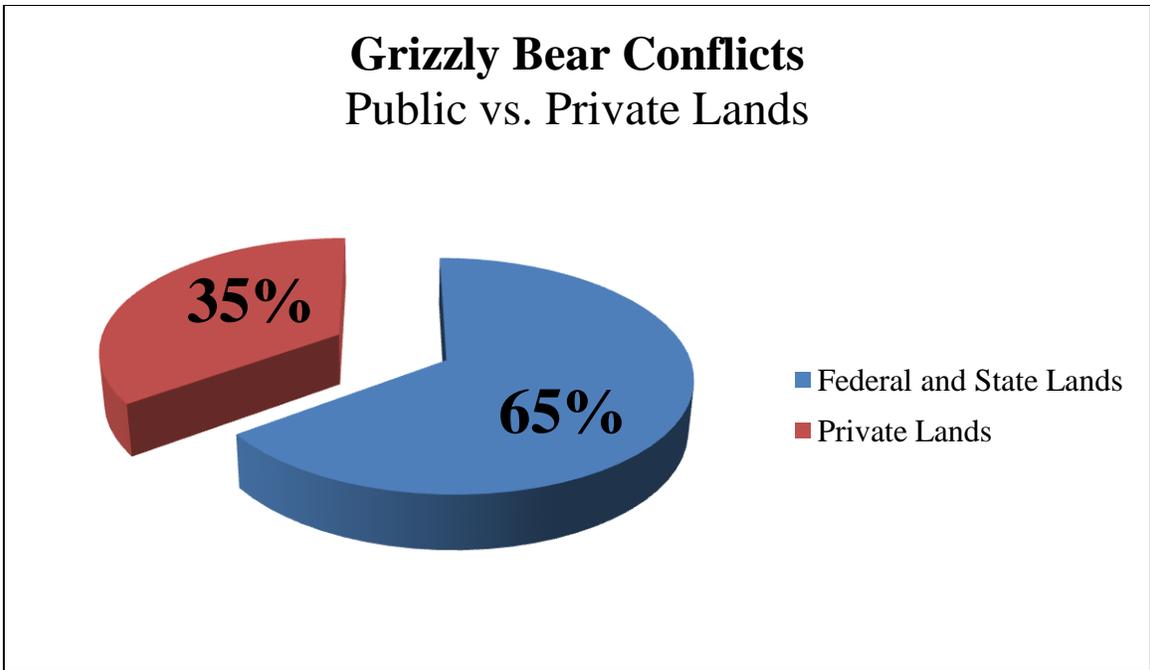
Department personnel investigated and recorded 164 grizzly bear-human conflicts in 2014 (Table 5, Figure 6). As a result of numerous and diligent education and conflict prevention efforts, the general pattern of conflicts is relatively steady. However, documentation of grizzly bears and conflicts continue to be observed in areas further from the RZ. Grizzly bears are coming into conflict with people in areas not used by grizzly bears in recent history and also incurring conflicts on private lands (Figures 7, 8). Grizzly bears killing cattle was the most frequent type of conflict documented in 2014. The annual variation in livestock depredation incidents is not easily explained. Although most human-bear conflicts are correlated with natural food abundance, the number of cattle and sheep killed annually do not follow the same pattern. The Department continues to explore options to reduce grizzly bear livestock conflicts.

**Table 5.** Type and Number of Human-Grizzly Bear Conflicts in Wyoming, 2014.

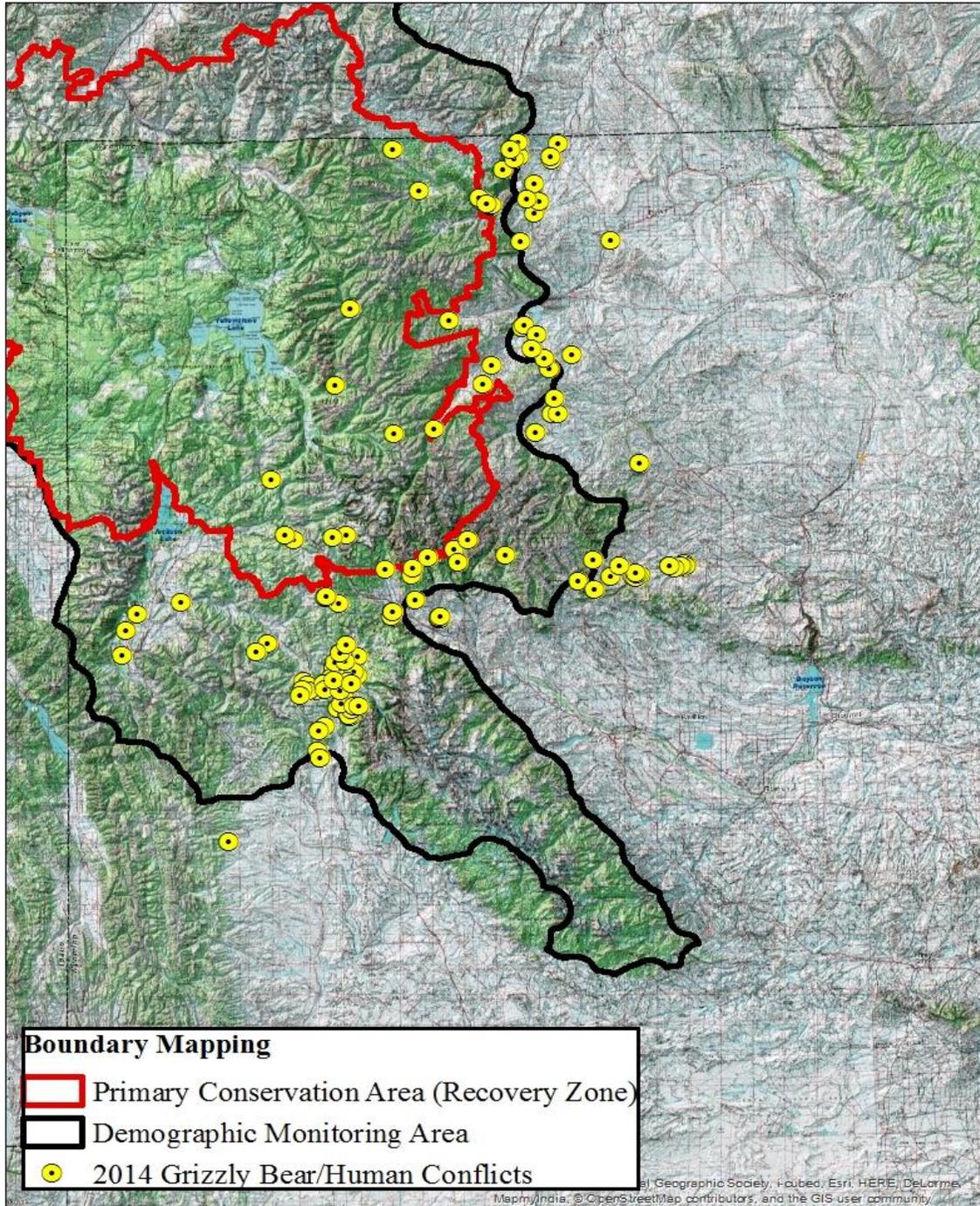
<b>Conflict Type</b>	<b>Number</b>	<b>Percentage</b>
Livestock	130	79.3%
Human foods	10	6.1%
Aggression toward human	7	4.3%
Pet/livestock/bird feeders	4	2.4%
Property damage	4	2.4%
Fruit trees	3	1.8%
Garbage	2	1.2%
Human injury	2	1.2%
Human death	1	0.6%
Apiary damage	1	0.6%
<b>Total</b>	<b>164</b>	<b>100 %</b>



**Figure 6.** Number of Human-Grizzly Bear Conflicts documented in Wyoming, 2009 - 2014.



**Figure 7.** Number of Human-Grizzly Bear Conflicts on Private and Public Lands in Wyoming, 2014.



**Figure 8.** Location of human-grizzly bear conflicts in Wyoming outside of National Parks ( $n = 164$ ) in relation to the Recovery Zone Boundary, Wyoming, 2014. The majority of documented conflicts in Wyoming occurred outside of the Recovery Zone, with an increasing portion occurring outside the current Demographic Monitoring Area.

## **MONITORING AND CONFLICT MANAGEMENT – GRIZZLY BEAR MORTALITIES**

Within Wyoming, outside of the National Parks and Wind River Reservation, there were 13 known or probable human-caused mortalities in 2014. Management removals accounted for 6 mortalities in 2014.

Of the 6 grizzly bears removed in management actions, 3 were removed due to livestock depredations and 3 due to property damage or human food rewards and exhibiting unnaturally bold behavior in close proximity to humans. In addition to the 6 management removals, 1 grizzly bear was killed by another grizzly bear, 1 was killed in a vehicle collision, and 5 mortalities are under investigation by law enforcement.

Most grizzly bear-human conflicts in Wyoming were a result of domestic livestock depredations and food rewards from humans in the form of garbage or pet and livestock feed. Long-term trends in the number of conflicts is likely a result of grizzly bears increasing in numbers and expanding into areas used by humans, including livestock production, on public and private lands.

If the GYE grizzly bear population continues to grow and expand in distribution, bears are likely to encounter food sources such as livestock and livestock feed, garbage, and pet food resulting in increased property damage and threats to human safety. Conflict prevention measures such as attractant storage, deterrence, and education are the highest priority for the Department. In general, there is an inverse relationship between social tolerance and biological suitability for bear occupancy in areas further from the RZe due to development, land use patterns, and various forms of recreation. Although prevention is the preferred option to reduce conflicts, each situation is managed on a case-by-case basis with education, securing of attractants, relocation or removal of individual grizzly bears, or a combination of methods.

## **2014 BEAR WISE COMMUNITY PROGRAM UPDATE**

### Introduction

The Bear Wise Community Program is a proactive initiative that seeks to minimize human-bear (black and grizzly) conflicts, minimize management-related bear mortalities associated with preventable conflicts, and to safeguard human communities in northwest Wyoming. The overall objective of Bear Wise is to promote individual and community ownership of ever-increasing human-bear conflict issues, moving toward creating a social conscience regarding responsible attractant management and behavior in bear habitat. This Program seeks to raise awareness and proactively influence local waste management infrastructures with the specific intent of preventing conflicts from recurring. Strategies used to meet the campaign's objectives are: 1) minimize accessibility of unnatural attractants to bears in developed areas; 2) employ a public outreach and education campaign to reduce knowledge gaps about bears and the causes of conflicts; and 3) employ a bear resistant waste management system and promote bear-resistant waste management infrastructure.

This report provides a summary of Program accomplishments in 2014. Past accomplishments are reported in the 2006 - 2013 annual reports of the IGBST and in the 2011-2013 Annual Job Completion Reports of the Department.

### Background

In 2004, a subcommittee of the IGBST conducted an analysis of causes and spatial distribution of grizzly bear mortalities and conflicts in the GYE for the period of 1994–2003. The analysis identified that the majority of known, human-caused grizzly bear mortalities occurred due to agency management actions in response to conflicts (34%), self defense killings, primarily by big game hunters (20%), and vandal killings (11%). The report made 33 recommendations to reduce human-grizzly bear conflicts and mortalities with focus on 3 actions that could be positively influenced by agency resources and personnel: 1) reduce conflicts at developed sites; 2) reduce self-defense killings; and 3) reduce vandal killings (Servheen et al. 2004).

To address action number 1, the subcommittee recommended that a demonstration area be established to focus proactive, innovative, and enhanced management strategies where developed site conflicts and agency management actions resulting in relocation or removal of grizzly bears had historically been high. Spatial examination of conflicts identified the Wapiti area in northwest Wyoming as having one of the highest concentrations of black bear and grizzly bear conflicts in the GYE. The North Fork of the Shoshone River west of Cody was then chosen as the first area composed primarily of private land to have a multi-agency/public approach to reducing conflicts at developed sites.

In 2005, the Department began implementation of the Bear Wise Community Program. Although the Program's efforts were focused primarily in the Wapiti area, the Department initiated a smaller scale project in Teton County to address the increasing number of black and grizzly bear conflicts in the Jackson, Wyoming area. For the last 8 years, the Bear Wise Community Programs in both Cody and Jackson have deployed a multi-faceted education and outreach campaign in an effort to minimize human-bear conflicts and promote proper attractant management. Although a wide array of challenges remain and vary between communities, many accomplishments have been made and progress is expected to continue as Bear Wise efforts gain momentum.

### Wapiti Project Update

The Wapiti Bear Wise Community Program continues to utilize radio, television and print media, mass mailings, and the use of signing on private and public land to convey the educational messages surrounding human-bear conflict prevention. Conflict prevention information is also disseminated through public workshops and presentations and by contact with local community groups, governments, the public school system, and various youth organizations. To compliment educational initiatives, the Program uses an extensive outreach campaign that assists the community in obtaining and utilizing bear-resistant products and implementing other practical methods of attractant management. Ongoing efforts and new accomplishments for 2014 are as follows:

The Carcass Management Program continues to provide a domestic livestock carcass removal service for livestock producers located in occupied grizzly bear habitat within Park County, Wyoming. The Program has been traditionally funded by the Park County Predator Management District and Wyoming Animal Damage Management Board. In addition to those donors, the Program received contributions from Park County, federal funding for grizzly bear conservation, Bole and Klingstein Foundation, and the Memorial Bear Fund. The Program provides livestock producers and owners with an alternative to the use of on-site carcass dumps, which are a significant bear attractant and indirectly contribute to numerous human-bear conflicts. Since June 2008, 671 domestic livestock carcasses have been removed from private lands. This year an article was published in the International Bear News discussing the efficacy of the Program.

Recommendations concerning the proper storage of garbage and other attractants are provided to the Park County Planning and Zoning Commission for new developments within the greater Cody area. The Bear Wise Coordinator reviews proposed developments on a case-by-case basis, attends monthly meetings, and contacts applicants directly to discuss conflict prevention measures. To date, these comments have been adopted as either formal recommendations or as a condition of approval for 19 new developments within Park County. In addition to these efforts, a traveling interactive Bear Aware educational display was developed and produced for use in public libraries across northwest Wyoming. The display focuses on the prevention of human-bear conflicts and features graphics, an interactive touch screen monitor, short video segments, a grizzly bear hide and skull, and educational materials that are available for check out. The display was featured at the Hot Springs County and Washakie County Libraries.

The Department's partnership with the North Fork Bear Wise Group (NFBWG) continues to grow. The group is comprised of six local Wapiti citizens that meet monthly in order to articulate community needs and assist in the development of educational and outreach initiatives. The group purchased a new billboard sign to replace a fading sign and has secured magnets to be mailed in the spring of 2015 to 2,500 Park County residents. These billboards, signs and educational kiosks remain posted throughout the Cody Region and are updated with seasonally appropriate material.



**STAY SAFE AND  
KEEP BEARS WILD**



**Thanks Wapiti residents  
for properly storing  
garbage, birdseed, and  
livestock feed.**

**It All Leads to One Moment.**

Department employees consulted with Bureau of Land Management to ensure attractants were properly stored at the Anchor Dam campground. The Department of Recreation within the BLM went forward with building a 20 foot meat pole so that campers could store game or other attractants. They also built 2 permanent bear boxes that can be used to securely store attractants.



A great deal of information is distributed by hand and through presentations as part of the Wapiti Project. Educational black bear/grizzly bear identification materials were distributed to individuals and to local sporting goods stores in the Cody, Pinedale, and Lander areas and mailed to black bear hunters who registered bait sites with the Department in areas surrounding the GYE. Numerous informational presentations were given that focused on human-bear conflict prevention to audiences including the Park and Big Horn County public school systems, homeowners associations, Boy Scouts, 4-H members, DANO, Paint Rock Hunter Management Program, guest ranches, and college students. Frequent 1-on-1 contacts were made during the 2014 conflict season in areas where the occurrence of human-bear conflicts has historically been high. A “Working Safely in Bear Country” workshop was conducted for the Park County Weed and Pest District, Bureau of Land Management, Rocky Mountain Power, Bighorn Canyon National Recreation Area, and Marathon Oil and Gas employees. A booth containing information on bear identification, attractant storage, hunting and recreating safely in bear country, and the proper use of bear spray was staffed at the Lander Winter Fair, Cody Arbor Day, Wyoming Outdoorsmen Banquet, and Spring into Yellowstone. A public service announcement (PSA) was recorded by the by Department personnel on “Staying Safe in Bear Country” and broadcast over the radio in the spring and fall of 2014 on the Bighorn Basin Radio Network.

It is important to make sure bear safety and awareness as part of hunter education in Wyoming. Training was provided to new and veteran hunter education instructors to assure that they are properly teaching large carnivore material. The instructors were all provided with “Staying Safe in Bear Country” DVD’s and two canisters of inert bear spray for Hunter Education courses. In addition 500 canisters of inert bear spray were purchased this year to be distributed at a later date for educational efforts.

Grant money was received from the Interagency Grizzly Bear Committee (IGBC) to purchase supplies for the bear trailer that is used by the USFS, GTNP, and the Department. There were stickers, pencils, temporary tattoos, and book markers that were purchased with the funding and handed out at public events. The Memorial Bear Fund also gave a grant for the purchase of 5 - 150 foot temporary electric fences and five electric chargers to be used for securing attractants. Although, there are many uses for this electric fence this year Department personnel put 18 temporary electric fences up to secure bee apiaries.

A grant from the IGBC was utilized to film and photograph “Montana Grizzly Encounters” captive bear *Brutus*. In order to get the best possible footage, Wyoming, Idaho, and Montana wildlife agencies worked together to film the captive bear. The 3 day filming of *Brutus* will be used to show how **NOT** to behave in bear country. This was a great opportunity to get footage of what could happen if attractants aren’t properly stored.



### Pinedale Area Update

In 2011, a Bear Wise Community effort was initiated targeting residential areas north of Pinedale, Wyoming where the occurrence of human-bear conflict has increased in recent years. Accomplishments for the Pinedale area in 2014 are as follows:

A great deal of informational (both formal and informal) presentations were held throughout the Pinedale Region and Sublette County. The Department hosted “Living in Large Carnivore Country” workshops in Pinedale and Green River. Approximately 75 people attended the workshops. “Hunting in Bear Country” presentations were given to 2 hunter safety classes in the Region. A bear safety presentation was given to cowboys and sheepherders of 2 different grazing associations in the Region, natural gas production companies, Sublette County Chamber of Commerce and Visitors Center, the Bridger Teton National Forest, Search and Rescue,

Sublette County Weed and Pest, Red Cliff Bible Camp, Bureau of Land Management and various other entities.

In order to reach out to a diverse array of people, the Department hosted a bear safety booth at Pinedale's Rendezvous Days Celebration, contacting hundreds of participants over a three day period. Pinedale's Rendezvous Days attracts approximately 10,000 people over the 4 day event and Department employees contact an estimated 1,000 constituents. In addition, the Department hosted a bear safety booth at the Cora Rural Fire Department's annual picnic and celebration, contacting dozens of homeowners that live and recreate in occupied grizzly bear habitat.

Department personnel and livestock operators removed over 90% of livestock carcasses and livestock remains discovered on public and private lands within the Region in 2014. Conflicts with livestock increased 47% within the Region from 2013 to 2014 primarily due to increased density and distribution of bears. Large Carnivore Section personnel worked extensively with owners of Fremont Lake summer homes. Department staff visited every house in the association, distributed bear information and left "door hangers" when residences were vacant. Additionally, Department personnel attended a homeowners meeting and presented information, answered questions, and dispelled several rumors about bear safety and bear management. Attractant storage and reporting seemed to improve in 2014. Objectives for 2015 include continued expansion of the Program into the other areas of the state where human-bear conflicts continue to be a chronic issue and the continuation of current educational and outreach efforts in the Cody area with specific focus on areas that have not adopted proper attractant management methods. The Department is also working to assist the U.S. Forest Service with providing bear proof storage and meat poles at targeted areas in the Region.

The Wapiti and Pinedale area Bear Wise Community Programs face the ongoing challenges of: 1) the absence of ordinances, regulations, or laws prohibiting the feeding of bears; 2) limited educational opportunities and contact with portions of the community due to a large number of summer-only residents and the lack of organized community groups and; 3) decreased public tolerance for grizzly bears due to record numbers of human-bear conflicts and continued federal legal protection. The future success of the Bear Wise Community Program lies in continued community interest and individual participation in proper attractant management.

### Jackson Hole Project Update

The Bear Wise Jackson Hole Program continues educational and outreach initiatives in an effort to minimize human-bear conflicts within the community of Jackson and surrounding areas. In 2014, the Program's public outreach and educational efforts included the use of signage, public workshops and presentations, distribution of informational pamphlets, promoting awareness about bear spray, and utilizing our bear education trailer.

A bear education trailer was purchased in August 2010 with funding from the Department, GTNP, Bridger-Teton National Forest and Jackson Hole Wildlife Foundation. Two bear mounts (1 grizzly bear and 1 black bear) have been placed in the trailer along with other educational materials. The bear mounts were donated to the Department through a partnership with the United States Taxidermist Association and the Center for Wildlife Information. The trailer was

displayed and staffed at various events and locations including GTNP, Jackson Elk Fest, Fourth of July parade and the National Elk Refuge Visitor Center.

Several venues and techniques were used in order to spread information related to bear safety, ecology and management. Public service announcements were broadcast on 4 local radio stations in Jackson for a total of 6 weeks throughout the spring, summer, and fall of 2014. The announcements focused on storing attractants so they are unavailable to bears and hunting safely in bear country. Numerous educational talks were presented to various groups including homeowner's associations, guest ranches, youth camps, Jackson residents, tourists, school groups and Teton County employees. Door flyers with detailed information about attractant storage and bear conflict avoidance were distributed in 2 Teton County residential areas where high levels of bear/human conflicts were occurring. Spanish language bear informational pamphlets were distributed to spanish speaking residents in Teton County with the help of the Teton County Latino Resource Center, Teton Literacy Center, and the Jackson Visitor Center. In addition restroom posters with information about attractant storage were placed in 16 different restaurants in Teton County for a 6-month period, and posters with information about attractant storage were placed in 16 different restaurants in Teton County for a 6-month period. Consultations were conducted at multiple businesses and residences where recommendations were made regarding sanitation infrastructure and compliance with the Bear Conflict Mitigation and Prevention Land Development Recommendations. We conducted multiple radio and newspaper interviews regarding conflict prevention in the Jackson area

A great deal of work was done directly with hunters and outfitters to reduce and resolve conflicts between hunters and grizzly bears in the Jackson area. Numerous personal contacts were made with private residents in Teton County. This has proven to be a useful way to establish working relationships with residents and maintain an exchange of information about bear activity in the area. A booth containing information on bear identification, attractant storage, hunting and recreating safely in bear country, and the proper use of bear spray was staffed at the Jackson Hole Antler Auction. Large Carnivore Section personnel assisted 6 hunting outfitters with the installation and maintenance of electric fence systems around their field camps located in the Bridger-Teton National Forest. In addition we placed signage detailing information on hunting safely in bear country, bear identification, recent bear activity, and proper attractant storage were placed at USFS trailheads and in private residential areas throughout Teton County. Educational black bear/grizzly bear identification materials were distributed to black bear hunters who registered bait sites with the Department in the Jackson Region. Bear spray was distributed by Department personnel free of charge to hunters at North Jackson trailheads with funding assistance from the Jackson Hole Wildlife Foundation.

Objectives for the Bear Wise Jackson Hole Program in 2015 will be focused on supporting Teton County and local waste management companies with projects that will help disseminate information and achieve compliance with the recently adopted Teton County Bear Conflict Mitigation and Prevention Land Development Regulations (LDR). In addition, more work will be done to identify areas within the city limits of Jackson and Star Valley communities where better attractant management and sanitation infrastructure is needed. The recent implementation of the Teton County Bear Conflict Mitigation and Prevention LDR has greatly reduced the amount of available attractants on the landscape and is a tremendous step forward for the Bear

Wise Jackson Hole Program. The new challenges faced by the Department will be achieving full compliance with this regulation, even in years with low conflict when it may appear that the conflict issues are resolved. The Bear Wise Jackson Hole Program will convey the importance of compliance and strive to maintain public support for the LDR through public outreach and education projects. In order for the Jackson Program to be successful, the Program must continually identify information and education needs within the community while being adaptive to changing situations across different geographic areas. This will require the Department to coordinate with other government agencies and local non-government organizations working across multiple jurisdictions to develop a uniform and consistent message. If this level of coordination is achieved, the Department will be more effective in gaining support and building enthusiasm for Bear Wise Jackson Hole, directing resources to priority areas, and reaching all demographics.

#### Literature Cited

Servheen C., M. Haroldson, K. Gunther, K. Barber, M. Bruscano, M. Cherry, B. Debolt, K. Frey, L. Hanauksa-Brown, G. Losinski, C. Schwartz, and B. Summerfield. 2004. Yellowstone mortality and conflict reduction report: presented to the Yellowstone Ecosystem Subcommittee (YES) April 7, 2004

### **ADDITIONAL INFORMATION AND EDUCATION 2014 ACCOMPLISHMENTS**

#### Electronic and Print Media

As per Wyoming Statute, grizzly bear relocation from one county to another must be announced through local media and to the local sheriff of the county into which the bear was relocated. Each announcement is posted in a timely fashion to the Department's website. In 2014, 14 notifications were distributed and posted on the website. Personnel issued multiple educational news releases throughout the season informing readers and listeners of bear safety, behavior, conflict avoidance, food storage and natural food availability.

#### Grizzly Bear Management webpage

The grizzly bear management webpage continues to be maintained and updated on a regular basis in order to provide timely information to the public regarding grizzly bear management activities conducted by the department. Webpage contents include various interagency annual reports and updates and links to other grizzly bear recovery websites. We have updated our Departmental webpage and included a specific link to Bear Wise Wyoming, aimed at education and awareness when recreating in bear country. We are currently monitoring user activity of the Bear Wise Wyoming page and our Grizzly Bear Management page to develop innovative ways to reach the public. Beginning May 2014, weekly updates of ongoing management activities related to depredations, research, trapping and monitoring, and information and education were posted to the department's website. A total of 23 weekly updates were posted from May 17, 2014 through October 31, 2014.

## Conservation and Hunter Education

Every hunter education class in Wyoming is required to discuss how to hunt safely in bear country. To assist instructors, most have been provided inert bear spray canisters for demonstration purposes and DVD's entitled: Staying Safe in Bear Country, A Behavioral Based Approach to Reducing Risk." A section on bear safety is included in the student manual. Approximately 5,000 students are certified each year. On an annual basis, newly certified hunter education instructors are trained by Department personal in techniques used to prevent encounters while hunting in bear country and the proper use of bear spray. Inert bear spray canisters are used to demonstrate the proper use of bear spray at our New Instructor Hunter Education Academy and are distributed directly to our volunteer instructors at annual Hunter Education Instructor Workshops held around the state. During 2014, 9 "Staying Safe in Large Carnivore Country" seminars were conducted in an effort to increase understanding and knowledge of bears, bear behavior and conflict avoidance, Statewide, 270 attendees participated in the seminars

## Publications

The primary link to other publications, annual reports, and peer reviewed literature for the Yellowstone population of grizzly bears is summarized on the United States Geological Service web site at <http://www.nrmssc.usgs.gov/products/IGBST>.

For information specific to the Wyoming Game and Fish Department's grizzly bear management program; including links to publications, reports, updates, and plan visit: <https://wgfd.wyo.gov/web2011/wildlife-1000674.aspx>

For additional information about the Wyoming Bear Wise Program contact:

Dusty Lasseter  
2820 State Highway 120  
Cody, WY 82414  
(307) 527-7125