2018 Wyoming Grizzly Bear Job Completion Report

Wyoming Game and Fish Department
Large Carnivore Section

August 1, 2019

Authors:

Clint Atkinson, Dan Bjornlie, Mike Boyce, Justin Clapp, Brian DeBolt, Luke Ellsbury, Becky Fuda, Zach Gregory, Andy Johnson, Ryan Kindermann, Dusty Lasseter, Ken Mills, Phil Quick, Sean Ryder, Zach Turnbull, and Dan Thompson

TABLE OF CONTENTS

INTRODUCTION

This completion report summarizes grizzly bear work completed by the Wyoming Game and Fish Department's (Department) Large Carnivore Section (LCS) and regional personnel during 2018. 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 cohesive document available to all interested parties.

POPULATION MONITORING – TRAPPING SUMMARY

Annual trapping of grizzly bears by the Department for population monitoring is similar to the annual monitoring programs for other species such as elk and deer. While the methods may differ, the goal is the same, to collect the data necessary to conserve and manage the populations. In addition, data collected during annual monitoring has been extremely useful in answering many important questions regarding the Greater Yellowstone Ecosystem (GYE) grizzly bear population.

Data on grizzly bear survival and reproduction, biological samples, body condition, and collar locations are vital components of the overall population monitoring program. This information provides data that enables us to accurately monitor the grizzly bear population in relation to recovery goals in the GYE.

To maintain a representative sample of marked grizzly bears in the population, trapping crews systematically trap in occupied grizzly bear habitats. Trapping crews move to new areas as collars are deployed with trapping ceasing by early fall to avoid conflicts with hunters during big game hunting seasons. The following summarizes trapping efforts for the 2018 season.

2018 WGFD Sunlight Basin Grizzly Bear Trapping Summary

Early 2018 trapping efforts focused on the Sunlight Basin/Crandall areas of the Shoshone National Forest from 11 June to 28 June, 2018. Trapping occurred on six sites. All traps, baits, scent lures, and other equipment were removed from trapping sites on 28 June and warning and closure signs were removed on 2 July.

Thirteen grizzly bears were captured in 14 capture events (one bear was captured twice). Eight bears were radio-telemetered with VHF or GPS collars (Table 1). Four bears were tagged and biological samples were taken but not radio collared. One bear was released unhandled. No black bears were captured.

Table 1. Grizzly bears captured in the Sunlight/Crandall areas of the Shoshone National Forest, June 2018.

Bear ID	Capture Date	Sex/Age Class	Location	Collar
925	6/13/18	Adult male	Reef Creek	GPS collar
Unmarked	6/13/18	Yearling	Ghost Creek	No collar
927	6/15/18	Adult male	Ghost Creek	GPS collar
928	6/16/18 and 6/20/18	Adult male	Upper Sunlight and Gravelbar Creek	GPS collar
930	6/18/18	Subadult female	Deadman Bench	VHF collar

G236	6/20/18	Subadult male	Deadman Bench	No Collar
932	6/20/18	Adult male	Reef Creek	GPS collar
933	6/22/18	Adult female	Ghost Creek	GPS collar
G237	6/23/18	Adult male	Gravelbar Creek	No collar
G196	6/23/18	Adult male	Deadman Bench	No collar
712	6/26/18	Adult male	Beem Gulch	GPS collar
G238	6/27/18	Adult male	Gravelbar Creek	No collar
384	6/28/18	Adult female	Reef Creek	GPS collar

2018 Wind River Reservation Grizzly Bear Trapping Summary-Wind River Tribal Fish & Game, U.S. Fish and Wildlife Service, and WGFD

A successful collaboration of capturing and collaring grizzly bears for research purposes was conducted by the Eastern Shoshone and Northern Arapaho Tribal Fish & Game Dept, U.S. Fish & Wildlife Service and the Department, 13 July to 22 August, 2018. Cell cameras that send images to a mobile device or email instantly were set with lure and bait at sites located in the Wind River Mountains to "target" capture grizzly bears. This new method was devised to increase efficiency and minimize labor while trapping in an area of suspected low grizzly bear density. The method involved setting cell cameras with blood lure and bait hung up a tree, waiting until a grizzly bear appeared on camera, and then setting a culvert trap as quickly as possible after a grizzly bear was detected on camera. This proved to be very efficient, with two grizzly bears caught during the first night traps were set (Table 2). These two bears are only the 2nd and 3rd grizzlies captured and collared in the Wind River Mountain portion of the Wind River Reservation over the course of three trapping events (2010, 2014, and 2018).

Table 2. Camera sites, grizzly bear captures, and grizzly bear detections on the Wind River Reservation, July and August 2018.

Location	Dates Camera Operational	Dates Culvert Operational	Grizzly Captured	Grizzly Detections
Hobbs Park (cell camera)	7/16 - 8/22	No trap set	none	none
Little Washakie Park (cell camera)	7/13 – 8/22	No trap set	none	• GB941 on 8/3

Crow Mtn (cell camera)	7/17 – 8/21	7/18 (Closed following capture of GB939)	GB939 – 7/18, adult male	• 1 on 7/17
Bold Mtn (regular trail camera, no reception)	7/17 – 8/21	7/24 (Closed following capture of GB941) 7/31 – 8/3	GB941 – 7/25, adult male	• 1 on 7/21 • GB939 on 8/6 • Unmarked grizzly 7/30-31 • Uncollared grizzly with blue ear tags 8/5-21

2018 WGFD Gros Ventre Grizzly Bear Trapping Summary

Late summer 2018 trapping efforts focused on the Gros Ventre area of the Bridger-Teton National Forest from 7 August to 24 August, 2018. Trapping occurred on four sites in the Soda Creek drainage of the Gros Ventre Wilderness. All traps, baits, scent lures, area warning and closure signs, and other equipment were removed from sites on 24 August.

One grizzly bear was captured during our operation. This bear was radio-telemetered with a GPS collar and released on site (Table 3). Three black bears were also captured at the Middle Soda Creek site during our efforts. They were released uncollared on site.

Table 3. Grizzly bears captured in the Gros Ventre area of the Bridger-Teton National Forest, August 2018.

Bear ID	Capture Date	Sex/Age Class	Location	Collar
946	8/19/18	Adult male	Middle Soda Creek	GPS collar

GRIZZLY BEAR OBSERVATION FLIGHTS

The Department and other members of the Interagency Grizzly Bear Study Team (IGBST), conduct observation flights in order to monitor the Greater Yellowstone grizzly bear population and estimate abundance. In 2018, the Grizzly Bear Observation Units (GBOUs) in the southern portion of the Greater Yellowstone Ecosystem (GYE; Figure 1) were flown once in an effort to reduce flight time and because grizzly bears in these GBOUs are very difficult to observe. This survey was conducted in June to maximize the potential for grizzly bear observations in these GBOUs. An exception to this were GBOUs 26A and 26B, which were flown once in June and once in July due to higher numbers of grizzly bears in these GBOUs. The remaining GBOUs in the northern GYE were flown in July and August.

During the first round of flights (including June flights), considerably more grizzly bears were observed than in 2017. A total of 299 total grizzly bears were observed in the Wyoming GBOUs in 2018 compared to 197 bears observed during the same round in 2017. The number of females with cubs-of-year (Fcoy or COY) groups observed during Round 1 was also much higher than that of 2017, with 35 observed compared to 18 in 2017 (Table 4).

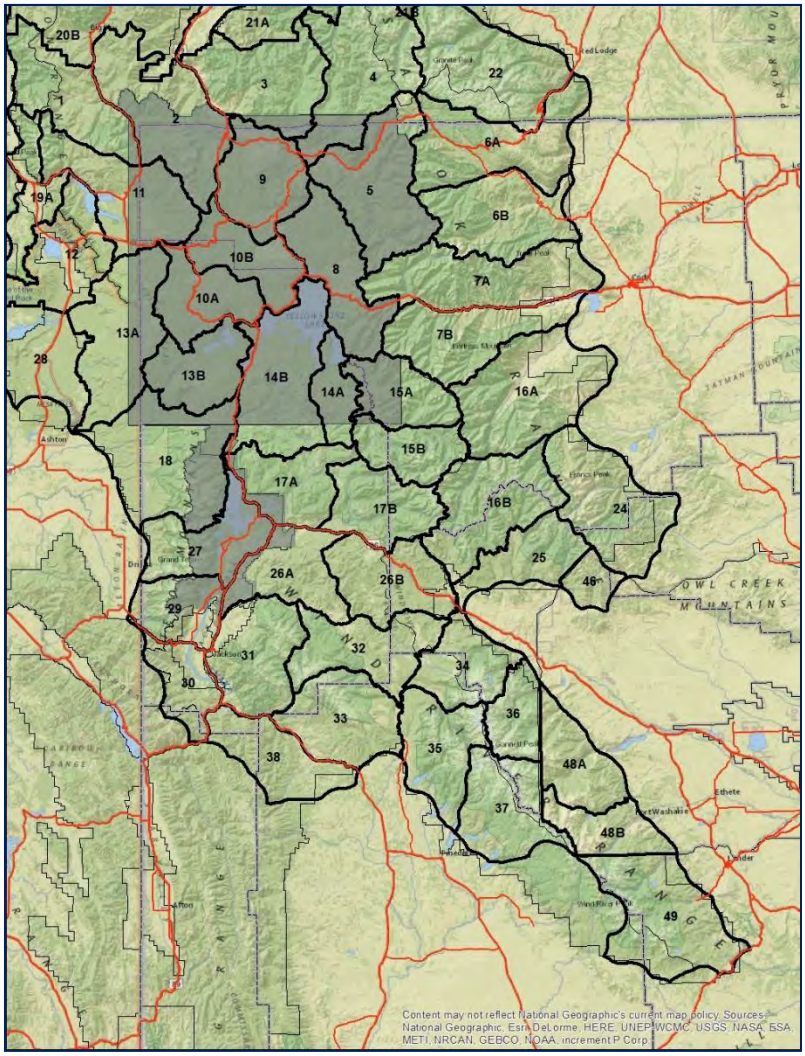


Figure 1. Grizzly Bear Observation Units (GBOUs) in the Wyoming portion of the Greater Yellowstone Ecosystem.

Table 4. Composition of grizzly bears observed in Round 1 during 2018 observation surveys in Wyoming.

		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					
Date	Unit	1	2	3	1	2	3	4	1	2	3		
7/23	6A											1	1
7/23	6B	-*	1	1	-	-	-	-	-	1	-	8	18
7/24	7A	-	2	4	-	-	-	-	-	1	-	11	36
7/25	7B	-	1	-	-	-	-	-	-	-	-	3	6
7/27	15A	-	1	-	-	-	-	-	-	-	-	1	4
8/1	15B	2	1	1	-	1	-	-	-	1	-	5	22
7/24	16A	-	10	-	2	3	-	1	-	-	-	33	81
7/25	16B	1	3	-	-	-	1	-	-	-	-	21	36
7/20	17A	-	-	-	-	-	-	-	-	-	-	1	1
7/21	17B	-	-	-	-	-	-	-	-	-	-	8	8
7/29	24	-	3	4	2	1	-	-	-	-	-	46	78
7/30	25	-	-	-	-	-	-	-	-	-	-	5	5
6/29	26A	-	-	-	-	-	-	-	-	-	-	0	0
6/15	26B	-	-	-	-	-	-	-	-	-	-	3	3
6/30	29	-	-	-	-	-	-	-	-	-	-	0	0
6/18	30	-	-	-	-	-	-	-	-	-	-	0	0
6/19	31	-	-	-	-	-	-	-	-	-	-	0	0
6/20	32	-	-	-	-	-	-	-	-	-	-	0	0
6/21	33	-	-	-	-	-	-	-	-	-	-	0	0
6/22	34	-	-	-	-	-	-	-	-	-	-	0	0
6/23	35	-	-	-	-	-	-	-	-	-	-	0	0
6/24	36	-	-	-	-	-	-	-	-	-	-	0	0
6/25	37	-	-	-	-	-	-	-	-	-	-	0	0
6/26	38	-	-	-	-	-	-	-	-	-	-	0	0
6/27	49	-	-	-	-	-	-	-	-	-	-	0	0
All Areas		3	22	10	4	5	1	1	0	3	0	146	299

*- indicates no bears observed

Only the northern GBOUs were flown during the second round of flights, with the exception of GBOUs 26A and 26B. A prolonged period of high winds and inclement weather resulted in the inability to fly two BMUs in Round 2 and aborting flights before completion for some others. Despite this, the 158 grizzly bears observed during Round 2 in 2018 was only slightly lower than the 189 observed in 2017. However, 13 Fcoy were observed during Round 2 flights; a decrease of 7 bears over the number observed in 2017 (Table 5).

Table 5. Composition of grizzly bears observed in Round 2 during 2018 observation surveys in Wyoming.

		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				
Date	Unit	1	2	3	1	2	3	1	2	3		
	6A	Not flown due to weather									0	0
	6B	Not flown due to weather									0	0
8/29	7A	4	1	1	1	-*	-	-	-	-	11	28
8/20	7B	-	-	-	-	-	-	-	-	-	4	4
8/22	15A	-	-	-	-	1	-	-	-	-	0	3
8/29	15B	-	-	-	-	-	-	-	-	-	0	0
8/28	16A	-	2	-	3	5	2	-	-	-	25	60
8/29	16B	-	-	-	-	-	-	-	-	-	1	1
8/16	17A	-	-	-	-	-	-	-	-	-	0	0
8/17	17B	-	-	-	-	1	-	-	-	-	4	7
8/28	24	-	2	3	1	2	-	-	-	-	26	52
8/28	25	-	-	-	-	-	-	-	-	-	1	1
7/19	26A	-	-	-	-	-	-	-	-	-	1	1
7/18	26B	-	-	-	-	-	-	-	-	-	1	1
All Areas		4	5	4	5	9	2	0	0	0	74	158

*- indicates no bears observed

A location referred to as "Devil's Graveyard" in grizzly bear observation flight unit 16B.

MOTH SITE USE BY GRIZZLY BEARS

Taken From: Grizzly Bear Use of Insect Aggregation Sites *(Daniel D. Bjornlie, Wyoming Game and Fish Department; and Mark A. Haroldson, Interagency Grizzly Bear Study Team, U.S. Geological Survey), 2018 Annual Report of the 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. 1991*b*, French et al. 1994). Early observations indicated that moths, and subsequently bears, showed specific site fidelity. These sites are generally high alpine areas dominated by talus and scree adjacent to areas with abundant alpine flowers. Because insects other than army cutworm moths may be present and consumed by bears (e.g., ladybird beetles [Coccinellidae family]) as well, we generally refer to such areas as "insect aggregation sites" or "moth sites." Within the GYE, observations indicate army cutworm moths are the primary food source at these sites.

Since the discovery of bears feeding at insect aggregation site in the early 1980s, numerous bears have been observed at or near these sites. Observability is high because of lack of tree cover and numbers of bears using the sites. However, complete tabulation of grizzly 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 aggregation sites fluctuate from year to year with moth abundance and variation in environmental factors such as snow cover.

As our knowledge of these sites has increased over time and techniques for monitoring grizzly bear use of these sites have changed. 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 three locations. During1997–1999, 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 and scree habitats (Ternent and Haroldson 2000). This method allowed trend in bear use of sites to be annually monitored by recording the number of bears documented in each circle (i.e., site).

We developed a new technique in 2000 (D. Bjornlie, Wyoming Game and Fish Department, unpublished data) that delineates sites by buffering only the locations of bears observed actively feeding at insect aggregation sites by 500 m; this distance was used to account for error in aerial 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 bears feed and does not include large areas of non-talus habitat that are not suitable for cutworm moths. Records from the grizzly bear location database from July 1 through September 30 of each year are then overlaid on these polygons and enumerated. Application of the new technique decreased the number of sites described in prior years, in which locations from both feeding and non-feeding bears were used. We now use this technique for the annual analysis completed for all years. Areas suspected as insect aggregation sites but dropped from the list of confirmed sites, and 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 bears. These sites may then be added to the confirmed sites list. When the status of a site is changed to confirmed, analysis is done on all data back to 1986 to determine the historic use of that site. Therefore, the number of 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. New observations of grizzly bears actively feeding in previously undocumented areas will be added as possible sites and monitored for future use. In addition, as new observations of actively feeding bears 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 bears using insect aggregation sites in past years.

Analysis of grizzly bear use of insect aggregation sites in 2018 resulted in an additional 200 observations of actively feeding grizzly bears on previously identified confirmed sites. In addition, there were observations of actively feeding grizzly bears at two previously undocumented sites so two possible new sites were added in 2018. Thus, there were 31 confirmed sites and 21 possible sites through 2018.

Overall documentation of grizzly bears on aggregation sites in 2018 (n = 281) was slightly lower than 2017 (n = 297) (Table 6). The number of grizzly bears observed on sites and the percentage of confirmed sites with documented use by grizzly bears varies from year to year, suggesting that moth numbers may be greater in some years than others (Figure 2), which may be due to variable snow conditions or the number of moths migrating from the plains. In 1993, a year with unusually high snowpack, the percentage of confirmed sites used by bears (Figure 2) and the number of observations recorded at insect sites were very low (Table 6). In all other years, the percentage of insect aggregation sites used by grizzly bears varied between 50% and 84% (Figure 2).

However, when we control for the amount of observation effort by including only grizzly bears observed during regularly conducted observation flights (see "***Observation Flights***"), grizzly bears observed using insect aggregation sites increased from 2017 (n = 228 observations, 6.9 locations/hour flown) to 2018 (n = 246 observations, 8.6 observations/hour flown; Figure 3). Because effort, as measured by hours flown, in the bear management units containing all confirmed insect aggregation sites has remained consistent since 1997, the change in the number of grizzly bears using insect aggregation sites suggests the increasing trend in grizzly bear use of these sites is not due to change in observation effort (Figure 3). The increase in reported observations of grizzly bears using insect aggregation sites from ground-based observers and our increased use of GPS collars with satellite technology has resulted in the need to censor these locations to prevent a bias in comparisons with previous years. Therefore, the number of aerial telemetry locations and observations from Table 6 reflect this change and may differ from previous annual reports.

Since 1986, 1,227 initial sightings of unique females with cubs have been recorded, of which 347 (28.3%) have occurred at (<500 m, n = 323) or near (<1,500 m, n = 24) insect aggregation sites (Table 7). In 2018, 18 of the 58 (31.0%) initial sightings of unique females with cubs were observed at insect aggregation sites; slightly higher than the mean of 27.3% for the previous five years (2013–2017, Table 7).

Survey flights at or near (<1,500 m) insect aggregation sites contribute to the count of unique females with cubs. However, the contribution from these flights is typically low, with a 10-year mean of 12.4 initial sightings/year since 2009 (Table 7). If these sightings are excluded, a similar trend in the annual number of unique sightings of females with cubs is still evident (Figure 4), suggesting that other factors besides observation effort at insect aggregation sites are responsible for the increase in sightings of females with cubs over time.

Table 6. Summary statistics for grizzly bear use of confirmed insect aggregation sites, Greater Yellowstone Ecosystem, 1986–2018.

Year	Number of confirmed sites[a]	Number of sites used[b]	Number of aerial telemetry locations	Number of ground or aerial observations
1986	4	2	7	5
1987	5	3	3	17
1988	5	3	11	28
1989	9	7	9	41
1990	14	11	9	77
1991	16	12	12	169
1992	17	11	6	107
1993	18	3	1	2
1994	18	9	1	31
1995	20	11	7	39
1996	21	14	21	67
1997	22	15	17	83
1998	25	21	10	182
1999	25	14	26	156
2000	25	13	48	95
2001	26	18	23	127
2002	27	20	30	251
2003	27	20	9	163
2004	27	16	2	134
2005	29	19	16	197
2006	29	16	15	146
2007	29	19	19	161
2008	29	22	17	179
2009	31	23	9	170
2010	31	18	4	132
2011	31	19	9	162
2012	31	22	16	252
2013	31	22	25	295
2014	31	24	11	343
2015	31	21	13	210
2016	31	19	10	207
2017	31	21	20	277
2018	31	19	18	263
Total			454	4768

[a] 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.

[b] A site was considered used if ≥1 location or observation was documented within the site during July–September of that year.

Table 7. Initial sightings of unique females with cubs on or near insect aggregation sites, Greater Yellowstone Ecosystem, 1986–2018.

Year	Number of unique females with cubs[a]	Number of sites with an initial sighting[b]	Initial sightings			
			Within 500 m[b]		Within 1,500 m[c]	
			n	%	*N*	%
1986	25	0	0	0	0	0
1987	13	0	0	0	0	0
1988	19	1	2	10.5	2	10.5
1989	16	1	1	6.3	1	6.3
1990	25	4	4	16.0	5	20.0
1991	24	7	13	54.2	14	58.3
1992	25	5	7	28.0	9	36.0
1993	20	1	1	5.0	1	5.0
1994	20	3	5	25.0	5	25.0
1995	17	2	2	11.8	2	11.8
1996	33	7	7	21.2	8	24.2
1997	31	8	11	35.5	11	35.5
1998	35	10	13	37.1	13	37.1
1999	33	3	6	18.2	7	21.2
2000	37	6	9	24.3	10	27.0
2001	42	7	13	31.0	13	31.0
2002	52	11	18	34.6	18	34.6
2003	38	11	20	52.6	20	52.6
2004	49	11	17	34.7	17	34.7
2005	31	5	7	22.6	8	25.8
2006	47	11	15	31.9	16	34.0
2007	50	10	17	34.0	17	34.0
2008	44	7	11	25.0	14	31.8
2009	42	4	6	14.3	7	16.7
2010	51	7	9	17.6	9	17.6
2011	39	6	7	17.9	7	17.9
2012	49	6	13	26.5	13	26.5
2013	58	8	14	24.1	15	25.9
2014	50	11	21	42.0	23	46.0
2015	46	7	11	23.9	13	28.3
2016	50	7	13	26.0	17	34.0
2017	58	7	12	20.7	12	20.7
2018	58	8	18	31.0	20	34.5
Total	1,227		323		347	
Mean	37.2	6.1	9.8	24.4	10.5	26.2

[a] Initial sightings of unique females with cubs; see Table 5.

[b] Insect aggregation site is defined as a 500-m distance around a cluster of observations of bears actively feeding.

[c] This distance is 3 times what is defined as an insect aggregation site for this analysis because some observations may be of bears traveling to and from insect aggregation sites.

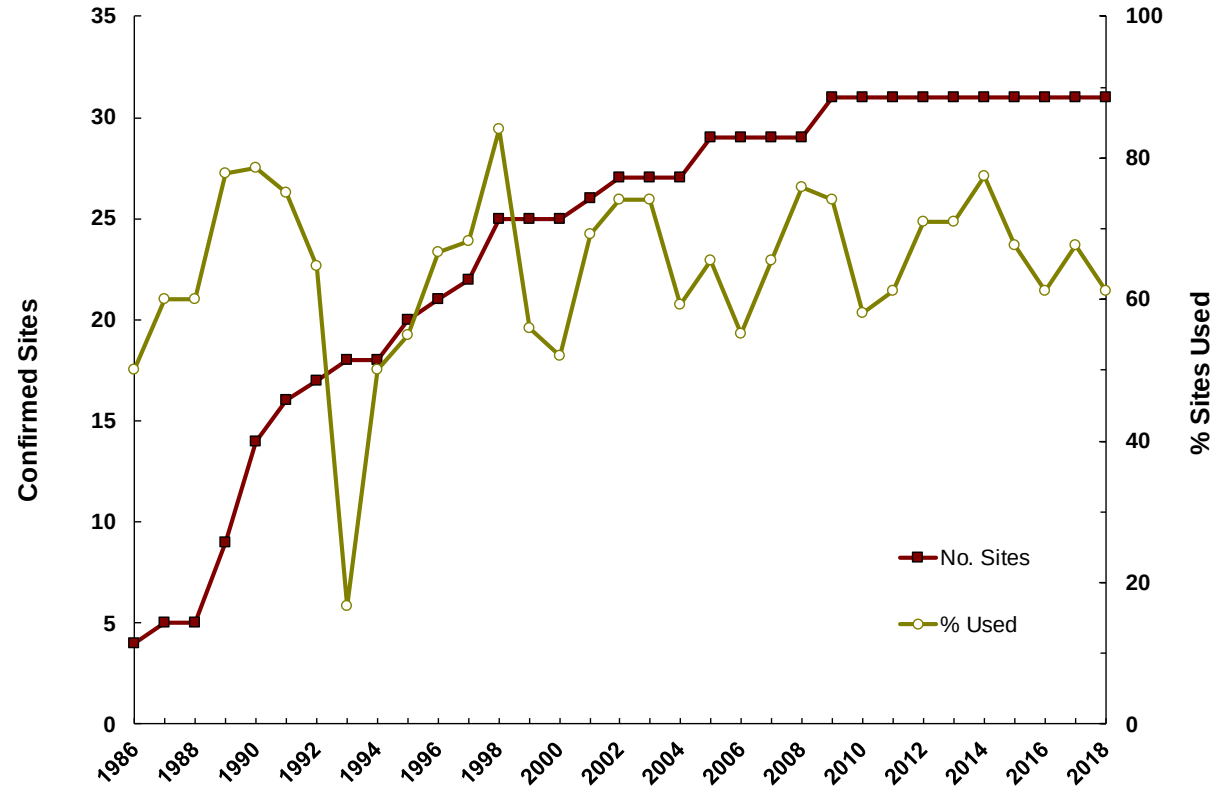


Figure 2. Annual number of confirmed insect aggregation sites and percent of those sites at which telemetry relocations of marked bears or visual observations of unmarked bears were recorded, Greater Yellowstone Ecosystem, 1986–2018.

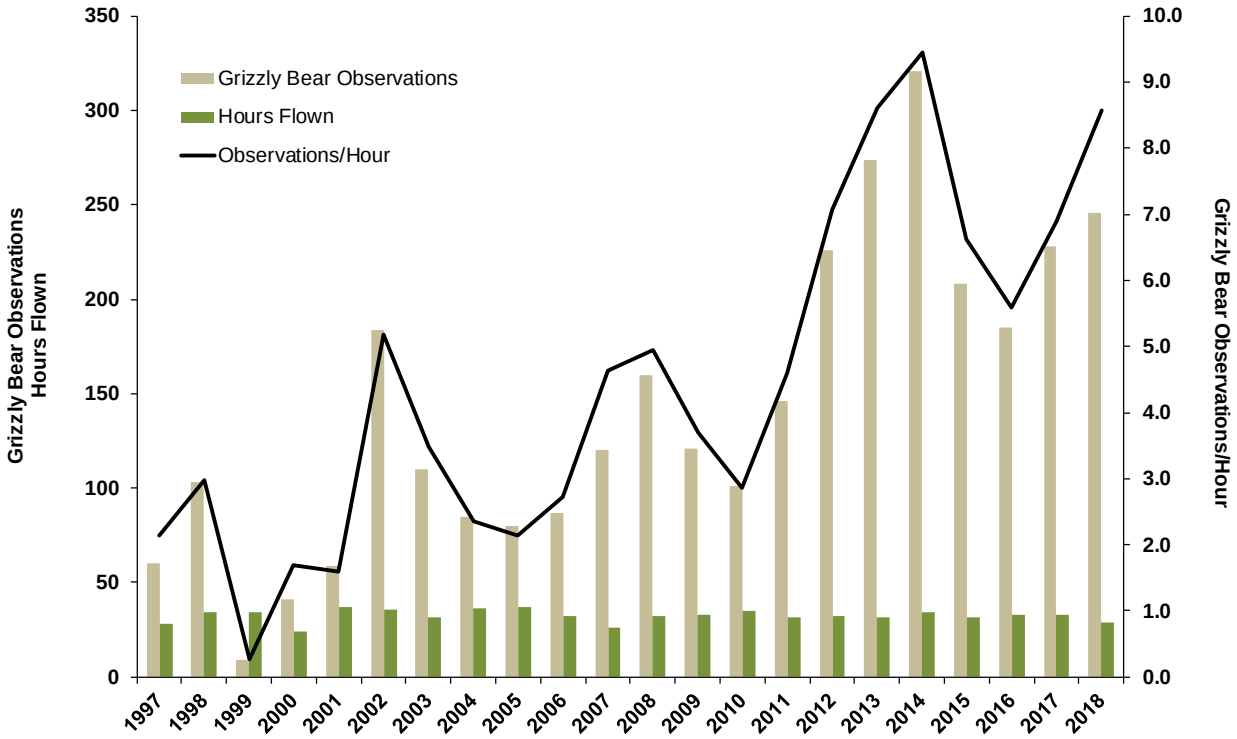


Figure 3. Number of grizzly bears observed (tan bars) on insect aggregation sites during observation flights only, hours flown (green bars) for these bear management units (BMU), and grizzly bear observations per hour (black line) during observation flights of BMUs containing all known insect aggregation sites, Greater Yellowstone Ecosystem, 1997–2018.

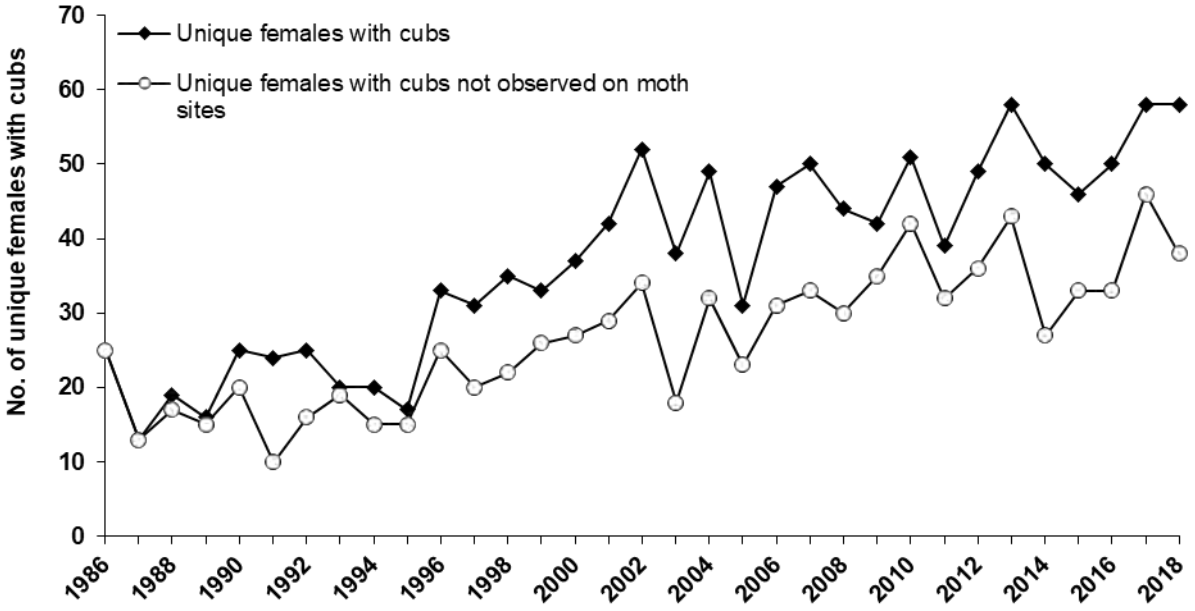


Figure 4. Total number of unique females with cubs observed annually in the Greater Yellowstone Ecosystem and the number of unique females with cubs not found within 1,500 m of known insect aggregation sites, 1986–2018.

Josh Westerhold

GRIZZLY BEAR OCCUPIED RANGE

Taken From: ***Grizzly Bear Occupied Range in the Greater Yellowstone Ecosystem, 1990–2018*** *(Daniel D. Bjornlie, Wyoming Game and Fish Department; and Mark A. Haroldson, Interagency Grizzly Bear Study Team, U.S. Geological Survey), 2018 Annual Report of the Interagency Grizzly Bear Study Team*

The Greater Yellowstone Ecosystem (GYE) grizzly bear population had been reduced to only a few hundred bears when it was first listed as threatened under the Endangered Species Act (ESA) in 1975. As the population has increased in the intervening years, GYE grizzly bears have reoccupied areas of their former range, including areas where their presence has not been known for over 100 years. Documenting range expansion has become an important part of grizzly bear population monitoring, providing researchers, managers, and the public with spatial data on grizzly bear presence necessary to inform conservation and management.

From its inception, the Interagency Grizzly Bear Study Team has recorded confirmed locations of grizzly bears throughout the GYE as part of routine population monitoring. These locations have been used to create periodic estimates of occupied grizzly bear range since the early 1980s (Basile 1982, Blanchard 1992, Schwartz et al. 2002, Schwartz et al. 2006). Bjornlie et al. (2014) developed a new technique that uses all confirmed grizzly bear locations. Those locations are first overlaid on a grid of 3-km cells to determine occupancy and the areas surrounding the centers of occupied cells are then interpolated to create a surface of occupied range (Bjornlie et al. 2014). Since the adoption of this method, biannual updates of grizzly bear occupied range have revealed steady range expansion. Additionally, reanalysis of location data dating back to the 1970s provide estimates of historic grizzly bear range for direct comparison with current results.

Because grizzly bears are a long-lived species and the collection of confirmed locations over the entire GYE is not feasible on an annual basis, Bjornlie et al. (2014) recommended that location data be pooled over a 15–20 year period to ensure the data provide an accurate representation of grizzly bear occupied range. Therefore, we used a 15-year period of location data in a moving window analysis for all years and annual estimate of occupied range contains location data from that year and the previous 14 years (e.g., 2004–2018).

Using this technique, analysis of grizzly bear locations from 1976 through 1990 produced an estimate of GYE grizzly bear occupied range almost entirely contained within the grizzly bear recovery zone established in the 1993 Grizzly Bear Recovery Plan (USFWS 1993) (Figure 5). By the late 1990s, occupied range had grown slightly to the south and east, but was still mostly contained within the Recovery Zone (Figure 5). However, in the 2000s, range expansion seemed to gain momentum and larger increases were seen, especially to the northwest and southeast (Figure 5). The addition of 2018 location data resulted in nearly all of the Absaroka and Beartooth Ranges falling within grizzly bear occupied range, as well as the entire Wind River Range. To the west, the entirety of the Centennial and Gravelly Ranges are included, along with the previously occupied Madison and Gallatin Ranges. To provide a spatial perspective, the portion of 2018 occupied range at the southeastern tip of the Wind River Range is closer to the town of Fort Collins, Colorado than it is to Bozeman, Montana, at the northern extent of GYE grizzly bear range.

Perhaps even more striking than the expansion of occupied range is the continued progression of confirmed grizzly bear locations outside occupied range, particularly on the eastern side of the GYE. Indeed, in 2018 we documented two of the most-easterly confirmed locations since grizzly bears were listed under the ESA. Grizzly bear tracks were confirmed near Ocean Lake, approximately 25 km northwest of Riverton, Wyoming (Figure 6). To the north, a female grizzly bear with two cubs was captured along the Shoshone River near the

town of Byron, Wyoming, a heavily agricultural area approximately 50 km northeast of the town of Cody, Wyoming (see Figure 6). This location is 60 km east of the historically occupied Absaroka Mountains, but only 40 km west of the currently unoccupied Bighorn Mountains in north-central Wyoming (Figure 6), where grizzly bears have not been documented for nearly 100 years. In the northern GYE, grizzly bear locations have been confirmed as far north as Interstate 90 near Livingston and Big Timber, Montana (Figure 6) and to the west, recent confirmed locations have been documented in the Blacktail Mountains just east of Interstate 15, south of the town of Dillon, Montana. In fact, verified locations of grizzly bears in places novel in recent history have become relatively common in many areas of the GYE and beyond. Confirmed 2018 locations west of Interstate 15 in the Pioneer Mountains and Big Hole Valley near Wisdom, Montana are located outside the Yellowstone Distinct Population Segment and could be bears originating from either the Greater Yellowstone population or the Northern Continental Divide population in northwestern Montana. These outlying locations do not necessarily constitute occupied range, but reveal the leading edges of grizzly bear expansion within and between ecosystems.

From 1990 through 2018, the area of occupied range has increased steadily at a rate of 4% per year from just over 23,000 km^2 to over 68,000 km^2 (Figure 7). Grizzly bear occupied range now includes 97.5% of the Demographic Monitoring Area (DMA), and has expanded 20–30 km beyond the DMA boundary to the east and west and by as much as 59 km in the Wyoming Range in the southwestern portion of the GYE (Figure 6). The 2018 data show that nearly 30% of GYE grizzly bear range is now outside the DMA boundary (Figure 7). As grizzly bears advance into these areas, they are encountering more human-dominated landscapes, many of which are private lands dominated by agricultural uses (Figure 8). By 1990, just over 600 km^2 of private lands were encompassed within grizzly bear occupied range, an area half the size of Grand Teton National Park. By 2018, nearly 12,000 km^2 of private lands occurred within occupied range, an area larger than Yellowstone and Grand Teton National Parks combined (Figure 8). A consequence of this increased expansion into private lands is the increased potential for human-bear conflicts. The recovery of grizzly bears in the GYE is a remarkable wildlife conservation success story, but this success presents formidable new challenges for wildlife managers and people living, working, and recreating in these areas, particularly in recently occupied areas.

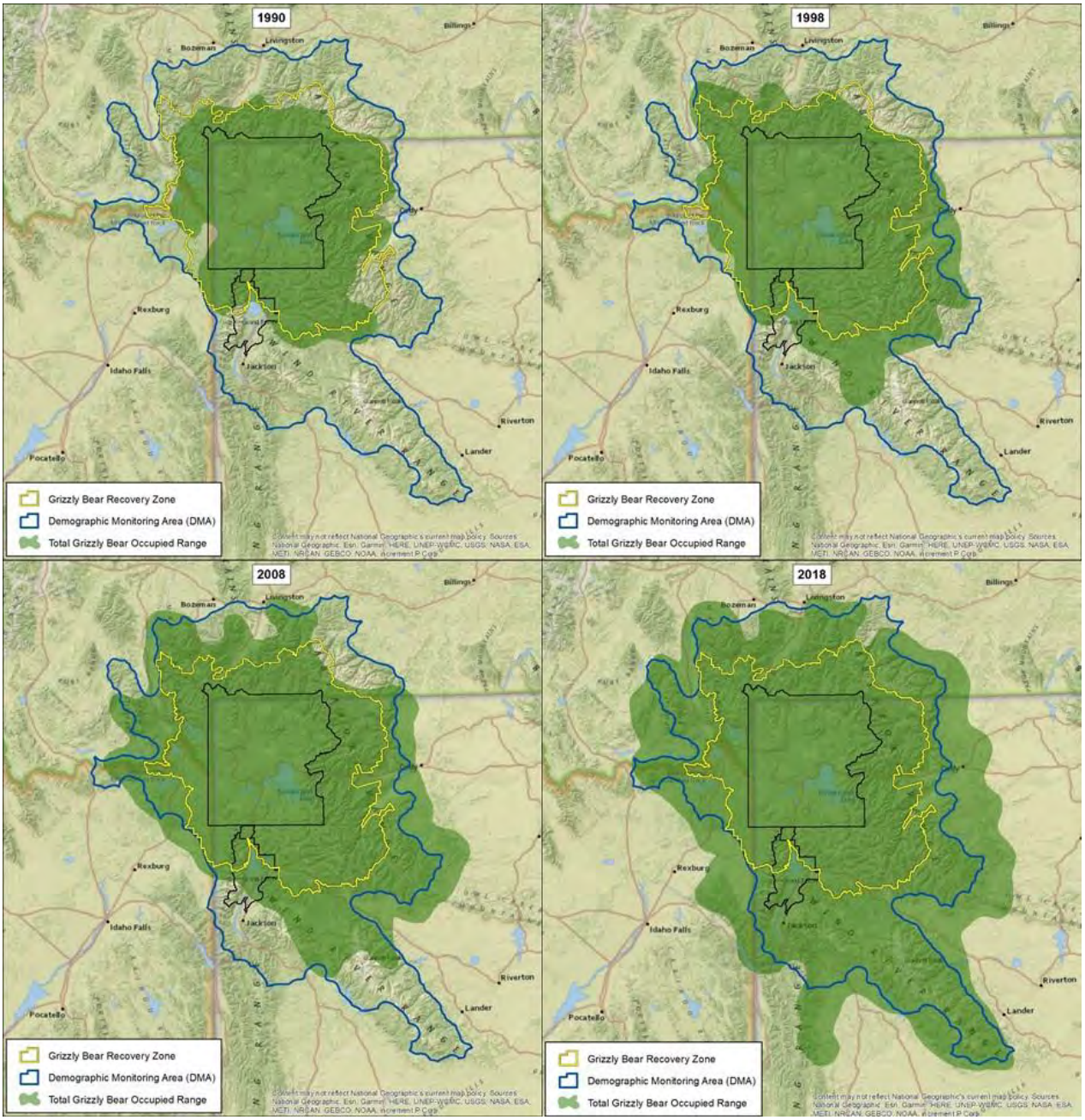


Figure 5. Grizzly bear occupied range (green shaded area) in the Greater Yellowstone Ecosystem, 1990, 1998, 2008, and 2018.

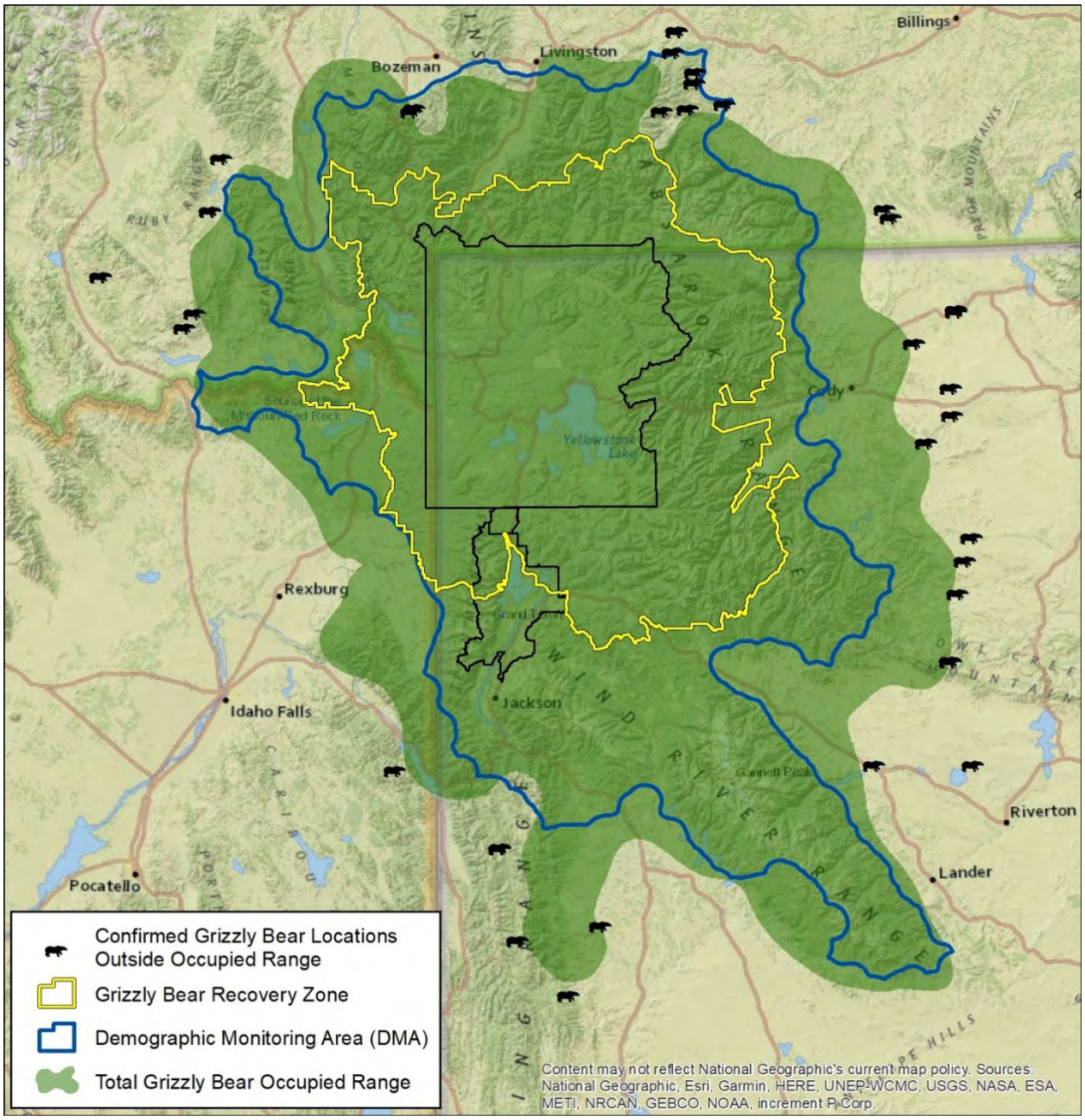


Figure 6. Grizzly bear occupied range (green shaded area) in the Greater Yellowstone Ecosystem, 2018. Bear icons represent confirmed grizzly bear locations outside occupied range.

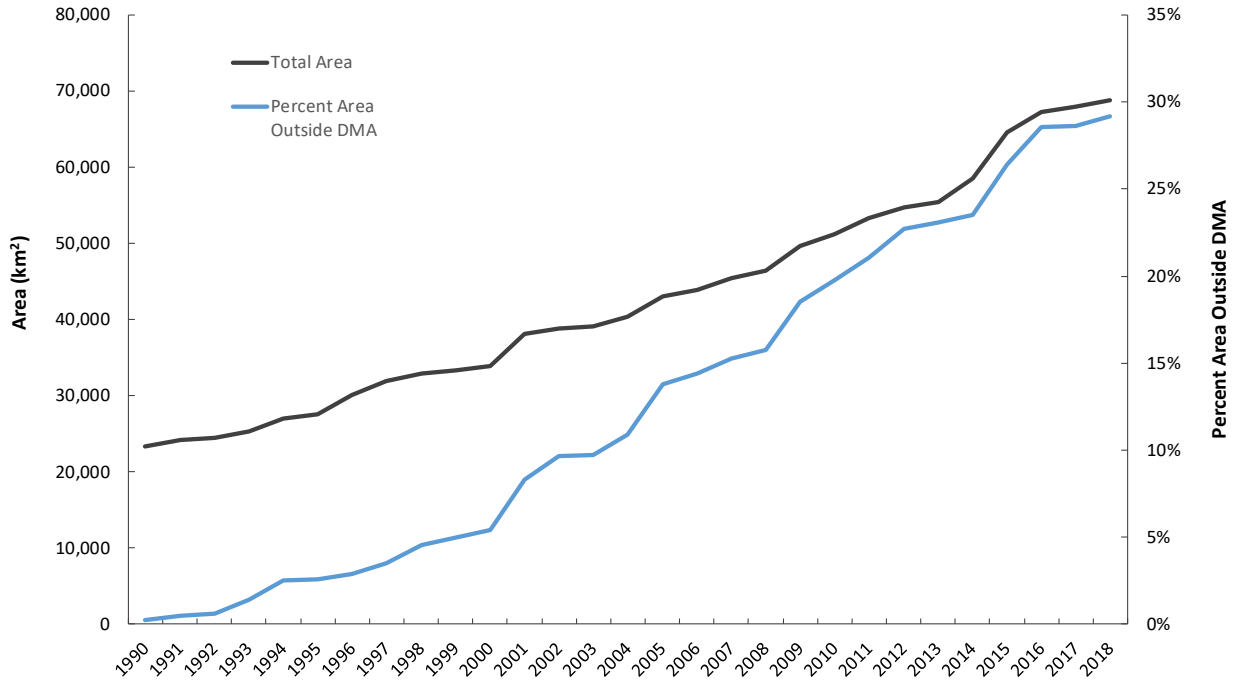


Figure 7. Total area of grizzly bear occupied range and percent of area of occupied range outside the Demographic Monitoring Area (DMA) in the Greater Yellowstone Ecosystem, 1990–2018.

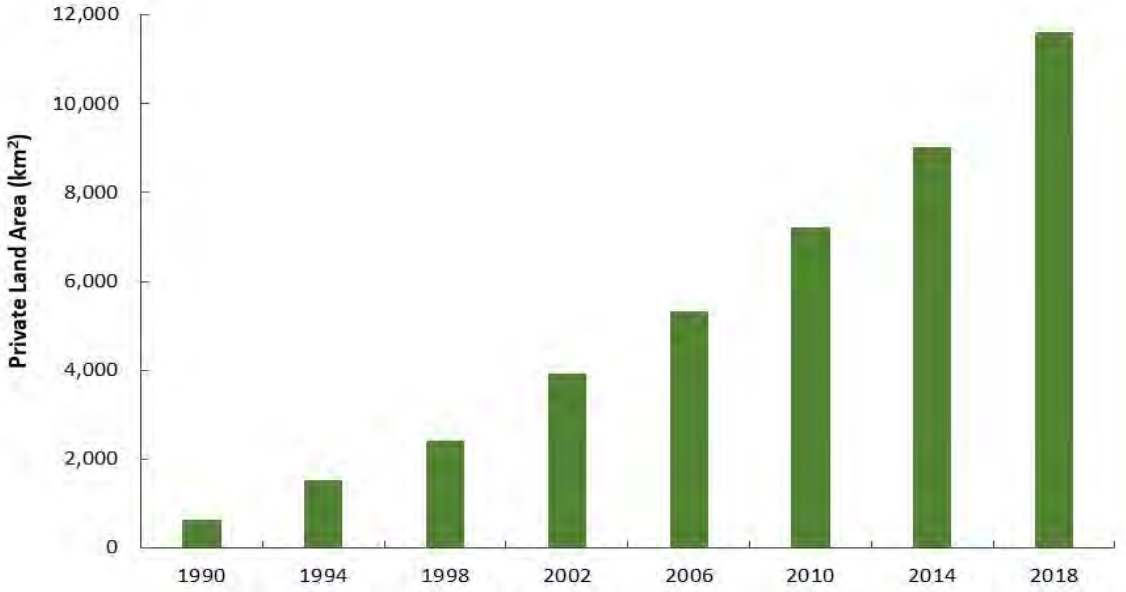


Figure 8. Area of private land within grizzly bear occupied range in the Greater Yellowstone Ecosystem in 4-year intervals, 1990–2018.

2018 GRIZZLY BEAR HUNTING ORIENTATION AND TRAINING

In the fall of 2018, the Game and Fish was prepared to conduct a highly regulated grizzly bear hunt in northwest Wyoming. The hunt was the culmination of multiple public meetings and Commission adopted regulations that allowed for hunting of the recovered grizly bear population in the GYE. In accordance with Wyoming Game and Fish Commission (Commission) Chapter 68 Grizzly Bear Hunting Seasons regulation, LCS personnel conducted mandatory hunting orientation and training for licensed grizzly bear hunters during the summer in peperation for the 2018 grizzly bear hunting season. The training was provided in Casper and Lander, WY as well as an online interactive version and was intended to provide hunters with the necessary information to provide for a safe and memorable hunt. The course covered the following information: history, species ID and grizzly bear ecology, gender identification, safety, regulations, field judging and shot placement, ethics, and additional information including meat preparation and recipes. All licensed hunters succesfully completed the course prior to initation of huntain seasons; on September 24, 2019, a federal judge's decision placed GYE grizzly bears under Endangered Species Act protections as a threatened populaton, remanding grizzly bear managementt authority back to the U.S. Fish and Wildlife Service, and thereby negating the hunt.

GRIZZLY BEAR CONFLICT MANAGEMENT

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 Commission promulgated Chapter 58 Notification of Grizzly Bear Relocation Regulation 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. Definitions. Definitions shall be as set forth in Title 23, Wyoming Statutes, Commission regulations, 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 3. Notification of relocation. 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.

WYOMING GAME AND FISH COMMISSION

By:

_____

Mike Healy, President

Dated: January 22, 2014

CONFLICT MANAGEMENT – CAPTURE, RELOCATION AND REMOVAL

During 2018, the Department captured 53 individual grizzly bears in 59 capture events in an attempt to prevent or resolve conflicts; meaning six bears were captured twice (Figure 9 and Tables 8 and 9). Most captures were adult and subadult (3-5 years old) males (Table 8).

Of the 59 capture events, 35 captures were a result of bears killing livestock (primarily cattle), 13 were captured for obtaining pet, livestock food, garbage, or damaging fruit trees. Nine bears were captured for frequenting developed sites or populated areas unsuitable for grizzly bear occupancy. Two bears were captured as a result of a human fatality. Of the 59 capture events, 29 (49%) were in Park County, 20 (34%) were in Sublette County, four (7%) were in Teton County, three (5%) were in Hot Springs County, and three (5%) were in Big Horn County (Table 9 and Figure 9).

Of the 59 capture events, there were 23 relocation events, four bears were released on site because they were non-target captures or part of a family group. Thirty-two bears were removed from the population. All relocated grizzly bears were released on U.S. Forest Service lands in or adjacent to the Primary Conservation Area (Figure 10). Of the 23 relocation events, 11 (48%) bears were released in Teton County, 11 in Park County (48%), and one (4%) was released in Fremont County (Figure 10 and Table 9).

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, the reason the grizzly bear was relocated, and additional bear safety and conflict avoidance information.

Bears were removed from the population 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). Of the 32 bears that were removed from the population, 17 were outside of the Demographic Monitoring Area. Removals occur after much deliberation and ultimate decisions take into account multiple factors unique to each conflict situation.

Table 8. Gender and age class for all 2018 grizzly bear conflict management captures (n = 59) in Wyoming.

Reproductive Status	Count
UNKNOWN GENDER YEARLING	1
FEMALE ADULT	5
FEMALE ADULT WITH 1 CUB OF THE YEAR	2
FEMALE ADULT WITH 1 YEARLING	1
MALE ADULT	22
FEMALE CUB OF THE YEAR	3
MALE CUB OF THE YEAR	3
FEMALE WITH 3 YEARLINGS	1
FEMALE SUBADULT	5
MALE SUBADULT	8
FEMALE YEARLING	3
MALE YEARLING	5
Total	**59**

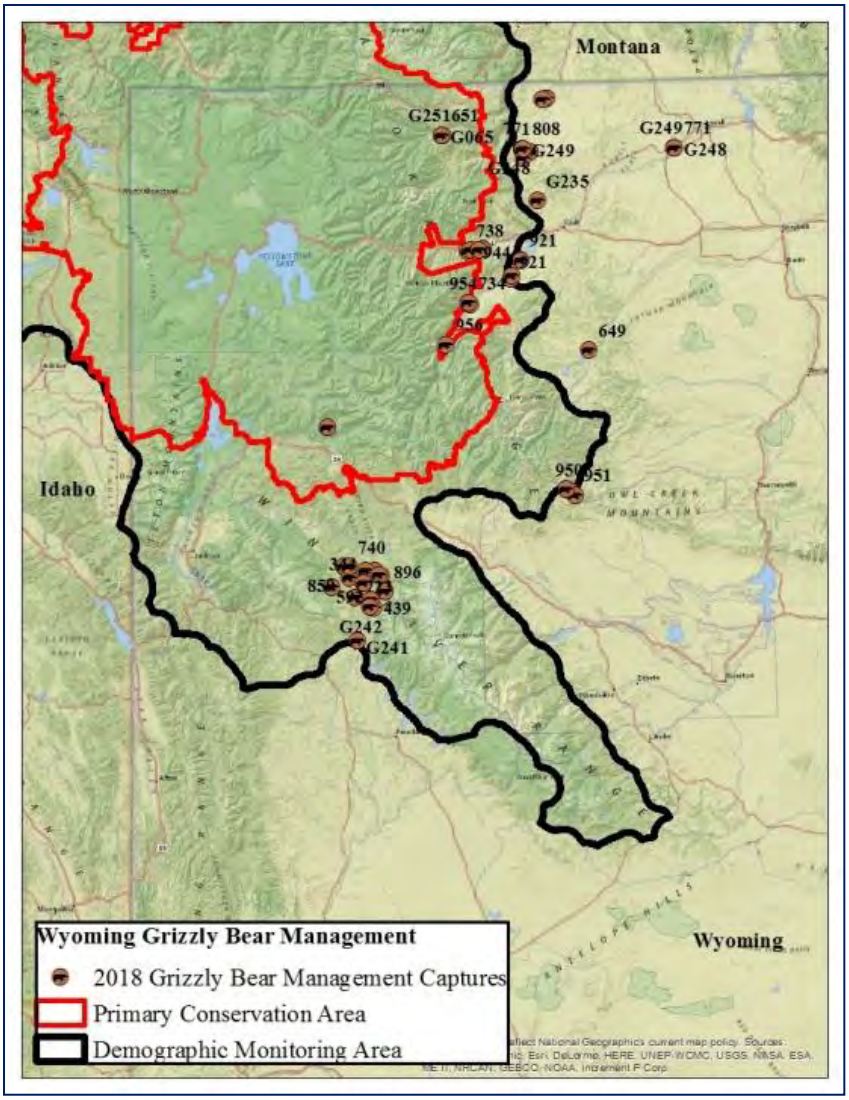


Figure 9. Management capture locations (n = 59) for grizzly bears in 2018. Grizzly bears with "G" in front of their number were marked but not fitted with radio collars (typically because they were too young to be collared). Grizzly bears identified with "NA" were grizzly bears removed from the population without being given an identification number. Please note that the mapping software combines some locations at this scale. Therefore, locations/bear numbers at or very near the same coordinates are not always distinct on the map, but are listed in Table 9.

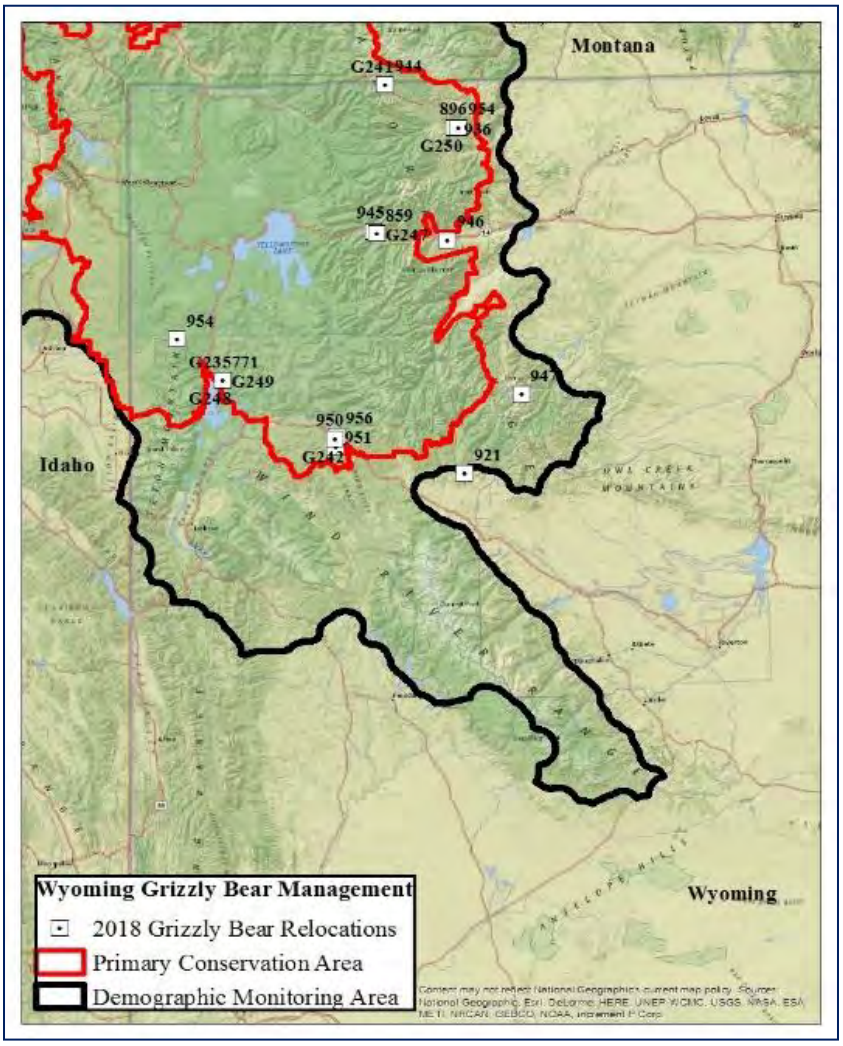


Figure 10. Release locations (n = 23) for grizzly bears captured and relocated in conflict management efforts 2018. Grizzly bears with "G" in front of their number were marked but not fitted with radio collars (typically because they were too young to be collared). Please note that the mapping software combines some locations at this scale. Therefore, locations/bear numbers at or very near the same coordinates are not always distinct on the map, but are listed in Table 9.

Table 9. Capture date, grizzly bear identification number (ID), capture county, relocation site, release county, and reason for capture for all 2018 grizzly bear conflict management captures (n = 59) in Wyoming. Grizzly bears identified with "N/A" were grizzly bears removed from the population without being given an identification number.

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
4/10/2018	649	PARK			REMOVED FOR FREQUENTING CALVING PASTURE AND LIVESTOCK CONFLICT HISTORY
4/24/2018	921	PARK	BEAR CREEK	FREMONT	CAPTURED FOR FREQUENTING CALVING PASTURES
4/29/2018	N/A	PARK			REMOVED FOR VERY BOLD BEHAVIOR AND FREQUENTING CALVING PASTURE/RANCH AREA
5/9/2018	N/A	PARK			REMOVED FOR BREKING INTO BUILDING AND GETTING PET FOOD
5/30/2018	N/A	PARK			REMOVED FOR BEING HABITUATED AND ASSOCIATED WITH MULTIPLE CATTLE DEPREDATIONS
5/30/2018	G235	PARK	BAILEY CREEK	TETON	CAPTURED FOR FREQUENTING A RESIDENCE WITH CHICKENS
6/22/2018	N/A	PARK			CAPTURED FOR CATTLE DEPREDATION. REMOVED DUE TO VERY POOR CONDITION
7/3/2018	936	SUBLETTE	SUNLIGHT BASIN	PARK	CATTLE DEPREDATION
7/8/2018	841	SUBLETTE			REMOVED FOR REPEATED CATTLE DEPREDATIONS
7/13/2018		SUBLETTE	ON SITE		NON-TARGET CAPTURE; RELEASED WITHOUT HANDLING
7/13/2018	344	SUBLETTE			REMOVED FOR REPEATED CATTLE DEPREDATIONS
7/13/2018	592	SUBLETTE			REMOVED FOR REPEATED CATTLE DEPREDATIONS
7/16/2018	G240	SUBLETTE	ON SITE		RELEASED ON SITE
7/24/2018	G241	SUBLETTE	FOX CREEK	PARK	CATTLE DEPREDATION
7/24/2018	G242	SUBLETTE	BLACKROCK	TETON	CATTLE DEPREDATION
7/25/2018	439	SUBLETTE			REMOVED FOR CHRONIC CATTLE DEPREDATION; G242, G243,G 244 RELOCATED
7/25/2018	G243	SUBLETTE	BLACKROCK	TETON	CATTLE DEPREDATION

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
7/25/2018	G244	SUBLETTE	BLACKROCK	TETON	CATTLE DEPREDATION
8/1/2018	N/A	SUBLETTE			REMOVED FOR LIVESTOCK DEPREDATIONS AND MISSING FOOT
8/4/2018	808	PARK			CAPTURED AND REMOVED FOR LIVESTOCK DEPREDATIONS.
8/5/2018	723	SUBLETTE			REMOVED FOR CHRONIC CATTLE DEPREDATION
8/7/2018	G247	TETON	MORMON CREEK	PARK	NON TARGET AT CATTLE DEPREDATION
8/8/2018	859	TETON	MORMON CREEK	PARK	CATTLE DEPREDATION
8/13/2018	740	SUBLETTE			REMOVED DUE TO REPEATED CATTLE DEPREDATIONS
8/17/2018	944	PARK	FOX CREEK	PARK	CAPTURED FOR DAMAGING APPLE TREES AT A RESIDENCE
8/18/2018	945	SUBLETTE	FIVEMILE CREEK	PARK	CATTLE DEPREDATION
8/23/2018	947	SUBLETTE	WOOD RIVER	PARK	CATTLE DEPREDATION
9/1/2018	921	PARK			REMOVED FOR APPLE TREE DAMAGE AND FREQUENTING RESIDENTIAL AREAS.
9/3/2018	738	PARK			REMOVED FOR GETTING INTO CHICKEN COOPS AND POOR CONDITION.
9/4/2018		HOT SPRINGS			REMOVED FOR MULTIPLE CATTLE DEPREDATIONS
9/6/2018		PARK			CATTLE DEPREDATION; DIED DURING CAPTURE
9/6/2018	771	PARK	BAILEY CREEK	TETON	CATTLE DEPREDATION. RELOCATED WITH TWO COY G248 AND G249
9/6/2018	859	SUBLETTE			REMOVED FOR REPEATED CATTLE DEPREDATIONS
9/6/2018	G248	PARK	BAILEY CREEK	TETON	CAPTURED AND TRANSPORTED WITH MOTHER(771) AND SIBLING (G249) FOR CATTLE DEPREDATION
9/6/2018	G249	PARK	BAILEY CREEK	TETON	TRANSPORTED WITH MOTHER (771) AND SIBLING (G248) FOR CATTLE DEPREDATION
9/7/2018	950	HOT SPRINGS	LOST LAKE, BTNF	TETON	CATTLE DEPREDATION
9/10/2018	946	SUBLETTE	CLOCKTOWER CREEK	PARK	CATTLE DEPREDATION
9/12/2018	951	HOT SPRINGS	SQUAW BASIN	TETON	CATTLE DEPREDATION

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
9/16/2018	N/A	TETON			REMOVED FOR HUMAN DEATH
9/16/2018	N/A	TETON			REMOVED FOR HUMAN DEATH
9/19/2018	N/A	PARK			REMOVED FOR FREQUENTING AGRICULTURAL AREAS, INCLUDING A PUBLIC CORN MAZE, POOR CONDITION AND PUBLIC SAFETY
9/21/2018	N/A	PARK			REMOVED FOR SEVERAL TRASH CONFLICTS AND BREAKING INTO TURKEY COOP AND KILLING A TURKEY
9/25/2018	651	PARK			REMOVED FOR OBTAINING GARBAGE FROM BEAR RESISTANT TRASH CAN AND PRIOR CONFLCT HISTORY
9/29/2018	954	PARK	FALL RIVER	TETON	FREQUENTING YARDS AND AROUND RANCH BUILDINGS, EXHIBITING BOLD BEHAVIORS DURING DAYLIGHT HOURS
9/30/2018	N/A	PARK			REMOVED FOR FREQUENTING AGRICULTURAL AREAS, INCLUDING A PUBLIC CORN MAZE, AND PUBLIC SAFETY
10/2/2018	N/A	PARK			REMOVED FOR FREQUENTING PUBLIC CORN MAZE AND FOR PUBLIC SAFETY
10/3/2018	N/A	PARK			REMOVED FOR HABITUATED BEHAVIOR, FOOD REWARDS AND FREQUENTING DEVELOPED AREAS
10/3/2018	N/A	PARK			REMOVED FOR HABITUATED BEHAVIOR AND FREQUENTING DEVELOPED AREAS
10/3/2018	N/A	PARK			REMOVED FOR HABITUATED BEHAVIOR AND FREQUENTING DEVELOPED AREAS
10/7/2018	956	PARK	LOST LAKE	TETON	PROPERTY DAMAGE TO A ROOT CELLAR TO OBTAIN ELK QUARTERS
10/16/2018	734	PARK	ON SITE		CATTLE DEPREDATION - RELEASED ON SITE WITH GPS COLLAR
10/16/2018	896	SUBLETTE	DEADMAN CREEK	PARK	DAMAGING PROPERTY AT OUTFITTER CAMP
10/16/2018	954	PARK	DEADMAN CREEK	PARK	NON-TARGET CAPTURE. MOVED FOR PREVIOUS CAPTURE ON SAME AREA ON 9/29. NOT HANDLED - RELOCATED
10/16/2018	G250	SUBLETTE	DEADMAN CREEK	PARK	DAMAGING PROPERTY AT OUTFITTER CAMP

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
10/19/2018	G065	PARK			REMOVED FOR OBTAINING FOOD REWARDS FROM BEAR RESISTANT CONTAINERS AND ASSOCIATED WITH SEVERAL DEPREDATIONS
10/20/2018	G251	PARK	ON SITE		INTO TRASH AND CLIMBING ON VEHICLES AT RANCH
10/25/2018	G249	BIG HORN			REMOVED WITH MOTHER 771 AND SIBLING G248 FOR PUBLIC SAFETY CONCERNS AND RECENT CAPTURE HISTORY
10/25/2018	771	BIG HORN			REMOVED WITH 2 COY G248 AND G249 FOR PUBLIC SAFETY CONCERNS AND RECENT CAPTURE HISTORY
10/25/2018	G248	BIG HORN			REMOVED WITH MOTHER 771 AND SIBLING G249 FOR PUBLIC SAFETY CONCERNS AND RECENT CAPTURE HISTORY

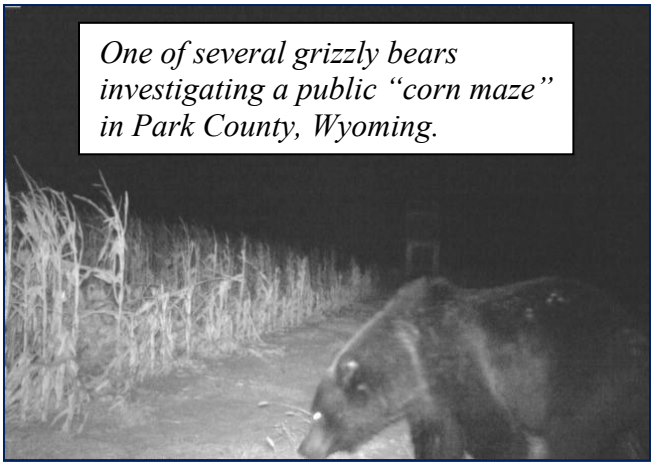
Large Carnivore Biologist Becky Fuda investigates a depredated calf, while Senior Support Specialist Kindra Brown observes and watches for bear activity.

CONFLICT MANAGEMENT – CONFLICT VERIFICATION AND REPORTING

Department personnel investigated and recorded a minimum 244 human-grizzly bear conflicts in the Wyoming portion of the GYE 2018 (Table 10, Figure 11). As noted in the table below by asterisk, some situations have multiple conflict categories that occur during one investigation. For example, the Department documented four human injuries by grizzly bears in 2018, however two of those injuries were nested in other conflict categories (e.g., one human death, and one animal death). As a result of education and conflict prevention efforts, the general pattern of conflicts is relatively steady within currently occupied habitat (Figure 11). However, as occupied grizzly bear range has expanded, conflicts continue to occur in areas further from the Grizzly Bear PCA and outside the DMA, often on private lands (Figures 12 and 13). Human-grizzly bear conflicts have increased in areas where grizzly bears have not been present in recent history.

Although joint education and attractant storage efforts of the Department, U.S. Forest Service, non-governmental organizations, and the public has reduced conflicts in many areas, the number of grizzly bear conflicts in Wyoming were high this year. Grizzly bears frequent lower elevation habitats and developed areas regularly during the non-denning period. Grizzly bear-cattle depredation was the most frequent type of conflict documented in 2018. 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. As grizzly bears expand further into human-dominated landscapes, human bear conflicts increase. These conflicts result in negative outcomes for both grizzly bears and people. The Department continues to explore options to reduce grizzly bear-livestock conflicts.

The majority of conflicts in 2018 occurred on public lands outside of the PCA (Figures 12 and 13). The distribution of conflicts is indicative of an expanding grizzly bear population outside the DMA. As bears expand and occupy habitats commonly used by humans, there is a greater potential for conflicts to occur. Education and conflict-prevention efforts will continue to focus on areas of Wyoming where bears and people overlap. Management actions to address conflicts will also continue to consider human values and effects the management action will have on the grizzly bear population.



One of several grizzly bears investigating a public "corn maze" in Park County, Wyoming.

Table 10. Type and number of human-grizzly bear conflicts in Wyoming portion of the Greater Yellowstone Ecosystem, 2018.

Conflict type	Number*	Percent (%)
Cattle	150	61
Garbage	19	8
Property Damage	16	7
Animal Death	10	4
Pet-livestock-birdfeed	8	3
Fruit Trees	8	3
Unsecured attractant	7	3
Aggression toward humans	7	3
Sheep	6	2
Other	5	<1
Poultry	4	<1
Human Injury	2	<1
Beehive	1	<1
Human Death	1	<1
Total	244	100

Figure 11. Number of human-grizzly bear conflicts documented in Wyoming, 2008 - 2018.

Long-term trends in the number of conflicts is likely a result of the grizzly bear population increasing and distribution expanding into areas used by humans on public and private lands. As the GYE grizzly bear population expand into less suitable habitat, the potential for bears to encounter food sources such as garbage, pet food, livestock and livestock feed, and other attractants will result 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 PCA 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 through education, securing of attractants, relocation or removal of individual bears, or a combination of conflict resolution methods.

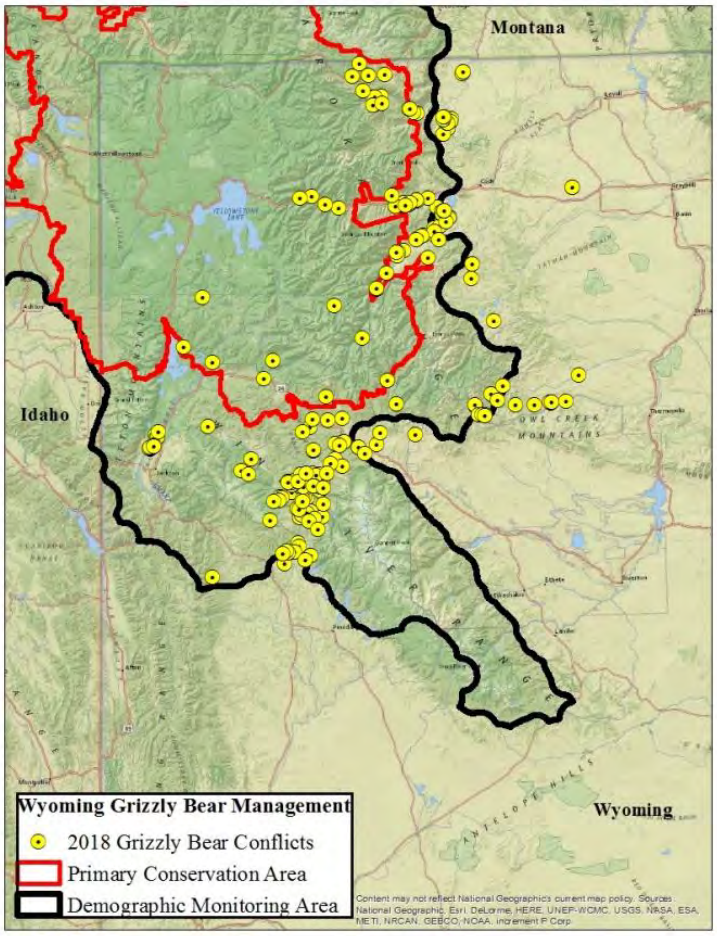


Figure 12. Location of human-grizzly bear conflicts in Wyoming portion of the Greater Yellowstone Ecosystem outside of National Parks (n = 244) in relation to the Grizzly Bear Primary Conservation Area and the Demographic Monitoring Area, 2018.

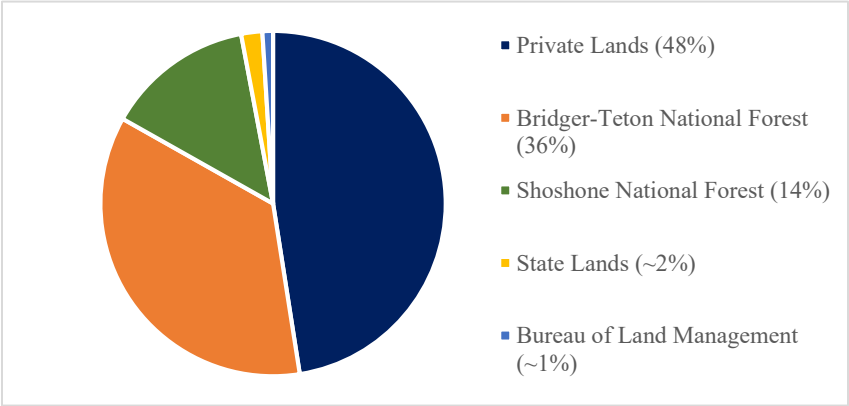


Figure 13. Percent of human-grizzly bear conflicts on private (n = 48%) and public lands (n = 52%) in Wyoming portion of the Greater Yellowstone Ecosystem, 2018.

2018 BEAR WISE WYOMING 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 project 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 2018. Past accomplishments are reported in the 2006 - 2017 annual reports of the IGBST and in the Department's 2011-2017 Annual Job Completion Reports

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 committee 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 12 years, the Bear Wise Community Programs in Northwest Wyoming 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. In an effort to broaden the scope of the program, this work was rebranded as the Bear Wise Wyoming Program.

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 2018 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 Commissioners, Wyoming Outdoorsmen, 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, 1088 domestic livestock carcasses have been removed from private lands.

- 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 Department's 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 22 new developments within Park County.

- In the Cody Region, LCS personnel erected six temporary electric fences around bee apiaries to minimize conflicts. There were also several electric fences temporarily placed around apple orchards to deter bears.

- Recorded an interview for Wilderness Attitude podcast discussing how to behave in bear country and management of bears in Wyoming. The episode aired in August and had large viewership on iTunes.
- In the spring, LCS personnel put on nine "Living in Large Carnivore Country" workshops across Wyoming. The objective of these workshops is to reach out to the

public and give them the opportunity to learn how to live with bears, mountain lions, and wolves. In 2018 we gave presentations and hands on demonstrations to 216 attendees.

- With grants from the Wyoming Outdoorsmen, Rocky Mountain Elk Foundation, and Western Bear Foundation the Department was able to purchase 200 cans of bear spray to be distributed to sportspersons. 100 cans of bear spray were handed out at the Department's Cody Check Station and 100 cans were handed out at Jackson Hole and Greater Yellowstone Visitor Center. Sportspersons where asked to voluntarily fill out a short survey to gather a better understanding how the Bear Wise program can better meet constituent needs.

- A public service announcement (PSA) was recorded by Department personnel on "Staying Safe in Bear Country" and broadcast over the radio in the spring of 2018 on the Bighorn Basin Radio Network. Large Carnivore Section personnel also took part in several radio interviews.

- A permanent electric fence was erected around the Park County Landfill (see below). Funding came from Wyoming Outdoorsmen, BLM, Park County Commissioners, and Greater Yellowstone Coalition. Volunteers from the BLM and Western Bear Foundation removed the existing fence. A private contractor installed the permanent electric fence.

- Funding was secured, from the Memorial Bear Fund, to purchase 10 temporary 150' electric fences and 10 solar fence chargers. These fences will be used by wildlife managers to secure attractants in order to minimize human-bear conflicts.

- 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, Fremont, Hot Springs, and Big Horn County public school systems, Cody Outdoor camp, Powell Recreation District, Boy Scouts, 4-H members, DANO Youth Camp, Paint Rock Hunter Management Program, guest ranches, and college students. Frequent one-on-one contacts were made during the 2018 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, BLM, and Rocky Mountain Power employees.

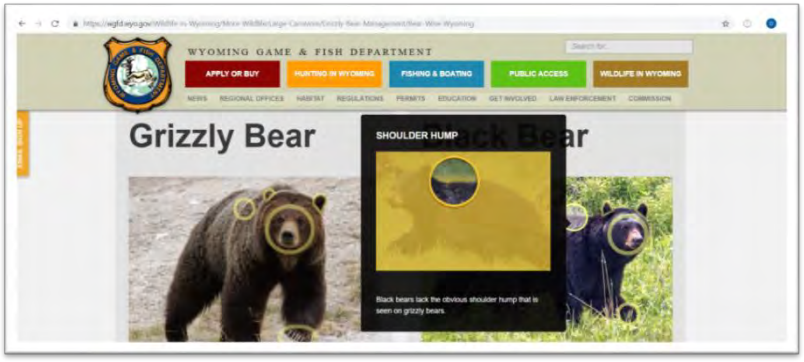
- A booth containing information on bear identification, attractant storage, hunting and recreating safely in bear country, and the proper use of bear spray was staffed at the Lander Winter Fair, Cody Outdoor Expo, Wyoming Outdoor Expo in Casper, Wyoming Outdoor Weekend in Lander, Dubois Museum Days, Powell Outdoor Safety Day, and Wyoming Outdoorsmen Banquet.

- By utilizing the bear trailer, booths, workshops, and giving 45 presentations upon request,the Bear Wise program directly reached approximately 3,500 people in northwest Wyoming. Although, the level of interaction differed from person to person it is certain that the added awareness leads to reduced conflict potential between bears and people.

- Grizzly bear hunter orientation was provided to residents and non-residents who drew grizzly bear licenses. This training was aimed at keeping hunters safe in the field, teaching them the physical characteristics differences of the sexes, and potential uses of bear meat.

- The new 2018 Antelope, Deer, and Elk Hunting Regulations brochure have a section on being Bear Aware. Specifically, there is information regarding game retrieval and handling, how to react to an aggressive/defensive bear encounter, how to properly use bear spray, and what to do if a bear comes into camp.

- With help from the Department web-designer the Bear Wise page was updated and revamped to be more interactive. The Bear Wise page had a total of 16,979 unique views over the course of the year.



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 2018 are as follows:

- The Department hosted a "Living in Lion, Bear, and Wolf Country" workshop in Big Piney. Approximately 15 people attended the workshop.

- Presented bear safety and carnivore biology information at two Pinedale Science Camps at the DC Bar Ranch in Kendall Valley.

- Hunting in Bear Country presentations were given to hunter safety classes throughout the region.

- Multiple bear safety presentations were given including: staff members of the Sublette County Chamber of Commerce and Sublette County Visitor's Center, Pinedale and Big Piney Ranger Districts of the United States Forest Service. Rock Springs BLM office, and Sublette County Weed and Pest employees and volunteers.

- 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. This year's booth featured a new "bear charger" that helps visitors practice using bear spray under more realistic conditions.

- The Department hosted a bear safety booth at Pinedale's Wind River Mountain Festival for the third year. The festival draws a diverse crowd and over 700 people visited the booth.

- Presented bear safety information, and entertained guests with the "bear charger" at the Jackson Hole Land Trust's annual banquet at the Murdock Ranch west of Pinedale.

- Large Carnivore Section personnel manned a bear booth at the Sublette County Conservation District's "Spring Expo" and reached approximately 200 people.

Objectives for 2019 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 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 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 2018, 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, carcass and fruit tree management, and utilizing our bear education trailer.

- A bear education trailer was purchased in August 2010 with funding contributions from the Department, Grand Teton National Park, 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 Teton National Park, Jackson Elk Fest, Fourth of July Parade and the National Elk Refuge Visitor Center.

- Public service announcements were broadcast on 4 local radio stations in Jackson for a total of six weeks throughout the spring, summer, and fall of 2018. 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 Government employees.

- Door flyers with detailed information about attractant storage and bear conflict avoidance were distributed in Teton County residential areas where high levels of bear/human conflicts were occurring.

- A considerable amount of time was spent removing ungulate and livestock carcasses from residential areas and ranches in the Jackson Region.

- Continued to work with a Jackson catering company, Roots Kitchen & Cannery. They have been involved in picking apples from trees that have been identified as a source of bear conflict by the Department . In 2018, they harvested fruit from 161 trees removing 13,000 lbs of apples which was made into cider.

- 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/Elk Feast.

- Assisted hunting outfitters and with the installation and maintenance of electric fence systems around their field camps and located in the Bridger-Teton National Forest.

- Assisted Teton County Transfer Station staff with an electric fence design for their new facility.

- 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.

- 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 (LDR).

- Bear Aware educational materials were distributed to school groups, campground hosts, hunters, and numerous residents in Teton County.

- Several radio and newspaper interviews were conducted regarding conflict prevention in the Jackson area.

- Educational black bear/grizzly bear identification materials were distributed to black bear hunters who registered bait sites with the Department in the Jackson region.

- Worked with a Jackson sanitation company and East Jackson residents on placing new bear resistant garbage cans in several East Jackson neighborhoods.

Objectives for the Bear Wise Jackson Hole program in 2019 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 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. Bruscino, 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

Large Carnivore Biologist Zach Turnbull with the charging bear display he and Becky Fuda built in Pinedale, WY.

Information and Education

2018 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 web page. In 2018, 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 and Bear Wise Wyoming Web Page

    - The grizzly bear management web page continues to be maintained and updated on a regular basis in order to provide timely information to the public. The web page contents include various interagency annual reports and updates. In response to public comment, personnel from the Large Carnivore Section, the Wildlife Division and Cheyenne Headquarters updated our webpage for a more user friendly and interactive format aimed at reaching wider audiences and increasing awareness and safety. The interactive nature of the webpage allows user to target information on bear ecology and safety specific to their area of interest (i.e., hiking in grizzly bear country, fishing in grizzly bear country).

- 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 DVDs 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.

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.nrmsc.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:

Bear Wise Coordinator
Dusty Lasseter
(307) 761-1666
dustin.lasseter@wyo.gov

EXPENDITURES FOR GRIZZLY BEAR MANAGEMENT BY THE DEPARTMENT – FISCAL YEAR 2019

The Department's 2019 fiscal year (FY) occurred from July 1, 2018 – June 30, 2019. During the course of FY 19, the Department conducted annual population monitoring, responsive conflict management, Bear Wise Wyoming programs, and other statutory and regulatory obligations in regards to damage compensation and law enforcement for grizzly bears. During FY 19, the Department directed $1,120,061.57 of funds toward grizzly bear conservation and management. Program expenditures are reported by primary work activities conducted during FY 19. The figures reported below do not represent all Department expenses incurred during this FY:

- Conflict Prevention: $208,001.41*
- Annual Monitoring: $270,777.46
- Additional Information and Education including Bear Wise Wyoming: $90,683.20*
- Season Setting and Regulations: $1,355.26
- Law Enforcement: $21,386.98
- Management Planning and Reporting: $5,832.81
- Damage Compensation for Verified Loss: $419,053.54

**Proactive Bear Wise Wyoming activities are represented both in "conflict prevention" and "additional information and education" categories.*

In addition to the direct expenditures, a total of $1,575,636.65 was allocated to grizzly bear management during FY 19 through shared expenditures and overlapping activities that involve grizzly bears and other Wyoming wildlife and Departmental responsibilities.