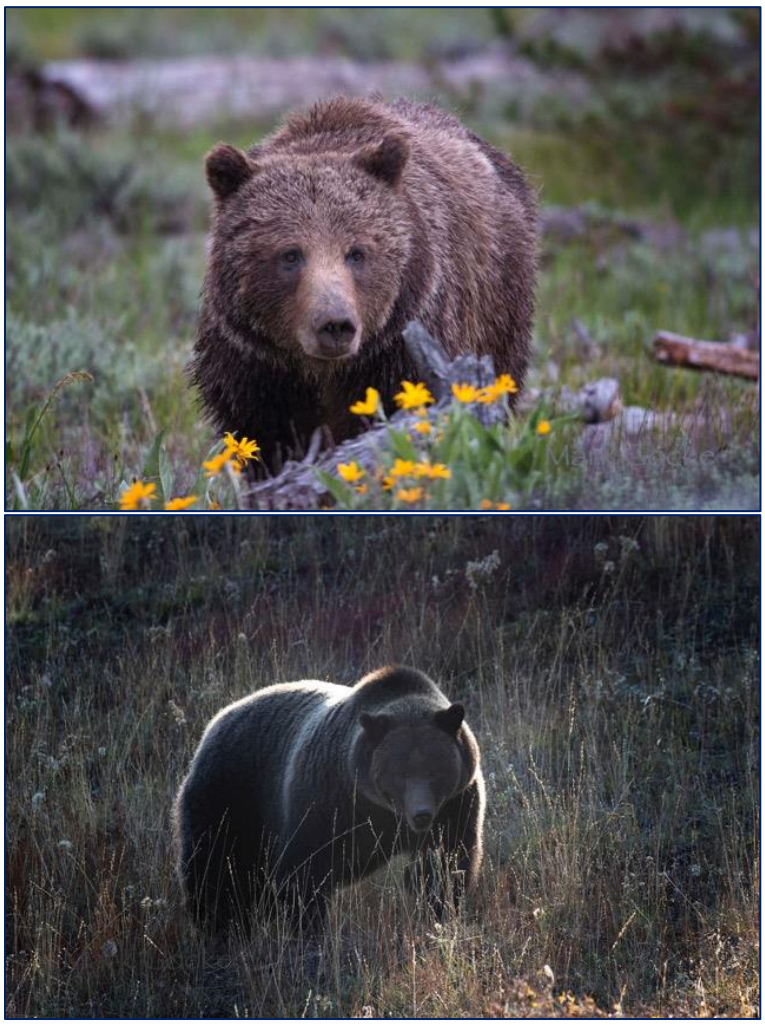
2019 Wyoming Grizzly Bear Job Completion Report



Wyoming Game and Fish Department
Large Carnivore Section
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This Job Completion Report is dedicated to the memory of Mike Hooker who passed suddenly on June 12, 2020. Mike worked for Game and Fish in multiple positions, but was most renowned for his black and grizzly bear experience. Mike's dedication and expertise were recognized and respected internationally in the world of bear research and management; his quick wit and hilarious stories will be greatly missed.

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 2019. 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 have 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. These data enable 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 and trapping ceases by early fall to avoid conflicts with hunters during big game hunting seasons. The following summarizes trapping efforts for the 2019 season.

2019 WGFD Timber Creek Grizzly Bear Trapping Summary

Early 2019 trapping efforts focused on the Timber Creek area of the Shoshone National Forest from 29 May to 21 June, 2019. Trapping occurred at five sites in the area. All traps, baits, scent lures, and other equipment were removed from sites by 21 June and warning and closure signs were removed from all areas on 24 June.

Nine grizzly bears were captured in 11 capture events (two grizzly bears were captured twice). Six grizzly bears were radio-telemetered with VHF or GPS collars (Table 1). Three grizzly bears were tagged and biological samples were taken but not radio collared. No black bears were captured.

Table 1. Grizzly bears captured in the Timber Creek area of the Shoshone National Forest, June 2019.

Bear ID	Capture Date	Sex/Age Class	Location	Collar
960	5/30/19, 6/1/19	Subadult male	Timber Creek and Francs Fork	GPS collar
G253	6/4/19	Subadult male	Pitchfork	No collar
961	6/7/19	Adult female	Pitchfork	GPS collar
G254	6/8/19, 6/11/19	Subadult male	Francs Fork and West Fork	No collar
963	6/11/19	Subadult male	Francs Fork	GPS collar
G255	6/13/19	Adult male	Timber Creek	No Collar
965	6/17/19	Subadult female	4 Bears	VHF collar
966	6/20/19	Subadult female	Francs Fork	GPS collar
967	6/20/19	Adult male	4 Bears	GPS collar

2019 Wind River Reservation Grizzly Bear Monitoring Summary-Wind River Tribal Fish & Game, U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department

Mid-summer efforts to capture and radio collar grizzly bears were conducted on the Wind River Reservation by the Eastern Shoshone and Northern Arapaho Tribal Fish & Game, U.S. Fish & Wildlife Service, and the Department, 2 July to 16 August, 2019. Cellular cameras that send images directly to a mobile device or email were set with lure and bait at sites located in the Wind River and Owl Creek Mountains to identify grizzly bears and target their capture.

This targeting capture technique was implemented in 2018 to increase efficiency and minimize labor while trapping in areas of suspected low grizzly bear density. The method involves setting cell cameras with blood lure and bait hung up a tree, waiting until a grizzly bear appears on camera, and then setting a trap as quickly as possible after a grizzly bear is detected on camera. Efforts in 2019 resulted in two detections of grizzly bears at two separate camera sites (one in the Wind River Mountains and one in Owl Creek Mountains). Traps were set at these sites, but did not result in any captures (Table 2).

Table 2. Camera sites, grizzly bear captures, and grizzly bear detections on the Wind River Reservation, July and August 2019.

Location	Dates Camera Operational	Grizzly Detections	Dates Culvert Operational	Grizzly Captures
Hobbs Park	7/18 - 8/12	none	No trap set	NA
Little Washakie Park	7/11 – 8/12	none	No trap set	NA
Crow Mtn.	7/2 – 8/14	none	No trap set	NA
Bold Mtn.	7/16 – 8/14	1 on 7/29	7/30 – 8/2	none
Spring Mtn.	7/17 – 8/16	1 on 8/3 1 on 8/4	8/5 – 8/9	none
Phlox Mtn.	7/12 – 8/13	None	No trap set	NA

2019 Wyoming Game andFish Department Fox Park Grizzly Bear Trapping Summary

Late-season 2019 trapping efforts focused on the Fox Park area of the Teton Wilderness of the Bridger-Teton National Forest from 28 August to 9 September, 2019. The Department worked in conjunction with the U.S. Geological Survey/Interagency Grizzly Bear Study Team (IGBST) crew from Bozeman, MT to split trapping efforts in this area. The Department crew set traps and ran them through 3 September, when they were replaced by the IGBST crew, which ran traps through 9 September. Trapping occurred at four sites in the area. While a grizzly bear visited the Snake River Park trap site, no black or grizzly bears were captured during the trapping operation. All traps, baits, scent lures, warning and closure signs, and other equipment were removed from sites by 9 September. We would like to thank the U.S. Forest Service/Bridger-Teton National Forest for the use of their Fox Park backcountry cabin and help with logistics.

GRIZZLY BEAR OBSERVATION FLIGHTS

The Department and other members of the IGBST, conduct observation flights in order to monitor the GYE grizzly bear population and estimate abundance. In 2019, the Grizzly Bear Observation Units (GBOUs) in the southern portion of the GYE (Figure 1) were flown once in an effort to reduce flight time and because grizzly bears in these GBOUs are rarely observed due to low densities and heavily forested terrain. 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 (Figure 1).

During the first round of flights (including June flights) in 2019, the Department spent 48.3 hours flying observation flights. A total of 265 total grizzly bears were observed in the Wyoming GBOUs in 2019 compared to 299 bears observed during the same round in 2018. The number of females with cubs-of-year (COY) groups observed during Round 1 was also lower than that of 2018, with 20 observed compared to 35 in 2018 (Table 3).

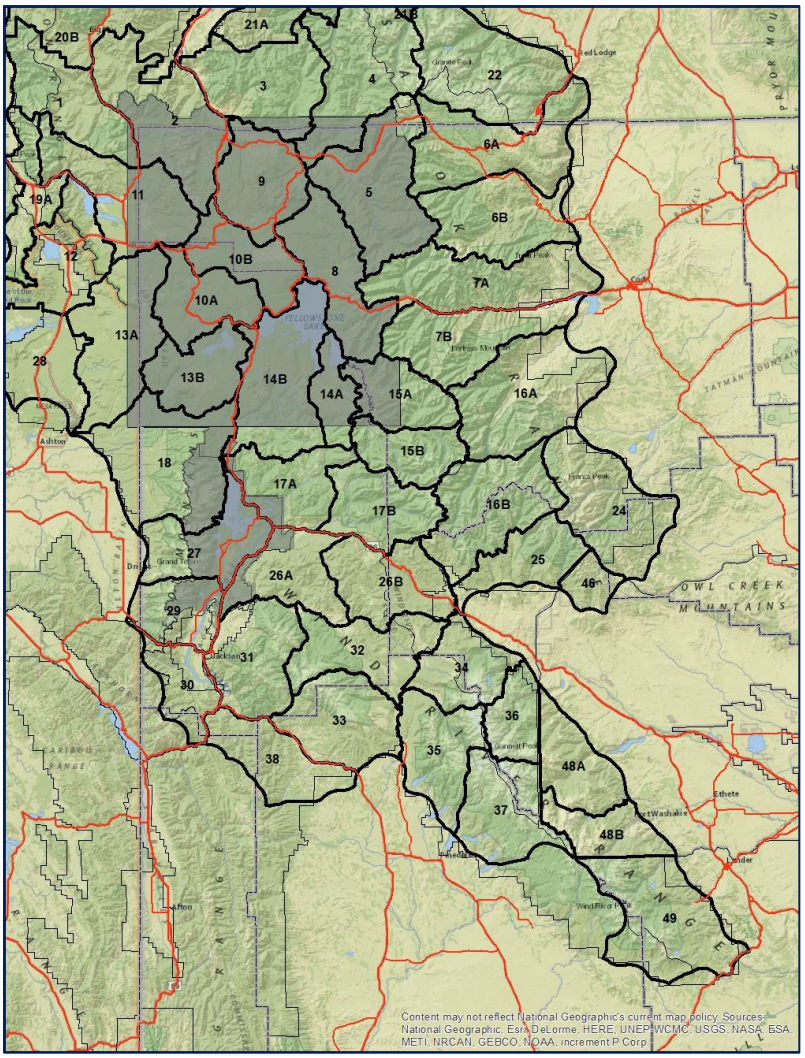


Figure 1. Grizzly Bear Observation Units (GBOUs) in the Wyoming portion of the Greater Yellowstone Ecosystem.

Table 3. Composition of grizzly bears observed in Round 1 during 2019 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		
7/15	6A	1	-*	-	-	-	-	-	-	-	-	1	3
7/15	6B	1	1	-	-	-	-	-	-	-	-	10	15
7/16	7A	-	1	-	-	-	1	-	1	-	-	13	22
7/16	7B	-	-	-	-	-	-	-	-	-	-	4	4
7/26	15A	-	-	-	-	2	-	-	-	-	-	4	10
7/20	15B	-	1	-	-	-	-	-	-	-	-	8	11
7/27	16A	4	1	1	3	6	-	-	-	-	-	40	79
7/21	16B	2	2	-	1	1	-	-	-	-	-	18	33
7/13	17A	-	-	-	-	-	-	-	-	-	-	4	4
7/14	17B	-	-	-	2	-	1	-	-	-	-	1	9
7/23	24	2	2	-	1	2	1	-	-	-	-	41	63
7/22	25	-	-	1	-	-	-	-	-	-	-	1	5
6/26	26A	-	-	-	-	1	-	-	-	-	-	0	3
6/30	26B	-	-	-	-	-	-	-	-	-	-	4	4
6/17	29	-	-	-	-	-	-	-	-	-	-	0	0
6/16	30	-	-	-	-	-	-	-	-	-	-	0	0
6/19	31	-	-	-	-	-	-	-	-	-	-	0	0
6/22	32	-	-	-	-	-	-	-	-	-	-	0	0
6/23	33	-	-	-	-	-	-	-	-	-	-	0	0
7/1	34	-	-	-	-	-	-	-	-	-	-	0	0
6/27	35	-	-	-	-	-	-	-	-	-	-	0	0
7/1	36	-	-	-	-	-	-	-	-	-	-	0	0
6/28	37	-	-	-	-	-	-	-	-	-	-	0	0
6/24	38	-	-	-	-	-	-	-	-	-	-	0	0
6/29	49	-	-	-	-	-	-	-	-	-	-	0	0
All Areas		10	8	2	7	12	3	0	1	0	0	149	265

* indicates no bears observed

Only the northern GBOUs were flown during the second round of flights, with the exception of GBOUs 26A and 26B. Department personnel spent 27.1 hours conducting observation flights in this round. Due in large part to an increase in grizzly bears observed on army cutworm moth sites in the northern GBOUs, the overall number of grizzly bears observed in the second round of flights increased from 158 in 2018 to 249 in 2019. The number of Females with COY observed during Round 2 flights also increased from 13 to 16 (Table 4).

Table 4. Composition of grizzly bears observed in Round 2 during 2019 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		
8/15	6A	-	-	-	-	-	-	-	-	-	0	0
8/15	6B	-	-	-	2	-	-	-	-	-	14	18
8/16	7A	1	1	-	1	1	-	-	-	-	14	24
8/14	7B	-	1	-	-	3	-	-	1	-	19	34
8/24	15A	-	-	-	-	-	-	-	-	-	2	2
8/28	15B	-	1	-	-	-	-	-	-	-	2	5
8/27	16A	-	2	-	1	5	-	-	-	-	21	44
8/20	16B	-	3	-	1	1	-	-	-	-	15	29
8/12	17A	-	-	-	-	-	-	-	-	-	2	2
8/13	17B	-	1	-	-	-	-	-	-	-	5	8
8/22	24	-	2	2	2	1	1	-	-	-	45	70
8/21	25	-	1	-	-	-	-	-	-	-	1	4
7/12	26A	-	1	-	-	1	-	-	-	-	2	8
7/11	26B	-	-	-	-	-	-	-	-	-	1	1
All Areas		1	13	2	7	12	1	0	1	0	143	249

* indicates no bears observed

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), 2019 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." 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.

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 3 locations. During 1997–1999, 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 2019 resulted in an additional 267 observations of actively feeding grizzly bears on previously identified confirmed sites. In addition, there were observations of actively feeding grizzly bears at two sites previously classified as possible and two observations of actively feeding grizzly bears at a previously undocumented site. Thus, two possible sites were reclassified as confirmed and one new possible site was added in 2019, bringing the number of sites to 33 confirmed and 20 possible.

Overall insect aggregation site use by grizzly bears in 2019 (n = 355) was the highest recorded since the beginning of the monitoring period in 1986 (Table 5). 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 5). In all other years, the percentage of insect aggregation sites used by grizzly bears varied between 47% and 88% (Figure 2).

However, when we control for the amount of observation effort by including only bears observed during regularly conducted observation flights (see "***Observation Flights***"), bears observed using insect aggregation sites increased from 2018 (n = 250 observations, 8.7 locations/hour flown) to 2019 (n = 322 observations, 9.0 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. The number of aerial telemetry locations and observations from Table 5 reflect this change and may differ from previous annual reports.

The IGBST maintains an annual list of unique females observed with cubs. Since 1986, 1,276 initial sightings of unique females with cubs have been recorded, of which 364 (28.5%) have occurred at (<500 m, n = 338) or near (<1,500 m, n = 26) insect aggregation sites (Table 6). In 2019, 15 of the 49 (30.6%) initial sightings of unique females with cubs were observed at insect aggregation sites; slightly higher than the mean of 28.7% for the previous five years (2014–2018, Table 6).

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 14.6 initial sightings/year since 2010 (Table 6). 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 5. Summary statistics for grizzly bear use of confirmed insect aggregation sites, Greater Yellowstone Ecosystem, 1986–2019.

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	18	12	6	108
1993	19	3	1	2
1994	19	9	1	32
1995	21	12	7	40
1996	23	15	21	68
1997	24	16	17	84
1998	27	22	9	185
1999	27	14	26	156
2000	27	13	48	97
2001	28	18	23	128
2002	29	20	30	251
2003	29	20	9	163
2004	29	16	2	134
2005	31	19	16	198
2006	31	17	15	147
2007	31	19	19	161
2008	31	23	16	181
2009	33	23	11	170
2010	33	18	4	134
2011	33	20	9	163
2012	33	23	17	252
2013	33	22	26	295
2014	33	24	11	343
2015	33	21	13	210
2016	33	20	11	208
2017	33	21	20	278
2018	33	20	18	267
2019	33	29	20	335
Total			477	5,127

[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 6. Initial sightings of unique females with cubs on or near insect aggregation sites, Greater Yellowstone Ecosystem, 1986–2019.

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	0.0
1987	13	0	0	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
2019	49	8	15	30.6	17	34.7
Total	1,276	N/A	338	N/A	364	N/A
Mean	37.5	6.2	9.9	24.4	10.7	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.

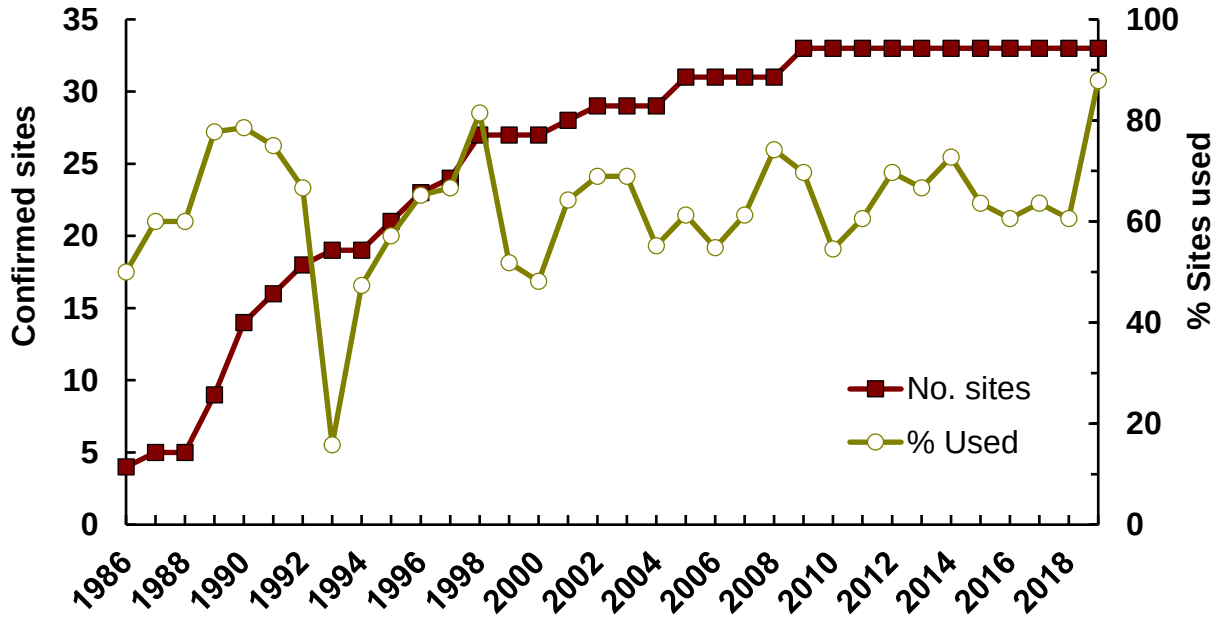


Figure 2. Annual number of confirmed insect aggregation sites and percent of those sites at which telemetry relocations of marked bears or visual observations of unmarked bears were recorded, Greater Yellowstone Ecosystem, 1986–2019.

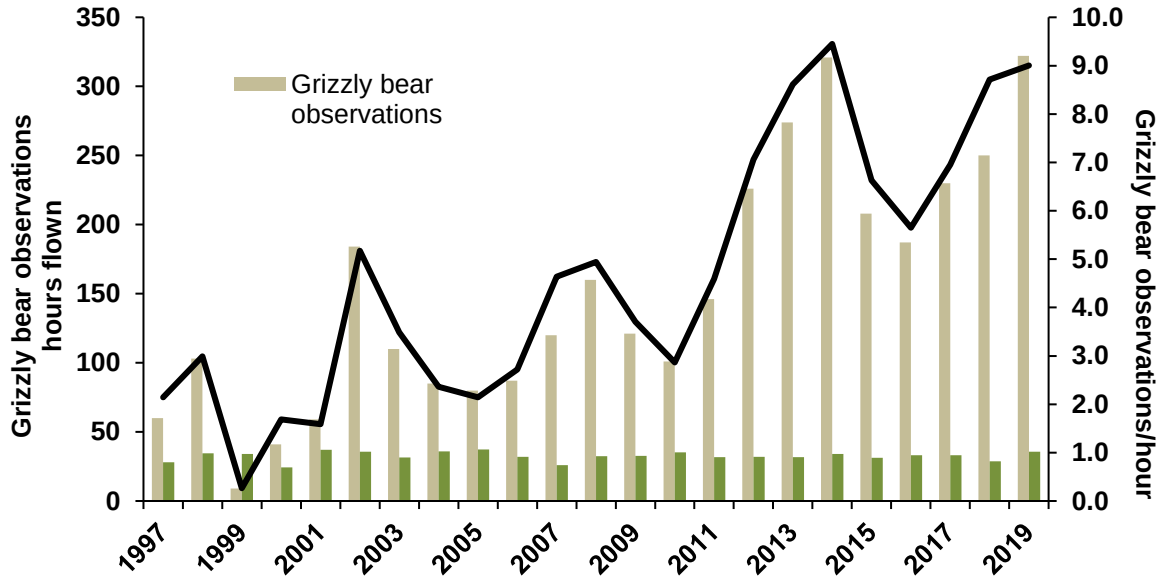


Figure 3. Number of grizzly bears observed (tan bars) on insect aggregation sites during observation flights only, hours flown (green bars) for these bear management units (BMU), and grizzly bear observations per hour (black line) during observation flights of BMUs containing all known insect aggregation sites, Greater Yellowstone Ecosystem, 1997–2019.

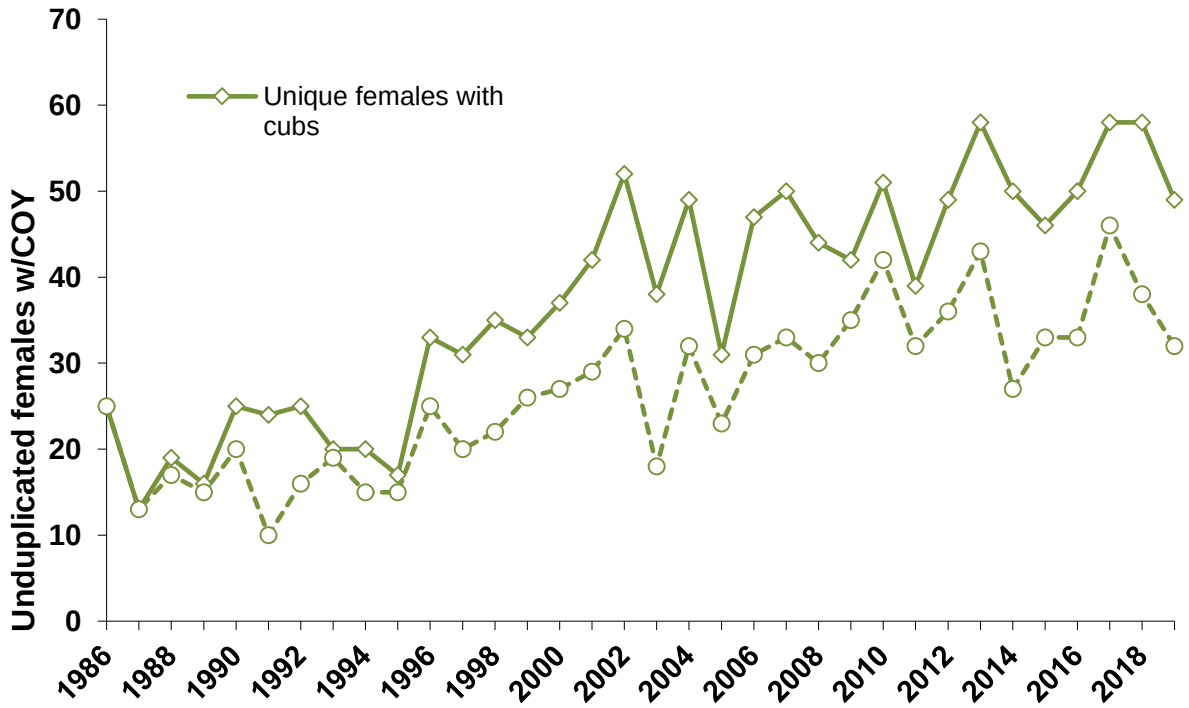


Figure 4. Total number of unique females with cubs observed annually in the Greater Yellowstone Ecosystem and the number of unique females with cubs not found within 1,500 m of known insect aggregation sites, 1986–2019.

PUBLICATIONS AND UPDATES

Personnel with the Department's LCS have been authors and/or collaborators of multiple peer-reviewed research papers and popular articles on grizzly bear ecology in recent years. These publications are examples of relevant information available for GYE grizzly bears and continue to be essential in demonstrating the recovery of the population. These publications are not opinion based or internet blogs, but rather represent the science and data that drive management and conservation of grizzly bears

For information specific to the Department's grizzly bear management program, including links to publications, reports, updates, and plan visit: https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Large-Carnivore/Grizzly-Bear-Management

Additional information regarding other publications, annual reports, and peer-reviewed literature for the GYE population of grizzly bears is summarized on the United States Geological Service web site at https://www.usgs.gov/science/interagency-grizzly-bear-study-team?qt-science_center_objects=0#qt-science_center_objects

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 2019, the Department captured 33 individual grizzly bears in 34 capture events in an attempt to prevent or resolve conflicts (one bear was captured twice) (Figure 5 and Table 7). Most captures were adult males.

Of the 34 capture events, 20 captures were a result of bears killing livestock (primarily cattle), 10 were captures involving bears that obtained food rewards (pet, livestock food, garbage, fruit trees), or were frequenting developed sites or human populated areas unsuitable for grizzly bear occupancy. Three events were non-target captures at livestock depredation sites, and one bear was captured and relocated from the Cody landfill. Of the 34 capture events, 18 (53%) were in Park County, 8 (23%) were in Sublette County, 4 (12%) were in Fremont County, 3 (9%) were in Hot Springs County and one (3%) was in Teton County (Table 7 and Figure 5).

Of the 34 capture events, there were 15 relocation events. All relocated grizzly bears were released on U.S. Forest Service lands in or adjacent to the Recovery Zone/Primary Conservation Area (PCA) (Figure 6). Of the 15 relocation events, nine were conducted in Park County (60%), five (33%) were in Teton County, and one (8%) was in Fremont County (Figure 6 and Table 7).

Grizzly bears are removed (lethally or through live placement in an approved facility) 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 33 bears captured, 18 bears were removed from the population, and one bear died during capture. Of these 19 human-caused mortalities associated with management captures, 10 were outside of the Demographic Monitoring Area (DMA). Removal of grizzly bears in Wyoming is dependent upon authorization from the U.S. Fish and Wildlife Service after careful and thorough deliberation taking into account multiple factors unique to each conflict situation.

A grizzly bear family group (circled) in close proximity to vehicles being monitoring by Game and Fish on the North Fork Highway west of Cody, WY.

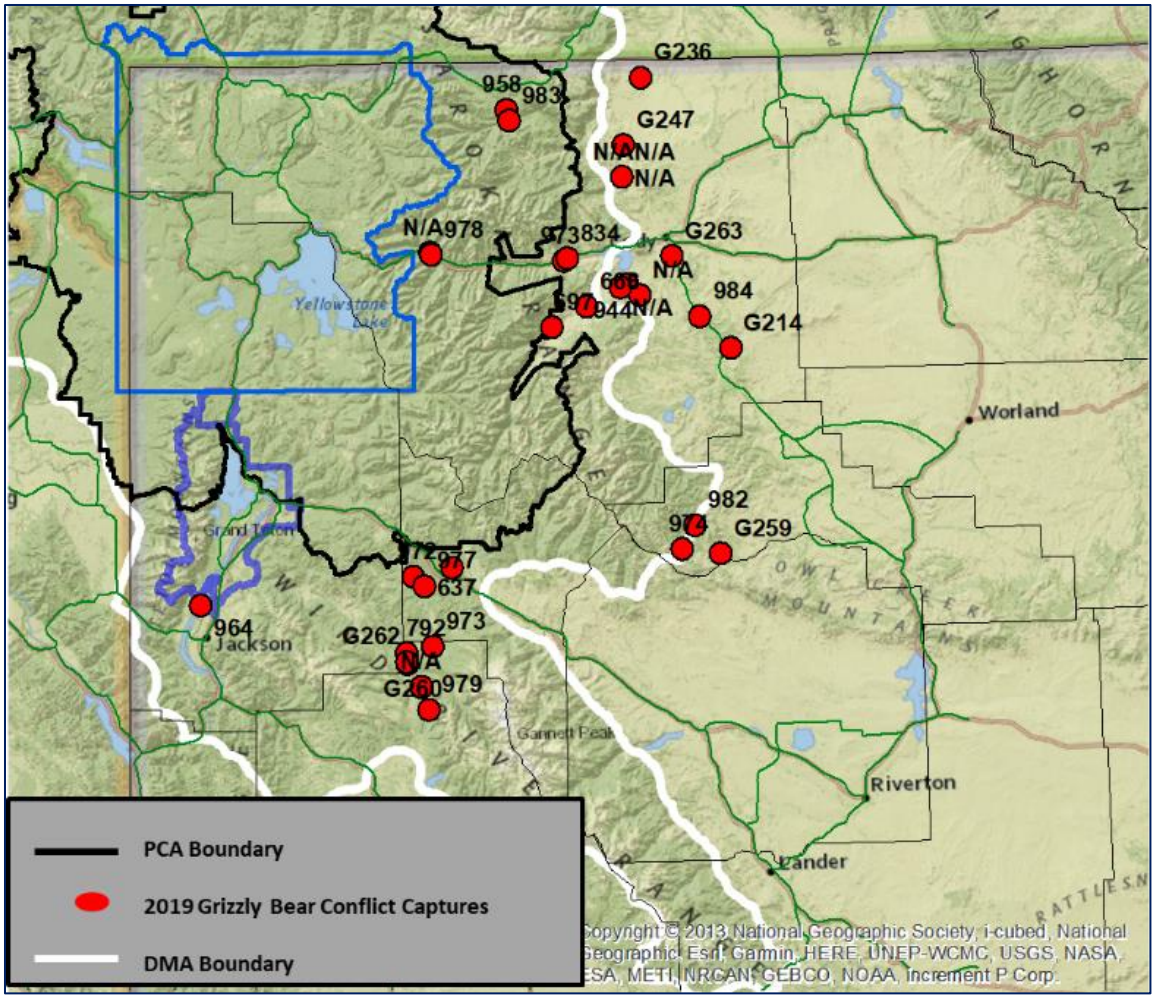


Figure 5. Capture locations (n = 34) for grizzly bears captured in conflict management efforts in Wyoming portion of the Greater Yellowstone Ecosystem, 2019. Grizzly bears with "G" in front of their number were marked but not fitted with radio collars typically because they were too young to be collared. Because of the mapping scale, some locations are combined at one symbol. A complete list is provided in Table 7.

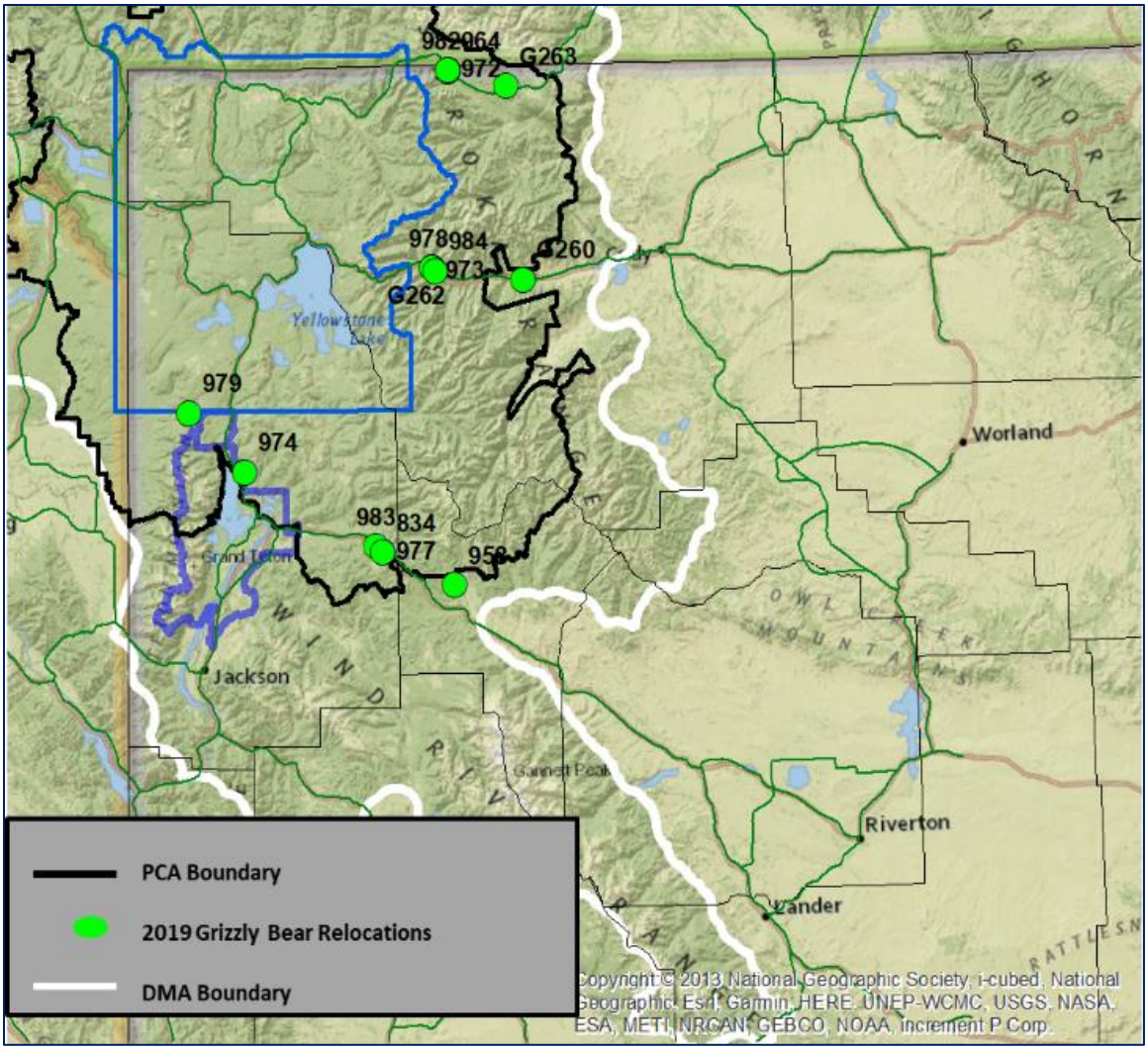


Figure 6. Release locations (n = 15) for grizzly bears captured, relocated, or released on site in conflict management efforts in Wyoming portion of the Greater Yellowstone Ecosystem, 2019. Grizzly bears with "G" in front of their number were ear-marked but not fitted with a radio collar upon release, typically because they were too young to be collared. Because of the mapping scale, some locations are combined at one symbol. A complete list is provided in Table 7.

Table 7. Summary of grizzly bear conflict management captures in Wyoming portion of the Greater Yellowstone Ecosystem, 2019. Grizzly bears identified with "N/A" were removed from the population without receiving an ID number.

Date	ID	Capture County	Relocation Site	Release County	Reason for capture
3/31/2019	697	Park			Captured for cattle depredation. Removed for repeated conflict history
4/16/2019	944	Park			Removed for multiple livestock depredations
5/10/2019	G247	Park			Removed for frequenting ranch houses, food rewards of grain, and aggression towards humans
5/11/2019	N/A	Park			Removed for cattle depredation
5/19/2019	958	Park	Long Creek	Fremont	Captured for frequenting developed areas and getting into bear resistant trash cans, property damage , and bird feeders
6/17/2019	N/A	Park			Removed for cattle depredation
6/25/2019	816	Fremont			Removed for multiple garbage conflicts/food rewards in town and other developed areas and a cattle depredation
7/19/2019	G259	Hot springs			Removed for multiple food rewards and ongoing bold behavior at a sheep camp, and food conditioned behavior
7/21/2019	G229	Sublette			Removed for cattle depredation
7/21/2019	G260	Sublette	Clocktower Creek	Park	Relocated for cattle depredation
7/28/2019	972	Fremont	Fox creek	Park	Relocated for cattle depredation
8/1/2019	973	Sublette	Mormon Creek	Park	Relocated for cattle depredation
8/8/2019	974	Hot springs	Bailey Creek	Teton	Relocated for sheep depredation
8/8/2019	N/A	Sublette			Removed for multiple livestock/cattle depredations
8/12/2019	G262	Sublette	Mormon Creek	Park	Relocated for cattle depredation
8/24/2019	637	Fremont			Removed for cattle depredation
8/24/2019	977	Fremont	Lost Lake	Teton	Non-target capture at cattle depredation site-relocated
8/24/2019	N/A	Park			Removed for cattle depredation (201916)
8/24/2019	N/A	Park			Removed with mother (201916) and sibling (201918) for cattle depredations
8/26/2019	N/A	Park			Removed with mother (201916) and sibling (201917) for cattle depredation
8/27/2019	792	Sublette			Removed for cattle depredation
8/28/2019	G214	Park			Removed for multiple food rewards of garbage and pet food
8/29/2019	978	Sublette	Mormon Creek	Park	Relocated due to association with multiple cattle depredations
9/13/2019	979	Sublette	Fall Creek	Teton	Non-target capture at depredation site-relocated
9/19/2019	G236	Park			Removed for agricultural property damage and human safety concerns

Table 7. Continued.

Date	ID	Capture County	Relocation Site	Release County	Reason for capture
9/20/2019	982	Hot springs	Fox Creek	Park	Relocated for cattle depredation
9/21/2019	983	Park	Togwotee Pass	Teton	Relocated for killing a previously injured horse
9/22/2019	984	Park	Mormon Creek	Park	Relocated for frequenting the roadside south of Cody, feeding on roadkill
9/26/2019	G263	Park	Clay Butte	Park	Relocated for frequenting the Cody landfill
9/30/2019	N/A	Park			Captured for frequenting a guest lodge, bold behavior, and food rewards. Died as a result of capture myopathy
9/30/2019	964	Teton	Fox Park	Park	Relocated for frequenting residential areas. Known to have damaged bird feeders. Bear relocated without handling
10/1/2019	834	Park	Blackrock Creek	Teton	Non-target capture-relocated
10/13/2019	668	Park			Removed for multiple food rewards. Increasingly bold behavior around people
10/22/2019	973	Park			Captured for obtaining garbage. Removed for conflict history

Tracks of a grizzly bear entering a trap.

CONFLICT MANAGEMENT – CONFLICT VERIFICATION AND REPORTING

Department personnel investigated and recorded 194 human-grizzly bear conflicts in 2019 (Table 8 and Figure 7). As a result of numerous and diligent education and conflict prevention efforts, the general pattern of conflicts is relatively steady to increasing within currently occupied habitat. However, as occupied grizzly bear range has expanded, conflicts continue to occur in areas further from the PCA and outside the DMA, often on private lands (Figure 8). Grizzly bears are increasingly coming into conflict with people in areas where grizzly bears have not been present in recent history.

Although the joint efforts of the Department, U.S. Forest Service (USFS), non-governmental organizations, and particularly the public, have resulted in reducing conflicts through education and attractant storage in many areas, the distribution of grizzly bear conflicts in Wyoming continue to expand with the population. Grizzly bears frequent lower elevations and developed areas regularly during the non-denning period. Grizzly bear-cattle depredation was the most frequent type of conflict documented in 2019. 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 outside the DMA, the potential for conflict between bears and humans increases, resulting in negative outcomes for both grizzly bears and people. The Department continues to explore and enable multiple options to reduce grizzly bear-livestock conflicts and expand our education and outreach efforts (see Bear Wise Wyoming Report, page 26).

The majority of conflicts in Wyoming occurred on lands outside of the Primary Conservation Area (Figures 8 and 9). The increasing distribution of grizzly bears is reflected in the annual documentation of conflicts further from this area and continued expansion outside the DMA. As grizzly bears expand and occupy habitats commonly used by humans, there is a greater potential for conflicts to occur. Education and conflict-prevention efforts are used anywhere grizzly bears and people coexist, and management actions will be a function of human values and effects on the grizzly bear population in those areas.

Verifying a grizzly bear depredation on a yearling bovine.

Table 8. Type and number of human-grizzly bear conflicts in Wyoming portion of the Greater Yellowstone Ecosystem, 2019.		
Conflict type	Number	Percent (%)
Cattle	126	65
Garbage	19	10
Pet-livestock-birdfeed	14	7
Property Damage	13	7
Other	6	3
Sheep	3	2
Poultry	3	2
Animal Death	3	2
Unsecured Attractant	2	1
Aggression Toward Humans	2	1
Encounter	1	<1
Beehive	1	<1
Horse	1	<1
Total	194	100

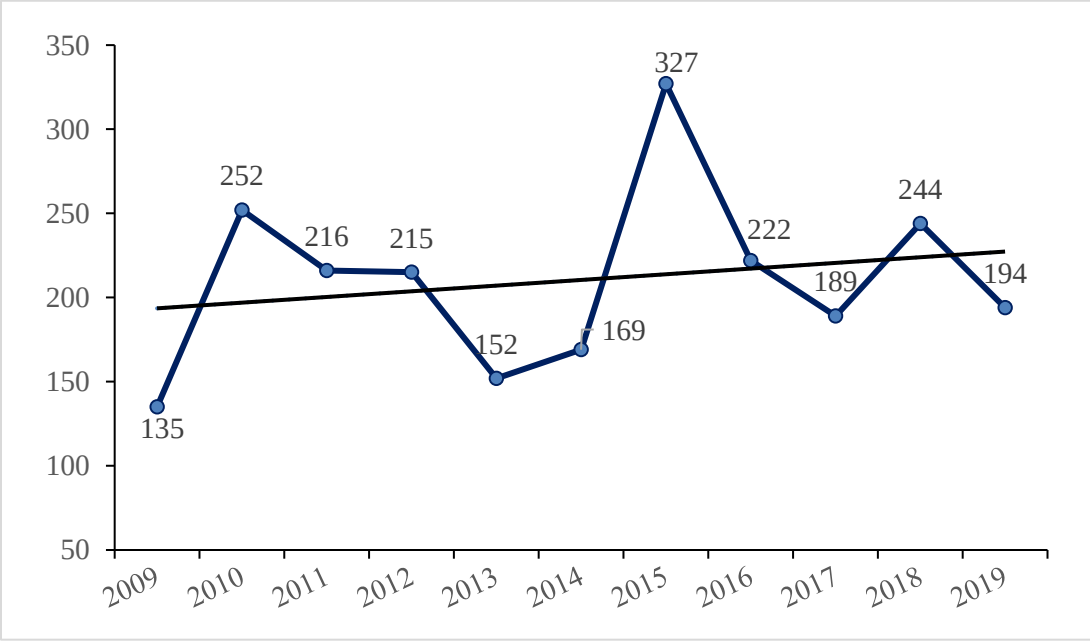


Figure 7. Number of human-grizzly bear conflicts and associated trendline in Wyoming portion of the Greater Yellowstone Ecosystem, 2009–2019.

Long-term trends in the number of conflicts is likely a result of grizzly bears increasing in numbers and distribution and expanding into areas used by humans, including livestock production, on public and private lands. There is also growing potential for roadside bear problems. Unfortunately, some people engage in unethical wildlife viewing practices, often resulting in habituated or food conditioned grizzly bears. These situations will continue to spark difficult challenges for grizzly bear managers in the future. As the GYE grizzly bear population continues to grow and expand into less suitable habitat, bears are more likely to encounter food sources such as garbage, pet food, livestock and livestock feed, and myriad other attractants, resulting in increased property damage and threats to human safety. Conflict prevention measures such as attractant storage, deterrence, and education are a priority for the Department. With that said, conflict management is often reactive. In general, there is an inverse relationship between social tolerance and biological suitability for bear occupancy in areas further from the Recovery Zone/Primary Conservation Area 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 bears, or a combination of methods applicable for long-term conflict resolution and conservation of grizzly bears.

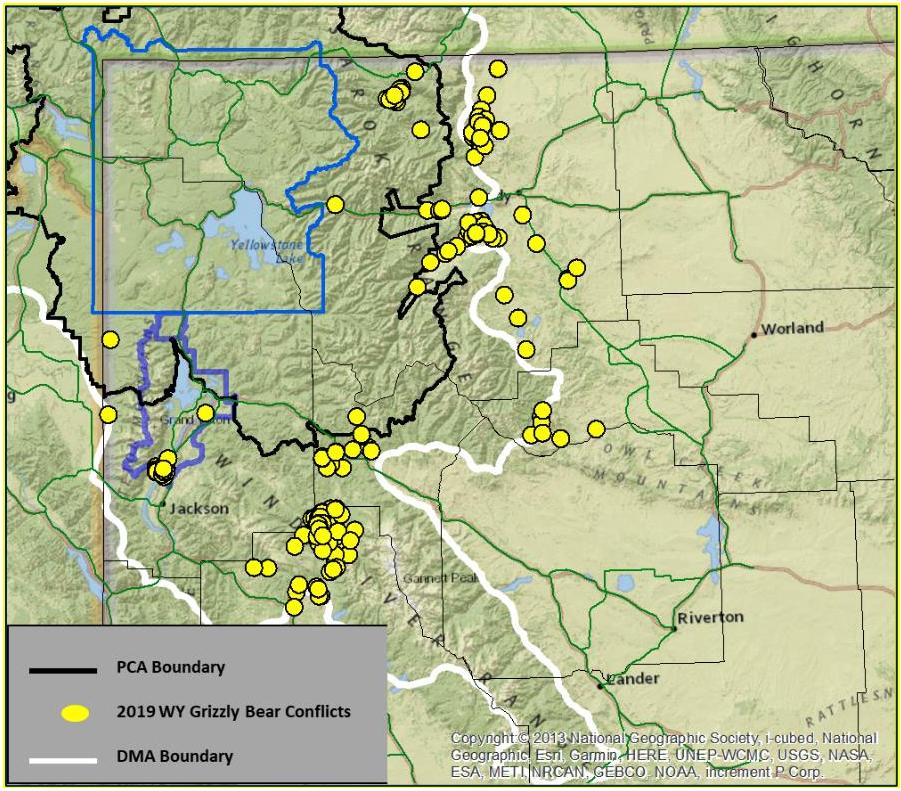


Figure 8. Location of human-grizzly bear conflicts in Wyoming portion of the Greater Yellowstone Ecosystem outside of National Parks (n = 194) in relation to the Grizzly Bear Recovery Zone/Primary Conservation Area and the Demographic Monitoring Area, 2019.

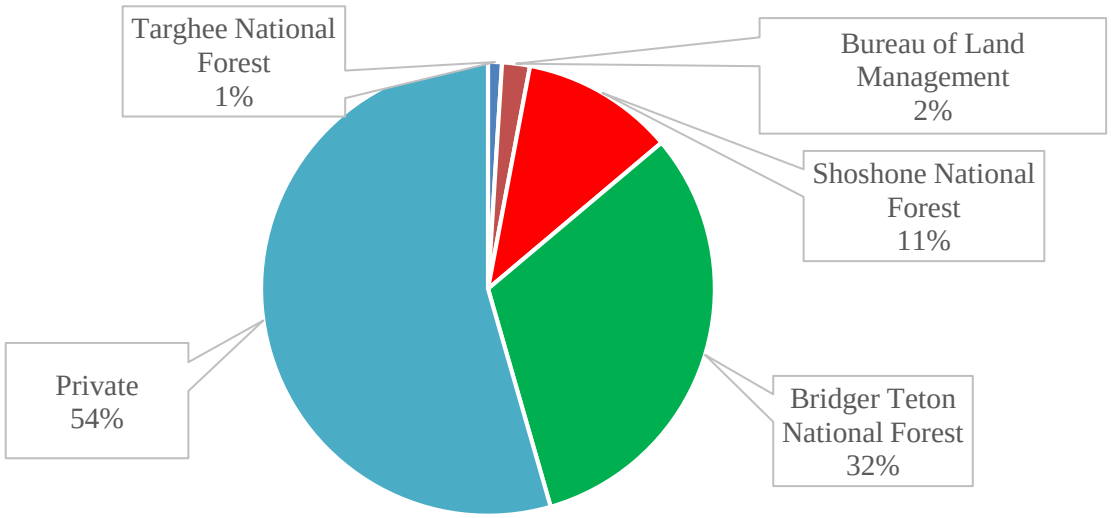


Figure 9. Percent of human-grizzly bear conflicts on private (n = 54%) and public lands (*n* = 46%) in the Wyoming portion of the Greater Yellowstone Ecosystem, 2019.

2019 Bear Wise Wyoming Project 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 2019. Past accomplishments are reported in the 2006 - 2018 annual reports of the IGBST and in the 2011-2018 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 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 15 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.

Cody Project Update

The Cody 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 2019 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, 1,232 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 Commission 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 24 new developments within Park County.

- In the Cody Region, LCS personnel erected 16 temporary electric fences around bee apiaries to minimize conflicts. There were also several electric fences temporarily placed around apple orchards to deter bear conflicts.

- In the spring, LCS personnel put on a “Living in Large Carnivore Country” presentation on Facebook Live. This was a new technique used to try and reach constituents that may not be able to attend a workshop in person. This is a new format that will continue to be utilized to better serve the public.

- A public service announcement was recorded by Department personnel on "Staying Safe in Bear Country" and broadcast over the radio in the spring of 2019 on the Bighorn Basin Radio Network. LCS personnel also took part of several radio interviews.

- Funding was secured, from the Rocky Mountain Elk Foundation, to purchase three collapsible bear boxes to be placed at backcountry campsites in the Beartooth Mountains. These bear boxes will be used by many outdoor recreationalists who travel from all over the country and world to utilize the Beartooth Mountains. Although, there are food storage regulations on these Forest Service lands, the backcountry campsites lack infrastructure for campers. Providing bear boxes will send a clear message that the area is occupied grizzly bear habitat.

- 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.

Redshirts in the Classroom; teaching Large Carnivore Safety to students in Cody, WY.

- Frequent one-on-one contacts were made during the 2019 conflict season in areas where the occurrence of human-bear conflicts has historically been high. This is an effective way to let the community know what is really happening instead of them speculating and demonstrating our personnel's dedication to being on the ground and reducing conflict potential.

- A “Working Safely in Bear Country” workshop was conducted for the Park County Weed and Pest District, Bureau of Land Management, and Rocky Mountain Power employees.

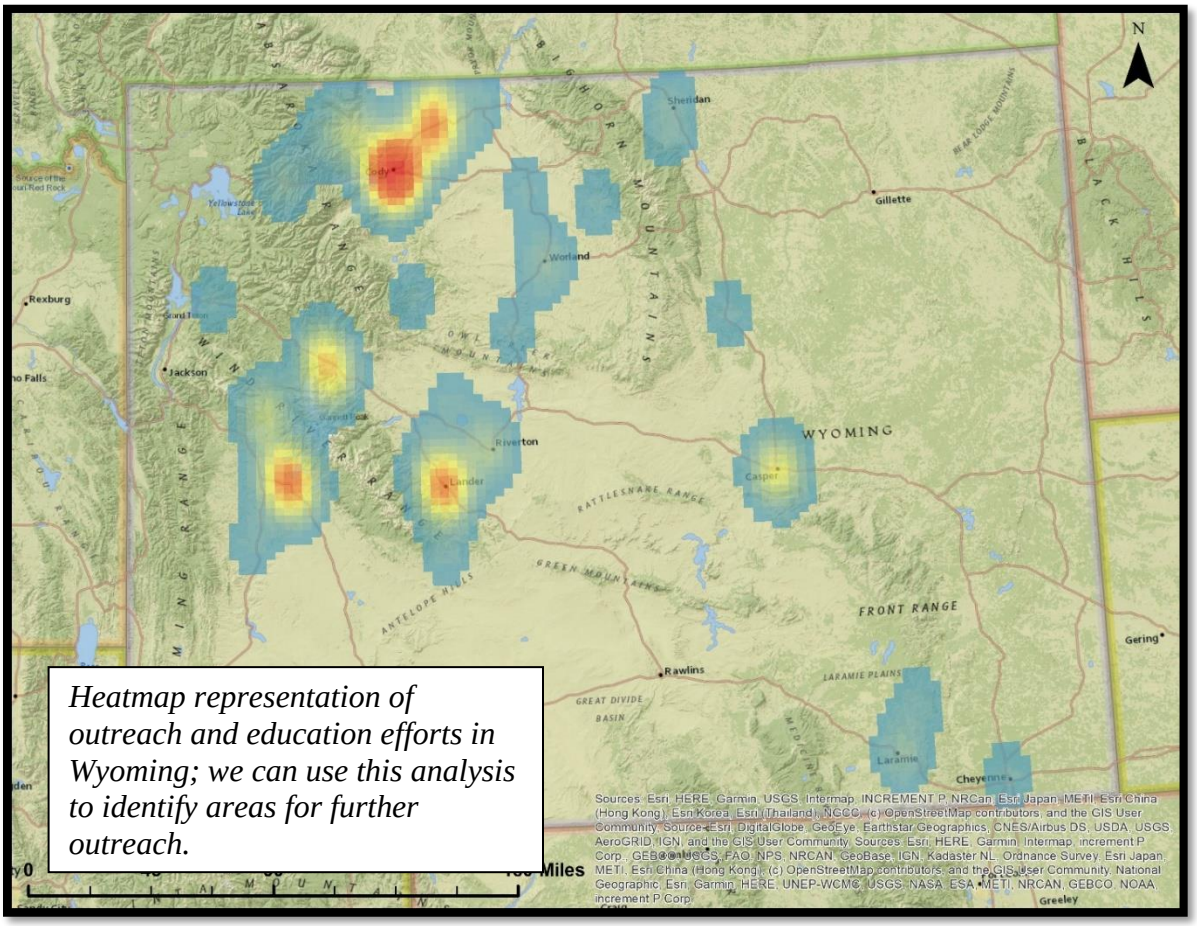
- A booth containing information on bear identification, attractant storage, hunting and recreating safely in bear country, and the proper use of bear spray was staffed at the Lander Winter Fair, Cody Outdoor Expo, Casper Expo, Dubois Museum Days, Powell Outdoor Safety Day, and Wyoming Outdoorsmen Banquet,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

Bear booth and “Charging Bear” used at multiple local celebrations.

- A permanent electric fence was erected in 2018 at the Park County Landfill. To ensure the fence is in good working order Department personal spent several days repairing and maintain the fence in 2019. The partnerships with Wyoming Outdoorsmen, BLM, Park County Commissioners, Western Bear Foundation, and Greater Yellowstone Coalition were vital in making this project a reality.

- By utilizing the bear trailer, informational booths, workshops, and giving 52 presentations upon request, the Bear Wise Wyoming program directly reached approximately 7,800 people in Northwest Wyoming. Although, the level of interaction differed from person to person it is certain that the added awareness to bears lessened

conflicts. The picture below shows a heat map of the presentations given in Wyoming, with the highest density of interactions showing up in red/orange (some areas that were collaborative discussions are not represented, these were specific to WGFD).



Heatmap representation of outreach and education efforts in Wyoming; we can use this analysis to identify areas for further outreach.

- The 2019 Antelope, Deer, and Elk hunting regulations 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.

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 2019 are as follows:

- 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 in an effort to educate future sportsmen and women and increase safety potential.

- LCS personnel provided range rider safety training to local cowboys and ranches that have a high potential of encounters with grizzly bears and livestock.

- Bear safety presentations were given to the Pinedale and Big Piney Ranger Districts of the United States Forest Service, and the Sublette County Weed and Pest employees and volunteers. These personnel have the potential to encounter grizzly bears during the course of their work activities.

- 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 "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 fourth year. The festival draws a diverse crowd and over 700 people visited the booth.

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

- LCS personnel presented bear safety information to Sublette County's Tip Top Search and Rescue. Tip Top members were able to practice using inert bear spray on the "bear charger".

- LCS personnel traveled to the Madison Valley of Montana at the request of local producers to participate in a workshop aimed at reducing livestock conflicts with large carnivores.

- LCS personnel provided training for Regional fisheries crews and local Sublette County Conservation District employees.

- Personnel provided bear biology and bear safety information at a Pinedale Middle School field day at Fremont Lake.

- Personnel participated in field tours for visiting agriculture extension agents from Clemson University and South Carolina.

Objectives for 2020 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 four 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.

- LCS personnel 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 2019, 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.

- LCS personnel assisted hunting outfitters and with the installation and maintenance of electric fence systems around their field camps located in the Bridger-Teton National Forest. Annually personnel meet with hunters and outfitters to reduce to conflict potential between humans and grizzly bears.

- LCS personnel assisted Teton County Transfer Station staff with an electric fence design for their new facility in order to be proactive and reduce conflict potential for black and grizzly bears.

- 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 Wyoming Game and Fish Department in the Jackson region.

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

- LCS personnels provided bear safety information including bear spray demonstrations with the "bear charger" at the Fire in the Mountains music festival in the Buffalo Valley. Several hundred attendees joined the workshops and donations were made by the festival to procure an install a bear proof food storage box during the summer of 2020.

- Objectives for the Bear Wise Jackson Hole program in 2020 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

Bear Safety Education at a Music Festival (Fire in the Mountains) in Buffalo Valley, WY.

Information and Education

2019 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 2019, 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 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 regarding grizzly bear management activities conducted by the department. The web page contents include various interagency annual reports and updates and links to other grizzly bear recovery websites.

- Hunter Education

    - Every hunter education class in Wyoming is required to discuss how to hunt safely in bear country. To assist instructors, we have 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 file:///C:/Users/dajthomps/Downloads/IGBST%20Publication%20List%201974-2020%20v2.pdf

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

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EXPENDITURES FOR GRIZZLY BEAR MANAGEMENT BY THE DEPARTMENT – FISCAL YEAR 2020

The Department's 2020 fiscal year (FY) occurred from July 1, 2019 – June 30, 2020. During the course of FY 20, 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 20, the Department directed $1,271,375 of funds toward grizzly bear conservation and management. Program expenditures are reported by primary work activities conducted during FY 20. The figures reported below do not represent all Department expenses incurred during this FY:

- Conflict Prevention: $245,196.01*
- Annual Monitoring (Population and Habitat Evaluations): $360,614.04
- Additional Information and Education including Bear Wise Wyoming: $140,426.06*
- Season Setting and Regulations: $11,283.06
- Law Enforcement and Investigations: $34,550.11
- Management Planning and Reporting: $15,742.52
- Damage Compensation for Verified Loss: $276,324.47

**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 $1,609,094 was allocated to grizzly bear management during FY 20 through shared expenditures and overlapping activities including overhead that involve grizzly bears, other Wyoming wildlife, and Departmental responsibilities.