2021 Wyoming Grizzly Bear Job Completion Report

Wyoming Game and Fish Department
Large Carnivore Section
October - 2022

Authors:

Clint Atkinson, Dan Bjornlie, Cade Bowlin, Mike Boyce, Justin Clapp, Brian DeBolt, Luke Ellsbury, Kyle Garrett, Zach Gregory, Andy Johnson, Ryan Kindermann, Becca Lyon, Gage Metzen, Ken Mills, Phil Quick, Sean Ryder, Scott Stingley 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 2021. 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 – CAPTURE SUMMARY

Annual captures 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 2021 season.

2021 WGFD Elk Fork/South Fork Area Grizzly Bear Trapping Summary

Early 2021 trapping efforts focused on the Elk Fork and South Fork drainages of the Shoshone National Forest and from 5 May to 11 June, 2021. Trapping occurred at 7 sites in the area. All traps, baits, scent lures, and other equipment were removed from sites by 20 May (Elk Fork; signs as well) and 11 June (South Fork) and warning and closure signs were removed from the South Fork on 15 June.

Six grizzly bears were captured collectively between the two areas. Two bears were fitted with VHF collars and 4 bears were fitted with GPS collars (Table 1). All bears were tagged and biological samples were taken, as well. Two black bears were captured and released unhandled.

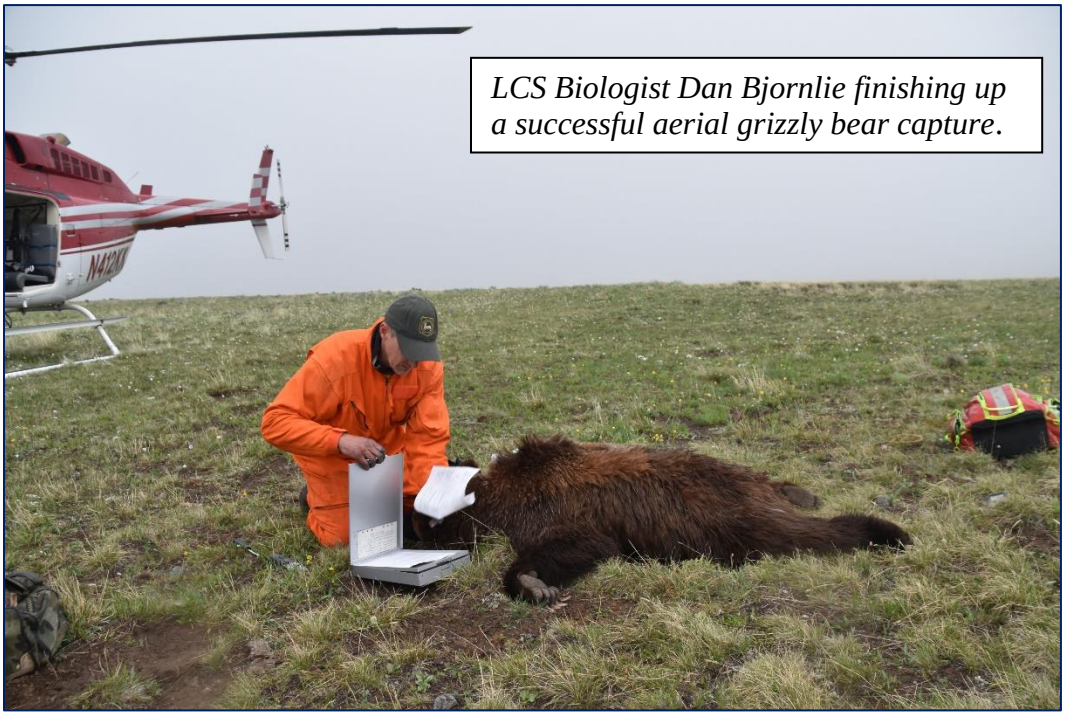
Table 1. Grizzly bears captured in the Elk Fork/South Fork areas of the Shoshone National Forest, May-June 2021.

Bear ID	Capture Date	Sex/Age Class	Location	Collar
639	5/12/21	Adult male	Rose Creek	GPS collar
1023	5/14/21	Subadult Male	North Cougar	GPS collar
885	5/31/21	Adult male	Belknap	VHF collar
1025	6/5/21	Adult female	Timber Creek	VHF collar
1026	6/8/21	Adult male	TE Cow Camp	GPS collar
1027	6/9/21	Adult female	Belknap	GPS collar

2021 Wyoming Game and Fish Department Aerial Grizzly Bear Capture Summary

To contribute to the U.S. Forest Service and Interagency Grizzly Bear Study Team objective of improving our understanding of how grizzly bears use army cutworm moth (*Euxoa auxiliaris*) feeding sites in the Greater Yellowstone Ecosystem (GYE) and to maintain a representative sample of radio-collared grizzly bears throughout GYE, the Wyoming Game and Fish Department conducted aerial darting operations to radio-collar grizzly bears in and around the Washakie Wilderness of the Shoshone National Forest from 27 to 29 June, 2021. The impetus for this work originated from the need to deploy radio collars on grizzly bears where it has been extremely difficult to capture bears due to the remoteness of the area and the difficulty in accessing grizzly bears feeding on army cutworm moths in the alpine talus.

The aerial darting operation in the Washakie Wilderness (Figure 2) was regulated by a permit from the U.S. Forest Service that limited the total number of landings and bear captures to 15 and 10, respectively. A capture crew of 3 people (pilot, darter, Department crew member) were present in the helicopter during operations. All darting was performed by a U.S. Department of Interior certified Aerial Capture Eradication and Tagging of Animals (ACETA) instructor from the Alaska Region of the National Park Service, with extensive experience in the aerial darting of large mammals, including bears. The pilot was OAS and ACETA certified and had extensive experience in aerial capture operations. Capture protocols required that the Department crew member be dropped off on the ground prior to attempting to dart a bear and picked up following darting. Thus, some captures required 3 landings in wilderness to complete (drop off, pick up, and capture site). Capture crews were able to limit the number of wilderness landings for some captures by dropping the Department crew member outside wilderness if the boundary was nearby, or by the Department crew member walking from the drop-off point to the capture site if it was nearby and easily accessible. Other captures were conducted in adjacent high elevation non-wilderness areas and required no wilderness landings. However, these areas were limited to a small pocket on the eastern edge of the study area and thus, wilderness access was required to obtain the necessary sample of bears (Figure 1).



LCS Biologist Dan Bjornlie finishing up a successful aerial grizzly bear capture.

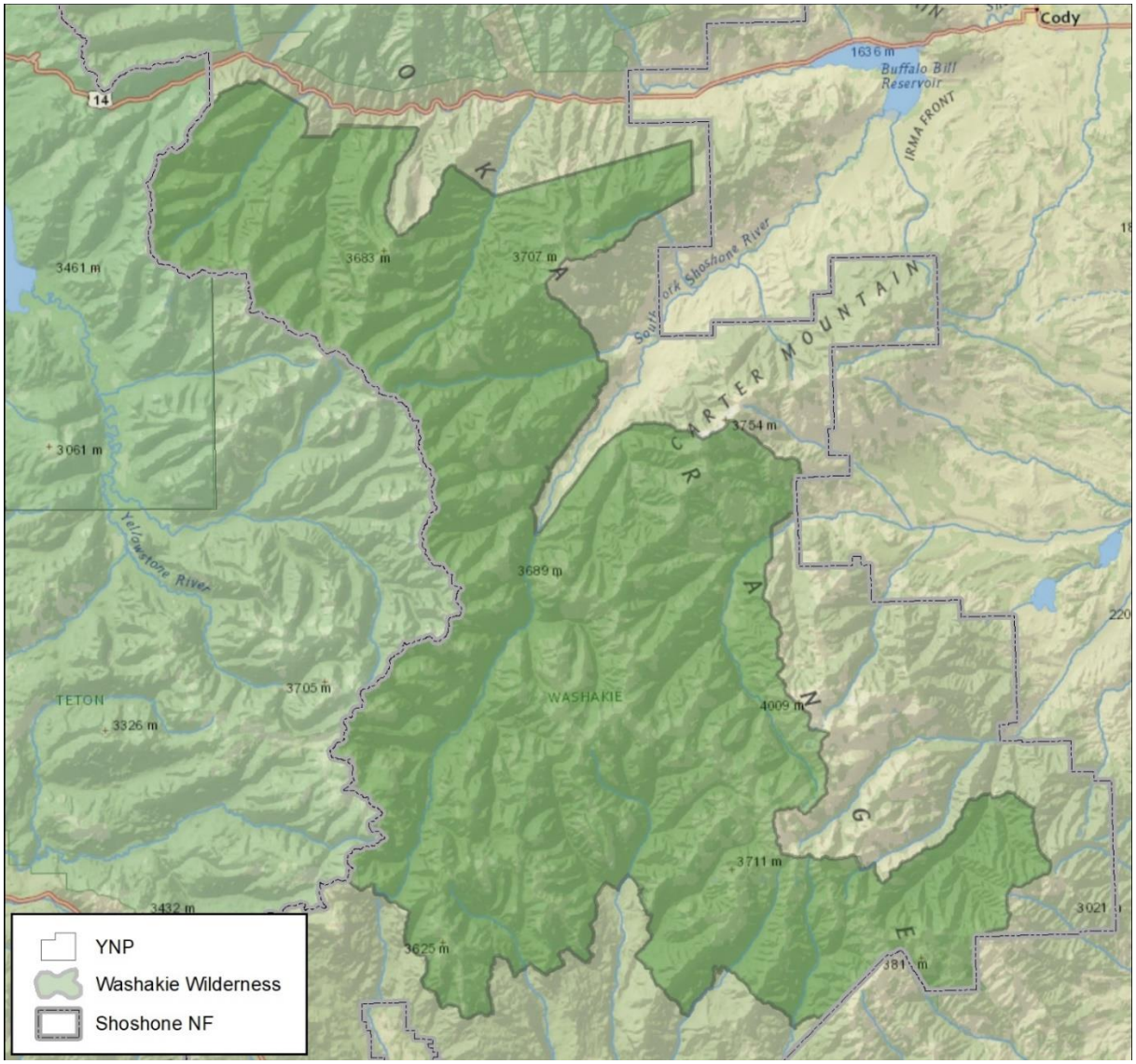


Figure 1. Area of focus for aerial grizzly bear captures; Washakie Wilderness and surrounding area of the Shoshone National Forest, June 2021.

Aerial capture work began on 27 June and concluded on 29 June, 2021. In all, 10 grizzly bears were captured; 5 males and 5 females (Table 2). Eight satellite GPS collars were fitted to bears (5 males; 3 females) to acquire fine scale location data. Longer-life VHF collars were placed on the other 2 female bears to obtain long-term survival and reproduction data on female bears in the area. In addition to radio collars, all bears were tagged and biological samples were taken. All collared bears will be monitored for survival and reproduction (females) for the period that collars are worn. GPS collars are all equipped with automatic release mechanisms that are programmed to activate in 2 years, allowing the collar to drop from the bear. All VHF collars are equipped with canvas spacers that will degrade with exposure to moisture and sunlight and break away after approximately 3-5 years. Some collars are naturally slipped by bears prior to these releases.

Table 2. Grizzly bears captured during aerial operations on the Shoshone National Forest, June 27-29, 2021.

Bear ID	Capture Date	Sex/Age Class	Location	Collar	Wilderness
967	6/27/21	Adult male	Haymaker Creek	GPS collar	Yes
1031	6/27/21	Adult Female	Jack Creek	GPS collar	No
1032	6/27/21	Subadult Female	Betty Creek	VHF collar	Yes
476	6/28/21	Adult Female w/ 1 COY	Needle Mtn	GPS collar	Yes
635	6/28/21	Adult male	Robinson Creek	GPS collar	Yes
1033	6/28/21	Subadult Male	Red Tops Mtn	GPS collar	Yes
538	6/29/21	Adult male	Dundee Creek	GPS collar	No
1034	6/29/21	Adult Female w/ 2 yearlings	Greybull River	GPS collar	Yes
1035	6/29/21	Adult Female	Jojo Creek	VHF collar	No
1036	6/29/21	Adult male	Anderson Creek	GPS collar	Yes

As of early August 2021, 8 of the 10 collared grizzly bears have locations focused on army cutworm moth sites in the capture area. Additionally, bear 1035 has a VHF collar which has been located twice since capture, both in close proximity to, and in the same talus habitat as, nearby moth sites and may be feeding on moths on a site not yet described.

Traditionally, the method for radio collaring grizzly bears is to trap them with culvert/box style traps or cable foot snares. However, the use of culvert traps is often limited to areas with road access for trucks or other motorized vehicles. Trapping with foot snares can be accomplished in backcountry settings away from roads, commonly via horseback, but still requires the presence of trees to anchor the snares. In many high elevation areas, trees are not present or are too small to act as anchors for snares, thus making foot snare trapping difficult to impossible to conduct safely. While grizzly bears often move to lower elevations snow-free areas in spring and early summer in search of food, most of these areas in the Washakie wilderness are inaccessible at that time of year due to high runoff making stream crossings on horseback unsafe. Numerous grizzly bears have been captured in more accessible lower elevation areas peripheral to moth sites, but few individuals subsequently visited the sites, and then used the aggregation sites infrequently. By the time stream levels have dropped in mid-summer, many grizzly bears in the Washakie wilderness have moved up to high elevation talus slopes to feed on army cutworm moths and are thus inaccessible for trapping. This has resulted in a data deficiency in an area that is central to the GYE grizzly bear population.

This data gap has also resulted in a lack of knowledge on the fine scale movements and feeding ecology of grizzly bears that use army cutworm moth sites. By day, army cutworm moths seek cover in scree fields of the Absaroka Mountains of the Washakie Wilderness from July to mid-September, commonly above 11,000 feet,

and then nocturnally feed on the nectar of nearby alpine flowers. Due to the high calorie content (French et al. 1994) and easy access of moths beneath the rocks in talus fields, grizzly bears shift their focus to moths as soon as the insects arrive and remain while this valuable food is present. Use of the sites by grizzly bears has increased over the last two decades since regular site monitoring began (Bjornlie and Haroldson 2021). There has been growing interest in the grizzly bear viewing opportunities that these sites provide, creating the potential for human disturbance of bears feeding on the sites. Location data from the collars deployed during aerial captures in this area will be used to fully investigate grizzly bear use of these sites and the potential implications of human presence at moth sites.

In addition to the challenge of data collection, the difficulty of backcountry trapping efforts via horseback often results in extended personnel time, often with few captures, even in areas where bears are accessible. During this aerial capture operation, helicopter flight time averaged 2.5 hours per day for 3 days. When all non-flight time to collar and sample a bear is included, each day's total capture effort was 5-6 hours. This averages approximately 1.5 hours per bear capture. The work was made much more efficient by having an experienced pilot in a fixed wing plane who located grizzly bears for potential helicopter capture. With this spotter plane, the time to capture was often only 15-20 minutes from the time the bear was spotted until it was darted and immobilized. While the crew spent ~1 hour collaring and sampling the captured bear, the spotter pilot was locating another bear for capture. Thus, multiple bears could be captured and collared in only a few hours each morning and completing that day's work before the winds increased to an unsafe level by late morning. Compared to traditional backcountry trapping from horseback, which often consists of 2-3 crew members with 4-6 horses riding 10+ days in remote settings to check traps, the temporal footprint of the aerial capture work was less than 10% of that ground-based work. In fact, the aerial work was so much more efficient than traditional backcountry trapping that it would take the sum of all overnight backcountry trapping operations conducted by the Department from 2001 to 2019 to add up to the 10 grizzly bears captured during the approximately 16 hours of aerial capture work conducted in this operation. In addition, there were no traps set that could be encountered by the public, thus increasing public safety. Also, the only physical contact with the ground were the few landing spots, on snow fields if possible, thus resource damage was virtually nonexistent.

The timing of the capture work was also important in the success of the operation. The dates of capture were chosen to be late enough for snowmelt to progress and bears to be at high elevations in open alpine habitats, but not so late that bears would have moved onto the steeper talus slopes to feed on army cutworm moths. This worked well, as many bears were located in open alpine terrain, but in low angle sloped conducive to aerial capture. The timing also resulted in increased public safety and minimal impact to wilderness visitor experience, as the public was not able to access these remote areas from the ground due to the high water from runoff and snow still remaining in some timbered areas of the trail system.

While this aerial darting operation to radio collar grizzly bears in the Washakie wilderness was highly successful, it cannot replace all backcountry trapping. Aerial work is not conducive to many areas of the GYE where forest cover is too thick to observe or effectively dart bears. However, there may be opportunities to expand aerial work to other areas of the GYE if the interest is there and the terrain allows.

2021 WGFD Wind River Reservation Grizzly Bear Trapping Summary

Late 2021 trapping efforts focused on the Owl Creek mountain range of the Wind River Reservation from 26 July to 16 August. Trapping occurred at 5 sites in the area (Figure 4). All traps, baits, scent lures, and other equipment were removed from sites by 16 August and warning and closure signs were removed from all areas by 24 August. Four grizzly bears were captured and collared with VHF or GPS collars (Table 3).

Table 3. Grizzly bears captured on the Wind River Reservation, July-August 2021.

Bear ID	Capture Date	Sex/Age Class	Location	Collar
1044	7/28/2021	Adult female	Upper Crow Creek	VHF collar
1047	8/7/2021	Adult Male	Upper Crow Creek	GPS collar
1049	8/8/2021	Adult female	Red Creek	GPS collar
531	8/14/2021	Adult female	Buck Creek	GPS collar

An adult female grizzly bear captured with Tribal Fish and Game personnel on the Wind River Reservation.

GRIZZLY BEAR OBSERVATION FLIGHTS

The Department and other members of the Interagency Grizzly Bear Study Team (IGBST), conduct observation flights to monitor the Greater Yellowstone grizzly bear population and estimate abundance. Again, in 2021 only one round of observation flights were conducted, and 7 of the 14 flights were flown with only the pilot and no secondary observer. Also, the Grizzly Bear Observation Units (GBOUs) in the southern portion of the Greater Yellowstone Ecosystem (GYE; Figure 2) were not flown in an effort to reduce overall flight time and because grizzly bears in these GBOUs are rarely observed due to low densities and heavily forested terrain. The remaining GBOUs in the northern GYE were flown in early August to maximize visibility.

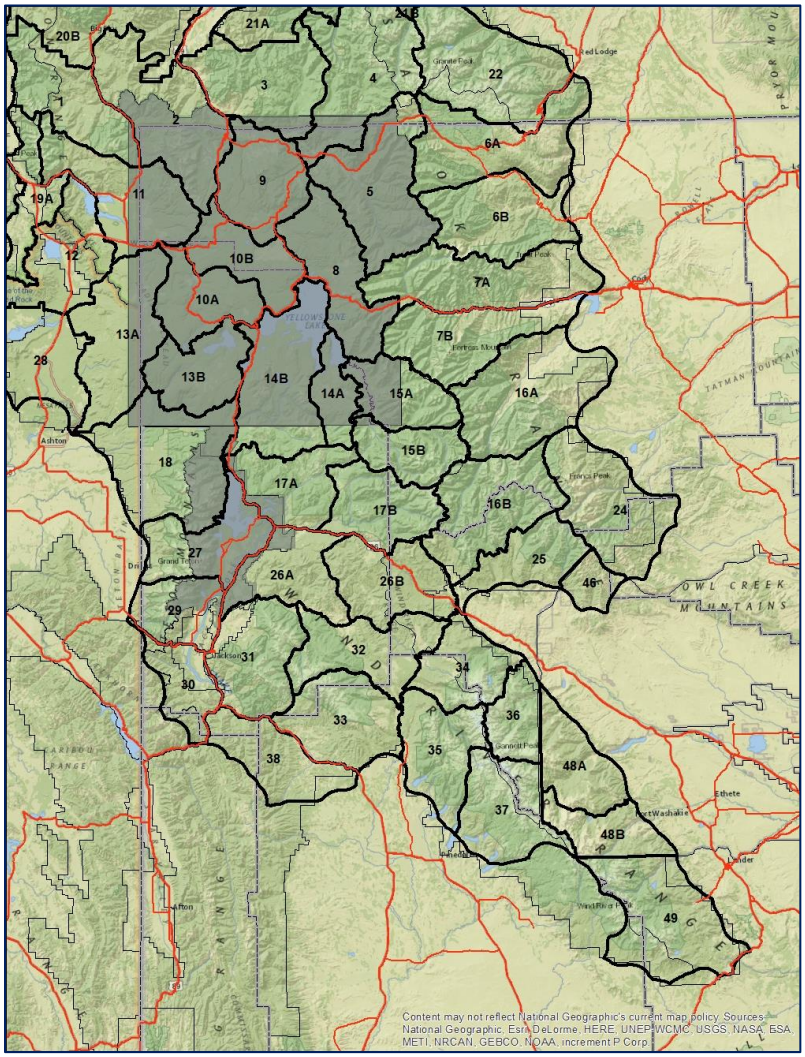


Figure 2. Grizzly Bear Observation Units (GBOUs) in the Wyoming portion of the Greater Yellowstone Ecosystem.

The Department spent 28.8 hours flying grizzly bear during the single round of observation flights conducted in 2021, compared to a total of 30.7 hours in 2020. A total of 374 grizzly bears were observed in the Wyoming GBOUs in 2021 compared to a total of 350 bears observed in 2020. Thus, the rate of observations for 2021 was 13.0 grizzly bears observed per hour, compared to 11.4 in 2020. The number of females with cubs-of-year (Fcoy or COY) groups observed during 2021 flights was lower than that of 2020, with 33 observed compared to 37 the previous year (Table 4).

Table 4. Composition of grizzly bears observed during the first round of surveys in 2020.

		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		
8/1	6A	-*	-	-	-	-	-	-	-	-	-	0	0
8/2	6B	0	2	1	1	4	1	-	-	-	-	26	54
8/15	7A	1	2	1	2	1	-	-	-	-	-	6	25
8/4	7B	3	3	1	1	-	-	-	-	-	-	32	53
8/5	15A	-	-	2	1	2	-	-	-	-	-	8	24
8/7	15B	1	-	-	1	2	1	-	-	-	-	11	25
8/14	16A	2	3	2	-	6	-	-	-	-	-	26	65
8/11	16B	-	1	-	-	-	-	-	-	-	-	17	20
8/10	17A	-	-	-	-	-	-	-	-	-	-	1	1
8/12	17B	1	-	-	-	-	-	-	-	-	-	1	3
8/13	24	1	6	-	3	2	1	-	-	-	-	54	90
8/9	25	-	-	-	-	1	-	-	-	-	-	4	7
8/6	26A	-	-	-	-	1	-	-	-	-	-	0	3
8/8	26B	-	-	-	-	1	-	-	-	-	-	1	4
All Areas		9	17	7	9	20	3	0	0	0	0	187	374

*- indicates no bears observed

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)*

Army cutworm moths (*Euxoa auxiliaris*; moths) were first recognized as an important food source for grizzly bears in the GYE during the mid-1980s. 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 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 sites, numerous bears have been observed at or near these sites. Observability is high because of lack of tree cover and number 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. We developed a technique in 2000 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 errors 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 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. Areas suspected as insect aggregation sites but dropped from the list of confirmed sites, and sites with only 1 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 historical 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 those 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.

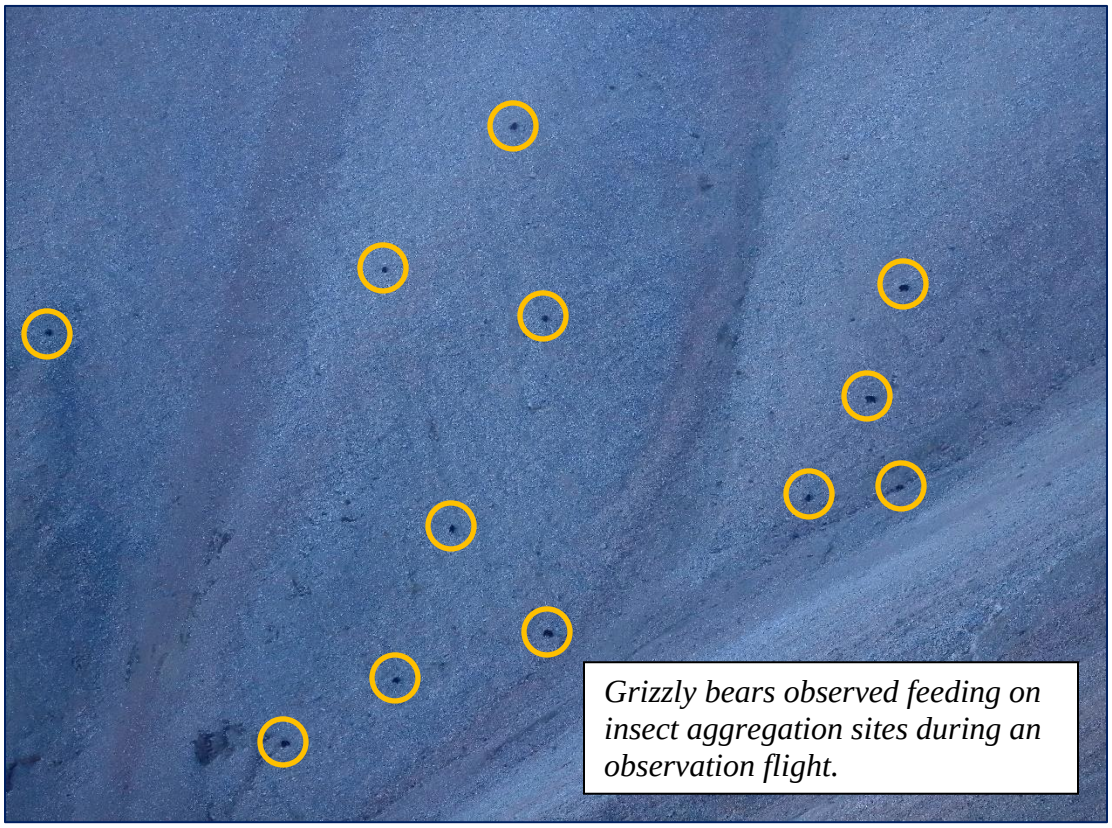
As with 2020, only 1 round of grizzly bear observation flights was flown in 2021. Thus, the number of hours flown over insect aggregation sites was again reduced compared to pre-2020 flight totals. However, unlike 2020, most observation flights (81%) were conducted with a secondary observer in addition to the pilot.

Analysis of grizzly bear use of insect aggregation sites in 2021 resulted in 215 observations of actively feeding grizzly bears on previously identified, confirmed sites. In addition, there was an observation of actively feeding grizzly bears at 2 sites previously classified as possible and 1 observation of actively feeding grizzly bears at a previously undocumented site. Thus, 1 previous possible site was reclassified to 'confirmed,' 1 possible site was merged with a nearby confirmed site due to overlapping site polygons, and 1 new possible site was added in 2021, bringing the number of sites to 35 confirmed and 19 possible.

Overall, the number of locations with grizzly bears on insect aggregation sites in 2021 (n = 357) was the highest recorded since the beginning of the monitoring period in 1986 (Table 5). This number includes all grizzly bear locations from aerial observation flights, telemetry flights, and observations made during flights for other species. The number of grizzly bears

documented 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 3), 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 3) and the number of observations recorded at insect aggregation sites were very low (Table 5). In all other years, the percentage of insect aggregation sites used by grizzly bears varied between 47 and 83% (Figure 3).

However, when we control for the amount of observation effort by including only bears observed during regularly conducted observation flights (see "***Observation Flights***"), the number of bears observed using insect aggregation sites per hour of flights has shown an overall increasing trend since these flights began in 1997 (Figure 4). Whereas the number of bears observed in 2021 was near the average for the previous 10 years, the number of hours flown was 45% lower than years in which 2 rounds of flights were conducted. Thus, the number of observations per hour flown was actually higher in 2021 than in any previous year (Figure 4).



Grizzly bears observed feeding on insect aggregation sites during an observation flight.

Table 5. Summary statistics for grizzly bear use of confirmed insect aggregation sites, Greater Yellowstone Ecosystem, 1986–2021.

Year	Number of confirmed aggregation 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	13	13	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	49	97
2001	28	18	23	128
2002	30	21	33	256
2003	30	20	9	163
2004	30	16	2	134
2005	32	19	16	198
2006	32	17	15	147
2007	32	19	19	162
2008	32	23	16	181
2009	34	23	12	170
2010	34	18	3	136
2011	35	22	10	165
2012	35	24	20	253
2013	35	23	27	297
2014	35	24	11	343
2015	35	21	13	211
2016	35	20	11	208
2017	35	21	20	279
2018	35	20	18	267
2019	35	29	20	335
2020	35	27	19	325
2021	35	23	30	327
Total			536	5,794

[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] An aggregation site was considered used if ≥1 location or grizzly bear observation was documented within the site during July–September of that year.

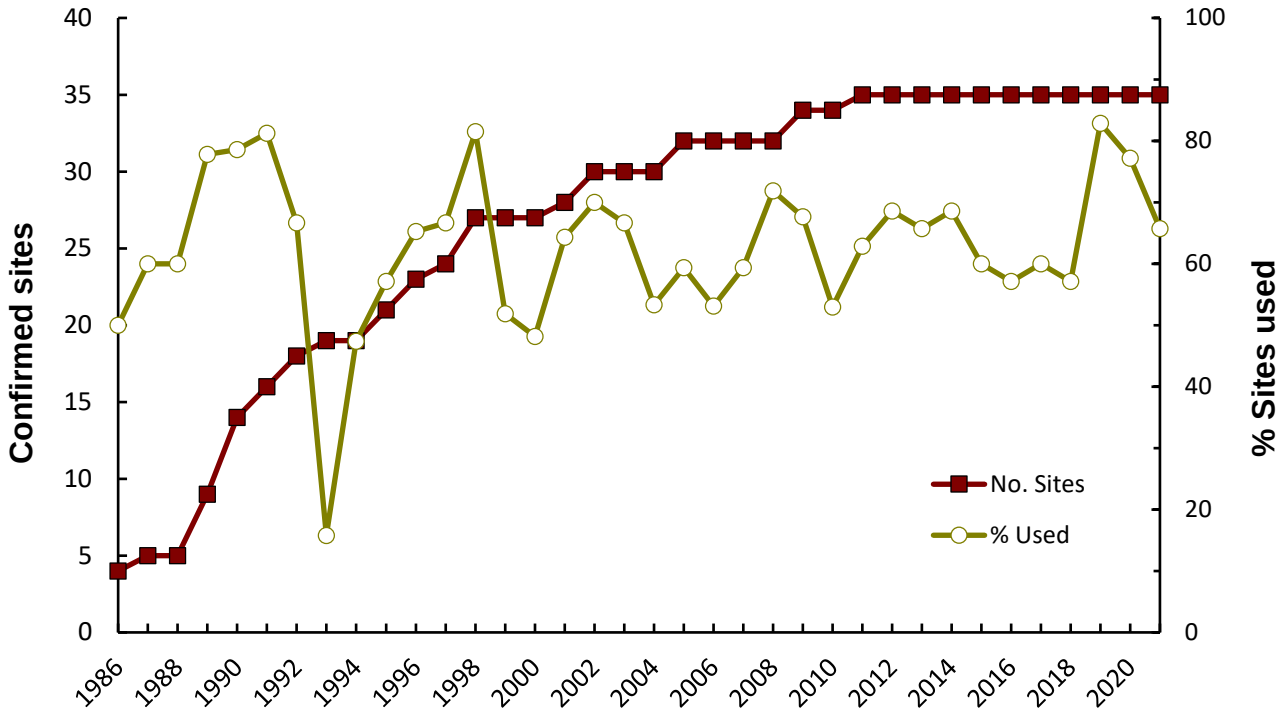


Figure 3. Annual number of confirmed insect aggregation sites and percent of those sites at which telemetry relocations of marked bears or visual observations of unmarked bears were recorded, Greater Yellowstone Ecosystem, 1986–2021.

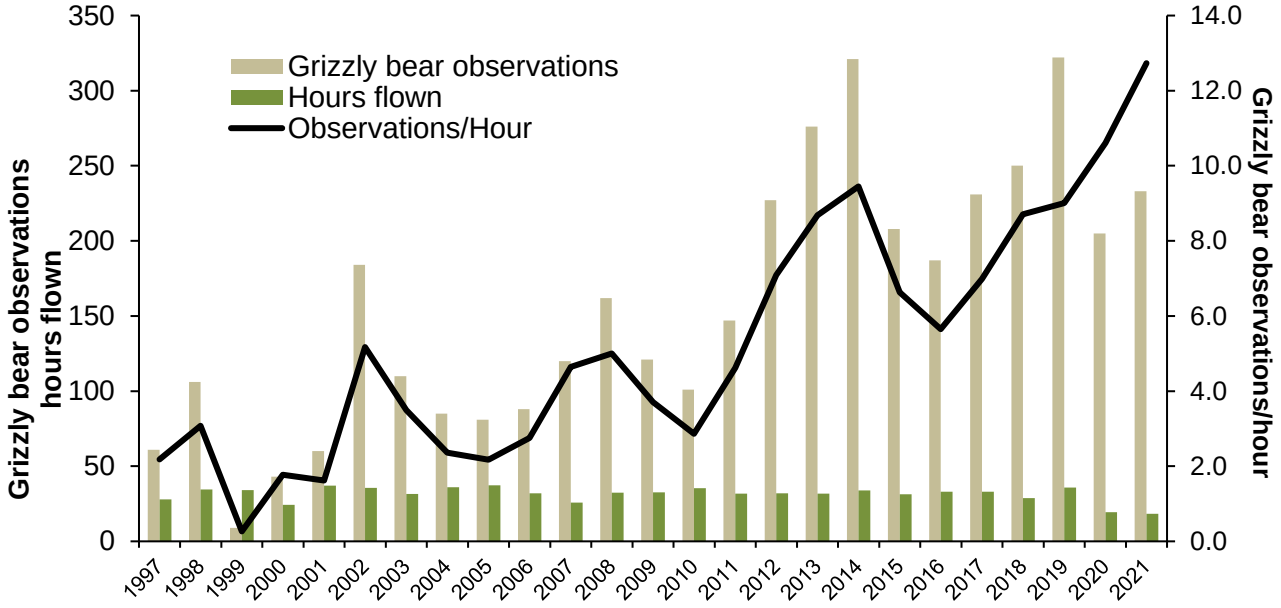


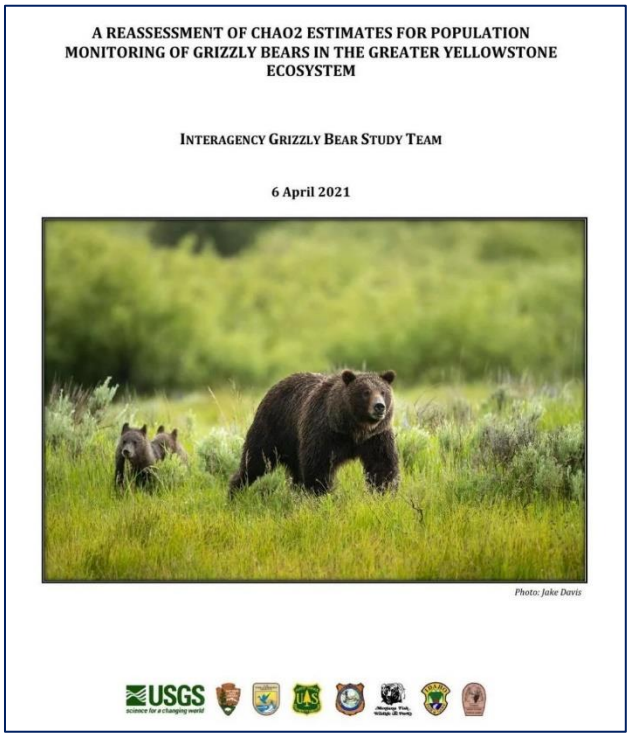
Figure 4. Number of grizzly bears observed (tan bars) on insect aggregation sites during observation flights only, survey hours (green bars) for these bear management units (BMU), and grizzly bear observations per survey hour (black line) during observation flights of BMUs containing all known insect aggregation sites, Greater Yellowstone Ecosystem, 1997–2021.

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. These publications are merely 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. LCS personnel were integral in updating the methodology to provide a more accurate estimate of the grizzly bear population and more accurate representation of mortality of grizzly bears. Personnel from the Large Carnivore Section have updated materials such as the Tri-State Memorandum of Agreement and provided updated information within the State of Wyoming's petition *TO ESTABLISH THE GREATER YELLOWSTONE ECOSYSTEM (GYE) GRIZZLY BEAR (Ursus arctos horribilis) DISTINCT POPULATION SEGMENT (DPS) AND REMOVE THE GYE DPS FROM THE FEDERAL LIST OF ENDANGERED AND THREATENED WILDLIFE.* The Wyoming Game and Fish Department supports celebrating the ongoing success story of grizzly bear recovery and management.

For a detailed reference of the science behind grizzly bear conservation, such as the aforementioned updates to population estimates and monitoring, and a listing of relevant peer-reviewed literature published by the Section and other members of the Interagency Grizzly Bear Study team visit 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

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/Wildlife-in-Wyoming/More-Wildlife/Large-Carnivore/Grizzly-Bear-Management


A REASSESSMENT OF CHAO2 ESTIMATES FOR POPULATION MONITORING OF GRIZZLY BEARS IN THE GREATER YELLOWSTONE ECOSYSTEM

INTERAGENCY GRIZZLY BEAR STUDY TEAM

6 April 2021

Photo: Jake Davis

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 their range. 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 2021, the Department captured 45 individual grizzly bears in 49 capture events in an attempt to prevent or resolve conflicts; four bears (1022, 1041, 1043, and 1048) were each captured twice (Figure 5 and Table 6). Of the 45 individual captures, 17 were female and 32 were male grizzly bears. Most captures were adult males (n = 19).

Of the 49 capture events, 23 captures were a result of grizzly bears killing livestock (primarily cattle), 17 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 (unsuitable due to the high probability of conflicts with humans and potential for conflict). Two grizzly bears were captured for damaging corn fields, one bear was captured because it was extremely sick/emaciated, and was humanely euthanized. Six grizzly bears were captured that were not implicated in the specific conflict (labeled "non-target" captures). Some non-target grizzly bears are relocated in order to focus trapping efforts toward the "target" individual or for human safety, and some are released on site. Of the 49 capture events, 21 (43%) were in Park County, 10 (21%) were in Sublette County, 7 (14%) were in Teton County, 6 (12%) were in Fremont County, and 5 (10%) were in Hot Springs County (Figure 5 and Table 6).

Of the 49 capture events, there were 19 relocation events (Figure 6 and Table 6). All relocated grizzly bears were released on U.S. Forest Service lands in or adjacent to the Primary Conservation Area/Recovery Zone (Figure 6). Of the 19 relocation events, 11 were conducted in Park County (58%), 6 (32%) in Teton County, 1 (5%) in Sublette County, and 1 (5%) in Fremont County (Figure 2 and Table 1). The Sublette County relocation was a non-target grizzly bear (2-year old female #1041) relocated a short distance instead of on site to focus capture efforts towards the target bear involved in the conflict.

Grizzly bears are removed from the population due to a history of previous conflicts, a known history of close association with humans, or if they are deemed unsuitable for release into the wild (e.g. orphaned cubs, poor physical condition, or human safety concern). Of the 45 grizzly bears captured, 30 bears were removed from the population. Of these 30, 17 (57%) were outside of the Demographic Monitoring Area, which is the area considered suitable for the long term viability of grizzly bears in the Greater Yellowstone Ecosystem. 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.

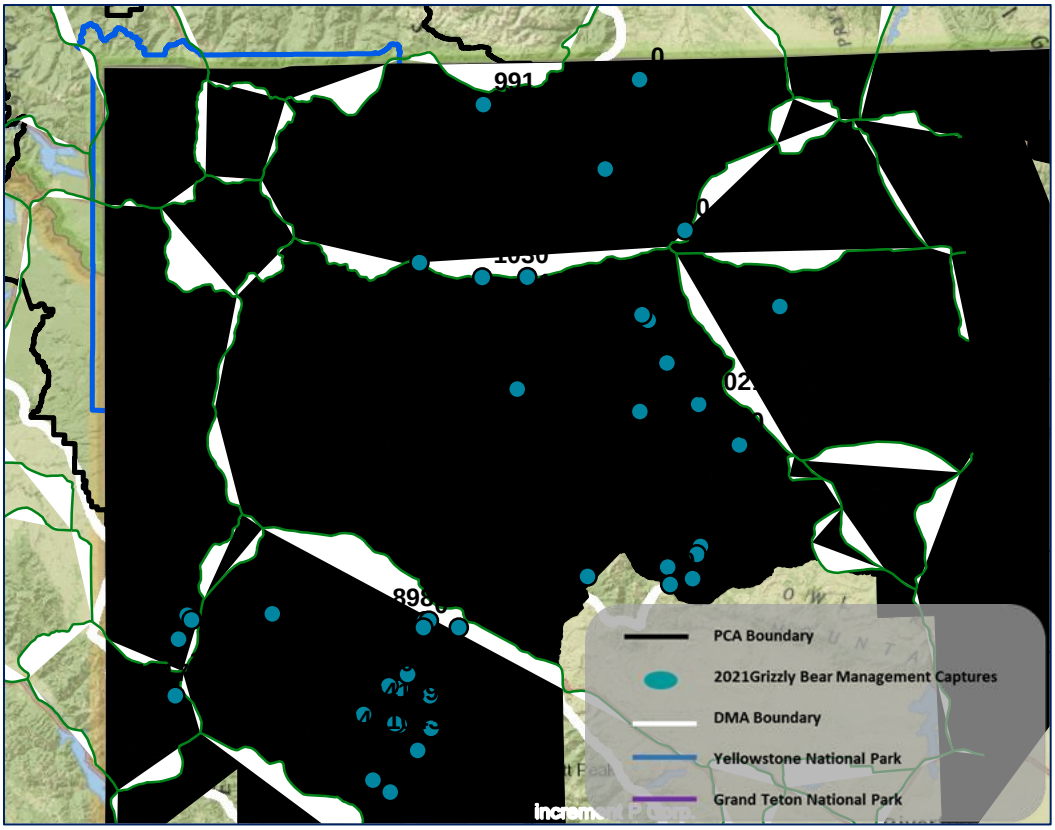


Figure 5. Locations (*n* = 49) for grizzly bears captured in conflict management efforts in Wyoming portion of the Greater Yellowstone Ecosystem, 2021. Grizzly bears with "G" in front of their number were marked but not fitted with radio collars typically because they were too young to be collared. Because of the mapping scale, some locations are combined at one symbol. A complete list is provided in Table 6.

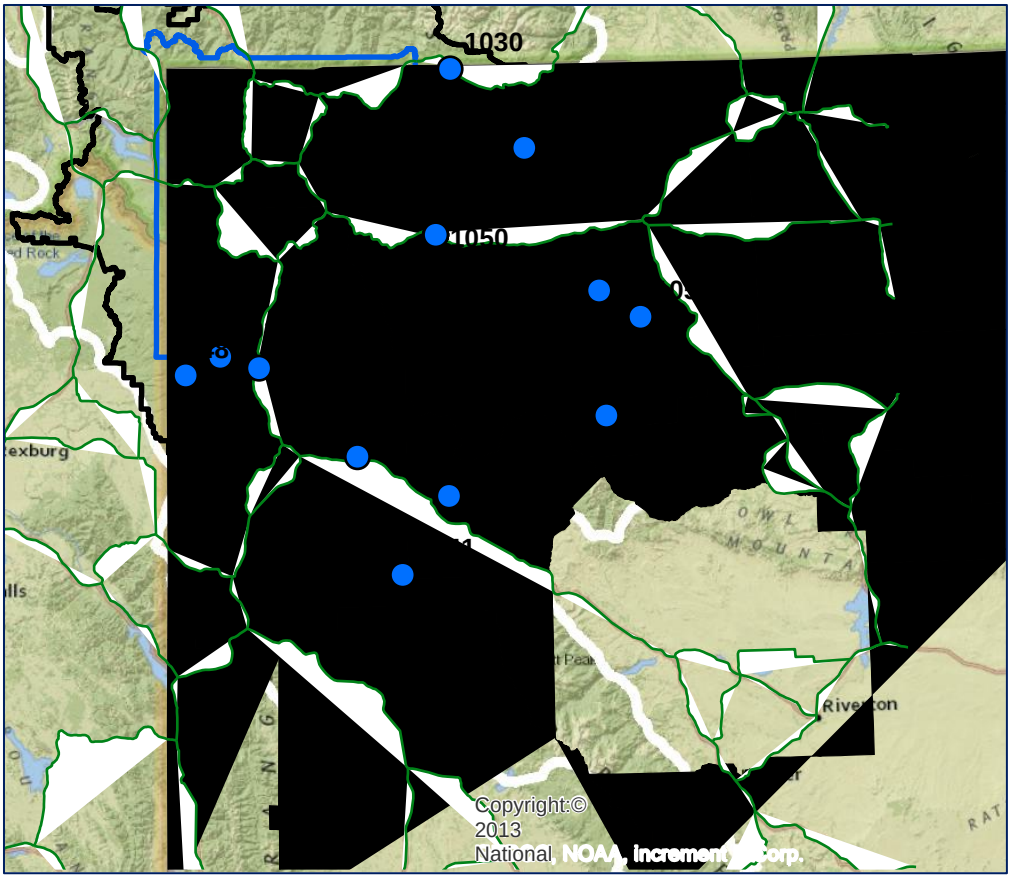


Figure 6. Release locations (*n* = 19) for grizzly bears captured, relocated, or released on site in conflict management efforts in Wyoming portion of the Greater Yellowstone Ecosystem, 2021. Grizzly bears with "G" in front of their number were ear-marked but not fitted with a radio collar upon release, 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 6.

Table 6. Capture date, grizzly bear identification number (ID), capture county, relocation site, release county, and reason for capture for all 2021 grizzly bear conflict management captures (n = 49) in Wyoming. Grizzly bear ID labeled as "N/A" were grizzly bears removed from the population without being given a chronological capture number.

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
4/6/2021	N/A	Park			Humane removal; no conflict, called in as a sick bear hanging around a ranch housing area.
4/11/2021	1020	Park	Sunlight Creek	Park	Non-target capture at site of cattle depredation
4/26/2021	1021	Park	Jojo Creek	Park	Non-target capture near area of cattle depredation.
5/5/2021	N/A	Park			Capture and removed for cattle depredation
5/5/2021	N/A	Park			Capture and removed for cattle depredation
5/7/2021	1022	Teton	Sheffield Creek	Teton	Captured and relocated after three attempts to haze from residential areas, displaying habituated behavior and food rewards
5/22/2021	1022	Teton			Removed for frequenting residential areas, receiving food rewards, after several hazing events and failed relocation. (Relocated 5/7/21 and returned 5/21/21)
6/5/2021	N/A	Park			Captured and removed for bold behavior around guest lodges and trailheads, including following horseback riders on several occasions.
6/15/2021	1029	Park	Grassy Lake	Teton	Captured and relocated for frequnetin a guest lodge and eating hay in the corral with horses
6/21/2021	1030	Park	Fox Creek	Park	Captured and relocted for frequenting developed site and chasing a dog through a group of
7/10/2021	N/A	Park			Capture and removed for cattle depredation
7/11/2021	1039	Sublette	Long Creek	Fremont	Non-target capture while mitigating cattle depredation

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
7/13/2021	1040	Sublette	Fivemile Creek	Park	Captured and relocated for cattle depredation
7/17/2021	1041	Sublette	Buffalo Meadow	Sublette	Non-target capture while mitigating cattle depredation
7/21/2021	G272	Park	Bailey Creek	Teton	Non-target capture while mitigating cattle depredation. Relocated with mother (886)
7/21/2021	886	Park	Bailey Creek	Teton	Non-target capture while mitigating cattle depredation
7/23/2021	1043	Fremont	Fivemile Creek	Park	Captured and relocated for cattle depredation
7/25/2021	N/A	Sublette			Capture and removed for multiple cattle depredations on private lands.
7/28/2021	N/A	Park			Captured and removed for frequenting agricultural areas including a cornfield and cattle feedlot.
7/28/2021	N/A	Park			Captured and removed for frequenting agricultural areas including a cornfield and cattle feedlot.
7/30/2021	N/A	Park			Capture and removed for multiple cattle depredation
7/31/2021	1046	Sublette	Buffalo Fork	Teton	Non-target capture while mitigating cattle depredation, Relocated due to proximity near house/property
8/2/2021	946	Teton			Captured and removed for breaking into structures and obtaining food rewards, previously relocated for cattle depredation
8/6/2021	898	Fremont			Captured and removed for cattle depredation
8/7/2021	1048	Teton	Boone Creek	Teton	Captured and relocated for obtaining unsecured attractants on several occasions at guest ranch
8/8/2021	N/A	Hot Springs			Captured and removed for sheep depredations
8/11/2021	N/A	Hot Springs			Captured and removed for sheep depredations

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
8/15/2021	1050	Hot Springs	Fivemile Creek	Park	Captured and relocated for cattle depredation
8/16/2021	890	Sublette			Captured and removed for cattle depredation
8/20/2021	N/A	Fremont			Capture and removed for significant property damage and food rewards, removed with male sibling
8/20/2021	N/A	Fremont			Capture and removed for significant property damage and food rewards, removed with male sibling
8/21/2021	G269	Sublette			Captured and removed for cattle depredation
8/24/2021	951	Sublette			Captured and removed for cattle depredation
8/25/2021	1041	Sublette	Fivemile Creek	Park	Captured and relocated for cattle depredation
8/26/2021	560	Fremont	Fivemile Creek	Park	Captured and relocated for cattle depredation
8/28/2021	1048	Teton			Capture and removed for repeated conflicts (property damage, obtaining livestock feed and garbage), previously relocated for accessing livestock feed
9/1/2021	N/A	Hot Springs			Captured and removed for cattle depredation
9/4/2021	974	Hot Springs			Captured and removed for sheep depredation
9/11/2021	1053	Sublette	Fivemile Creek	Park	Captured and relocated for cattle depredation
9/15/2021	N/A	Park			Captured and removed for frequenting housing areas, feeding in pumpkin patch and proximity to feedyard.
9/21/2021	1028	Teton			Captured and removed for repeated conflicts involving property damage, livestock feed and garbage; previously captured and relocated by Grand Teton National Park

Date	ID	Capture County	Relocation Site	Release County	Reason For Capture
9/27/2021	N/A	Fremont			Captured are removed for numerous conflicts associated with breaking into trailers/trucks, visiting camps and attempting entry into occupied tent
10/1/2021	1017	Teton			Captured and removed for repeated conflicts involving garbage, compost and livestock feed; previously captured and relocated
10/10/2021	1055	Park	Carter Mountain	Park	Captured and relocated as a non-target capture while attempting to capture bear 1043
10/10/2021	1043	Park			Captured and removed for frequenting residential areas and obtaining livestock feed food
10/18/2021	N/A	Park			Captured and removed for frequenting developed areas near and in the town of Cody, poor body condition and aggressive behavior towards people rafting the river
10/22/2021	991	Park			Captured and removed for breaking into a barn through the wall
10/26/2021	N/A	Park			Captured and removed for cattle depredation. This bear had two yearlings at time of capture, one caught and released on site (1056)
10/26/2021	1056	Park	Meeteetse Creek	Park	Captured with mother for cattle depredations, released on site

CONFLICT MANAGEMENT – CONFLICT VERIFICATION AND REPORTING

WGFD personnel investigated and recorded 281 human-grizzly bear conflicts in 2021 (Table 7, Figure 7). As a result of vigilant education and conflict prevention efforts, the general pattern of conflicts is relatively steady within currently occupied habitat (Figure 7). However, as occupied grizzly bear range has expanded, conflicts continue to occur in areas farther from the Recovery Zone and outside the DMA, often on private lands. Grizzly bears are increasingly coming into conflict with people in areas where they have not been present in recent history.

Although the joint efforts of the WGFD, U.S. Forest Service, non-governmental organizations, and the public, have resulted in reducing conflicts through education and attractant storage, the distribution of grizzly bear conflicts in Wyoming continues to expand with the population. 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 2021. The annual variation in livestock depredation incidents is not easily explained. Although most human-bear conflicts are correlated with natural food abundance, the numbers of cattle and sheep killed annually do not follow the same pattern. As grizzly bears expand farther 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 WGFD continues to explore and use multiple options to reduce grizzly bear-livestock conflicts and expand our education and outreach efforts (see Bear Wise Wyoming Report, page 30).

Half of the grizzly bear conflicts in Wyoming occurred on private lands and the majority were outside of Recovery Zone (Figure 8). The increasing distribution of grizzly bears is reflected in the annual documentation of conflicts farther from suitable habitat and continued expansion 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 are used anywhere bears and people coexist, and management actions will be a function of human values and effects on the grizzly bear population in those areas.

Section personnel put in a great deal of effort to secure attractants from grizzly bears such as garbage. When a bear receives human food rewards there is a potential for that bear to become food-conditioned and a threat to public safety

Table 7. Type and number of human-grizzly bear conflicts in Wyoming portion of the Greater Yellowstone Ecosystem, 2021.		
Conflict type	**Number**	**Percent (%)**
Cattle	161	57.30%
Pet-Livestock-Birdfeed	29	10.32%
Garbage	29	10.32%
Sheep	17	6.05%
Property Damage	11	3.91%
Beehive	7	2.49%
Other	7	2.49%
Aggression Toward Humans	5	1.78%
Animal Death	4	1.42%
Animal Injury	3	1.07%
Fruit Trees	2	0.71%
Unsecured Attractant	2	0.71%
Poultry	2	0.71%
Encounter	1	0.36%
Grand Total	281	100.00%

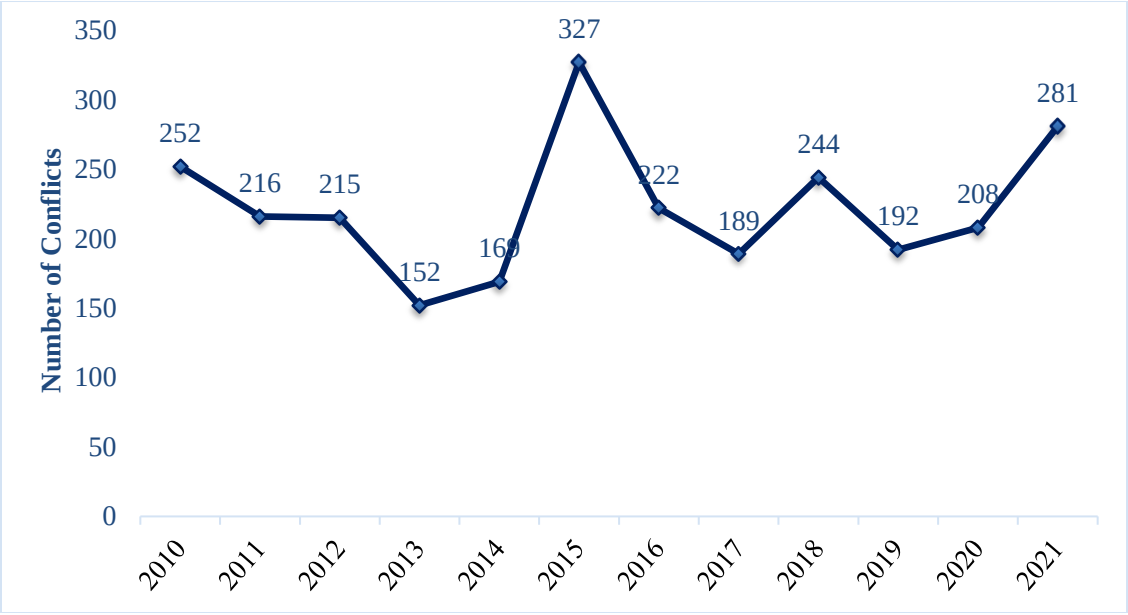


Figure 7. Number of human-grizzly bear conflicts and associated trendline in Wyoming portion of the Greater Yellowstone Ecosystem, 2010–2021.

Long-term trends in the number of conflicts are 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. 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 bear managers in the future. As the GYE grizzly bear population has exceeded its biological carrying capacity, it continues to grow and expand into less suitable habitat. Therefore, bears are more likely to encounter food sources such as garbage, pet food, livestock and livestock feed, and a myriad of 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 WGFD. Nevertheless, conflict management is often reactive. Even with the most stringent food and attractant control, the increasing and expanding grizzly bear numbers will lead to conflicts between bears and people. In areas where females are teaching their young to be unafraid of humans, there will be young bears venturing out to find food and struggling to survive. This fact emphasizes the importance for bears to be afraid of humans, and for people to recognize that habituated bears are not healthy for the population and may need relocated or euthanized. In general, there is less social tolerance and biological suitability for bear occupancy in areas farther from the Recovery Zone 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.

A grizzly bear family group walks through the Jackson Police Department parking lot in downtown Jackson, WY.

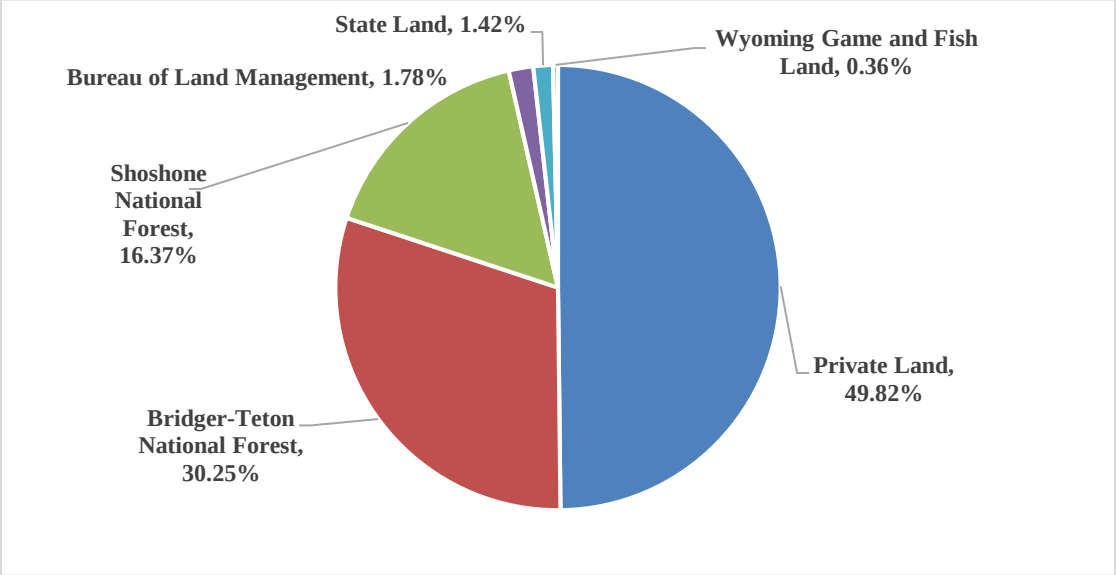


Figure 8. Percent of human-grizzly bear conflicts broken down by jurisdiction in the Wyoming portion of the Greater Yellowstone Ecosystem, 2021.

Grizzly bears exhibiting habituated roadside behavior are an increasing challenge on multi-jurisdictional state highways in Wyoming.

2021 Wyoming 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 increasing human-bear conflicts, moving toward creating a social conscience regarding responsible attractant management and human 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 2021. Past accomplishments are reported in the 2006 - 2020 annual reports of the Interagency Grizzly Bear Study Team (IGBST) and in the 2011-2020 Annual Job Completion Reports of the Wyoming Game and Fish Department (WGFD).

Background

In 2004, a subcommittee of the IGBST conducted an analysis of causes and spatial distribution of grizzly bear mortalities and conflicts in the Greater Yellowstone Area (GYA) 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 GYA. 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 16 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 2021 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 Bureau of Land Management, National Fish and Wildlife Foundation. 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, 1,567 domestic livestock carcasses have been removed from private lands**.

- In the Cody Region, Large Carnivore Section (LCS) maintained 10 permanent electric fences that were built in 2020. The fences are around bee apiaries that have been in the same place long term. These project were completed in cooperation with USDA wildlife service non-lethal specialist and funding to do livestock conflict prevention.

- LCS personnel held trainings, and coordination efforts with Guardian Air Rescue

- Numerous informational presentations were given that focused on human-bear conflict prevention to students at the following schools: Powell High School, Cody high, middle, and elementary schools, Basin Middle school, and Lovell elementary school.

- 300 canisters of bear spray were purchased with funding from the Western Bear Foundation, and Safari Club International. The cans of bear spray were given free of charge to hunters and anglers in late August. Giveaways were held in Cody, Jackson, and Lander.

- A "Working in Large Carnivore Country" workshop was conducted for the Park County Weed and Pest District, Park County Search and Rescue, and Rocky Mountain Power.

- A permanent electric fence was erected in 2018 at the Park County Landfill. To ensure the fence is in good working order WGFD personal spent several days repairing and maintaining the fence in 2021. The partnerships with Wyoming Outdoorsmen, BLM, Park County Commissioners, Western Bear Foundation, and Greater Yellowstone Coalition were vital in making this project a reality.

- Regional Hunter Education classes, and numerous other public outreach events were held in Cody, Powell, Meeteetsee, Thermopolis, Wapiti, and Burgess Junction.

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 2021 are as follows:

- Hunting in Bear Country presentations were given to Hunter Education 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 USFS, and other groups throughout Sublette County.

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

- LCS personnel attended and participated in the Sublette County Conservation District's spring Expo providing Information and education to attendees.

Objectives for 2021 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 2020, 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. 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 local radio stations in Jackson throughout the spring, summer, and fall of 2021. 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 WGFD.

- 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 worked extensively with the Apiarists in Teton County. They worked together to electrify bee yards and chicken coops to secure the potential attractants.

- 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 Lander Development Recommendations (LDR).

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

- Several 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 Jackson residents on placing new bear resistant garbage cans in several Jackson neighborhoods.

- LCS personnel sat in on and participated in numerous meetings working with Teton County to develop new land development restrictions (LDR). These will take effect in 2022. The purpose is to help work towards reducing bear human conflicts at homes in Teton County.

Objectives for the Bear Wise Jackson Hole program in 2021 were 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.

Information and Education

2021 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.

    - 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 web sites.

- Hunter Education

    - Every hunter education class in Wyoming is required to discuss how to hunt safely in bear country. To assist instructors, most have been provided inert bear spray canisters for demonstration purposes and DVD's entitled *Staying Safe in Bear Country, A Behavioral Based Approach to Reducing Risk*. A section on bear safety is included in the student manual. Approximately 5,000 students are certified each year.

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 Wyoming Coordinator
Kyle Garrett
(307) 527-7125
kyle.garrett@wyo.gov

EXPENDITURES FOR GRIZZLY BEAR MANAGEMENT BY THE DEPARTMENT – FISCAL YEAR 2022

The Department's 2022 fiscal year (FY) occurred from July 1, 2021 – June 30, 2022. During the course of FY 22, 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 22, the Department directed $1,690,499 of funds toward grizzly bear conservation and management. Program expenditures are reported by primary work activities conducted during FY 22. The figures reported below do not represent all Department expenses incurred during this FY:

- Conflict Prevention: $250,400.35*
- Annual Monitoring (Population and Habitat Evaluations): $515,133.87
- Additional Information and Education including Bear Wise Wyoming: $174,495.01*
- Season Setting and Regulations: $6,241.08
- Law Enforcement and Investigations: $63,226.03
- Management Planning and Reporting: $8,433.77
- Damage Compensation for Verified Loss: $345,898.99

**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 $2,353,049 was allocated to grizzly bear management during FY 22 through shared expenditures and overlapping activities including overhead that involve grizzly bears, other Wyoming wildlife, and Departmental responsibilities.

Literature Cited

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