

Interagency Grizzly Bear Study Team



The data presented here were collected by the Interagency Grizzly Bear Study Team for the entire Greater Yellowstone Ecosystem (GYE). Data obtained are not presented separately for administrative units. Member agencies include: U.S. Geological Survey; U.S. Fish and Wildlife Service; National Park Service; U.S. Forest Service; Wyoming Game and Fish Department; Idaho Department of Fish and Game; Montana Fish, Wildlife and Parks; and the Wind River Fish and Game Departments of the Shoshone and Arapaho Tribes.



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2019 Annual Report Summary

Captures: Eighty-one individual grizzly bears (*Ursus arctos*) were captured on 98 occasions during the 2019 field season. Forty-five captures were of new individuals that had not been previously marked. There were 59 research captures of 46 individuals (16 females, 27 males; 3 bears of unknown sex were released without handling). All research captures occurred within the Demographic Monitoring Area (DMA). Thirty-nine captures of 37 (9 females, 28 males) individuals were the result of management trapping efforts in response to human-bear conflicts. Fifteen management captures of 14 individuals (3 females, 11 males) occurred outside the DMA. Sixteen bears (5 females, 11 males) were translocated. There were 21 (5 females, 16 males) management removals, 10 of (2 females, 8 males) which were inside the DMA and 11 (3 females, 8 males) occurred outside the DMA.

Aerial VHF Telemetry and Bears Monitored: We radio-monitored 98 individual grizzly bears during the 2019 field season, including 51 (40 adults) females. Fifty-eight grizzly bears entered their winter dens wearing active transmitters. More than 914 aerial VHF radio-locations were obtained during 265 flight hours from 98 individual grizzly bears radio-monitored during all or a portion of the 2019 field season. Forty of radio-monitored grizzly bears were adult females. We obtained >104,200 GPS-derived locations from 48 bears wearing satellite tracking collars. Since 1975, 973 individual grizzly bears have been radiomarked in the GYE.

Grizzly Bear Observation Flights: Two rounds of observation flights were conducted within the DMA as part of our effort to count unique females with cubs-of-the-year (hereafter, females with cubs) and document distribution of females with young (cubs, yearlings, or 2-year-olds). The first round of flights began June 4, and 54 observation areas were surveyed during 108 flight hours. The second round of flights began on July 4 and 42 areas were surveyed during 91 flight hours. A total of 682 grizzly bears were observed in 493 groups, including 42 observations of females with cubs and 62 observations of females with older young.

Estimating Numbers of Females with Cubs and Grizzly Bear Population Size (Demographic Recovery Criterion #1): Within the DMA, 47 unique females were differentiated from 167 sightings (59% aerial, 41% ground) of females with cubs. A total of 91 cubs were observed during the initial sightings of unique females. Mean litter size was 1.94 cubs/litter. We observed 13 single cub litters, 25 twins, 8 triplets, and 1 quadruplet. Using the sighting frequencies associated with unique females with cubs observed and without the aid of telemetry, our 2019 estimate based on the Chao2 technique was 66. The model-averaged estimate based on data from 1983–2019 was 58 (95% CI = 47–72) females with cubs, which continues to exceed the objective of 48 specified in the demographic criteria for the GYE. Our 2019 estimated population size derived from the model-averaged females with cubs within the DMA was 737 (95% CI = 657–818). Not including observations at moth sites, our 2019 estimate for numbers of females with cubs using the Mark-Resight method was 68 (95% CI 37–114), with a 3-year average (2017–2019) of 75 (95% CI 49–112). Outside the DMA, we documented 5 observations of 4 females with cubs. Only one of these females was also observed within the DMA, whereas the other 3 were only seen outside the DMA.

Distribution of Females with Young (cubs, yearlings, or 2-year-olds) (Demographic Recovery Criterion #2): Females with young were documented in 18 of 18 Bear Management Units (BMU) within the USFWS-designated Recovery Zone (48% of DMA) during 2019. Seventeen of 18 BMUs have been occupied by females with young each year during the 6-year period 2014–2019; 1 BMU had documented occurrences of females with young during 4 of the last 6 years.

Grizzly Bear Mortality (Demographic Recovery Criterion #3): Within the DMA we documented 27 known and probable grizzly bear mortalities that occurred in 2019: 3 independent-age (≥ 2 years old) females, 17 independent males, 2 independent bears of

unknown sex, and 5 dependent-age (<2 years) young of unknown sex. Nineteen were attributable to human causes, and 7 to natural causes. Cause of death for 1 documented mortality was undetermined. Including an estimate for unknown or unreported mortalities and using randomly assigned sex for the 2 independent-age bears for which sex was not known, the estimated total mortality ($n = 9$) was 3.5% of the estimated population of independent females ($n = 257$); for independent males total estimated mortality ($n = 30$) was 11.7% of the estimated population ($n = 257$). There were no documented human-caused mortalities for dependent young within the DMA during 2019. Estimated population size for dependent young within the DMA was $n = 218$. We documented 2 additional mortalities in the DMA of bears that died prior to 2019 (an adult female with 1 cub in 2018). Outside the DMA, we documented 18 mortalities (5 females, 9 males, and 4 with undetermined sex), all of which were human-caused.

Army Cutworm Moth Aggregation Sites: A total of 466 grizzly bear observations were recorded during systematic observation flights at 28 (54%) of the 52 confirmed and possible army cutworm moth (*Euxoa auxiliaris*) aggregation sites. Fifteen (32%) of the 47 initial observations of unique females with cubs within the DMA occurred at moth aggregation sites.

Whitebark Pine Surveys: Twenty-one transects were sampled during late July and early August to measure whitebark pine (*Pinus albicaulis*) cone production on live trees. Overall, the mean number of cones/tree was 19.6, which was slightly above the long-term average of 17.0 for the period 1980–2018. We observed no additional tree mortality due to mountain pine beetle (*Dendroctonus ponderosae*) among trees consistently surveyed since 2002 on 19 of the transects. Total mortality on these transect trees sampled since 2002 remains at 75.8% (144/190) with 100% (19/19) of transects containing beetle-killed trees. These data suggest the mountain beetle outbreak has run its course.



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