

Bear Management Brief

Grizzly Bears: Population Connectivity and Genetic Diversity

Key Points

- Currently, the grizzly bear population in the greater Yellowstone ecosystem (GYE) is isolated from other populations. Decreases in genetic diversity could occur over time due to inbreeding.
- However, the grizzly bear population in the GYE is not eminently at risk from the deleterious consequences of inbreeding. Thus, the need for gene flow is not urgent at this time.
- Two migrants to the GYE per generation that survive and breed would increase the level of genetic diversity in the GYE. These movements could occur naturally or by translocation.
- Bears in the GYE and Northern Continental Divide (NCDE) ecosystems are dispersing and expanding their range, thereby reducing the distance between the two populations.
- If natural gene flow does not occur within 2-3 decades, translocation will be considered.

Background:

- Grizzly bears in the GYE were listed as a federally threatened species in 1975, due to unsustainable levels of human-caused mortality and loss of habitat.
- Since the mid-1980's, the grizzly bear population in the GYE has increased in abundance and expanded its range. More than 600 grizzly bears now occupy over 14 million acres in the GYE.
- The grizzly bear population in the NCDE is also expanding. However, natural gene flow by bears moving across the landscape between the GYE and the NCDE may be several years away.
- The average dispersal distance for subadult male grizzly bears in the GYE is 70 km. The distance between the occupied ranges of the GYE and NCDE populations is currently 165 km, more than two times the average dispersal distance, but approximately equal to the maximum dispersal distances observed for male bears in this region.
- The obstacles to achieving natural connectivity are substantial because much of the land between the GYE and NCDE is in private ownership.
- Grizzly bear gene flow between the GYE and NCDE is currently being monitored via genetic samples (DNA) collected from blood, tissue, and hair of live and dead bears. Bear movements are also monitored through radio telemetry.
- If no genetic exchange between the GYE and NCDE is detected by 2020, then plans will be developed to translocate two or more bears from other populations into the GYE beginning in 2022, to ensure that genetic diversity in the GYE does not decrease below existing levels.

Issues:

- Natural connectivity will require a cooperative effort on the part of federal and state agencies, private landowners, industry, political leaders, and the public.
- Connectivity can be enhanced by allowing both the GYE and NCDE grizzly populations to increase their current sizes and by facilitating range expansion through natural dispersal and/or reintroduction into suitable intermediate habitat.
- The most immediate threat to GYE grizzly bears is not connectivity between ecosystems, but human-caused mortality and habitat loss.

Bear Safety Tip:

- When backcountry hiking in bear country, you can reduce the chances of being injured by a bear by: 1) hiking in groups of 3 or more people, 2) carrying bear spray, 3) staying alert, 4) making noise in areas with poor visibility, and 5) not running during encounters with bears. During a surprise encounter with a bear, slowly back away. If the bear charges, stand your ground and use your bear spray. If the bear attacks during a surprise encounter (as evidenced by an immediate charge with head held low and ears laid back), play dead. If a curious or predatory bear (as evidenced by a direct focused approach with head up and ears erect) persistently stalks you, be aggressive and fight back. Fight back during any attack at night while you are sleeping.