BEAR CONSERVATION

Why Genetic Diversity Matters and What it Means for the Yellowstone Grizzly Bear

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Female gizzly in Yellowstone National Park, USA (Xinem)

Introduction

Biodiversity is a term exploding in popularity among scientists. This concept is not new, however, as conservation has worked tirelessly to protect as many species as possible while still maintaining a balance between ecosystems and human activity encroachment.

Biodiversity exists on three levels: ecosystem diversity, species diversity, and genetic diversity. Our attention focuses towards genetic diversity with regards to the grizzly. While the population of grizzly bears by the numbers has risen, the genetic diversity within these populations could decrease significantly and this may lead to a huge problem in terms of longevity for the species in the Greater Yellowstone Ecosystem (GYE).

Diversity within a species is vital. One disease could wipe out a significant portion of the population should it have low variance in gene types. To have genetic diversity is to have a strong population.

Background

Grizzly bears have large ranges; some can exceed 200-400 square miles depending on the sex of the bear. Yellowstone National Park is nearly 3,500 square miles which seems to say that the park offers plenty of space for bears to roam and migrate. This would be the case if said bears understood park boundaries.

Many come into contact with landowners and livestock and these encounters tend to end fatally for the bear. While tragic, this is not the only human conflict that impacts grizzlies. Due to the sheer amount of development around the GYE, bear populations have become fragmented. The GYE grizzlies are becoming unrelated and isolated from the Canadian and Alaskan grizzly populations. This could cause what is known as genetic drift.

Genetic drift is the phenomenon that occurs when a population becomes isolated. Because no breeding is occurring between grizzly populations, there is no influx of new alleles among the population. While the isolated population may be increasing in numbers, the genetic diversity of the bears could be beginning to decrease.

The Delisting Dilemma

When the decision to delist the grizzly bear hit the public, there was a collective cheer for the efforts of conservation making positive progress. Some bear scientists, however, were left worrying. It always seems wonderful when a population that had been struggling experiences exponential growth, but this delisting could have negative impacts.

Without the protection of the Endangered Species Act (ESA), many argue that the GYE grizzlies will be susceptible to significant decline and that their delisting is premature. Some “anti-delisters” cite problems with human conflict and the genetic drift issue as a means for delaying delisting. They believe that these phenomena have severe impacts on the populations and now that the protection of the ESA is lifted, their populations will decline.

Good News for Grizzlies

The good news is that those opposed to the delisting are few in number and have few grounds for their positions. The Interagency Grizzly Bear Study Team (IGBST) has conducted decades of research confirming the success of the GYE grizzlies. Other bear scientists may argue populations must be at least double the size of the current population in order to be healthy, though this would contribute to far more bear-human interactions. IGBST has concluded that the viable population of breeding bears has, indeed, reached a stable capacity which enables the delisting process to happen with confidence. Protections that are still in place for the bears will also continue to allow the population to thrive. The problem of genetic drift still looms on the horizon, but, for now, we can call the conservation efforts for the GYE grizzly successful.

Further Reading

See our web page on grizzlies at http://www.bearconservation.org.uk/grizzly-bear/