Yellowstone National Park

BIODIVERSITY CASE STUDY (From the International Wolf Center's 'Gray Wolf, Gray Matter')

The return of the gray wolf to Yellowstone National Park has caused a cascade of effects that scientists are only beginning to understand. Wolves were exterminated from the park by the early 1930s because they were believed to be a threat to humans and a menace to the ecosystem. Sentiments changed, and in 1995 and 1996 wolves were reintroduced into Yellowstone as well as central Idaho.

In the time since the wolf's return to Yellowstone, biologists have been monitoring the plants' and animals' response to wolves. Preliminary results from scientific studies reveal that changes are occurring. One study showed that elk—the wolf's primary prey— changed their browsing behavior after wolves were reintroduced to the park. Prior to the return of wolves, high numbers of elk grazed heavily on trees and other plants in the river valleys. With wolves present, the elk must now be more vigilant to avoid predation by wolves. When elk move about the ecosystem more actively, the trees in the river valleys are not grazed as heavily and can regenerate more readily. Scientists have noted that aspen, willow and cottonwood trees all are growing taller and spreading more widely in these areas. With more hardwood trees available, beavers have more food and build dams that create ponds. With expanded riparian areas, a wider range of plants and animals find homes, including songbirds and trout.

Other changes are being observed as well. When wolves kill elk, they often leave food behind for scavengers such as ravens, grizzly bears, magpies, wolverines, eagles and various beetle species, helping those populations to grow strong. Wolves reduce coyote numbers because the two species compete for food. Fewer coyotes mean that red foxes, hawks and eagles have less competition for smaller prey such as ground squirrels and gophers.

Ecological relationships are complex and difficult to document. While many changes in Yellowstone's ecosystem have been documented since wolves arrived, it is impossible—and inappropriate—to attribute all the changes to wolves. Drought, extreme winter weather and even human activity affect the ecosystem. Even if biologists could document all the aspects of such complex cause-and-effect interactions, the story is still unfolding. All the animals and plants in the Yellowstone ecosystem will continue to change and adapt in response to many factors, including each other, for many years to come. Fifty or 100 years from now we may begin to have a clearer picture of the true impact of the wolf's reintroduction to Yellowstone.

Sources:

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Smith, D. W., R. O. Peterson, and D. B. Houston. 2003. Yellowstone After Wolves. BioScience *53:330–40.*