

# Wolves in the Ecosystem

Wolves are part of a complex ecosystem that includes plants, animals, microbes, and even humans. Each part of that ecosystem affects every other part, eventually. Wolves can play a fundamental role in shaping ecosystems through their interaction with large herbivores. Yukon wolves are among the few in the world that still live in a natural ecosystem, that includes other large predators and prey species.

## A Strand in the Food Web

When a wolf pack makes a kill, it feeds a whole community. After the wolves move on, the ravens, foxes, wolverines, eagles, and other animals move in to feed off the carcass. Once the larger animals have eaten their fill, smaller scavengers arrive on the scene, all the way down to insects and microbes that break down the last fragments of the kill.

Another key role that wolves play is dispersing nutrients through the ecosystem. For example, in some parts of Yukon, wolves eat salmon, which are rich in nitrogen. When wolves distribute fish carcasses throughout forests or when they defecate, the nitrogen becomes fertilizer for terrestrial ecosystems. Similar integral roles have been found with moose carcasses. The carcasses of moose killed by wolves enrich soil fertility around the kills, causing rapid microbial and fungal growth that provides increased nutrients for plants in the area.

## Wolves and Other Animals

Over millennia, wolves have been shaped and molded by their prey, and the prey in turn has been shaped by the presence of wolves. For example, sheep evolved to use mountains that provide escape terrain, caribou migrate between seasonal areas, muskoxen circle their young, moose are aggressive when healthy—all in response to long-term evolutionary effects of predation by wolves. That evolution continues today.

Wolves are opportunistic hunters, taking whatever prey is most available and vulnerable. They prefer to kill weaker animals—the young, the old, and the sick—but can and do bring down healthy adults as well. The combined effects of

predation by wolves and bears generally keeps numbers of moose and, in some cases, caribou lower than the habitat could support if there were no predators present.

## **An Ecosystem Without Wolves**

What happens when you remove wolves from an ecosystem? It has happened elsewhere in North America, so we know some of the consequences. Ongoing studies in Yellowstone reveal the magnitude of the changes that happened after wolves were extirpated in the 1930s. The reintroduction of wolves in the 1990s is restoring the system to a former time, a time when wolves were the apex predator.

In a system without wolves, coyotes, foxes, and other predators increase, often leading to a decline in small prey populations, which can destabilize plant and animal communities, possibly driving local extirpations for some species. Increases in the numbers of coyotes and foxes may also result in increased conflicts between these species and people.

Without wolves, many areas in North America experience high numbers of elk and deer, and keeping these grazers in check to prevent overgrazing is difficult. In Yukon, wolf predation keeps ungulates well below carrying capacity and eliminates any threat of overgrazing or range impairment.

Wolf kills are important food sources for animals such as wolverine and eagles, especially in late winter. Wolves are what's known as a keystone species—a species that has a critical role in shaping the structure of an ecosystem.

### **For Further Information:**

#### **Wolf Conservation and Management Plan Review Committee**

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