

Bring Back the Wolf—Everywhere

A new study shows that restoring top predators is a big challenge but essential for maintaining healthy ecosystems.



(Photo: Matthew J. Lee/*The Boston Globe* via Getty Images)

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People have been suppressing predators since our terrified ancestors first banded together around campfires. Oddly, though, we only began to notice the catastrophic aftereffects in the 1960s. That's when biologists first demonstrated that taking out a top predator has a knock-on effect for almost every plant and animal below it on the trophic ladder, or food web.

It's called a "trophic cascade," and when settlers eradicated wolves from the Lower 48, they set off a cascade on "a continental scale," according to a [new study](#) published in the *Journal of Animal Ecology*. Where the wolf's howl once could be heard from the Arctic to the Gulf of Mexico and from Cape Cod to the Olympic Peninsula, the night went silent. And coyotes, [once confined to the Great Plains](#), were suddenly free to increase their populations almost astronomically, extending their range from coast to coast and north into Alaska.

Wolves out, coyotes in. Almost a wash, right?

On the contrary, coyotes are “mesopredators,” meaning midsize, and they favor smaller prey than do wolves. So the proliferation of coyotes caused a corresponding decline in a host of other species, among them sandhill cranes, snowshoe hares, long-billed curlews, and yellow-bellied marmots. The replacement of wolves with coyotes is also a [major reason](#) black-footed ferrets, pygmy rabbits, San Joaquin kit fox, whooping cranes, and least terns are now endangered species.

The new study set out to examine the wolf-coyote dynamic on a much larger scale than previous studies. Oregon State University wildlife ecologists Thomas M. Newsome and William J. Ripple focused on fur-trapping records over the past few decades from wildlife management agencies in the Canadian provinces of Saskatchewan and Manitoba, an area of almost 600,000 square miles.

They were particularly interested in how the presence of wolves affected two competing mesopredators, coyotes and red foxes.

It turned out that the foxes outnumbered coyotes by about four to one when wolves were present, in the northern forests. On the other hand, where wolves had been driven out by humans, in the southern third of the study area, the coyotes outnumbered the foxes by about three to one. But the really interesting area was a 125-mile-long transition zone. There the wolves were still around but sporadically and at lower densities—too low to suppress the coyotes.

That matters, according to Newsome, because it means that undoing this particular trophic cascade may be more challenging than we imagine. It’s conventional wisdom among environmentalists that the [restoration of wolves](#) to Yellowstone National Park essentially “fixed” a broken environment, moving elk away from streams, freeing overgrazed aspen groves to regrow, and otherwise allowing the mix of species to recover to a more natural balance. But a [controversial opinion piece](#) in *The New York Times* this spring argued that this is mostly a myth. No environmental fix is that easy, especially not when it involves wolves. The new study reinforces that argument.

“If our interest is in the broader ecological effects of restoring wolves,” said Newsome in an interview, “this study suggests that they need to occur over large continuous areas at ecologically effective densities before they suppress coyotes.” Even around Yellowstone, much less in New England or the Southeast, human activities have altered the landscape irreparably and broken up suitable wolf habitat into small, often widely distributed patches. Newsome doesn’t think that’s cause to give up on wolf restoration. But it suggests that it will continue to be complicated, and that wildlife managers may need to target restorations carefully to achieve particular effects—for instance, to save a particular species—and think much bigger.

Newsome, a Fulbright Scholar visiting from Australia, also hopes to apply the large-scale analysis to the top predator back home. There the elimination of dingoes from huge areas has caused foxes and house cats to proliferate. That's a major reason Australia has seen 29 mammal species—about 10 percent of its endemic mammals—go extinct over the past two centuries. He says there’s increasing interest in dingo recovery, not just as a way to protect other native species but also to control overabundant native herbivores, such as kangaroos, and nonnative pigs, goats, and rabbits.

Restoring any top predator means factoring in the negative effects on ranching and other human enterprises, said Newsome. It also means developing strategies for predators and livestock to coexist—for instance, by developing guardian dog programs for ranch animals. The new study makes clear that it also requires thinking about big landscapes. It's not just about national parks anymore.

It's about entire continents.