

Wolves at the Door of a More Dangerous World

Weeks away from being removed from the endangered species list, wolves in the northern Rockies may soon be hunted once more

Three weeks ago, while tracking Yellowstone National Park's gray wolf (*Canis lupus*) packs from the air, wildlife biologist Douglas Smith darted wolf number 637, a young female from the Cougar Creek pack. Then, handling her on the ground for monitoring, he noticed that she had only three legs, probably after getting caught in a coyote trap outside the park's boundaries. Smith, leader of the park's wolf project, fears that 637's misfortune could be a harbinger of things to come, because gray wolves here are soon slated to be removed from the endangered species list. The new ruling from the U.S. Fish and Wildlife Service (USFWS) has been in the works for 5 years and is expected to be published at the end of this month in the *Federal Register*; it would go into effect 30 days later. Wolves on park grounds would still be protected, but "what will happen when they travel outside the boundaries?" asks Smith. "There's a good chance some are going to end up like this one, trapped or killed by hunters."

Smith isn't the only one worried about the future for wolves in the northern Rocky Mountains when they lose the protective shield of the federal Endangered Species Act. Yet at first glance, the announcement would seem cause for celebration. After all, wolves were intentionally driven to extinction in this region less than 100 years ago. Now, following successful reintroductions and management, their population hovers around 1500 animals.

But some of those who have worked to restore the wolf say the new ruling is like the proverbial wolf in sheep's clothing: It turns wolf management over to state and tribal agencies that plan to actively reduce the canid's numbers. The state management plans, already approved by USFWS, will allow trophy hunting and trapping of wolves, plus lethal control of those that harm

livestock or eat too many deer and elk. Last year, Idaho Governor C. L. Otter promised to "bid for that first ticket [hunting tag] to shoot a wolf myself," although he later said that Idaho would manage a viable wolf population. Most controversially, each state is required to maintain a population of only 100 wolves and 10 breeding pairs. That means wolf numbers could drop to a mere 300 and still be considered "recovered," although most wolf watchers think a tally of 500-plus animals is more likely.

So instead of popping champagne corks, as usually happens when a species is brought back from the brink, conservation groups are preparing legal briefs to challenge the ruling. They charge that it's based on politics, not science.

But USFWS officials say they are convinced their science is sound. "That is what the law mandates," says Edward Bangs, wolf recovery coordinator at USFWS in Helena, Montana, referring to the 1994 federal environmental impact statement that established the minimum numbers for recovery. "We've looked at every minute bit of science." He adds that the wolf's biologi-



Pushing boundaries. Yellowstone's wolves don't stay inside the park, as these partial estimates of their movements show.



cal resilience gives him the most hope for their continued success. "Every year, about 23% of the population is killed by people legally and illegally, and yet the wolves are still growing at 24% a year. Biologically, they couldn't be any easier. But politically, wolves are the most difficult to manage."

Hunted with passion

Before Lewis and Clark, some 350,000 wolves inhabited the lower 48 states, preying on bison, deer, and elk, according to genetic studies. As pioneers decimated the bison, wolves turned to livestock, and settlers and the federal government fought back with guns and poison. Ironically, it was the job of USFWS to wipe out wolves. They succeeded by the 1930s, extirpating the canids from more than 95% of their historic range. "Wolves were hunted and killed with more passion than any other animal in U.S. history," says a USFWS publication.

Placed on the federal endangered species list in 1974, gray wolves began making a comeback in the 1980s, when a few Canadian wolves (the Canadian population may be as high as 60,000) crossed the border and settled in Montana. In the 1990s, USFWS brought 66 Canadian and 10 Montana wolves to Yellowstone and a separate area in Idaho. Ranchers, farmers, and hunters fought the restoration, but USFWS surveys showed that many Americans wanted this top predator back on the landscape. "For many people, wolves are



Top dog. Some hunters worry that wolves may compete with them for elk and deer.

the symbol of Yellowstone,” says Bangs. “They think that we should find a way to live with wolves,” although he adds that this idea is more prevalent among city dwellers who don’t live near wolves.

The reintroductions, which cost a total of \$27 million over 33 years, have been hailed worldwide as great successes, particularly in Yellowstone, where the wolves are helping to bring back a more balanced ecosystem (*Science*, 27 July 2007, p. 438). They also serve as key subjects in a natural laboratory for scientists. Research has shown the ecological benefits of reintroduction, many scientists say: “The most trenchant message from conservation science in the last decade comes from studies about the role of top predators in maintaining the health of ecosystems,” says Michael Soulé, a professor emeritus at the University of California (UC), Santa Cruz.

With abundant prey and open territory, the reintroduced wolves rocketed back, doubling their numbers in the first few years. Young wolves regularly disperse in neighboring states such as Utah and Oregon, although packs have not yet been established there. And although the wolves are currently considered an endangered species, USFWS is allowed to manage them, which includes killing or relocating them. The agency removes packs that have spread into problem areas and has killed about 700 wolves since 1987.

Given the wolf’s recovery, it’s now time for the next step, says Bangs: removing

wolves from the Endangered Species List. To gauge scientists’ reactions to the delisting and the minimum population target, USFWS “surveyed 80 scientists around the world,” says Bangs. “Between 75% and 80% of them thought that this goal [of 300 wolves] was good enough, although I, personally, think it is too low. But the broad consensus was that this definition represents a minimum viable population.” Bangs adds that the “states have already committed to managing for more than the minimum, so that there will be a cushion” of about 45 breeding pairs and more than 450 wolves.

That’s still a reduction of about two-thirds of their numbers. Indeed, traces of earlier attitudes toward wolves linger. Many ranchers, farmers, and hunters despise the canids because they kill livestock and pets and compete for elk and deer. Posters put up by antiwolf groups label the wolf “The Saddam Hussein of the Animal World.” Terry Cleveland, director of the Wyoming Game and Fish Department, says that “state law requires us to have an aggressive management plan for wolves,” although he adds that this will include monitoring as well as hunting. Outside of the greater Yellowstone area, wolves will be classified as predatory animals. That means that, once delisted, they can be killed without a hunting license and by many methods,

including intentionally running over them with a car or in “wolf-killing contests.” Cleveland says that “our floor wolf population here will be roughly 150 wolves. The ceiling has yet to be determined.”

Idaho, too, plans a hunting season for its 700-some wolves, and populations will be thinned in areas of high conflict, says Steve Nadeau, a large carnivore manager for Idaho’s Fish and Game Department. “But we’re going to go slow and conservative to see how the harvest works.” In Montana, where about 400 wolves reside, the numbers are also certain to drop because the plan describes wolves as a

“species in need of management.” Carolyn Sime, the wolf program coordinator for Montana’s Fish, Wildlife, and Parks Department, says that “when there are at least 15 breeding pairs, hunting and trapping could occur.”

The wildlife agencies insist they’re not planning to send the canids back to the brink. “We manage big game for a living, and we’re good at it,” says Nadeau. “We’ll do a good job with the wolves, too. The whole world is watching, and we know it.”

The states’ plans to treat wolves as big game animals available for trophy hunting may actually end up helping the canids, suggests Bangs. He expects hunters will likely become some of wolves’ staunchest supporters, “just as they are now for mountain lions and black bears.”

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**—STEVE NADEAU,
IDAHO FISH AND
GAME DEPARTMENT**



Born to run. Reintroduced wolves are recolonizing their old territories.

Battling over the numbers

Despite Bangs's description of broad support for the delisting among the USFWS survey of scientists, many university scientists and conservation organization researchers interviewed by *Science* find the plan premature and unwise. In particular, they object to the notion that a population of 300 wolves is viable. "They don't even need a scientist to tell them that," says Robert Wayne, an evolutionary biologist at UC Los Angeles, whose lab has reconstructed the past genetic history of North America's gray wolves. In a letter he sent to USFWS last February in response to the service's request for his comments on the delisting proposal, Wayne wrote that the recovery goal "severely underestimates the number of wolves required for maintaining a genetically healthy, self-sustaining meta-population." He also notes that the delisting proposal makes no effort to assure that the populations in the three states and Canada are interconnected via corridors so that the wolves can mix genetically and form a metapopulation. He and others argue that such a metapopulation was one of the goals of the original 1987 federal wolf recovery plan.

The lack of gene flow most threatens the 171 wolves in Yellowstone National Park, which are all descendants of the first 41 released there between 1995 and 1997. Without new wolves, the population's genetic health is certain to decline, says Wayne and his graduate student Bridgett vonHoldt, who analyzed the genealogy and genetic viability of the Yellowstone wolves last year. They note that recent studies of a highly inbred population of Swedish wolves indicate that within 60 years, the Yellowstone wolves will begin suffering from "significant inbreeding depression," which will lead to a lower population. "It will be the equivalent of having one less pup a year," says Wayne.

But Bangs counters that the Endangered Species Act requires only that wolf numbers stay above the threatened or endangered level. "It isn't about maintaining genetic diversity," he says. If inbreeding problems arise, new wolves can always be reintroduced to the park later. "Connectivity can happen through a ride

in the back of a truck," he says. That attitude dismays vonHoldt. "The impact is there on the horizon for anyone to see," she says. "Why create a problem for others to solve down the line? Why not fix the recovery plan now?"

"Basically, the goals of the USFWS's wolf recovery plan aren't in sync with the latest thinking in conservation science," says Carlos Carroll, a wildlife biologist with the Klamath Center for Conservation Research in Orleans, California, who has modeled the restored wolf populations. "Biologists have moved away from the idea of a minimum viable population [MVP] to a more comprehensive population analysis." The problem with MVP numbers, he adds, is that "wildlife managers focus solely on that number," as they are in the three states. Instead, he and other researchers say that management plans need to include the "range of factors that might threaten a population and determine ways to make it more resilient to unexpected events," such as a new disease.

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**—DOUGLAS SMITH,
YELLOWSTONE WOLF PROJECT**

"That 300 figure reflects old thinking; new data suggest that several thousand wolves" may be needed before delisting should be considered, says Carroll. He and others note that USFWS delisted the Great Lakes gray wolves only last year in Michigan, Wisconsin, and Minnesota, when the population totaled 4000 individuals. (Although all three states now consider wolves as big game animals, none has yet initiated a hunting season.)

And then there are the wolves of Yellowstone. Smith and others have monitored them for 13 years, collecting data that should help settle long-standing issues such as how great an impact wolves have on prey populations and how natural wolf populations fluctuate. None of the states' plans makes special provisions or buffer zones to protect these wolves; one of Montana's proposed wolf-hunting zones abuts the park's boundary. Six of the park's 11 wolf packs travel outside the park's boundaries every year (see map, p. 890); and two of these six do so for extensive periods of time, largely in pursuit of elk, the wolves' main prey. "They'll get into trouble," predicts Smith. "I support delisting. But [this] concerns me, because the parks' mission is one of protection

and preservation. And we will most certainly lose some of our wolves."

State wildlife managers make no promises on this issue, saying that wolves in their territory are fair game. "The Yellowstone wolves will be treated the same as elk that also travel outside of the park and are hunted," says Sime. Counters Smith, "These are park wolves; most spend 99.9% of their time here, yet they may get killed on that one trip outside. The public knows them as individuals. Which state official is going to take the call when someone's favorite wolf is shot?" Further, the loss of park wolves to hunters will "squander our research."

Many scientists would prefer to see the wolves remain on the endangered list until they reach a point at which they can be self-sustaining without the need for heavy human management. "It's frustrating," says Sylvia Fallon, an ecologist with the Natural Resources Defense Council in Washington, D.C. "Having a natural population of wolves is achievable and sustainable, and we're close to being there. But now, they're going to be knocked back down. We have to stop the delisting."

Environmental organizations are already running ads decrying the planned delisting and have joined forces to ask for an injunction against USFWS's proposal as soon as it is published. They have also already filed a lawsuit to try to block another USFWS ruling, published in late January, that would essentially let the three states begin lethal management of the wolves (although not a public hunting season), even if the delisting is blocked in court.

Conservationists argue that wolves should stay on the land and fulfill their ecological niche where possible. But for that to happen, people must accept the presence of wolves—and change their behavior accordingly, says Timmothy Kaminski, a wildlife biologist with the Mountain Livestock Cooperative in Augusta, Montana. Otherwise, a sad, repetitive scenario ensues, with wolves moving onto the same ranchlands, killing cattle, and then being killed, over and over. "Wolves are here; grizzly bears and mountain lions are here. You can't turn your cows out into a mountain pasture without being as vigilant as an elk," says Kaminski. "This is no longer a 20th century landscape."

—VIRGINIA MORELL