

Wolf Reintroduction Proposed In Scottish Highland Test Case

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Summary: Researchers are proposing in a new report that a major experiment be conducted to reintroduce wolves to a test site in the Scottish Highlands, to help control the populations and behavior of red deer that in the past 250 years have changed the whole nature of large ecosystems.

FULL STORY



A deer exclusion fence in the Scottish Highlands, at lower left, shows areas heavily browsed by red deer, compared to a healthier and more diverse forest ecosystem in the center of the image. Concerns about overgrazing by deer in this nation are raising questions about the reintroduction of wolves, the type of key predator which Oregon State University researchers have found tend to restore a normal ecosystem balance.

Credit: Photograph by Alison Hester

Researchers are proposing in a new report that a major experiment be conducted to reintroduce wolves to a test site in the Scottish Highlands, to help control the populations and behavior of red deer that in the past 250 years have changed the whole nature of large ecosystems.

The proposal is modeled after research done in the United States, at Yellowstone National Park and elsewhere, which has demonstrated that the absence of large predators such as wolves and cougars has allowed deer, elk and other animals to badly overgraze lands and ravish entire terrestrial ecosystems.

If successful, the experiment might demonstrate the same ecosystem recovery is possible in Scotland that has been accomplished in some parts of the U.S. where wolves have been brought back.

"Wolves were last found in Scotland more than 250 years ago, and as a result it's likely that very few natural areas now bear much resemblance to their native conditions," said William Ripple, a professor of forest ecosystems and society at Oregon State University, and one of the world's leading experts in the study of the interaction of grazing ungulates and large predators.

"There's an increasing awareness that the loss of large predators is a global issue, both marine and terrestrial," Ripple said. "The effects ultimately extend to forests, grasslands, streams, fisheries and wildlife. We see the same kinds of impacts time after time."

In what has been called restoring "landscapes of fear," scientists point not just to the effect of large predators

in helping to control the populations of grazing animals, but also their behavior. The threat of predation and attack can fundamentally change the movement and activities of grazing animals 24 hours a day, 365 days a year, in ways that such approaches as human hunting fail to do.

The native red deer in Scotland – essentially the same animal as elk in the United States – have not faced predation or fear such as that for 250 years. Deer densities in that country are now thought to be so high they are close to the food-limiting carrying capacity of the land, and have serious consequences on native Scots pine and birch regeneration.

In Yellowstone National Park in the U.S., the reintroduction of wolves after decades of absence is now allowing willow, aspen and cottonwood trees to thrive once again in some places, instead of being eaten as young shoots by elk. This is helping to control stream erosion. The interactive webs of birds, insects, fish and beaver are returning to health. These processes, called "trophic cascades," result when the loss of one key predator can have cascading effects on an ecosystem that go far beyond the obvious.

The new report is just being published in the journal *Biological Conservation*, co-authored by Ripple, Adrian Manning of the Australian National University in Canberra, and Iain Gordon of CSIRO Sustainable Ecosystems in Australia.

It outlines a situation in Scotland that may be especially challenging. The land has been so systemically changed, for such a long period, that even local residents may have no memory of what it once looked like.

"The long-term absence of any organism or ecosystem from a region can be a major barrier to restoration," the scientists wrote in their report. "Over generations, human memory of an ecosystem, or the presence of a particular organism diminishes, and expectations of good ecological conditions are gradually lowered. The idea of reintroductions and large-scale ecological restoration seems too intractable, complex, open-ended, confronting or radical to be feasible."

In light of that, the scientists are proposing a substantial test case – on a Scottish island or a major fenced area – that would allow the reintroduction of wolves on a more limited area, and a careful monitoring of their effects on red deer populations, behavior, and hopefully ecosystem recovery.

Researchers believe that areas in Scotland now dominated by pure pine trees were once a diverse mixture of mixed pine, birch forest, abundant alder, rowan, willow, aspen, bird cherry and juniper, with scattered oaks, lichens, trees with holes and cavities for nesting, large downed logs, and multiple other features.

In many areas, diverse forests of Scotland have now simply been replaced by overgrazed moorland.

Because of the potentially profound effect of wolves on red deer behavior as well as populations, researchers said in the report that relatively few wolves might have a large impact.

A controlled experiment demonstrating the whole ecosystem benefits that might result from such an approach, the researchers said, would be well worth the "considerable media attention" and potential controversy such a project might entail.

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