

Op-Ed for Ensia Magazine: The 100 Pound Rodent That's Going to Save Our Endangered Wetland Species

The North American beaver is an absolute powerhouse: equipped with a strong paddle-shaped tail, enormous inch-long teeth, and weighing in at up to 100 pounds, it is hard to believe that these creatures are in the same family as house mice. Despite these impressive statistics, by far the most impressive feat that beavers carry out are their enormous ecosystem-engineering projects which make ecosystems more resilient to climate change, and can be instrumental in recovering threatened wetland species.

New research coming out over the past decade has shown that beavers can play a key role in mitigating environmental impacts of climate change on vulnerable ecosystems. Scientists are churning out papers explaining that beaver-created floodplains are effective fire breaks. This is because beaver dams spread water across [greater surface areas](#), saturating more vegetation and earth.

Beaver ponds provide a more sustainable and reliable water source during periods of drought, and are capable of holding more water during heavy rainfall events – characteristics that can fight the increased unpredictability of weather patterns under the influence of climate change. In Müller-Schwartz's "The Beaver: Natural History of a Wetlands Engineer," the author details a study that compared the time it took for water to flow through a dammed and undammed stream; the results showed that a single beaver dam complex could hold water for 11 days, compared to just 3-4 hours when they were absent. Slowing the course of water through a

watershed makes it available for a longer period of time to be consumed by animals, plants, replenish groundwater storage, or provide other services.

As a wildlife enthusiast myself, I would have to say that my favorite impact beavers have on ecosystems is their ability to greatly improve biodiversity. When beavers create wetlands, they boost habitat for all sorts of organisms (meanwhile reducing habitat for mosquitoes!). In Ben Golfarb's book titled "Eager: The Surprising, Secret Life Of Beavers And Why They Matter," he explains that "in the intermountain West, wetlands, though they make up just 2 percent of the total land area, support 80 percent of biodiversity." Of these species, many are highly vulnerable to the effects of climate change, and beaver-created wetlands represent a crucial refuge to ensure their survival.

Amphibians are particularly vulnerable to the inconsistent weather patterns instigated by climate change, so they are increasingly seeking beaver-created habitats to provide more stability. A team of researchers led by John M. Romansic investigated amphibian diversity across Washington state, and found that 2.7 times more amphibians associated with beaver-dammed sites than undammed sites. In the Great Basin region, researchers found that beaver dams can mitigate the negative effects of climate change on [spotted frog breeding](#).

Beavers are clearly instrumental in the generation of high-quality wetland habitat, but since 1700, the United States has lost roughly [40% of all its wetlands](#). And even though beavers are far from being endangered, they are distant from returning to their own population sizes: it is estimated that up to 400 million beavers roamed the United States before European colonization, compared to only up to 12 million today. Across the United States, beavers have a lot of room to grow: in Colorado, beaver populations have dropped to 30 % below the ecosystem [capacity for](#)

[them](#). In California, the federal government [approved a proposal](#) to spend 1.67 and 1.44 million in the 2022/23 and 2023/4 fiscal years for beaver restoration efforts across the state.

Recognizing that beavers create amazing microhabitats for great diversities of wildlife, conservationists are taking initiatives toward using beavers as a method of restoring degraded ecosystems. In Oregon, a beaver restoration project aimed to attract beavers by planting willows, filling drainage ditches, and digging channels. Before completing construction beavers had already moved in and built a dam network that not only increased numbers of threatened coho salmon and steelhead but also created their [ideal spawning habitat](#).

In Ontario, scientists investigated the effects of beaver-induced wetland flooding on habitat preferences among a population of endangered spotted turtles. They found that the population of turtles grew post beaver flooding, that flooding [increased the amount of suitable turtle habitat](#), and that turtles traveled farther to seek new, larger territories. The healthy increase in turtle activity and population size was attributed largely to a beaver-induced reduction of habitat fragmentation. This research has large implications for turtle conservation across the United States, as the reduction of high-quality wetland habitat is endangering many turtle species.

Spotted turtles, along with Blanding's turtles, are threatened and endangered respectively in the state of Maine. Habitat fragmentation is a [major culprit](#). Both species prefer complex wetland habitats, with Blanding's turtles taking a [particularly strong preference](#) toward wetlands with permanent pools, a type of habitat that beaver dams create. As Maine conservationists work to protect desirable wetland habitat for these cherished species, I would suggest they investigate the roles beavers may have in engineering habitat. Taking on beaver restoration efforts in fragmented and degraded wetland habitats may be a non-traditional, but highly successful,

method at boosting spotted and Blanding's turtle populations.

On a larger scale, implementing more beaver restoration campaigns throughout the United States could bring back populations of numerous threatened wetland species. The amount of endangered species in the United States is growing, and some researchers argue that the United States [greatly underestimates](#) the true number of endangered species. Conservationists should increasingly look to using beavers to restore threatened species because it is [cost-effective](#), highly productive and requires a minimal amount of human maintenance. As climate change and development continue to threaten our fragile wetlands, a 100 pound rodent engineer may be a key line of defense against them.

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