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It Was War. Then, a Rancher's Truce With Some Pesky Beavers Paid Off.

The 'highly skilled environmental engineers' can help to store precious water and rejuvenate land ravaged by climate change. Just don't dynamite their homes.

By Catrin Einhorn Photographs by Niki Chan Wylie

Einhorn and Wylie visited northeastern Nevada and walked across a huge beaver dam, very carefully, for this article.

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WELLS, Nev. — Horace Smith blew up a lot of beaver dams in his life.

A rancher here in northeastern Nevada, he waged war against the animals, frequently with dynamite. Not from meanness or cruelty; it was a struggle over water. Mr. Smith blamed beavers for flooding some parts of his property, Cottonwood Ranch, and drying out others.

But his son Agee, who eventually took over the ranch, is making peace. And he says welcoming beavers to work on the land is one of the best things he's done.

"They're very controversial still," said Mr. Smith, whose father died in 2014. "But it's getting better. People are starting to wake up."

As global warming intensifies droughts, floods and wildfires, Mr. Smith has become one of a growing number of ranchers, scientists and other "beaver believers" who see the creatures not only as helpers, but as furry weapons of climate resilience.

Last year, when Nevada suffered one of the worst droughts on record, beaver pools kept his cattle with enough water. When rains came strangely hard and fast, the vast network of dams slowed a torrent of water raging down the mountain, protecting his hay crop. And with the beavers' help, creeks have widened into wetlands that run through the sagebrush desert, cleaning water, birthing new meadows and creating a buffer against wildfires.

True, beavers can be complicated partners. They're wild, swimming rodents the size of basset hounds with an obsession for building dams. When conflicts arise, and they probably will, you can't talk it out.

Beavers flood roads, fields, timber forests and other areas that people want dry. They fell trees

But beavers also store lots of water for free, which is increasingly crucial in the parched West. And they don't just help with drought. Their engineering subdues torrential floods from heavy rains or snowmelt by slowing water. It reduces erosion and recharges groundwater. And the wetlands beavers create may have the extra benefit of stashing carbon out of the atmosphere.

In addition to all that, the rodents do environmental double duty, because they also tackle another crisis unleashed by humans: rampant biodiversity loss. Their wetlands are increasingly recognized for creating habitat for myriad species, from salmon to sage grouse.

Beavers, you might say, are having a moment. In Colorado, Idaho, Montana, Nevada, Oregon, Utah and Wyoming, the Bureau of Land Management is working with partners to build beaver-like dams that they hope real beavers will claim and expand. In California, the new state budget designates about $1.5 million a year to restoring the animals for climate resiliency and biodiversity benefits.

"We need to get beavers back to work," Wade Crowfoot, California's secretary of natural resources, said in a webinar this year. "Full employment for beavers." (Beaver believers like to note that the animals work for free.)

Further east, where water and beavers are more plentiful, the job market isn't as hot. But there are projects. In Maryland, groups are trying to lure beavers to help clean the water that flows into Chesapeake Bay. In Wisconsin, one study found that beavers could substantially reduce flooding in

some of the most vulnerable areas of Milwaukee County.

Instead of killing beavers, the federal government should be embracing them as an important component of federal climate adaptation, according to two scientists who study beavers and hydrology, Chris Jordan of National Oceanic and Atmospheric Administration Fisheries, and Emily Fairfax of California State University Channel Islands.

"It may seem trite to say that beavers are a key part of a national climate action plan, but the reality is that they are a force of 15-40 million highly skilled environmental engineers," Dr. Jordan and Dr. Fairfax wrote this year in a perspective article in the research journal WIREs Water.

Dr. Fairfax's recent research focuses on how beaver complexes interact with wildfires. For now, her findings indicate, they are too wet to burn. But as climate change makes wildfires more intense, she said, that could change.

"We cannot afford to work against them any longer," she and Dr. Jordan wrote. "We need to work with them."

Caroline Nash, a river scientist at the consulting firm CK Blueshift LLC who has published research on beaver-related restoration, emphasized that projects should be evaluated on a case-by-case basis.

"It's all about identifying those locations where beavers' survival interests align with humans' survival interests, and they're not always aligned," Dr. Nash said. "And so suggesting that they're always going to be aligned is creating a recipe, I think, for broken hopes and expectations and a loss of trust."

Before Europeans arrived in North America, beavers' engineering helped to shape the landscape and hydrology of the continent from coast to coast. But their fur was popular in Europe for felted hats, and trappers had nearly eradicated them by the late 1800s. As their numbers climbed back, in part because of reintroduction programs beginning a century ago, conflicts came, too. Even in places where beavers are honored as a state animal (New York, Oregon) or a national symbol (Canada) people in low-lying areas did not like their property returning to wetland.

Mr. Smith said "people are starting to wake up" about beavers.

A beaver path on a dam at Cottonwood Ranch.

Beavers build dams with logs, sticks, stones and mud to create deeper water, which helps them dodge predators like bears. Their lodges have underwater entrances, and they stockpile food below the surface for winter. Beavers' front teeth are orange from the iron that strengthens them for gnawing trees.

When human-beaver conflicts arise, they can be addressed without killing the animals, experts say. Paint and fencing can protect trees from gnawing. Systems like the Beaver Deceiver secretly undo their handiwork with pipes that drain water from beaver settlements even when the animals keep building. Such measures are actually a more effective solution than removing the animals, according to advocates, because new beavers tend to move into empty habitat.

If coexistence is impossible, a growing number of groups and private businesses are seeking to relocate, rather than kill, nuisance beavers.

"We put the nuisance in air quotes," said Molly Alves, a wildlife biologist with the Tulalip Tribes, a federally recognized tribal organization just north of Seattle that moves unwanted beavers to land managed by the United States Forest Service.

The group's impetus was a desire to expand the extraordinary habitat that beavers offer salmon, a culturally and economically important species. When they started in 2014, the Tulalip Tribes had to invoke their sovereign treaty rights to relocate beavers because doing so was illegal in their area under Washington State law. After a lobbying push, beaver relocation is now legal statewide and the tribes are advising state officials on a program to train others in best practices.

One lesson learned: Keep beaver families together.

"They're much more likely to stay where we put them if their whole family is there," Ms. Alves said. "Beavers tend to form really tight-knit familial bonds."

But in many states, it's illegal to relocate beavers (and other wildlife), in part because officials worry about people simply moving the problems elsewhere.

And officially sanctioned beaver killing continues. Suzanne Bond, a spokeswoman for the United States Department of Agriculture, which runs the program that kills tens of thousands of beavers each year by trapping, snaring and shooting, said the agency was reviewing the relevant science and was "committed to increasing our capacity to respond to beaver damage and impacts with nonlethal mitigation techniques."

Beaver pools kept livestock with enough water during last year's drought.

Mr. Smith's father got so angry at beavers in part because the sides of their dams would fail during the rush of the spring snow melt, sending damaging sediment onto his hayfields. But the younger Mr. Smith decided to try a different approach to cattle management, moving them around his land and letting them spend less time around the creeks. That allowed shrubs and trees to grow in along the banks, making the whole area more stable. Eventually, if the beaver dams did give way, they would do so at the center, and the surge of water would stay in the channel.

Over time, beavers expanded the wetlands. New meadows grew in. Willows sprout from beaver dams, having taken root where the animals anchored them. The water runs clear. Fish and frogs have returned.

"Now the only time we get crossways with beaver is if they start building dams in our irrigation ditches," Mr. Smith said. "But we've learned ways to discourage them from doing that." Pulling out the dams a couple of times usually does the trick, he added.

Part of what has made the partnership successful is Mr. Smith's flexibility. For example, beavers have completely rerouted one section of creek. But Mr. Smith doesn't see the change as good or bad, "just different." The most important thing, he said, is how much water they're storing on the land.

Now more than ever, he said, "water is liquid gold."