



February 5, 2024

House Committee on Climate, Energy, and the Environment

**Re: Support for House Bill 4014, Landowners Living with Beavers Grant Program Fund**

Dear Chair Marsh, Vice-Chairs Bobby Levy and Emerson Levy, and Members of the Committee,

Trout Unlimited is known in Oregon and throughout the nation for its work in restoring riparian and instream habitats in collaboration with government agencies, conservation organizations, and private landowners. The 3,400 Oregon members of Trout Unlimited are affiliated with our grassroots entity, the Oregon Council of Trout Unlimited.

**On behalf of the 3,400 members of Trout Unlimited in Oregon, we ask you to move HB 4014 forward.**

Nature has provided us with an industrious and cost-effective ally in our work to protect and restore habitat for native fish. Of all places in the U.S., Oregon should be protecting beaver populations to assist us in restoring our watersheds and fisheries.

Many of our state's rivers and lakes are in poor condition. What were once world-renowned fish runs are now approaching extirpation in many places. But it is not just about fish; these hard-working rodents and the structures they build can improve water quality, restore ground water, and mitigate the impacts of wildfires—all to the benefit of humans as well as the environment. In [Attachment 1](#), we've provided a copy of a recent article authored by Greg Fitz and published in the Fly Fish Journal, regarding the ecological benefits of beavers. This bill will expand and support the work of allowing beavers to provide these benefits on the landscape by offering funds, training and support for private landowners to coexist with beavers.

We recognize that there can be significant conflicts between beavers and landowners. We are pleased the Oregon Legislature is stepping up to fund non-lethal remedies for landowners that will allow more beavers to continue their positive effects on waterways. We hope this results in increased public support for beavers as partners in this process.

ODFW has developed a beaver management plan that recognizes the importance of private lands in maintaining a healthy population of beavers. However, the agency does not have funds dedicated to implementing the plan. The expense of the needed equipment or the lack of

technical knowledge are often barriers for landowners who might otherwise be open to trying non-lethal options. HB 4014 funds will allow many more private landowners the choice of co-existence.

A 2016 report commissioned by the legislature revealed that the majority of Oregonians are concerned about habitat loss, lack of water, declining fish populations, and conservation and management of resources in general. This bill is a modest but meaningful way of addressing those concerns.

HB 4014 is another important step in Oregon's long-term conservation goals including ODFW's Oregon Conservation Strategy, Oregon's 100 Year Water Vision, as well as ODFW's mission "To protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations."

Please bring forward and approve HB 4014.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mark W. Rogers".

Mark W. Rogers  
Chair, Oregon Council of Trout Unlimited

Attachment 1

See attached: Greg Fitz, *The Good Dam: Beavers are a Landscape's Best Friend*, The FlyFish Journal (Issue 15.2).



◀ HERE ▶

One of the main dams at the downstream edge of a beaver complex near the massive Bootleg Fire in Oregon's Klamath River Basin, summer 2021. Photo: Sarah Koenigsberg

# THE GOOD DAM

BEAVERS ARE  
A LANDSCAPE'S  
BEST FRIEND

*Words*  
GREG FITZ



◀ CLOCKWISE  
FROM ABOVE ▶

A yearling beaver pauses while eating pondside grasses to sniff the northern Utah air on Temple Fork Creek.  
Photo: Sarah Koenigsberg

Idaho Fish and Game officers demonstrate the proper way to load a beaver into a box (left) before it is dropped, by parachute, into Idaho's Frank Church Wilderness circa 1950.  
Photos: Idaho Fish and Game

A beaver leaves its mark in fresh mud on North Fork Box Creek in central Utah.  
Photo: Sarah Koenigsberg

It is nearly impossible to predict what random piece of media will catch the public's attention and end up going viral. A few years ago, a short film from the archives of Idaho Fish and Game made that strange leap from historic obscurity to pop culture phenomenon.

Complete with the newsreel narration of the era and the warbling orchestral soundtrack of old film, the video documented a 1948 program in which beavers were loaded into crates attached to parachutes and air-dropped from planes into the Idaho wilderness. You may have seen it. It showed up all over the place online, on TV news and public radio broadcasts, and was a question (answer?) on the game show *Jeopardy*. The story inspired at least two children's books, too.

The video was called "Fur for the Future" and is still available to watch on IDFG's YouTube channel. Along with the beavers, it features muskrats and pine martens being captured in live traps and relocated, though only the beavers are dropped from a plane.

The film opens with a pair of manly hands stroking a beaver pelt while the voiceover explains that fur is a "resource for our country and our time" and compares it to farming crops, logging the forest and harnessing rivers for hydropower to explain why the animals were being moved to grow their numbers.

But today, instead of trying to secure a future supply of pelts, a growing community of conservationists, ecologists and restoration practitioners are relocating beavers, finding ways for communities to live with their dams, and replicating their construction work on the landscape to help secure the supply of a resource with far more value than fur, especially in the parched American West: Water.

**BEAVERS ARE WELL-KNOWN** as "nature's engineers." Their dams, canals and tree cutting transform watersheds. But when that activity butts up against human infrastructure or landowners' preferred organization of the landscape, it is almost always the beavers who lose. In the years following World War II, a handful of Idaho beavers scored a plane ride into the wilderness, but in most cases, unwelcome beavers were simply killed.

And, of course, long before beavers were running afloat of the built environment, millions had been killed to make fashionable hats and coats. Europe laid waste to their beaver populations and then the trappers who arrived in North America ahead of the larger waves of immigration decimated beaver populations across this continent. The Hudson's Bay Company, in a particularly ruthless strategy to slow



the arrival of competitors in the early 19<sup>th</sup> century, practiced a policy called the "Fur Desert," in which trappers killed every beaver they could in a wide swath of the West, leaving empty landscapes and damaged watersheds behind.

Until very recently, trapping continued on a large scale, which kept beaver populations deeply suppressed. Shortsighted fishery managers also removed beavers in many places because their dams were thought to be a problem for fish, never mind that trout, salmon and other species living and migrating

through moving water co-evolved and thrived alongside beavers for thousands of years.

Before the trappers took their immense toll, North America was estimated to be home to 100 to 200 million beavers. Vast networks of their dams and ponds would have saturated sections of meadows, valley floors and headwater streams across most of the United States and Canada. Today, their population is about 10 percent of those historic numbers. Beavers, along with the water they hold back, are missing from much of the landscape.



◀ ABOVE ▶

During 2021's Bootleg Fire in south-central Oregon, a large beaver complex resisted the spread of the fire, demonstrating the resilience of ecosystems with beaver populations and their importance as a keystone species. Photo: Sarah Koenigsberg

**BEAVERS ARE BUILDERS**, and a keystone species of river ecosystems in much of the Northern Hemisphere. For all their grace as swimmers, they are awkward, slow-moving animals on dry land and susceptible to predators when they're out of the water. To provide security for themselves and their offspring, the industrious rodents began building and maintaining private ponds. It is a remarkable evolutionary adaptation, with equally remarkable benefits to river ecology.

Their work stacking and weaving branches and layers of mud together to dam streams is a fundamental aspect of how watersheds stabilize flows and water temperatures, provide habitat for fish and animals, and survive wildfire. When the beavers are

removed, these interwoven systems start to unravel as soon as the first flood breaches their dams and begins to scour the river channel.

Long before settlers clear-cut forests, carved roads, built huge dams, withdrew too much water and turned prairie, meadows and wetlands into farm and ranch lands, the loss of beavers was changing the hydrological function of North American rivers. Once you begin to recognize that loss on the landscape, it becomes impossible not to see it.

Beaver dams slow the flow of water and sediment. In a healthy system, their dams are staggered throughout the small streams and tributaries of a watershed, holding water on the landscape, causing it to spill out across the floodplain during wet

seasons, and giving it time to soak into the ground where it recharges the water table by percolating down into aquifers. These wet places are crucial hubs for biodiversity.

All this water helps grow the plants and trees in the floodplain, ensuring food for the herbivorous beavers themselves, while also supporting the birds, insects, amphibians and animals that feed, rest and nest in this lush habitat. Tall trees and riparian vegetation shade streams and surrounding areas, helping keep air and water temperatures cool, and later fall into the stream, creating logjams that stabilize banks and provide habitat for fish.

In trout and salmon streams, groundwater is especially critical to maintaining cold stream temperatures in the summer and stable temperatures in the winter. During dry seasons and drought, deep beaver ponds provide sanctuary for fish. Stored groundwater feeds the watershed, maintaining streamflow, and keeps riparian plants alive during dry spells.

When wildfire sweeps through the landscape, the saturated areas around beaver ponds are far less likely to burn compared to drier parts of a forest or meadow. These places become sanctuaries for animals fleeing the fire and crucial habitat where animals can find food when they return. When it eventually rains after a fire, ash and debris are swept into streams and rivers. Beaver ponds let material settle out of the water column and their dams act like filters. Studies have shown the water below beaver dams is often much cleaner following a severe wildfire than the water upstream. Likewise, in streams with beaver dams, the same sediment-filtering systems help keep spawning gravel from being buried by silt after floods.

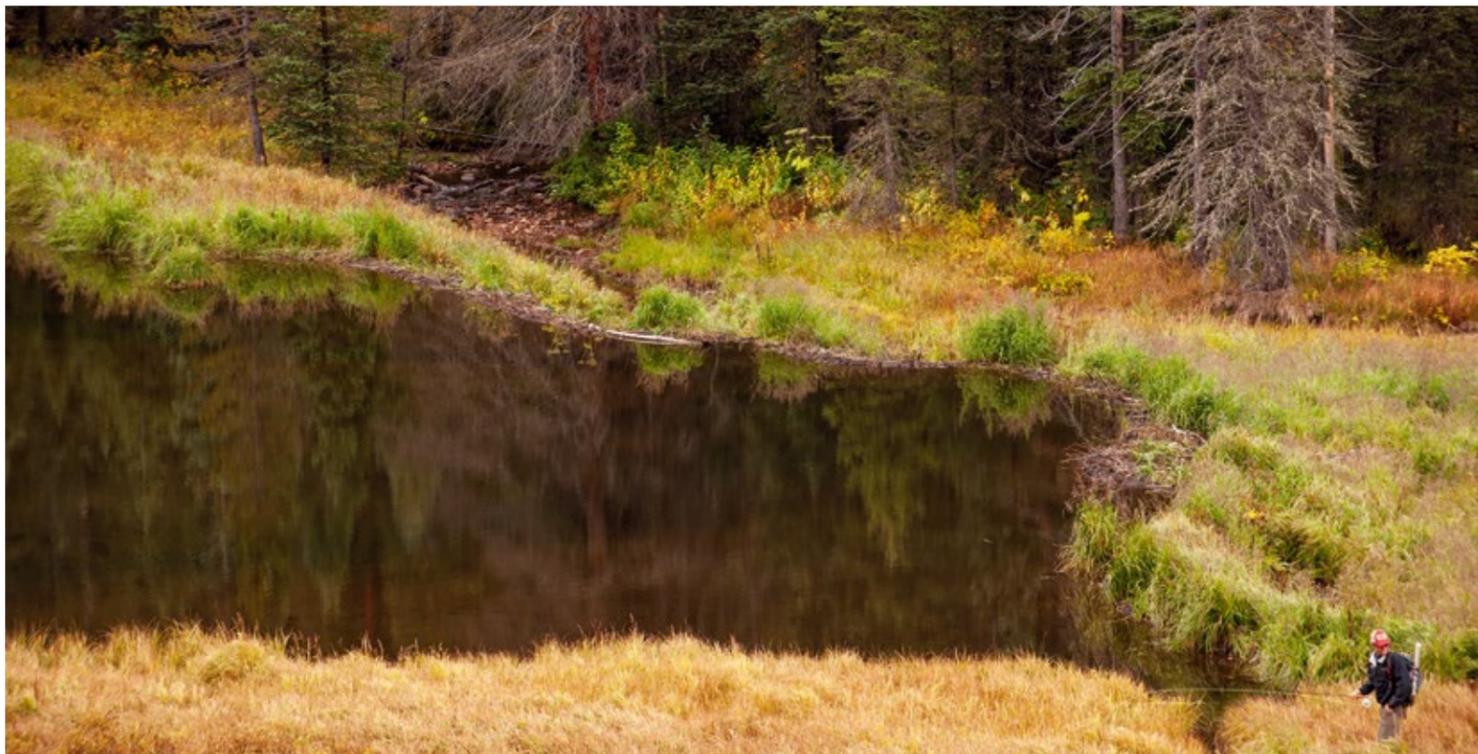
The benefits to plants, fish, birds and animals are obvious, but the hydrological windfalls delivered by beavers also serve human communities. During high water events, flooding is often reduced downstream of beaver dams because the dams and connected floodplains upstream act like levees, slowing water and diverting into off-channel lands where it can soak into the ground instead of flowing downstream

in torrents. For towns and rural homes, more groundwater means wells and springs don't run dry. Farmers have more water for irrigating crops and orchards without needing to draw down groundwater and streams to dangerous levels. More water means ranchers have more grass for grazing cattle and hunters have more vegetation feeding big game animals like elk, deer, moose and pronghorn, not to mention habitat for waterfowl and upland game birds.

Without beaver dams, water leaves the landscape too quickly. As any angler wading in fast or deep current could tell you, moving water has immense weight and power. During runoff or heavy rain, water gains volume and velocity as it pours down headwater streams, into river main stems, and heads to the sea. In headwaters and tributaries, if beaver dams don't help slow and divert the flow, erosion accelerates, incising stream channels and straightening meanders. The bigger the flow, and the faster it moves, the more debris and sediment it can carry, scouring away logjams, spawning gravel and the soft marl that freshwater shellfish and many aquatic insects depend upon.

Soon the streams become deeply cut, bare channels disconnected from their floodplains and surrounded by dry grasslands instead of thick riparian trees and shrubs. Without adequate groundwater and shade, the water is much warmer and more likely to run dry during the summer or a drought. When seasonal runoff or big floods occur, fish can't escape into side channels and the floodplain—the high water can wash young fish away, decimating populations.

This accelerated erosion creates a brutal compounding cycle. Each wet season, instead of replenishing the habitat and groundwater, the high water downcuts stream channels further and washes away anything that might slow it down, ensuring the water moves even faster next time, leaving behind hotter, drier landscapes and less productive ecosystems. When wildfire arrives, there isn't enough water to slow or stop it and these places end up burning much deeper and hotter than they would in a healthy, connected system.



«ABOVE»

Ben Kurtz plays hide and seek with a moose (not pictured) while fishing brookies on a pond high in Colorado's Gore Range. The moose didn't like Ben playing with his fish and chased him off after a while. Photo: Tim Romano

**ESPECIALLY IN WESTERN STREAMS,** the differences between a healthy watershed full of beaver activity and the ones where beavers are missing, or kept away intentionally, can be stark. The recognition of the ecological and hydrological bulwark they provide, and the need to find ways to heal these systems and build resilience as the impacts of climate change grow, is motivating new approaches to our relationship with beavers.

Today a wide range of ecologists, conservationists, state and federal agencies, nonprofits, tribes, landowners, farmers and ranchers, and storytellers are realizing these animals have lessons to teach us and could be allies instead of just a resource to be harvested or a nuisance to be controlled.

There is understandable excitement around this work. Search online and you'll find extensive resources and testimony. Books, films, academic research and journalists are drawing the connection between beavers and watershed function, calling for changes in management, and pointing toward practical ways to work *with* beavers and replicate their work on the landscape.

Where beavers are established in remote locations or protected public lands, the best plan is to simply let them go about their business. As long as they have food and water, they'll do their engineering for free

and watersheds will reap the benefits. But, for all their positive contributions, beavers can be difficult neighbors when they set up shop near human infrastructure. They tend to block culverts and irrigation ditches, cut down trees someone might prefer to keep standing, and flood locations that landowners or cities want kept dry. If a beaver dam bursts, it can send a shock of mud and water into downstream property.

Too often, the knee-jerk reaction to a conflict with a beaver is to kill it. But to gain the benefits they provide, landowners might instead install pond-leveling devices that run a pipe through a beaver dam to keep it from getting too large. They might regularly notch the tops of the dams to keep levels and flooded areas to a manageable size instead of removing them completely. Certain trees, or key pieces of infrastructure, might need to be enclosed in a fence to prevent beavers from cutting them down or blocking them.

Even more than ingenious solutions to managing beavers, perhaps the most important step is to realize that the soggy ground and impounded water near the dam could be a profound asset instead of a liability and is worth some of the mess and extra effort required to coexist.

When beaver conflict is too much of a problem, relocation is a wiser option than killing them.



«CLOCKWISE FROM TOP LEFT»

Catherine Means (back of cage) and Kent Woodruff (former director of the Methow Beaver Project in Washington state) transport a live-trapped beaver from an area in conflict with human infrastructure in 2016. Though translocation is sometimes necessary, the MBP focuses on employing low-tech process-based restoration techniques and coexistence techniques before resorting to it, recognizing that we humans can do a lot to prepare sites to be better suited to beaver success before we reintroduce the animals themselves. Photo: Sarah Koenigsberg



"Reverse Logging Expert" Scott Nicolai takes a break from mentoring restoration crews with Anabranch Solutions. The low-tech process-based restoration work being done in this burn scar from southeast Washington state's Lick Creek Fire of 2021 benefits Snake River steelhead populations. Photo: Sarah Koenigsberg

Quality Control: A pup inspects a Beaver Dam Analogue (BDA) being built on Fish Creek, a golden trout stream flowing through Troy Meadow in California's South Fork Kern River watershed. The construction crew included members of the Trout Unlimited CA Inland Trout Program, Sequoia National Forest, and the Tubatulabal Tribe of Kern Valley. Photo: Katie Falkenberg

Living beavers are too important a resource to waste. Far better to move them to a place where they are needed—or reintroduce them where they are missing—and let them do their good work there instead. Today they might not get dropped by parachute, but where family units of beavers can be caught in live traps and moved together, there has been pronounced success relocating these animals to public and private lands where they will be protected and allowed to go about their beneficial work in peace.

Relocating beavers is complex, logistically challenging work. Keeping the animals healthy and

finding good places for them is just as difficult—if not more so—than trying to capture them in live traps in the first place. This brings up two key challenges. One, there aren't enough beavers available to move to all the places that need restoration. And two, if beavers are moved to a new location that is too degraded, they will simply leave to find a better option, starve or be killed by predators before they can get established.

Thousands of miles of streams across the west are in need of restoration. If beavers aren't available to do this work right away, we need to learn the lessons they have taught us and do it ourselves.

⟨ HERE ⟩

This area east of Logan, UT, suffered from diminished beaver populations for decades, but about a decade ago the riparian area was fenced off to cattle and closed to beaver trapping. Since then, beavers have made a major comeback on their own, with dam after dam on both Spawn Creek and Temple Fork Creek. Photo: Sarah Koenigsberg



**BROADLY SPEAKING**, practitioners refer to this work as “low-tech, process-based restoration,” but the easiest way to understand it is simply doing the work beavers would had they not been removed in the first place.

High-tech restoration refers to large-scale interventions that require heavy machinery and, often, extensive engineering. This might mean dam breaching, culvert removal or replacement, or adding logjams back to river systems with earth-moving equipment or helicopters. The magic of low-tech work is that it is done by hand, with simple tools such as saws, shovels, buckets, grip-hoists and post drivers. Mostly, to do this work, you just need a crew willing to get in the water, get dirty and work like a beaver.

This work centers on building “post-assisted log structures” (PALS) and “beaver dam analogues” (BDAs), structures in the stream channel that function like small beaver dams, to kick-start the hydrologic processes needed to hold water on the landscape and rebuild lost habitat. To build BDAs and PALS, crews drag logs into the stream and pound stakes into the riverbed, stack and weave branches around these anchor pieces, and pack it all with soil and rocks to build a semi-permeable barrier. Water begins to impound as they are built. In northeast Oregon, Northwest Youth Corp members working on hand crews would often find juvenile salmon and trout holding in these new pools only days after they were built in the headwaters of the Grande Ronde and John Day rivers.

In much of this work, crews also plant willow and cottonwood and other native plants near the BDAs to help reestablish a stream’s riparian habitat. Eventually, as they grow, these trees will become food and building materials for the beavers who show up to maintain these places. Last summer, NASA published satellite data and photos documenting the benefits of this work in Idaho. Where beavers had returned there was much more

vegetation compared to the nearby streams where they hadn’t been reintroduced.

This beaver-based restoration work can be relatively fast and mobile. Crews can work in remote locations that might be difficult to reach or just inappropriate for heavy equipment. In California, crews doing this work in designated wilderness areas in national forests use mules to haul in equipment and supplies miles from the nearest road. On bigger restoration projects, practitioners work alongside heavy equipment or follow up to maintain the sites as they recover in subsequent years. Experienced crews get into a rhythm building BDAs and PALS, treating miles of streams in a season, often for much lower costs compared to hiring earth-moving machinery. It is also work volunteers can learn to do when guided by experienced practitioners.

This work is being undertaken by a wide range of conservationists, agencies and tribes. Anabranch Solutions, a group founded by researchers from the watershed sciences department at Utah State University, is leading projects and providing extensive educational resources about low-tech, process-based restoration. Their website is an informational clearinghouse, providing details about research informing this work, testimonials about past and current projects, and instruction manuals on low-tech process-based restoration.

My colleagues at Trout Unlimited are relocating beavers and building BDAs to help wildfire resilience in Washington state; restoring salmon and steelhead habitat on the Snake and Columbia rivers; using these techniques to prepare habitat for the return of salmon in the upper Klamath River as the world’s largest dam removal gets underway; restoring golden trout habitat in high-elevation meadows in the Sierra Nevada mountains; and numerous other projects benefitting trout populations and water supplies across the mountain west and southwest. Often, anglers volunteering with a local Trout Unlimited chapter can get involved or support this work directly.



**ACROSS THE DRIER**, hotter American West, our watersheds, and the fish, animals and communities that depend on them, are at a crossroads. Historic land-use changes from logging, agriculture and development, and the growing impacts of climate change, are compounding to rapidly impact water temperatures, water availability and wildfire resilience. As anglers, many of us see these impacts to trout and salmon in our home waters firsthand.

As society grapples with how we’ll provide energy, manage our shared land and resources, feed our communities, and protect and recover biodiversity, beavers provide lessons and act as allies to help rebuild the natural systems that sustain water supplies and habitat. Frankly, they’ll do this work for free if we’ll only let them.

When and where beavers aren’t immediately available, process-based restoration offers a practical, affordable intervention needed across thousands of stream miles in the west.

With huge issues such as climate change and land use, there is no silver bullet, but the cascading benefits provided by beavers, and restoration guided by their expertise, offer meaningful, positive opportunities for recovering and sustaining durable ecosystems. For anglers deeply concerned about our trout and salmon numbers, real hope is offered by the vision of saturated floodplains, headwater impoundments recharging groundwater, and tiny silver trout and salmon fry sheltering and growing in cold, deep beaver ponds where their dams have been missing for over a century. ☞

«ABOVE»  
Bird’s eye view of BDA structures being built on Fish Creek in California’s South Fork Kern River Watershed by Trout Unlimited CA Inland Trout Program, Sequoia National Forest, and the Tubatulabal Tribe of Kern Valley. Photo: Katie Falkenberg