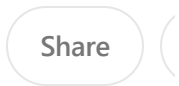
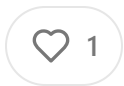


Fish are wildlife, too. And the National Park Service is Recovering Our Lost Natives

Fish are cold, slimy, unfeathered, unfurred, unheard, and usually unseen by non-anglers. For the general public, including much of the environmental community, fish don't count as wildlife.



TED WILLIAMS
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Yellowstone cutthroat trout from the Yellowstone River near LeHardy Rapids. Photo by Paul Weamer, Yellowstone Volunteer Fly Fishing Program

by Ted Williams

Despite major political challenges, the most ambitious native-fish recovery project ever attempted is well underway in our first and most beloved national park. The war on nonnative, invasive lake trout in 87,000-acre Yellowstone Lake, which once sustained 80 percent of all Yellowstone cutthroat trout, is at last going well.

And native-fish recovery has been scheduled, completed, or is underway on many Yellowstone National Park streams where native westslope cutthroats, Yellowstone cutthroats, and fluvial (river-dwelling) Arctic grayling had been eliminated by alien trout unleashed during the era of ecological illiteracy by the U.S. Fish Commission (renamed the Bureau of Sport Fisheries in 1902).



Westslope cutthroat trout were extirpated from their native water in Yellowstone National Park until biologists recently recovered them by eradicating non-native rainbow trout and rainbow/cutthroat hybrids with rotenone. Photo by Paul Weamer YNP Native Fish Conservation Program

Rotenone (a short-lived and easily neutralized organic piscicide) works best on small streams, so fewer than five percent of park waters can be successfully treated. The Lamar drainage (Slough Creek, most of Soda Butte Creek, and the Lamar River) is too big for rotenone. But wherever possible the park has been using electrofishing to help rid the drainage of rainbows, rainbow/cutthroat hybrids and brook trout. And catch and-release for brook trout and trout with obvious rainbow markings is now illegal in the drainage. If you land one and don't kill it, you're in violation.



Hickey Brothers Research, LLC contract gillnetting crew aboard the Kokanee with a cat of invasive lake trout from Yellowstone Lake. Photo by Dr. Pat Bigelow YNP Native Fish Conservation Program

Unlike all other resource agencies, the National Park Service has no wiggle room when it comes to its mission -- protecting and restoring native ecosystems and, within reason, allowing “natural processes to proceed uninhibited.” In 1916 Congress passed the service’s “Organic Act,” requiring the new agency to “conserve the scenery and the natural and historic objects and wildlife” of all units “leave[ing] them unimpaired.”

So in the few waters where native-fish recovery is possible, Yellowstone fisheries managers would be breaking federal law if they stood by while lake trout chow down on Yellowstone cutthroats, or when brook trout outcompeted Yellowstone cutthroats, or when rainbows and mongrels hybridized with and outcompeted Yellowstone and westslope cutthroats.

For anglers ingrained with the catch-and-release tenet, that reg is hard to swallow. But all who choose to fish the Lamar drainage should be mindful of two facts: The park's legal mandate leaves it no choice but to establish such a regulation; and if enough anglers comply and if headwater recovery happens, native Yellowstone cutthroat genes will eventually swamp rainbow genes. And because cutthroats evolved in the system, they will do better and grow bigger than the aliens.

“When it comes to rainbow-trout mitigation, the Buffalo Creek project is the biggest and most needed we have,” declares Dr. Todd Koel, who leads Yellowstone National Park's native fish conservation program. “In spring the big migratory cutthroats move from the lower Lamar Valley up into the headwaters in the remote backcountry to spawn. Then in summer and winter they return to the lower river. Hybrids and rainbows do the opposite; they're mostly concentrated downstream in the Lamar Canyon and lower river. So for now we have this separation. But if we were to let everything go, we'd lose the entire Lamar system and end up with what's happened many other large river systems around here -- just big hybrid swarms.”



Fluvial (river dwelling) Arctic grayling had been extirpated from the park for decades. But from 2017 to 2021 biologists implemented fluvial grayling recovery in the upper Gibbon River system by rotenoning out nonnative rainbow trout, rainbow/cutthroat hybrids and lacustrine (lake dwelling) grayling. They then planted some 170,000 fluvial grayling fry. Adults are now thriving. Photo by Jay Fleming YNP Native Fish Conservation Program

By “letting everything go,” Koel means failing to eradicate rainbows and rainbow/cutthroat hybrids from upstream water, especially Buffalo Creek, where they were introduced more than a century ago. The National Park Service, Montana Fish, Wildlife and Parks, and the U.S. Forest Service hope to create a genetic and thermal refuge for Yellowstone cutthroats in a lake and 47 miles of Buffalo Creek

“If we were to let everything go, we’d lose the entire Lamar system and end up with what happened in many other large river systems around here -- just big hybrid swarms.”

Most of Buffalo Creek flows through the Absaroka-Beartooth Wilderness in the Custer Gallatin National Forest. Leading the charge against this and other genetic and thermal refuges for imperiled native trout is Wilderness Watch. Log on to its website and you'll see a grizzly, an icon of wilderness. But icons of wilderness like cutthroat trout and grayling don't count for Wilderness Watch and its many allies.

These groups object to motorized-vehicle use, however brief, by biologists recovering native fish in wilderness. And they object especially to rotenone, almost always the only possible method of removing non-native fish, and harmless to all air-breathing organisms and most aquatic organisms.

Rotenone is applied to moving water at 50 parts per *billion*, has a half-life of hours and is easily neutralized downstream with potassium permanganate. In modern fisheries management, rotenone has never been seen to permanently affect a natural aquatic ecosystem except to restore it.

Wilderness Watch, Alliance for the Wild Rockies, Conservation Congress, Friends of the Bitterroot, Gallatin Yellowstone Wilderness Alliance, Swan View Coalition, and Yellowstone to Uintas Connection are in full cry, spewing misinformation and disinformation about rotenone and even potassium permanganate which, in addition to neutralizing rotenone, is used to treat drinking water and preserve foods.

The ringleader, Wilderness Watch, has delayed (maybe blocked) the Buffalo Creek project with environmental-review objections and litigation. It falsely claims that "poison has no place in wilderness" and that any motorized use "violates" the Wilderness Act.

The act explicitly provides for motorized use to move equipment, rotenone included, into wilderness for the purpose of protecting and restoring wilderness.

assets such as native fish. Federal permits are routinely granted.

“The narrative [by Wilderness Watch *et al*] is rife with falsehoods,” remarks Montana Fish, Wildlife and Park’s recently retired Yellowstone cutthroat biologist Carol Endicott who wrote the Environmental Assessment for the Buffalo Creek Project. Among the voluminous untruths she cites is Wilderness Watch’s mantra that “hundreds of gallons of rotenone” will be used to treat Buffalo Creek.

“All rotenone-based piscicides currently available have a concentration of five percent rotenone,” Endicott says. “So the amount of rotenone for two treatments of 47 stream miles and Hidden Lake is 4.2 gallons. Wilderness Watch and allies are accusing us of trying for a recreational fishery as if that would be bad. Buffalo Creek, currently teeming with rainbows and hybrids, is barely fished as it is. Our crews have been up there a lot and have never seen an angler. You have to hike ten miles through grizzly country to reach it, and it’s not a day trip.”

The Buffalo Creek project remains a top priority, but it languishes under the Wilderness Watch lawsuit. And with Trump’s slash-and-burn budget cutting directed at federal entities he dislikes -- such as the National Park Service, the U.S. Forest Service and the U.S. Fish and Wildlife Service -- prospects look grim.

Park critics in West Yellowstone, Bozeman and Livingston have exaggerated the Lamar-drainage regulation to the point that word among the angling community was (and to some extent still is) that if you catch a non-native fish in the park, you must kill it. But of Yellowstone’s 200 fishable streams that regulation applies to only three. If you don’t like killing alien rainbows, rainbow/cutthroat hybrids or alien brook trout, just don’t fish the Lamar drainage.

Park biologists are finding rainbows all the way up to the second meadow of Sloan Creek -- some of the most sacred water in the park. One can catch stocked or wild rainbows in almost every state, and they don’t belong in almost every state, Montana included. So there is nothing special about catching them in Yellowstone.

But there is something very special about catching native cutthroats and native grayling.

In the few waters where native-fish recovery is possible, Yellowstone fisheries managers would be breaking federal law if they stood by while lake trout chowed down on Yellowstone cutthroats, or when brook trout outcompeted Yellowstone cutthroats, or when rainbows and mongrels hybridized with and outcompeted Yellowstone and westslope cutthroats.

As Dave Hallac once told me when he was Yellowstone's chief scientist, "Many people I talk to are overwhelmed when they get to see bison, wolves or grizzlies. It's an emotional experience. I've often thought, what if we'd introduced zebras? Would anyone say that's great, that zebras are beautiful and we want to photograph them? What we've got with some of these nonnative fish is no different."

Were it not for Yellowstone National Park -- and in particular John Varley, the biologist who went on to be the park's head resource manager -- America's catch-and-release ethic might not exist. No-kill, which went into effect on most park waters in 1973, was at least as controversial as wolf reintroduction.

Trotting out the old mythology they'd been taught in college and grad school, state game-and-fish bureaucrats around the nation ranted about how you "can't stock harvestable surpluses." Guides and outfitters were apoplectic, claiming they'd be forced out of business. Outdoor writers reflexively recycled it all; some even reported that the feds were plotting to end all sportfishing. Anglers screamed at politicians. Politicians screamed at Varley.

But Varley and his colleagues stood tall. They understood something the general public does not -- that fish are wildlife, too, and that park visitors were removing and mostly wasting something terrestrial wildlife desperately needed.

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When cutthroats were being legally killed in the park, 50,000 anglers a year at Fishing Bridge (over the Yellowstone River) had to wait an average of seven hours and 40 minutes between fish. Despite the slow fishing, the most common items by weight in park trash cans were whole Yellowstone cutthroats.

“When the Craighead brothers were studying park grizzlies in the 1960s they never saw a bear take a trout [save from trash cans],” Varley told me. By 1975, with no-l just kicking in, grizzlies were fishing 17 of the 59 cutthroat spawning streams collected by Yellowstone Lake.

By the early 1990s grizzlies were fishing 55; and one research team observed a sow with cubs averaging 100 fish a day for 10 days. Once again, cutthroats were the sockeye salmon of the greater Yellowstone ecosystem, supporting a long food chain whose links included grizzlies, black bears, otters, bald eagles, ospreys, kingfishers, loons and white pelicans, to mention just a few.

But then lake trout infested Yellowstone Lake. I was with Varley in July 1994 when the first one was caught. The phone call made him physically ill. “I just can’t think of worse news,” he told me. “They could have said brook trout -- well, that’s bad news, but we can get around that. They could have said brown trout; they could have said almost anything, but not lake trout.”

By 2004 the planet's greatest cutthroat sanctuary lay in ruins. During an eight-week survey of nine Yellowstone Lake spawning tributaries only 35 trout were seen. Grizzlies had essentially ceased fishing; during that year there were only eight reports of bear activity on all spawning streams.

In 2001 Yellowstone Lake cutthroats had supported at least 60 breeding pairs of ospreys. By 2009 osprey pairs were down to four, and for the previous two years they'd produced no young. Sixteen years of increasingly intense lake-trout control by gillnets failed to curtail population growth.

But the Wyoming Chapter of Trout Unlimited came to the rescue, funding critical lake-trout research. Sophisticated sonic tracking studies revealed where lake trout spawn and how they move. Cutthroat bycatch was sharply reduced. Private donations of \$1 million per year poured into the suppression program through Yellowstone Forever, the park's official fund-raising partner. Today's gillnetting is about 10 times that of 1999 and far more effective per man-hour.

In 2011 there was a huge pulse of juvenile cutthroats. Before that, biologists had found big fish and almost no small ones. They thought the pulse was an anomaly. But the same pulse of small fish showed up in succeeding years. Over the past decade, adult cutthroats have also greatly increased, and today abundance meets 2010 Native Fish Conservation Plan's benchmark for recovery.

Lake trout can't be eliminated in the foreseeable future, but they're being made ecologically insignificant. It's the model for invasive plant management throughout the nation. Early in the infestation, you put lots of resources into knocking it down, then you go to "maintenance mode" with much less cost and effort.

You've heard the old saw about how a few concerned citizens can make a difference. Well, it's true, as the Wild Trout Conservation Coalition reminds us. But as the

coalition also reminds us, that difference isn't always a good thing. What the coalition seeks to conserve -- via a barrage of biological bullshit -- are mongrels and aliens.

Carter Andrews of Jackson Hole, Wyoming is a fresh- and saltwater fishing guide a host of The Outdoor Channel TV show "The Obsession of Carter Andrews." Among his obsessions are fish fiction and historical fiction. For example, while serving as coalition president he offered this: "A new management campaign undertaken by Yellowstone National Park stands to devastate the wild trout stocks within park waters . . . Many anglers will confirm that the park's science here is illogical. Lake trout and Yellowstone cutthroats occupy radically different places in the water column, and their habits rarely coincide . . . Despite this evidence, the Yellowstone Park Service has instituted a killing campaign in Yellowstone Lake. A team of commercial fishermen has been hired to string gillnets across Yellowstone Lake in order to cull the very fish that the park itself introduced, no doubt creating a bycatch that goes unmentioned. So doing, the Park Service is effectively destroying a fishery of great aesthetic, recreational and economic value."

You've heard the old saw about how a few concerned citizens can make a difference. We know it's true, as the Wild Trout Conservation Coalition reminds us. But, as the coalition also reminds us, that difference isn't always a good thing.

Wild Trout Conservation Coalition founder and Jackson Hole attorney Peter Moyer promoted Andrews' fantasy that Yellowstone cutthroats and lake trout have cohabited amiably for more than a century. And he opined that the lake-trout suppression campaign might well be a plot by unethical biologists to promote themselves via disinformation. Moyer told the *Jackson Hole News & Guide* that when park biologists claim to find lots of lake trout stuffed with Yellowstone cutthroats they may be cheating by feeling the stomachs first and then cutting open the ones that obviously contain fish.

“Careers for biologists have been built on it,” he proclaimed, and their motivation for such malfeasance is tied to a huge “killing campaign.”

In my interview with Moyer he extended blame from Yellowstone biologists to Trout Unlimited: “I think TU has been a major reason for the whole campaign,” he said. “The TU people in D.C. work with the National Park Service in D.C.”

One of the main arguments of the Wild Trout Conservation Coalition was that lake trout were stocked in Yellowstone Lake in the late 1800s by the National Park Service - a quarter century before the agency existed.

Clearly, lake trout were not introduced by any federal entity. There was never a confirmed report of a lake trout in Yellowstone Lake before 1994. And in that year ichthyologist Bob Behnke told me this: “When I used to work for the Fish and Wildlife Service in the 1960s we’d set gillnets all over that lake, some very deep. And we only got cutthroats.”

Finally, otolith (ear bone) studies have determined that in the 1980s the chemistry of the water in which the lake trout lived changed abruptly from that of Lewis Lake (which the U.S. Fish Commission polluted with lake trout in 1890) to that of Yellowstone Lake, indicating that the fish came from Lewis Lake or waters with similar chemistry, such as Jackson Lake downstream.

Moyer has unearthed and recycled disinformation about the alleged ecological danger of rotenone. His main source appears to have been Wilderness Watch which disrupts or blocks native-fish recovery all across the West with wild tales about rotenone killing everything that swims, drinks, walks, crawls or flies.

“The poisons,” [antimycin, which is no longer available, and rotenone] Moyer falsely stated in screeds to newspapers, “are highly toxic to humans and animals [and] can also act as mutagens interfering with DNA





Yellowstone cutthroat trout captured by electrofishing, moved to a safe holding location, and returned to upper Soda Butte Creek following an August 2023 rotenone treatment to remove alien, invasive brook trout. NPS Photo by J. Frank

Dave Sweet of Cody, Wyoming is a native-trout-recovery hero, winner of TU's Distinguished Service Award, and founder of the hugely successful fund-raising effort for lake-trout control called "Save the Yellowstone Cutthroat Project."

He made the point that, when the issue is eradicating alien, invasive fish with rotenone, what counts with the general public and politicians is not science. What counts is the word "poison" and how loudly opponents shout. "Peter [Moyer] is just vocal," Sweet told me. "He writes letters and copies the world. I went to Washington D. C. and sat down with both our senators and our representative. As soon as they heard I wanted to talk about Yellowstone Lake the first two words out of their mouths were 'Peter Moyer.' They've been copied on everything he's written; he's just relentless."

If allowed to proceed, recovery of Yellowstone Lake and the Lamar River will require public patience. By comparison, recovery of smaller streams will seem instantaneous.

Via rotenone treatments, the park has reestablished westslope cutthroat trout or fluvial Arctic grayling or both to 67.2 miles of streams and 281 acres of lakes in the Gallatin and Madison watersheds. Some 200,000 westslope cutthroats and 400,000 fluvial Arctic grayling have been stocked across four project areas since 2007.

Rotenone treatments have permitted Yellowstone cutthroat reintroduction to Elk, Lost, Vancy and upper Soda Butte creeks, and westslope cutthroat reintroduction to Goose and Gooseneck lakes.

The east branch of Specimen Creek, which originally sustained westslope cutthroat has been restored using just eggs from a naturalized population in Geode Creek (12 miles east of Mammoth) because managers wanted the fry to imprint to their new habitat. Juvenile and adult Geode Creek westslopes were released in High Lake, Specimen Creek's water source and isolated from it by falls. They're doing well and spawning.

Immediately after treatment with rotenone (the poison Wilderness Watch *et al* port as an aquatic and terrestrial biocide) the crew found healthy larvae of one of the rare caddisflies in the West -- *Rhyacophila alexanderi*.



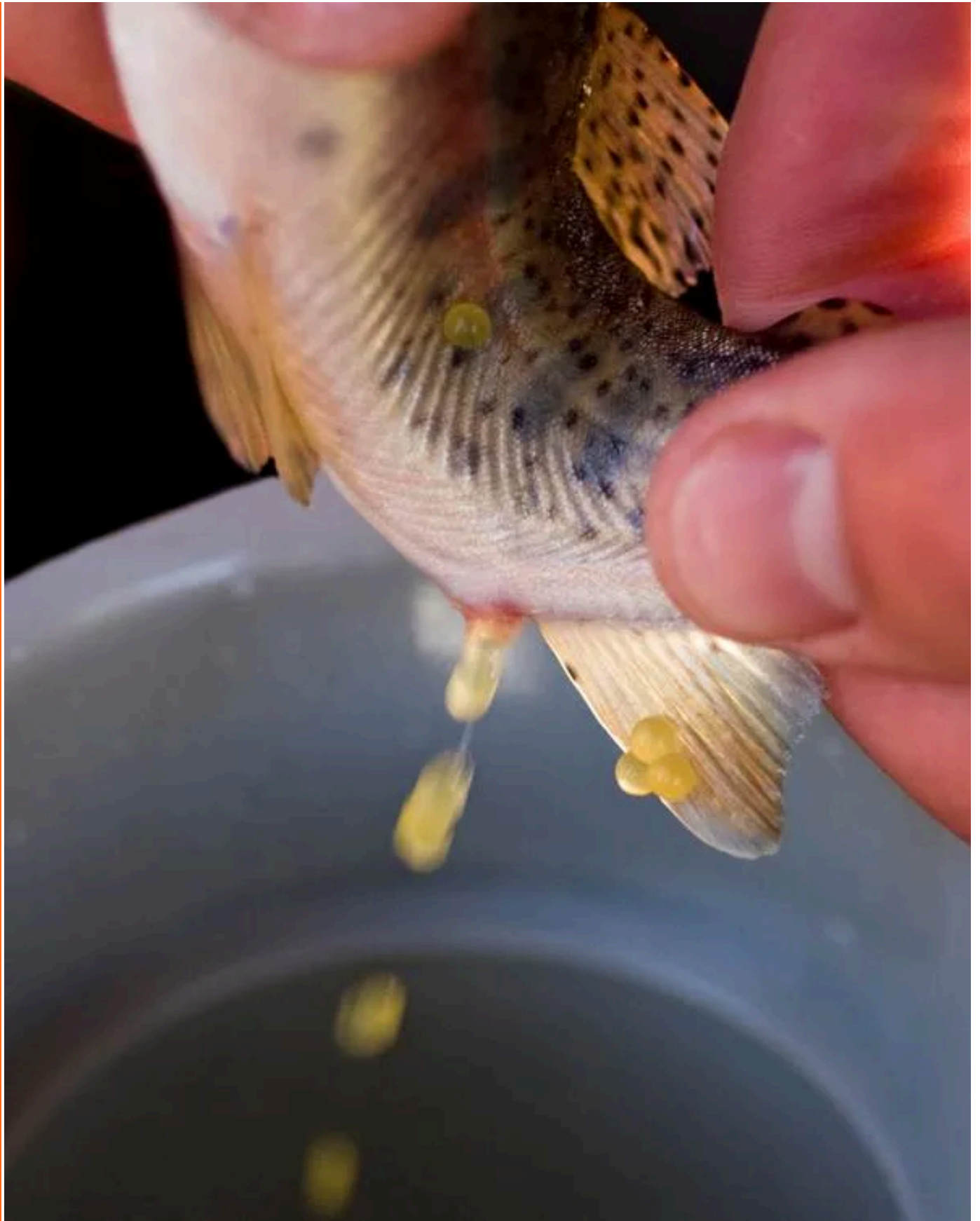




Park technicians collect naturalized westslope cutthroat trout from Geode Creek by electrofishing. Eggs from these fish were used to recover natural westslope habitat such as Specimen Creek. Photo by Jay Fleming YNP Native Fish Conservation Program

Fluvial grayling were extirpated from Yellowstone long ago, but in aptly named Grayling Creek on the west side their habitat remained intact, save for the presence of alien brown trout, rainbows and rainbow/cutthroat hybrids. In summer 2013 the park rotenoned all aliens from Grayling Creek and tributaries, down to a specially constructed fish barrier that protects 32 miles of fluvial grayling and westslope cutthroat sanctuary from re-infestation. As of 2025, both native species are thriving.

From 2017 to 2020 eradication with rotenone of rainbow trout and rainbow/cutthroat hybrids from the upper Gibbon River drainage -- including Grebe, Wolf, and Ice lakes, and the Gibbon River upstream of Virginia Cascades allowed reintroduction of some 100,000 westslope cutthroat trout embryos and fry and 170,000 fluvial grayling fry. About 7,000 fluvial grayling fry were stocked in Grebe Lake in 2023. As of 2025, both species are thriving.



Stripping eggs from a westslope cutthroat trout for the recovery project on Specimen Creek
Photo by Jay Fleming YNP Native Fish Conservation Program

Immediately after treatment with rotenone (the poison Wilderness Watch et al portray as an aquatic and terrestrial biocide) the crew found healthy larvae of one of the rarest caddisflies in the West -- Rhyacophila alexanderi.

For a half century, Yellowstone National Park has led the way in native-ecosystem preservation and restoration, setting an example for the nation and the world.

Pointing at John Varley from his office desk was a watercolor of a human index finger metamorphosing into an exquisitely rendered Yellowstone cutthroat trout. It was a nameplate, showing instead of spelling who he was and what he did. To me, it symbolized the finger of enlightened management transferring a few sparks of healing back to a biota vandalized by tinkerers.

I saw that tradition in action when Yellowstone superintendent Jack Anderson stood up to concessionaires, politicians, the public and even biologists by transforming circus bears that ate garbage in stadia built for tourists into real bears that ate cutthroats, mammals, carrion and whitebark pine nuts in the wild.

I saw the tradition continue when another Yellowstone superintendent, Robert Barbee, defended natural-fire policy to a nation and Congress indoctrinated by a shovel-toting bear with a Pooh-size brain.

I saw it again when Park Service director Bill Mott faced down an anti-environment Reagan White House and ignorant, superstitious congressional delegations in deference to wolf recovery and habitat acquisition.

I saw it with native-fish recovery projects designed by ecosystem conservators like Dave Hallac who left the park in 2023 to lead the Outer Banks Group of National Parks, and with park superintendent Dan Wenk who retired in 2018. And I see it now with ecosystem conservator Dr. Todd Koel.

To borrow the words of TU's Dave Sweet, "If we can't save our native trout in our national parks, and in particular in our first national park, we're doomed to lose them everywhere."

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Ted Williams writes rare books as well as articles for low-paying publications.



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