Attempt to revive Arctic grayling population fails in southwestern Montana lake

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Native Arctic grayling living in Upper Red Rock Lake in southwest Montana have seen their numbers nosedive over the past four years, despite an effort to remove what were thought to be competing cutthroat trout from the same waters.

Between 2014 and 2017 the spawning population of grayling in the waters of the Centennial Valley fell from about 2,000 spawning-age fish to 240, despite the removal of almost 90 percent of the hybridized Yellowstone cutthroat trout living in the same streams and lake.

Grayling, because of their small populations, were considered for Endangered Species Act protection until 2014.

“Their population was this low in the ‘90s and rebounded, but anytime we see such a dramatic decline it is cause for concern,” said Andrew Gilham, a fisheries biologist for the U.S. Fish and Wildlife Service in Bozeman.

That’s because this population of lake-dwelling grayling, called adfluvial, is the sole native remnant population from the end of the last ice age. Luckily, eggs from the grayling have been taken and raised and the fish stocked in about 30 other Montana mountain lakes to preserve

the fish's genetics. But that doesn't make the diminishing of the native grayling any easier for those working to preserve the sail-finned fish.

"We're very concerned," said Bill West, manager of the 51,000-acre Red Rock Lakes National Wildlife Refuge, which surrounds the grayling habitat. "But everyone needs to know we're working on it."

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Jim Magee, of the U.S. Fish and Wildlife Service, walks a drift boat downstream as FWP fisheries biologist Matt Jaeger, in the middle, shocks grayling and FWP fisheries technician Lucas Bateman nets them on Red Rock Creek in the Centennial Valley to collect eggs for incubators in Elk Springs Creek in 2014.

FWP

New rules

One of the ways the refuge is working to change things is by asking the Montana Fish and Wildlife Commission at its Thursday meeting to re-enact artificial flies and lures and catch-and-release-only regulations for hybridized cutthroat trout in the streams. That population, thanks to trapping and a 20-fish limit, declined from about 3,200 fish in 2014 to around 380.

“When we looked at everything, even historical data, when one population would go up the other one would, it was kind of a positive condition all the way through,” Gilham said.

Grayling and cutthroat occupied the same streams for centuries. But the population in Red Rock is Yellowstone cutthroat trout, stocked back when fisheries managers didn’t know the difference between cutthroat species. Grayling are native to the Missouri River drainage, which has also long been home to westslope cutthroat trout.

The native fish have been facing competition since 1899 when rainbow trout were stocked as a sport fishery, followed closely by brook trout in 1900 and finally Yellowstone cutthroat trout in 1967.

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Montana Fish, Wildlife & Parks stocked 10,000 grayling in Handkerchief Lake in northwestern Montana last summer.

FWP

Icy lake

Gilham said what seems to be limiting grayling populations in the Centennial Valley is heavy ice buildup on Upper Red Rock Lake, where the fish overwinter. Heavy ice means when vegetation dies in the shallow lake — about 5.5 feet deep — oxygen depletes in the water, and the grayling suffocate.

“That’s what we think is the biggest threat moving forward,” he said.

It’s difficult to get an accurate count of the grayling in the system. Most are captured and counted when they spawn at 3 years old. Few fish live beyond that age, Gilham said.

“We do see fish that live up to 7 years old, but that’s pretty rare,” he added.

West said the refuge has considered installing windmill-driven aeration systems to pump oxygen into the lake in winter, but it’s expensive and might not work on such a large body of water. Dredging is not an option because the lake is in a wilderness area. Even if it were dredged, the sandy lake bottom would probably quickly fill in from wave action in the windy area, Gilham said.

The cooperative partnership between the refuge — which includes the USFWS; Montana Fish, Wildlife and Parks; the Bureau of Land Management; Forest Service; Montana Department of Natural Resources and Conservation; and The Nature Conservancy — has also tried other measures to save the grayling, including:

- Restoring streams in the area that the grayling could use to spawn in.
- Removing culverts and other blockages on streams.
- Changes to grazing management.
- Banning angling during the fishes’ spring spawning season from May 15 to June 15 to protect eggs.

Now the refuge will also notch beaver dams to allow fish passage during the spring spawn.

Whether all of the changes, cumulatively, may help is unknown.

“We can’t take out Lima Dam (downstream), and that’s what caused (the problem),” West said.

In a valley that once provided a remote refuge for the fishery, the lake-dwelling grayling have seen their habitat greatly reduced despite the creation of the refuge in 1935, “home to the largest wetland complex in the Greater Yellowstone Ecosystem.”

“Grayling have the ability to recover,” West said. “If we can figure out the bottleneck we could take the ups and downs out of the curve. The goal is to keep the population at 1,000. We’re now at 240. That’s not good.”

West said the partnership that has worked to rebuild the fishery is a good one, but everyone involved is kind of “growly” right now. “That doesn’t mean the problem is unsolvable, but you caught us at a head-scratching moment.”