

# Last hope for endangered sucker fish

Hatcheries could help in the Klamath Basin

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Sucker spawning season is a chilly time to be snorkeling in the Williamson River, but if you need to collect sucker eggs, that's really the only place to be.

Shortnose and Lost River suckers from Upper Klamath Lake only spawn on the shallow rocky stretches of a 5-mile section of river near Chiloquin in southern Oregon.

Catching them by hand is tricky. Stealth is the key.

"Getting into the shallowest areas and then just trying to make as little noise as possible is the way to go," said U.S. Fish and Wildlife Service biologist Josh Rasmussen.

Rasmussen, who until changing jobs this past fall was the service's sucker recovery program coordinator in the Klamath Basin, is following behind two divers with a net as they move smoothly upstream — a sort-of drysuit ballet.

"Then you just have to slowly get up behind them and grab them by the tail ... What we call the caudal peduncle, the fleshy part (in front) of the tail," he said.

Aside from being the greatest anatomical name ever, the caudal peduncle provides the perfect spot for holding on tight. Spawning suckers can be close to 3 feet long and put up quite a fight.

Fish technician Joel Ophoff pulls himself along the rocky bottom, appearing almost motionless from above. Then suddenly, his body jerks as he grabs a Lost River sucker. In one smooth motion, he twists in the water to sit on the bottom, pulling the large flopping fish back and onto his lap.

"Finally got a female!" he said, cradling the fish in his arms.

The crew needs to catch and then release both females and males. They collect eggs and sperm so they can provide fertilized eggs to two hatcheries focused on suckers conservation.

These hatcheries could be the last best hope to save the two species that were a vital traditional food source for the Klamath Tribes, who called the two species c'waam and koptu.

"Every elder I've ever talked to are just like, 'Oh, suckers are, they're so good. They're so good.' And I was like, well, I can't try it yet. But you know, that's the goal. You know, one day that the tribe will be able to go out and harvest suckers every year," said tribal member Jimmy Jackson, who works at the tribe's hatchery, which is focused on preserving genetic diversity in case the wild sucker populations vanish.

## Vanishing fish

The Klamath Basin is coming off a tough year.



The U.S. Fish and Wildlife Service's Joel Ophoff cradles a Lost River sucker hand-caught in the Williamson River. The crew will collect fertilized eggs from the fish to raise in a conservation hatchery.



The Lost River sucker is one of two species of suckers that are endangered in the Klamath Basin.

Farmers, ranchers, fish, birds — nobody had enough water. And the crisis — fueled by climate change, politics and water policy — doesn't appear likely to resolve anytime soon.

The two species of endangered suckers in Upper Klamath Lake are in the middle of the turmoil.

"When I was a kid, there was thousands and thousands of suckers in the river every spring ... Now that I'm an adult, you know, 20 years later, you go down there and there's only a few hundred of them," Jackson said.

Despite being protected as an endangered species for more than 30 years, the numbers of shortnose and Lost River suckers have continued to decline. Only about 8,000 shortnose suckers are left in the world.

But the problem is not really the low number of adults remaining, but that the fish are all so old. All of the fish the Fish and Wildlife Service crew catches are nearing the end of their natural lives.

"For the shortnose sucker, the oldest individual that we've ever aged was 33 years old," Rasmussen said. "Right now, most of the individuals we have in the lake were born in 1991. So that puts them at 30 years old. So they're within three

years of the maximum lifespan ever recorded for the species.

That means within the next three years, most of the shortnoses could die or simply stop breeding because of their age.

This is a serious problem because in their traditional stronghold of Upper Klamath Lake, there are practically no new suckers living long enough to reach spawning age. Nearly all the juveniles disappear right around their first birthdays.

"Upper Klamath Lake is this amazing, spectacular lake when viewed from afar. And suckers, which happen to be very tough fish, if they can't survive there, then the whole ecosystem is in danger," said U.S. Geological Survey fish biologist Summer Burdick.

Burdick has spent several years doing research out on the lake, trying to figure out why young suckers don't survive.

"It's kind of like being the detective in a murder mystery case in which you have many, many suspects," she said. "Trying to figure out which of these suspects, or if there's a combination of these suspects, that are actually the ones causing the death of the fish."

During the summers, when young suckers are known to die off, her team

goes out on the water to check submerged cages — called mesocosms — at different spots around the lake. The cages contain young suckers, which are monitored for disease and overall health every few weeks.

One year the fish in the experiment died of a parasite that attacked their gills. The next year they died of a bacterial infection. Another year, the young suckers suffered from tail rot disease.

After studying years of data, Burdick came to realize that the real problem for suckers isn't infections or parasites.

"The aha moment was, hey, it's not the thing that's getting them in the end. It's some sort of stressor that's reducing their immune system to the point that it doesn't matter what the disease is, it matters what the stressor is," Burdick said. "And that's really what we're looking for here is that stressor."

## The stressor

Figuring out what's in Oregon's largest lake that is stressing the suckers turns out to be even more challenging.

But a few things have become clear in the science.

"We know that air temperatures in the Klamath Basin have been increasing over the last 100 years ...

and the temperatures in the lake right now in the mid-summer are in the range that are stressful for suckers — and also in the range that are perfect for their parasites to thrive," Burdick said.

High temperatures and drought in the Klamath region have been intensifying because of human-caused climate change — the result of increased heat-trapping carbon in the atmosphere caused by burning fossil fuels like coal, oil and natural gas.

In addition, water levels in the lake affect water quality and the availability of sucker habitat.

And there's another factor.

"What would it take for those (young fish) to die year after year after year — for 30 years? In my mind, it has to be something that's consistent, widespread and applicable across the entire population," the Fish and Wildlife Service's Rasmussen said.

The only thing he says makes sense are the massive algae blooms that choke large sections of Upper Klamath Lake every summer.

Scientists believe the lake has always had algae blooms, but human development has increased the amount of naturally-occurring phosphorus eroding from the soil into the water. This phosphorus feeds multiple algae blooms every year — intensifying them and allowing different kinds of algae to thrive. The algae changes the pH of the water and releases toxins into the water.

Then, when the algae die and decompose, oxygen levels in the lake crash.

"We start to see very, very low oxygen levels, which is poor for the fish. That's the same oxygen they need to breathe," he said.

Some work is already being done to reduce the amount of phosphorus getting into the lake. And the recently-passed federal Infrastructure Investment and Jobs Act will bring \$160 million to the Klamath

Basin for restoration activities by the Fish and Wildlife Service.

But a lot of restoration work is needed, so any projects to help the suckers will once again be competing for resources with other fish, birds and other priorities.

The older generation of suckers don't have very much time.

## Lifeline

This is where the hatcheries come in.

The Klamath Tribes' hatchery is the fail-safe. The primary mission there is preserving sucker genetic diversity in case the wild populations vanish.

But for the newer Fish and Wildlife Service hatchery operation near the California border, it's all about numbers.

Fish counts show that more than 80% of adult suckers survive in the lake from year to year, but for juvenile fish, that figure is close to zero. If the two species of suckers are ever to recover, an influx of younger fish is vital. Raising them in the protection of the hatchery could help.

"We want to get them to that stage because if they can become adults, then we think they could be out there for 20 to 30 years and provide some stability for us," Rasmussen said.

Staff tag and release the fish at different ages, locations and times of year in an effort to figure out if there's an ideal combination that will promote survival.

Some of the young fish have managed to make it through, at least for a while. They've been picked up swimming by tag detection stations in the watershed — a result that suggests some hatchery-reared fish are surviving after their release.

But in a lake system that's so environmentally degraded, where even the fittest wild sucker fish aren't surviving, it may end up being more about the quantity of fish released than any other factor.

After a couple of final releases of hatchery-reared sucker fish into the lake, which are planned this month, its total number of young suckers introduced this year will reach about 25,000.

That annual number is expected to rise significantly over the next decade.

Last June, the Fish and Wildlife Service's sucker fish hatchery was officially designated a national fish hatchery, while securing a long-term lease on the facility.

That means early next year, the hatchery will begin expanding, with the goal of eventually releasing 60,000 fish every year.

"I think we will be able to add to the population and artificially support it," Rasmussen said. "Such that we have time to allow the environmental conditions to improve and allow the species to get back on its own feet."

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