Small ponds in Minnesota prairies may help save minnow species

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Nick Utrup sat with a team of biologists in the tall grass, straining to see through the ripples of a small, unnamed pond. An approaching rainstorm from the west, already over the red cliffs of the nearby Blue Mounds

State Park, had stirred up the wind throughout the prairie. But Utrup and the others stayed focused on finding signs of an elusive minnow.

The Topeka shiner, a rare and endangered fish, is only found in the few remaining prairies of Minnesota and a handful of other states in the Midwest. A decade ago it looked well on the way to extinction. But a group of scientists in a branch of the U.S. Fish and Wildlife Service along with nonprofit conservationists at the Nature Conservancy may have unlocked the secret to bringing it back, as well as a host of other prairie life. And it all depends on small unnamed ponds called oxbows.

When people think of prairie restoration they almost always think of the grasses, the bison and the birds and the soil, said Marissa Ahlering, a science director for the Nature Conservancy.

"But it's the water and the wetlands, too," Ahlering said. "These are the veins of the whole prairie system."

Oxbow ponds get their name from a horseshoe shape resembling the old yokes used on teams of oxen. They form from the bend of streams and rivers that cut through grasslands. Over time some of those bends naturally separated from the larger stream, leaving behind small pools. Once a year, or every few years, the stream reconnects to these orphaned pools when the water is high enough, briefly allowing fish to move from one to the other.

The isolation and shallow water of an oxbow pond provides a nice little sanctuary and breeding ground for a slew of small fish, like Topeka shiners, protected from fast currents and predators, said Utrup, the Fish and Wildlife Service's lead biologist for the Topeka shiner recovery.

But dynamic streams and flooded pools also make it difficult to farm and build roads.

Many of the region's oxbows have been drained away or filled. Streams and rivers have been made straighter and stronger by expansive agricultural drainage systems, curtailing their natural meander. By the late 1990s it was clear that Topeka shiners were on the brink of extinction and were added to the endangered species list. But they still had a few strongholds in South Dakota, Minnesota and Iowa.

In 2010 and 2012, the Minnesota Department of Natural Resources started finding massive drops in the already small numbers of Topeka shiners left in the state. Utrup, for one, thought it wouldn't be long before they were gone from Minnesota.

But then 10 years ago, things suddenly and remarkably turned around. The Fish and Wildlife Service got a small federal grant in 2014 to try out a simple plan—find some of those old oxbows that had been filled in, bring in some heavy equipment and dig them back out.

Even when filled in, the oxbows had left clear impressions in the land that made them easy to find, said Scott Ralston, a wildlife biologist with Fish and Wildlife who works with the project.

Much of the work was done on private property, Ralston said. The drained oxbows never made for very good farmland, and many farmers were happy to see the ponds restored as watering holes for cattle, duck hunting, nutrient sinks or just for the view, he said.

Results were immediate. Within a year or two of restoring an oxbow, Topeka shiners didn't just return they exploded. The three-inch minnows proved far hardier than anyone expected, Ralston said.

They can survive in waters with low oxygen, thick with nutrients and farm chemicals.

When federal funding dried up, the Nature Conservancy stepped in. The conservation group got grants to either buy land or pay farmers for easements to permanently protect oxbows using money from Minnesota's Outdoor Heritage Fund, a sales tax approved by voters. Together they've restored now restored more than 130 oxbows in the state.

In 2019, the Conservancy bought 160 acres of restored prairie along the Champepaden Creek, just outside of Luverne in far southwestern Minnesota, and gave the land to Fish and Wildlife. The agency dug out several old oxbows that year, all about four feet deep and less than 100 yards long.

Last week, as the rain clouds rolled in, biologists returned to the Champepaden oxbows for the first time to see if any fish had come back. Conditions at the site have been close to awful—since digging them out, the state has gone through one of its most severe and prolonged droughts in decades. There have been few chances for the pools to reconnect with the creek.

"There," Utrup said suddenly as he pointed out several small shadows swarming around a much larger sunfish. "There they are. Do you see them?"

Topeka shiners like to use sunfish nests when they breed, depositing their own eggs into them. Sunfish then protect the shiner eggs along with their own.

The biologists saw dozens of shiners circling sunfish nests.

The crew dragged a seine net across another nearby oxbow to confirm what was by then obvious—the Topeka shiners were back. The drought didn't seem to bother them at all.

"Ooh, there's one right away," habitat biologist Heidi Keuler said as soon as the net came out of the water. She scooped up a healthy, wriggling shiner, sleek silver with bright orange fins. The orange glows bright in June, at the peak of their breeding colors. The fish's skin will return to a duller gray in the fall. The crew counted and measured a total of 85 Topeka shiners, quickly releasing them back into their small sanctuary.

They've returned now to just about every oxbow that Fish and Wildlife has restored.