Conservation

THOUSANDS OF FISH: Martin Konrad of the Iowa Department of Natural Resources Fisheries Bureau says more than 13,000 small fish, representing 18 species, were found in this oxbow along White Fox Creek in north-central Iowa when it was seined in the fall of 2013. The DNR is now evaluating fish survival in oxbows.

Restored oxbows reduce nitrates

Key Points

■ Oxbows are parts of streams that have been cut off from the main channel.

■ Restoring them can aid in flood control, wildlife habitat and filtering chemicals.

■ Projects in Iowa show 45% reduction in nitrates from oxbow restoration.

By **LYNN BETTS**

THE more oxbows they restore, the more farmers, fishers and conservationists find to like about them. Oxbows — meandering parts of old riverbeds that have been mostly cut off from the current stream — are important habitat for some fish. Restored oxbows also aid in flood control, offer wildlife habitat, and can work similarly to a wetland to filter farm chemicals out of runoff and tile water.

Oxbows that have been cut off from the river fill in with sediment over time. Restoring them is as simple as digging out the sediment and reconnecting the oxbow to the creek, in most cases, says Karen Wilke, Boone (Iowa) river project director for The Nature Conservancy.
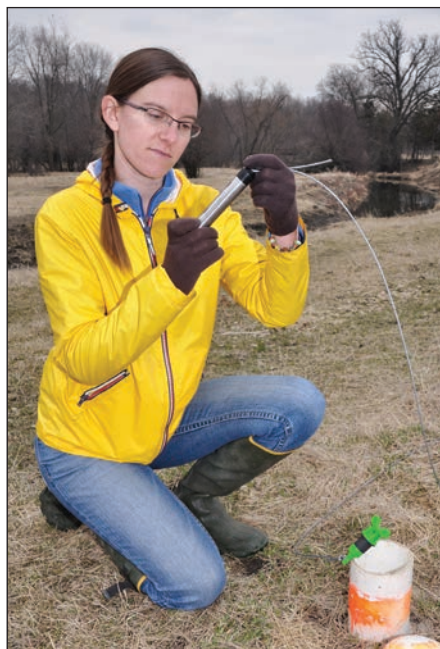
What's the catch?

"When we first talk with a farmer about a potential restoration, they're hesitant," Wilke says. "They wonder what the catch is. Will they have to maintain the oxbow? What happens if or when it fills back in? They don't get any incentive to restore an oxbow, but we've found when they learn there is no catch and no responsibility for maintenance, they're happy to have the oxbow restored."

Aleshia Kenney, a fish and wildlife biologist for the U.S. Fish and Wildlife Service in Moline, Ill., has been helping with oxbow restorations in the North Raccoon River Watershed in Iowa since 2009.

"The Fish and Wildlife Service has done more than 50 in the Raccoon River Watershed since 2002 — including 20 along a nine-mile stretch of Cedar Creek. The prairie streams found in this part of Iowa are littered with potential oxbow restorations," Kenney says.

Kenney says the early restorations were done to improve habitat for the endangered Topeka shiner. "It's a true prairie fish species, and an indicator species of stream health. Topeka shiners like pooled water in smaller tributary streams that meander," she explains, "and they use off-stream habitat to complete their life cycle."

▲SAVING THE SHINER: Oxbow restorations were first started several years ago to preserve habitat for the endangered Topeka shiner; now more than 50 oxbows have been restored in Iowa, and nitrate removal from water, creating wildlife habitat and other benefits are being considered, as well.

▲ TESTING WATER: Karen Wilke of The Nature Conservancy checks on water-monitoring equipment at a restored oxbow. The Iowa Soybean Association is measuring the impacts oxbows have on tile water, groundwater and water in the stream.

But they're by no means the only fish found in restored oxbows. "We have pulled up to 24 different species of fish and over 10,000 individual fish out of one oxbow," Kenney says. "The benefits of these oxbow restoration projects don't end with the Topeka shiner, as these wetlands produce abundant quantities of food for amphibians, reptiles and migrating birds, especially waterfowl."

Kenney says it usually takes two to three days to dig an average of 3 to 5 feet of

sediment out of the oxbow to reach the old streambed level. "Water usually bubbles up when you have hit it," she says, "and there will be old river cobble and mussel shells from the time the stream used to flow there.

"The groundwater is an important water source for the oxbow, including in the winter months when it keeps the water in the oxbow from freezing solid," she says.

Most oxbows are small and horseshoe-shaped, with a surface water area of a quarter- to a half-acre. Average cost to dig out a half-acre oxbow and haul the sediment to a nearby field is $10,000 to $12,000.

Topsoil back to the field

"As part of the permitting process, the excavated sediment can't remain in the floodplain," Kenney explains. "It's usually dark black, organic topsoil that farmers are willing to put back onto their fields. If the landowner wants it in his field, we will haul it in the fall after crop harvest, and feather it in. So that's another benefit to the farmer. There was a time farmers were hesitant and we'd take any oxbow that was offered, but now, in areas where we've

▲FISHING HOLE FOR CRITTERS: Tenant Larry Haren (left) of Hamilton County, Iowa, thinks restored oxbows are a good idea. "It doesn't affect my grazing, and it's a fishing hole for mink, raccoon and other critters," he says. The soil you see in the middle of the oxbow is by design. Called a bridge, it's meant to divide the oxbow in low flow times to protect smaller fish, says Karen Wilke (right) of The Nature Conservancy.

ALESHIA KENNEY

done so many restorations, farmers are calling to get on the list. Some farmers have several on their land."

Helps wetland, wildlife

"The oxbow functions somewhat like a wetland. Matter of fact, some people call them an oxbow wetland," Kenney says. "You're going to see frogs, shore birds, herons, waterfowl and other wildlife associated with wetlands using these. We're experimenting with a 'bridge' of higher soil in the middle to leave half of the oxbow shallow with vegetation that enhances its function as a wetland."

That's all the better to filter out nitrates from underground tile. Wherever possible, underground field tile water is redirected to the oxbows. The Nature Conservancy and others are collecting water samples every two weeks year-round. "We're monitoring water in the tile, from wells in the groundwater near the oxbow, and from the oxbow itself to track how they remove nitrates," Wilke says.

Monitoring data so far show an average of 45% of nitrates are removed from water that enters the oxbow.

Betts writes from Johnston, Iowa.