



Edwin Lake restoration. Shawn May USFWS.



*Biologists assessing depth of sediment.
Daniel Guenther, USFWS*

Vision

An agricultural landscape where restored wetlands resist invasion by non-native plants, and serve as oases of biodiversity for native species, especially nesting waterfowl.

Mission

To aid in the restoration of wetlands for native biota, especially breeding waterbirds, by providing managers with a framework for evaluating sediment removal as a restoration method.

Goal

To identify wetland restoration methods that minimize invasion by non-native plants.

THE WETLAND RESTORATION AND SEDIMENT REMOVAL PROJECT

Restoring wetlands is a common management practice for conservation agencies in some parts of the USFWS Midwest Region. For example, about 250 wetlands are restored annually in Minnesota by the USFWS Partners for Fish and Wildlife private lands program alone. Small, prairie pothole wetlands are hotbeds of biodiversity in the agricultural landscape, supporting native wetland plants, insects, and birds, especially nesting waterfowl. But, many of these wetlands become choked with invasive species like hybrid cattails and reed canary grass. These plants crowd out the native wetland plants and reduce open water areas needed by nesting ducks. Figuring out ways to keep out invasive species and maintain the structure and function of these wetlands is essential.

In 2008, Minnesota's Private Lands Program and Wetland Management Districts began to compare different methods of restoring prairie pothole wetlands to see if there are differences in wetland quality long-term. The top layer of soil in a degraded wetland has washed into the basin from the adjacent uplands and contains weed seeds. We incorporated removing sediment into the restoration and compared it with simply restoring hydrology (plugging ditches and breaking tile lines). By recording the details of when, where, and how these wetlands were restored and whether or not sediment was removed as part of the restoration process, we are able to monitor the habitat quality of the wetlands as they mature and retrospectively evaluate our restoration methods. We are using an adaptive management framework that employs predictive models and statistical methods that allow us to learn a little bit from every wetland that is monitored.

PATIENCE REQUIRED

Unfortunately, there is no quick way to assess long-term outcomes of wetland restoration. Patience is part of the process; biologists estimate that a wetland will need to be eight years post-restoration before we can fully evaluate whether or not we've been successful in minimizing invasion by invasive species. However, monitoring occurs in years 1-4, 6, and 8 years post-restoration. Only a few wetlands have reached their fourth birthday, a key milestone; that is when we do a preliminary assessment of habitat quality.

In 2016, we have entered 97 wetlands into the project; 31 of them have reached their fourth birthday. Early results indicate that sediment removal is beneficial for temporary wetlands, with 89% of temporary wetlands having improved plant diversity four years after sediment removal (n=9). In contrast, among seasonal wetlands, only 50% had improved plant diversity four years after sediment removal (n=8). However, these small sample sizes leave a lot of uncertainty. We need more wetlands in the project to accurately assess the effectiveness of our wetland restoration methods.



WHERE ARE WE NOW?

We would like to enroll more wetlands, from more geographic locations into the project to increase sample sizes and build confidence in our results. We welcome new cooperators from refuges, wetland management districts, state agencies, NRCS, and others that restore wetlands for conservation. We've kept the initial site assessment and follow-up monitoring as simple as possible because we know that agency biologists have time constraints. We have a project coordinator who can assist new cooperators.

Statistics:

Dates: 2009 - Present

Number of restoration sites: 97 enrolled, 91 monitored

Acres restored and monitored: 60 acres

Cooperators: Minnesota Private Lands Office (lead), Fergus Falls, Morris, Windom, and Detroit Lakes WMDs; Minnesota Valley and Union Slough NWRs. (7 of 19 enrolled have collected data)



WHAT'S NEXT?

Each year, we host a coordination meeting or call for the project cooperators. At this meeting, we provide an update about what we are learning and discuss ways to make the project better. We anticipate that we will need to 'stay the course' until at least 2020 when enough wetlands will have reached their eighth birthday and we can fully evaluate our restoration methods. In fact, we think that learning from our management through strategic monitoring of wetland restorations should become an accepted part of how we do restorations. Learning about the outcomes of wetland restoration practices is a long-term effort, but it is the only way to reliably improve our restoration methods to support nesting ducks and all the other biota that thrive in healthy wetland ecosystems.



CONTACT INFORMATION

John Riens, Minnesota Private Lands Office; john_riens@fws.gov

Sheldon Myerchin, Minnesota Private Lands Office; sheldon_myerchin@fws.gov

Shawn Papon, Fergus Falls Wetland Management District; shawn_papon@fws.gov

Updated July 2016

