

Final Report for LEPF Project SG 404-11

Project Title: Wet Meadow Restoration
in a Floodplain in Sylvania



Funding provided by: Lake Erie Protection Fund

Organization: The Olander Park System

Project Director: Erika Buri, Conservation Manager

Agency Advisor: Mark Witt, Ohio Division of Wildlife

Project Priorities:

Protect, enhance, and restore wetlands and their functionality and expand wetland acreage within the watershed. (page 30, 2008 LEPR)

Abstract:

The Olander Park System (TOPS) received \$15,000 from Lake Erie Protection Fund (LEPF) to restore 18 acres of wet meadow at 150-acre Sylvan Prairie Park (SPP) in Sylvania Township. SPP is in the Ten Mile Creek/Ottawa River Watershed, part of the Maumee Area of Concern. Much of SPP is floodplain, and much of that was old field. In 2009, TOPS installed 18 acres of wet meadow in the floodplain, and the goal of the LEPF project was to install 18 more acres in 2011. To prepare the 18 acres for seeding, we used a boom sprayer to apply aquatic safe glyphosate herbicide. We also mowed the standing dead vegetation to increase seed to soil contact. In early November 2011, we used a Great Plains Seed Drill to plant Ohio Prairie Nursery's Ohio Moist Meadow Seed Mix at a rate of 7 PLS pounds per acre. To restore a more natural hydrology to the floodplain, we used a backhoe to crush and back-fill field tile drop inlets and outlet pipes. The now 36 acres of wet meadow will mature into a native plant community that can support native wildlife and critical ecosystem functions like water filtration, pollution reduction, and flood control.

Project Description:

The Olander Park System (TOPS) received \$15,000 from the Lake Erie Protection Fund (LEPF) to restore 18 acres of wet meadow at Sylvan Prairie Park. The LEPF is supported by the voluntary contributions of Ohioans who purchase the *Erie...Our Great Lake* license plate featuring the Marblehead lighthouse. You can find more information about the LEPF through the Ohio Lake Erie Commission's website: www.lakeerie.ohio.gov.

The LEPF funds were used to increase the acreage of restored natural areas at Sylvan Prairie Park (SPP) in Sylvania Township in Northwest Ohio. SPP is a 150-acre natural area owned and managed by TOPS. SPP is in the Ten Mile Creek/Ottawa River Watershed, part of the Maumee Area of Concern. Seventy-seven acres (51%) of SPP is floodplain. When TOPS acquired the property, most of it was degraded old field which had been drained with ditches and field tiles. Our management plan for SPP calls for restoring 53 acres of old field in the floodplain to wet meadow. Wet meadow is a type of wetland that is important and rare in Northwest Ohio. A wet meadow is grassland with waterlogged soil near the surface. Wet meadows support a diversity of species, collect and store runoff and remove excess nutrients, thereby reducing flooding and nutrient pollution downstream. In 2009 and 2010, we installed 18 acres of wet meadow at SPP. In 2011, we used the \$15,000 award from LEPF to purchase seeds for planting an additional 18 acres of wet meadow.

To help ensure the success of our 2011 wet meadow installation, we wanted to restore a more natural floodplain hydrology by crushing field tiles. We obtained a 1957 site plan showing location of field tiles from Lucas Soil and Water Conservation District. Later, Lucas County Engineers gave us more recent drainage plans from the year 2000. We had no previous experience crushing field tiles, so we had an on-site consultation with our Agency Advisor about the best techniques for efficiently and effectively finding and crushing field tiles. Next, we used GPS and GIS to map the locations of the visible drop inlets and the outlets into ditches and lakes. Finally, we began crushing field tiles by digging them out with a back hoe and then back filling the resulting trenches. For the tiles that had visible drop inlets, we dug out the drop inlets themselves and the attached outlet pipes for about 20 feet back from the drop inlets. For the tiles that had no visible drop inlets, we dug out the outlet pipes to about 20 feet back from where they emptied into the ditches or lakes. (See Activities/Timeline below for timing of these activities in relation to our preparation and planting activities.)

Prior to preparing and seeding the site, we walked the floodplain areas in Sylvan Prairie Park to confirm the best sites for wet meadow installation. We mapped the sites with a GPS unit and used ArcGIS to create a map of the 18 acres. We established four 30-meter transects in random locations in the 18 acre site. Along each transect, we determined a pre-restoration plant species list and estimated percent cover of each species.

To prepare the 18 acres of old field for the wet meadow installation, we treated the site with herbicide 2 weeks before we wanted to plant the seeds. In some places the previous year's growth of Queen Anne's Lace and aster was very tall and dense. Immediately before spraying, we mowed those areas to 15 inches, short enough for the spraying equipment. Doug Haubert from Sandusky County Park District performed the

herbicide treatment with SCPD's boom sprayer. He used Aqua Star, an aquatic-safe glyphosate herbicide, at a rate of 1.5 to 2 quarts per acre.

The results of the spraying were good. We intended to plant the wet meadow seeds 2 weeks after spraying. However, the weather was too dry to allow us to seed at that time. (See Timeline and Lessons Learned for more information.) After consulting with our Agency Advisor, we decided to wait until early November to plant the wet meadow seeds.

In early September we used an additional 6 pints of Aqua Star to re-spray small patches of weeds that had grown back in our 18 acre site. Total acreage sprayed was about 2. We also sprayed patches of the invasive plants Phragmites and teasel.

In early November, we mowed the standing dead vegetation to improve seed to soil contact and then planted the wet meadow seeds with a Great Plains Seed Drill rented from Fulton Soil & Water Conservation District. We used the "Ohio Moist Meadow Seed Mix" from Ohio Prairie Nursery and seeded at a rate of 7 PLS pounds per acre.

In early spring 2012, we did some follow-up work to help the newly seeded sites along. We cut down the standing dead Phragmites to make it easier to spray the re-growth again in September. We mowed areas of red clover to release the emerging natives and help them get established during this first growing season.

In mid-May 2012 we repeated the plant community monitoring along the four established transects to determine any changes during the first growing season after the November seeding. The general results of this monitoring are described in the Outcome/Work Products section below.

Activities/Timelines:

- April 2011
 - Received 1957 field tile map
 - Consulted with Agency Advisor about how to destroy field tiles and wet meadow seeding techniques
 - Site visit with Agency Advisor to begin field tile search
- June 2011
 - Ordered Ohio Moist Meadow Seed Mix from Ohio Prairie Nursery
 - Determined and mapped exact locations for spraying and seeding
 - Purchased Aqua Star herbicide
 - Baseline survey of plant community
 - June 17: Mowed site to prep for spray
 - June 17: Sprayed site to knock back non-native plants (late spray because of very rainy spring)
- July 2011
 - Consultation with Agency Advisor because of weeks of drought. Advised to wait until late October or early November to seed
- September 2011
 - Re-sprayed spots where non-native plants had re-grown
 - Sprayed Phragmites and teasel patches in the wet meadow sites
 - Mapped locations of drop inlets and outlet pipes draining fields
- November 2011
 - November 8-9: Mowed site to prepare for seeding
 - November 10-11: Used seed drill to plant wet meadow seed on 18 acres
- February to April 2012
 - Crushed field tiles with back hoe
- April 2012
 - Cut down standing dead Phragmites to prepare for spraying in September
- May 2012
 - Mowed areas where red clover was growing densely
 - May 14: Post-restoration plant community monitoring

Outcome/Work Products:

We planted 18 acres of wet meadow in an area that lost most of its wetlands to agricultural development. These new 18 acres increase to 36 the total floodplain acreage planted in wet meadow at Sylvan Prairie Park. As these wet meadow plant communities mature, they will be able to support a greater diversity of native wildlife and sustain critical ecosystem functions like water filtration, pollution reduction, and flood control.

In the course of planting the 18 acres of wet meadow, we controlled several small patches of Common Teasel, one medium and several small patches of Phragmites, and one medium patch of Canada Thistle. (Small patch is <20 plants. Medium patch is 20-100 plants.) In May 2012 the Canada Thistle patch appeared to be about 95% controlled, and the Phragmites patches were about 75% controlled. Control rate of the Common Teasel patches was not determined.

On May 14, 2012, we performed the first post-restoration plant community monitoring along the four established transects to determine any changes during the first growing season after the November seeding. None of the species in the wet meadow seed mix were identified along the transects. There were some seedlings too small to identify. The identifiable plants were mostly Queen Anne's Lace, Goldenrod, and Yellow Sweet Clover. This is slightly different from the plants that were the most common before the spraying and seeding: Queen Anne's Lace, Barnyard Grass, and Goldenrod. We expect that the species we planted will become a larger part of the plant community during the 2013 and 2014 growing seasons. We will continue to monitor the plant community to see if our planting was successful.

LEPF funds have helped us increase the acreage of protected native wetland habitats in the western Lake Erie watershed. Over time, these restored wet meadows in the floodplain at Sylvan Prairie Park will decrease sediment and nutrient loading in Lake Erie tributaries and improve wetland and lotic habitats on site. This functioning natural area will, in turn, provide a place for environmental education, passive recreation and enjoyment of nature. As developmental pressures in surrounding Sylvania Township increase, there are fewer and fewer areas that provide these critical recreational, aesthetic, and ecological functions. By restoring Sylvan Prairie Park from old field to native plant communities, TOPS will help meet these needs for our community.

Lessons Learned/Hurdles:

One of our biggest hurdles in this project has been destroying field tiles to restore a more natural hydrology. Sylvan Prairie Park was ash-elm swamp forest, then drained for agriculture, then reshaped into the beginnings of a golf course, then purchased for a housing development, and finally purchased by The Olander Park System and managed as a natural area. The agriculture and golf course stages of the site's history created a very complicated drainage system. We asked for lots of input and help along the way from various partners: Ohio Division of Wildlife, Lucas Soil & Water Conservation District, Sandusky County Parks, and Lucas County Engineers. However, we still made mistakes.

One of the first drop inlets and associated outlet pipes that we dug up and crushed also drained a neighboring property. We then had to reconnect the outlet to drain the neighbor's yard. After this debacle, we tried to find a more up to date drainage plan for the site than the 1957 plan Lucas Soil & Water had given us. Lucas County Engineers were able to give us a 2000 drainage plan for the partially built golf course. Armed with this plan, and a healthy wish to be conservative about which tiles we destroy, we will continue to crush more drop inlets and outlet pipes through 2012. We should have asked Lucas County Engineers sooner for any previous site plans that might affect our planned projects.

Another hurdle we faced was weather. The timing of our spraying was delayed due to too much rain in April and May. The timing of our seeding was delayed by the late spray and then even further by too little rain in June and July. Once we realized the initial preparation spray was going to be pushed back to mid-June, we should have discussed other options with our Agency Advisor and other consulting partners. If we had considered the possibility of a fall planting at that time, we might have cancelled the June spray and just done a late summer spray. Then we would have avoided having to do a second round of spraying.

As we have learned with our previous tallgrass prairie and wet meadow installations, seeding requires patience for results. We expect to see more of the wet meadow species on the site in 3 years.

In our application we proposed using Timberstone High School students to help with plant community monitoring. We have found that it is difficult to use high school students for this type of activity. However, college students are a great asset for this type of work. TOPS has partnerships with the University of Toledo Department of Environmental Sciences (UTDES) and with Lourdes University. We have had interns from both Lourdes and UT help with the wet meadow plant community monitoring. The UT DES Terrestrial Ecology Lab class uses Sylvan Prairie Park as a site for two of its field labs every semester. The students do insect and plant surveys on the restored sites at Sylvan and share their data with us.

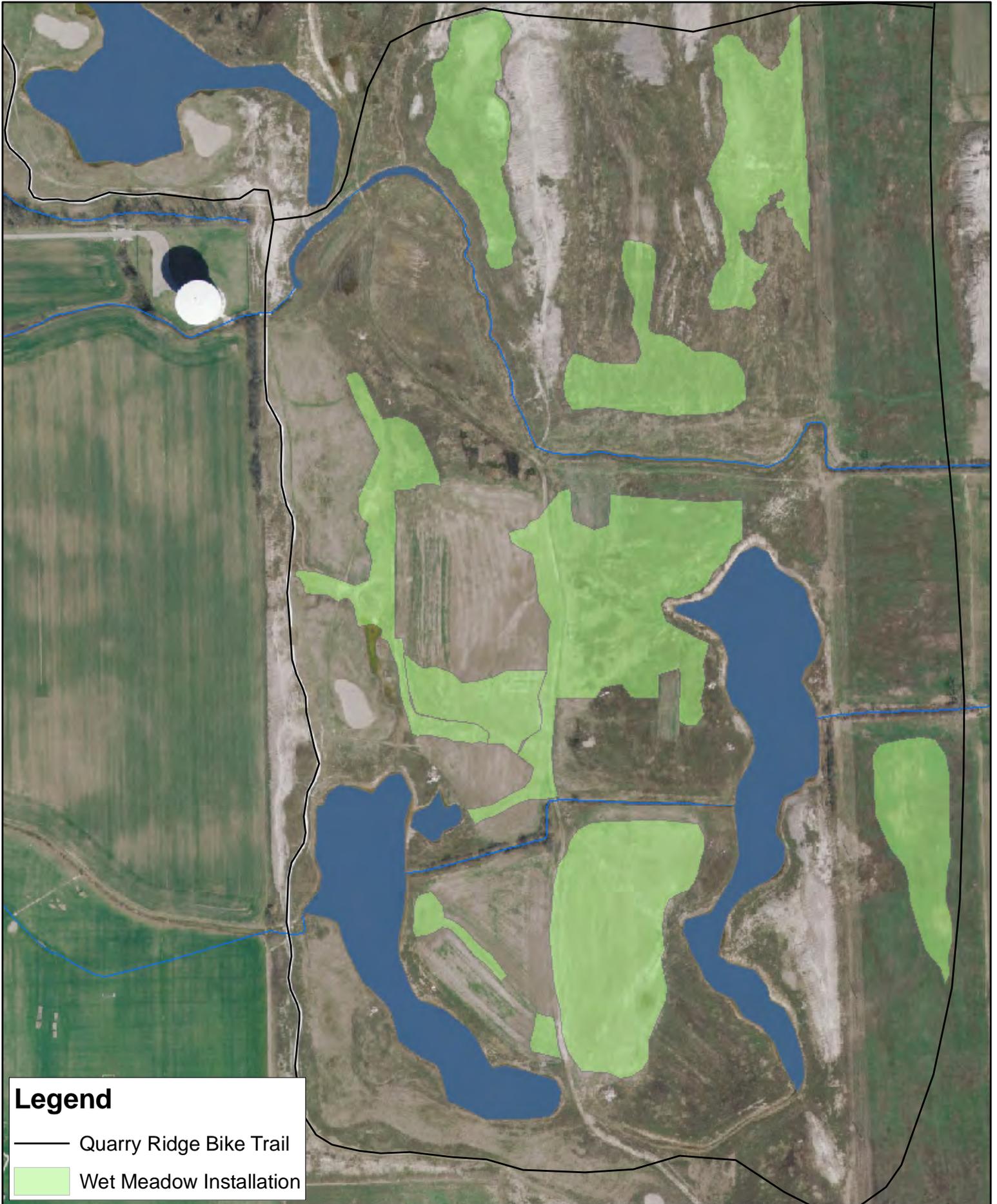
Finally, we have learned to combine preparation treatments for multiple restoration projects. When ordering, we purchased supplies for this wet meadow project and for a tallgrass prairie installation at the same time. Sandusky County Parks sprayed 30 acres of SPP on the same day; 18 acres for this project and the rest for tallgrass prairie. We also seeded both tallgrass and wet meadow over the course of a few days while we had the seed drill rented.

Future Plans:

To help our wet meadow sites establish a healthy and lasting native plant community, we will continue our treatment of invasive plants. We have an Integrated Pest Management Plan for SPP which details which invasives should be treated each month of the year and what treatment to use. We will continue to improve the floodplain hydrology by crushing more of the field tiles and by converting the present trapezoidal ditches to over-wide ditches. Over-wide ditches reduce flow velocity and allow water to spill over into the floodplain, maintaining the wet soils characteristic of wet meadows. The over-wide ditch project at SPP has been funded by an Ohio EPA Section 319(h) Grant. Note that in 2011, TOPS only restored 18 acres of wet old field because of this ditch project. The remaining 17 acres of wet old field will be impacted by the ditch project, so they must be restored after that project is completed in 2012.

We will repeat the plant community monitoring every summer to assess the effectiveness of this restoration project. If the results are not satisfactory, we will re-evaluate our management plan and try other ways to improve the quality of the wet meadow.

Wet Meadow Installed in 2011 - Sylvan Prairie Park



Legend

- Quarry Ridge Bike Trail
- Wet Meadow Installation



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