# Roadside Habitat Improvement Project

Final Report


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***Acknowledgements***

First of all I would like to thank Jean Hansen, past County Conservationist for bringing her vision into life and laying the ground work for the creation of the Roadside Habitat Improvement Project. She got Tamarack Song, Director of the Natural-Cultural Resources Committee, myself and Brian Slizewski, Three Lakes Road Crew Foreman, inspired. As Jean's health declined, Michele Sadauskas, destined present County Conservationist, stepped into her place. It's been wonderful to work with Michele: fun, productive and creative. Tamarack and Michele are amazing and helped me a lot to do my job as they were there to bounce off ideas, help find solutions and lend different perspectives.

There has been a lot of support for the project and for me directly from Oneida County Land and Water Conservation team members. Especially Jonna was always right there to help out, making sure things are in order, and lending her creativity. Jonna did most of the design work of the sign, which is located at each site. Many thanks also to Stephanie and Karl, who were always available when needed.

Many hours of labor and money were saved through the amazing contribution of the Three Lakes Road Crew. Brian Slizewski and his team helped to move compost, mulch and machinery in order to support the project.

If it hadn't been for all the wonderful people who volunteered many hours to support the Roadside Habitat Improvement Project, it wouldn't have been as successful as it has been. A heartfelt THANK YOU goes to Lety Seibel, Coyote Three Feathers Herron, Quentin Thomas, Danny Fletcher, Marissa Monte, Lukas Bean, Zander Salamander, Iziah Ananzi, Nathan Shortridge, Canto Rio, Don Meeder, Jules Rivest, Megan McCrumb, Kellie Sloane, Paul Ellenbecker, Luke Boushee, Michael Fox, Al Votis and the Science class from the Three Lakes High School.

## ***Introduction***

The Roadside Habitat Improvement Project is a joint project of the Town of Three Lakes and Oneida County Land and Water Conservation. The project has enhanced the region's natural resources by focusing on strengthening habitat for native pollinator species some of which have been declining in an alarming way like the Monarch Butterfly (Jepsen, Schweitzer, Young, Sears, Ormes, & and Black, 2015) or are proposed to be listed on the endangered species list, like the Rusty Patched Bumble Bee (www.fws.gov/midwest/endangered/insects/rpbb/factsheetrpbb.html; www.iucn.org bumble bee specialist group).

A number of different drivers have led to the decline in pollinator populations. Fragmentation, agro-chemicals, invasive species, and climate change have created habitat loss. Additionally, there is evidence that declining native plant diversity correlates with the decrease of native pollinator populations (Potts, Biesmeijer, Kremen, Neumann, Schweiger, & Kunin, 2010).

In the context of the project, four sites in Three Lakes were planted with native wildflowers in order to increase roadside pollinator habitat and strengthen native pollinator populations.

Two of the sites, Three Lakes Winery and Thunder Lake Wildlife Marsh, were planted in late Spring of 2016 and successfully improved food sources for native pollinators as the plants took off and bloomed in their first season. Monarch Butterfly caterpillars were sighted at both sites.

The other two sites, Military Road and County Road A were planted in Fall 2016.

## ***Plots***

All four plots are located within the town boundary of Three Lakes. Three of them are located on town roads, while one is on the roadside of County Road A. Three different habitats are covered by the four plots: prairie, marshy prairie, and woodland edge.

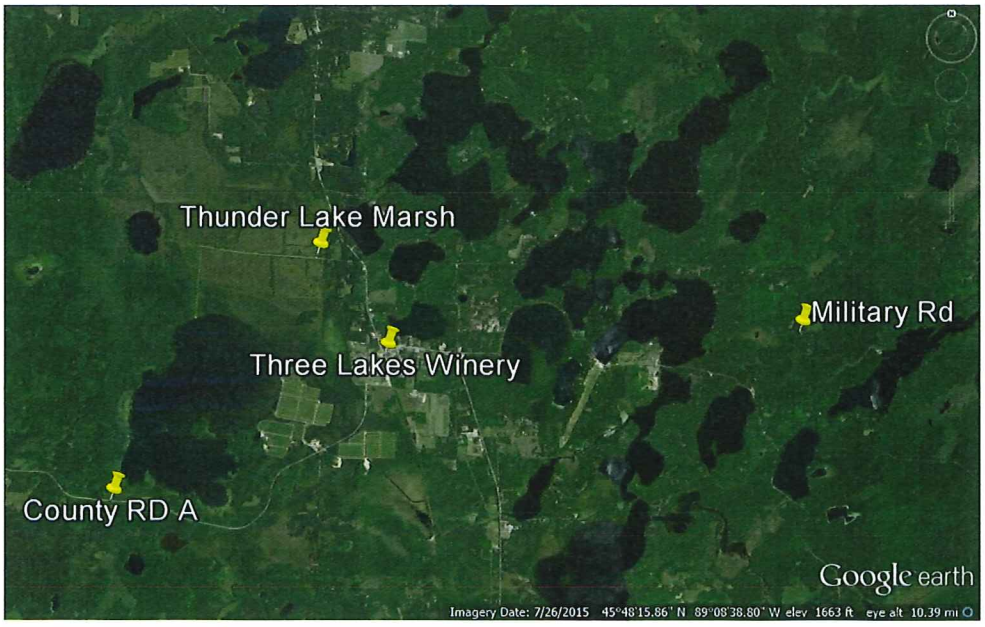


**Figure 1 Overview plot locations**

***Three Lakes Winery***

This plot is located at the biggest intersection in downtown Three Lakes. This location was picked as it provides a high degree of public exposure to tourists and residents. The site is well exposed to sunlight from all cardinal directions and would be best characterized as prairie habitat.


**Figure 2 Southern plot before planting**

**Figure 2A Northern plot before planting**

Preparation for this site consisted of sod removal and application of compost. A planting design and map were created prior to planting. The considerations for the design were the visual angles of vehicles pulling out of the drive way into open traffic, pedestrian routes, and biogeographic preferences of plants.

**Figure 3 Compost distribution**

The Three Lakes Road Crew picked up and delivered compost and mulch for the site. We were able to use Buckthorn woodchips resulting from a Buckthorn removal event held in Three Lakes in May 2016.

On June 14, 2016, four hundred and fifty-one plugs were planted. Sixteen different species (see Table 1 in Appendix 1) were spaced roughly eighteen inches apart, with some variation according to assumed final plant size. Michele Sadauskas and Karl Jennrich came to help from Oneida County Land and Water Conservation. Tamarack Song and several other staff members from Teaching Drum Outdoor School volunteered their time for planting or mulching on that day.

**Figure 4 Planting**

Watering at that site occurred via garden hoses from a spigot at the Three Lakes Winery building. I received help with watering several times throughout the summer from volunteers.


**Figure 5 Three Lakes Winery after planting June 2016**


**Figure 6 Three Lakes Winery October 2016**

The plants at this site did very well. The survival rate is at 98%. Figure 5 and 6 compare the beds right after planting and in October 2016.

***Thunder Lake Wildlife Area***

Thunder Lake Wildlife Area is located one mile north of Three Lakes and is managed by the DNR. It's a popular area for recreational use. The project plot is located East and West of a birding trail maintained by the Three Lakes Bird Club. This site is exposed to direct sunlight from all cardinal directions. The habitat is described as a marsh prairie.

**Figure 7 Thunder Lake Wildlife Area**

This site was chosen for the fact that it provides public exposure and a habitat that is quite different from the other sites. As there was already an existing healthy vegetative association, we decided to use an interspersed planting technique.

On June 11, 2016, seventeen different species were planted randomly into the existing vegetation (see Table 2 in Appendix 1). We cut out 6" diameter and 4" deep circles of ground cover to provide space for 128 new plant plugs. This technique was used to decrease plant competition for nutrients, water and sunlight. One hundred and twelve plants came from a commercial nursery while 16 were part of the homegrown crop.

Two staff members, one visitor of Teaching Drum Outdoor School, and one junior high student helped to put the plants into the ground.

**Figure 8 Planting at Thunder Lake Wildlife Area**

Watering was easy as the adjacent water channels held plenty. I occasionally received help with watering from a couple who lives down the road from the plot.

I did maintenance on that plot in mid-July. Blackberry and strawberry offshoots were encroaching on the new plants' space and were consequently removed.

Approximately 40% of plants did not survive the summer in that location. The main reason, I could detect, is the competition with already existing vegetation. Additionally, a large part of the plants had to deal with being set back in their developmental stage as they were artificially kept dormant at the nursery.

As the homegrown crop provided plenty of plants suitable for this site, the plan is to replant in Spring 2017. The plants that will be used are Turtlehead, Blue flag iris and Joe pye weed.

**Figure 9 Thunder Lake Wildlife Area October 2016**

***Military Road***

This plot is located on 7126 Military Road which is adjacent to the Teaching Drum Outdoor School property. The site matches the characteristics of a woodland edge habitat. It has good exposure to light from the East. Southern exposure to sun is only given in the middle of summer when the sun is higher than the adjacent tree line. There is some sun exposure from the Southwest.

**Figure 10 Military Rd. plot with landscape plastic**

Part of the school's mission is "to live respectfully with the Earth". Many staff members and guests have volunteered to help out with this project and are guaranteeing that this plot will be well taken care of.

Military Road is designated as a Scenic Byway by the US Forest Service, and is located within the Chequamegon- Nicolet National Forest. Many tourists are either driving or riding by throughout the seasons as they enjoy the great outdoors.

In order to eliminate a potential invasive species seed bed, the site was covered with black landscaping plastic from June till the end of September. With this technique, heat gets trapped under the plastic and kills any sprouting or dormant seeds. The plastic was removed right before planting.

The Three Lakes Road Crew picked up and delivered compost and mulch for the site.

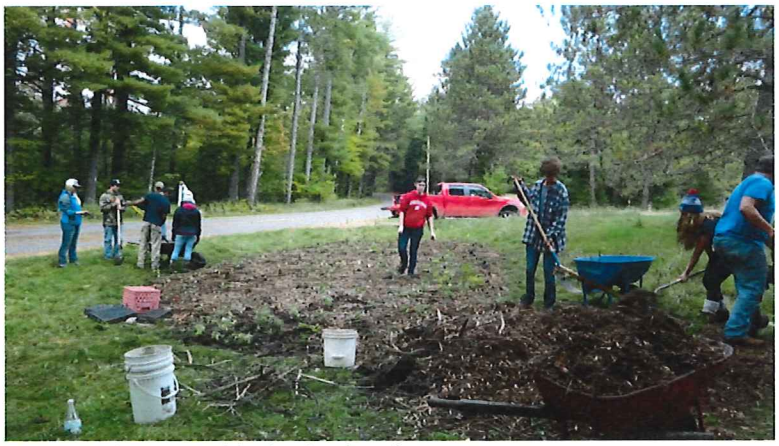

**Figure 11 Planting with high school students**

Several staff members of Teaching Drum Outdoor School helped with spreading compost.

A planting design and map were created prior to planting. The considerations for the design were sun exposure, height and weight support of tall plants, view of drivers going by, and biogeographic preferences of plants.

On September 28, the science class, with teacher Al Votis from the Three Lakes High School, came to plant and mulch. As there were twelve students, their teacher and I, the activities went quite fast.

Students were eager to apply their new map reading and planting skills which they had acquired earlier at the County Road A site and plants were put in the ground on one end of the plot while we were still

laying out plants at the other end. That led to a smaller amount of spacing than anticipated and the need to reorganize and add plants. However, it was beautiful to see how passionate the students got.

We put in more than 371 plants of 18 different species. Please see Table 3 in Appendix 1 for a detailed plant listing matching the original plot design.

There hasn't been any need for watering in 2016. Future watering will be provided by Teaching Drum Outdoor School.

**Figure 11 Military Rd. after planting**

***County Road A***

Located just East of the "Three Lakes Unincorporated" sign, this is the biggest plot. The plot has very good Eastern and Western exposure year round. Southern exposure is limited to the summer months, when the sun's angle is steep enough for it to reach above the tree line. We classified this as prairie habitat.

**Figure 11 County Rd. A plot with landscape plastic**

County Road A is an important traffic route into Three Lakes and solidifies the County's involvement in the project.

In order to eliminate a potential invasive species seed bed, the site was also covered with black landscaping plastic from June till the end of September.

The Three Lakes Road Crew picked up and delivered compost and mulch for the site.

Several staff members of Teaching Drum Outdoor School helped with spreading compost.

A planting design and map were created prior to planting. The design included 19 different species with a total of 873 plants. The considerations for the design were sun exposure, height and weight support for tall plants, view of drivers going by, and biogeographic preferences of plants. Please see Table 4 in Appendix 1 for a detailed plant listing matching the original plot design.

On September 28, the science class, with teacher Al Votis from the Three Lakes High School, came to plant and mulch at this site. Prior to their arrival, Michele Sadauskas, County Conservationist, and Tamarack Song, Director of Teaching Drum Outdoor School, helped me to start on the layout of the bed. Michele also helped to instruct students to read the map and lay out the plants accordingly, how to plant, use the planting tools and identify plants. During this process, quick adjustments for the spacing between plants had to be made which led to an unknown, smaller number of plants actually put into the ground.

Collette Sorgel from the Vilas County News Review came to report on the activity.

Watering at this site will be "natural" to a large degree. Since the bed is located below the road, ditch water will be funneled into it. Water will be brought in if needed.

**Figure 13 County Rd. A after planting**

## ***Educational outreach***

The community's quality of life has improved by creating a new awareness about the importance of native pollinators and their habitat through educational programs, tours, informational materials and signs. The project provides an opportunity to become actively involved in improving natural ecosystems by educating yourself about pollinators, native plants and the role of invasive plants. Both the general public and high school students have taken advantage of this opportunity and


**Figure 12 Sign at each plot**

volunteered time for the project in 2016. Each site has an educational sign to inform the public and direct where more information can be accessed.

To extend outreach to the public, I held several presentations throughout the summer of 2016:

**July 23:** I presented the "Roadside Habitat Improvement Project" at a "Helping Pollinators and Other Wildlife" workshop which was part of a Rhinelander Greenspaces Project series of the US Forest Service. Please see Flyer 1 in the attachments.

**August 3:** I held a presentation at the Three Lakes Natural-Cultural Resource Committee.

**August 26:** I organized the workshop "Pollinators in the Northwoods" which was held at the Reiter Center in Three Lakes. Please see Flyer 2 in the attachments. Dr. Christelle Guédot from the UW Madison, Department of Entomology, presented on "Pollinators: Who are they, what is their status, and what can we do to protect them?". The second keynote speaker, Patrick Goggin from the UW-Extension Lakes, presented on "Gardening with native plants for pollinators and other wildlife in the Northwoods". I had planned to present on the "Roadside Habitat Improvement Project" after them. However, both of the prior presentations went over time, so my presentation was cut short. Pat Goggin helped to lead the tour over to the Winery plot which gave lots of opportunity for questions and explorations.
The response to the workshop by the public and the media was considerable. Channel 12, WXPR, The Lakeland Times and Vilas County News Review sent representatives to report about the workshop. Please see attached list of available links of media coverage. Twenty-five people, from as far away as 60 miles, attended.

The general public is actively seeking guidance on what they can do to help native pollinators. People have walked in or called the Oneida County Land and Water Conservation office to ask about what to consider for planting and which species would be best.

## ***Metrics of success***

Increasing native pollinator habitat disrupts the vicious circle described in "Global pollinator declines: trends, impacts and drivers" (Potts, Biesmeijer, Kremen, Neumann, Schweiger, & Kunin, 2010). They refer to habitat loss as the strongest driver in decreasing native pollinators, which in turn leads to a loss in native plant habitat which again leads to a decrease in native pollinators; creating a downward spiral.

Therefore, improving native pollinator habitat naturally leads to an increase in native pollinators and at the same time manages another important driver of decreasing native pollinator numbers: introduction of invasive alien species (Potts, Biesmeijer, Kremen, Neumann, Schweiger, & Kunin, 2010).

**Figure 14 Monarch butterfly caterpillar at Three Lakes Winery**

**Figure 15 Monarch butterfly caterpillar in Whorled milkweed**

The plots at the Three Lakes Winery and the Thunder Lake Marsh both showed increased native pollinator activity, bees and butterflies, due to restored native habitat (Waltz & Covington, 2001) (Steffan-Dewenter & Tscharntke, 1997)

They both hosted caterpillars of the Monarch Butterfly. The presence of host plants is an important driver for butterfly colonization (Steffan-Dewenter & Tscharntke, 1997).

Since there was no food source for that butterfly caterpillar available at those sites prior to the projects habitat adjustments, their presence is clearly considered a success. In the late summer and early fall months, blooming was at its peak at both sites. Since there was only grass at the Winery sites prior to the project's planting, the now visiting bees, flies, and butterflies came to the new habitat.

As far as the plots on Military Road and County Road A, observations in regards to pollinator observation and the plants' development will need to be made in the summer of 2017. Any of the results will be reported to the Lumberjack RC&D grant committee upon request.

The observation of nesting sites will begin in Spring 2017 when all of the plots will present habitat for native pollinators. In 2016, we observed the naturally existing nesting habitats at Thunder Lake Wildlife Area and the Three Lakes Winery. Bare sand, dead shrubs and Milkweed plants provided space for pollinators to move in.

## ***Things we learned along the way***

We learned a lot about planning as the project progressed. The initially projected 80 hours of Coordinator time were strongly underestimated. Even the 200 hours that were calculated after reevaluation were not enough to get the project completed. There are a number of reasons for that.

With every new project it takes experience and networking in order to be most efficient. For example, it took a lot less time to plan the third and fourth garden than it took for the first two.

The landscaping and bed preparation took much more time than projected as the physical labor was more intense than anticipated.

As we were able to acquire discounts for many of the materials and plants, there were more funds for labor. Also the $1,000 donation from Mark McCain, the owner of the Three Lakes Winery, was pledged entirely to Coordinator time. We ended up using 394.5 hours or Coordinator time.

In contrast, the estimated 40 hours involvement of the County Conservationist, hit the mark, as we used 43 hours of her time.

The originally estimated 100 hours of volunteer involvement more than doubled with 236.75 hours logged.

For more details on the budget and time involvements please see the Grant Payment Worksheet (Appendix 3) submitted with the final report.

## ***Conclusion and outlook***

The location of the Three Lakes Winery plot at the Town's most prevalent intersection has significantly improved the townscape. Many people get to enjoy the natural beauty of the native wild flowers. Considering that a large number of Three Lakes inhabitants economically depend on tourism and the beautification of the Town enhances Three Lakes as a tourist attraction, the Roadside Habitat Improvement Project contributes to the community's well-being.

Project partners united the public and private sectors with the joint goal to help preserve the Northwood's ecosystem by increasing native pollinator habitat and decreasing habitat for invasive species. Any effort to preserve the area's ecosystem leads to an increase in ecosystem services which directly benefits the area's citizens.

The educational component of the project has helped to increase people's awareness and understanding of ecosystem drivers and connections. Many environmental educators argue that being exposed to Nature will potentially increase the desire to preserve. Therefore, the environmental education component may be considered another metric of success.

## ***References***

Jepsen, S., Schweitzer, D., Young, B., Sears, N., Ormes, M., & and Black, S. (2015). *Conservation Status and Ecology of the Monarch Butterfly in the United States.* NatureServe and Xerces Society for Invertebrate Conservation.

Potts, S. G., Biesmeijer, J. C., Kremen, C., Neumann, P., Schweiger, O., & Kunin, W. E. (2010). Global pollinator declines: trends, impacts and drivers. *Trends in Ecology and EVolution*, 345-353.

Steffan-Dewenter, I., & Tscharntke, T. (1997). Early succession of butterfly and plant communities on set-aside fields. *Oecologia*, 294-302.

Waltz, A. E., & Covington, W. W. (2001). Butterfly Response and Successional Change Following Ecosystem Restoration. *USDA Forest Service Proceedings*.

*www.fws.gov/midwest/endangered/insects/rpbb/factsheetrpbb.html.*
*www.iucn.org* - Bumble bee specialist group.

***Appendix 1 - Tables of native plants used at each site***

Table 1 Native Plants planted at Three Lakes Winery

| Latin Name | Common Name | Quantity |
|---|---|---|
| Amorpha canescens | Leadplant | 16 |
| Aster laevis | Smooth Aster | 32 |
| Coreopsis lanceolata | Lanceleaf Coreopsis | 32 |
| Eryngium yuccifolium | Rattlesnake Master | 32 |
| Liatris aspera | Rough Blazingstar | 32 |
| Monarda fistulosa | Bergamot | 16 |
| Ratibida pinnata | Yellow Coneflower | 32 |
| Verbena stricta | Hoary Vervain | 32 |
| Campanula rotundifolia | Harebell | 32 |
| Agastache foeniculum | Lavender Hyssop | 32 |
| Zizia aurea | Golden Alexanders | 32 |
| Asclepias verticillaris | Whorled Milkweed | 32 |
| Helianthus hirsutus | Rough sunflower | 32 |
| Solidago canadensis | Canada Goldenrod | 32 |
| Asclepias syriaca | Common Milkweed | 32 |
| Silphium perfoliatum | Cup plant | 3 |
| | Total | 451 |

Table 2 Native plants at Thunder Lake Wildlife Area

| **Latin Name** | **Common Name** | **Quantity** |
|---|---|---|
| Amorpha canescens | Leadplant | 4 |
| Aster laevis | Smooth Aster | 8 |
| Coreopsis lanceolata | Lanceleaf Coreopsis | 8 |
| Eryngium yuccifolium | Rattlesnake Master | 8 |
| Liatris aspera | Rough Blazingstar | 8 |
| Monarda fistulosa | Bergamot | 4 |
| Ratibida pinnata | Yellow Coneflower | 8 |
| Verbena stricta | Hoary Vervain | 8 |
| Campanula rotundifolia | Harebell | 8 |
| Agastache foeniculum | Lavender Hyssop | 8 |
| Zizia aurea | Golden Alexanders | 8 |
| Asclepias verticillaris | Whorled Milkweed | 8 |
| Helianthus hirsutus | Rough sunflower | 8 |
| Solidago canadensis | Canada Goldenrod | 8 |
| Asclepias syriaca | Common Milkweed | 8 |
| Iris versicolor | Blue Iris | 8 |
| Silphium perfoliatum | Cup plant | 8 |
| | Total | 128 |

Table 3 Native plants at Military Rd.

| Latin Name | Common Name | Quantity |
|---|---|---|
| Rudbeckia hirta | Blackeyed Susan | 38 |
| Solidago gigantea | Giant Goldenrod | 18 |
| Aster nova aenglia | New england aster | 20 |
| Aster laevis | Smooth aster | 5 |
| Aster colentangiense | Sky blue aster | 6 |
| Heliopsis helianthoides | False Sunflower | 27 |
| Monarda fistulosa | Beebalm | 69 |
| Anaphalis margaritacea | Pearly Everlasting | 12 |
| Rudbeckia laciniata | Cutleaf coneflower | 5 |
| Aquilegia canadensis | Wild columbine | 20 |
| Agastache foeniculum | Lavender hyssop | 41 |
| Anemone canadensis | Canada anemone | 20 |
| Helianthus stumosus | Woodland sunflower | 20 |
| Campanula rotundifolia | Blue harebell | 15 |
| Zizia aurea | Golden alexander | 15 |
| Silphium perfoliatum | Cup plant | 10 |
| Veronicastrum virginicum | Culver's root | 10 |
| Chelone glabra | Turtlehead | 20 |
| | Total | 371 |

Table 4 Native plants at County Rd. A

| Latin Name | Common Name | Quantity |
|---|---|---|
| Verbena hastate | Blue Vervain | 89 |
| Asclepias syriaca | Common Milkweed | 153 |
| Monarda fistulosa | Beebalm | 61 |
| Oenothera biennis | Evening Primrose | 55 |
| Aster nova aenglia | New england aster | 45 |
| Aster laevis | Smooth aster | 16 |
| Aster colentangiense | Sky blue aster | 16 |
| Silphium perfoliatum | Cup plant | 26 |
| Rudbeckia hirta | Blackeyed Susan | 64 |
| Campanula rotundifolia | Blue harebell | 20 |
| Zizia aurea | Golden alexander | 20 |
| Agastache foeniculum | Lavender hyssop | 32 |
| Veronicastrum virginicum | Culver's root | 32 |
| Asclepias verticillaris | Whorled milkweed | 64 |
| Coreopsis Lanceolata | Lanceleaf coreopsis | 43 |
| Heliopsis helianthoides | False Sunflower | 32 |
| Ratibida Pinnata | Yellow coneflower | 32 |
| Helianthus hirsutus | Rough sunflower | 32 |
| Chelone glabra | Turtlehead | 41 |
| | Total | 873 |

***Appendix 2 - Available media coverage links and event flyers***

http://www.lakelandtimes.com/main.asp?Search=1&ArticleID=31365&SectionID=13&SubSectionID=84&S=1

http://www.lakelandtimes.com/main.asp?Search=1&ArticleID=31091&SectionID=14&SubSectionID=93&S=1

http://www.lakelandtimes.com/main.asp?Search=1&ArticleID=30216&SectionID=13&SubSectionID=13&S=1

http://www.lakelandtimes.com/main.asp?Search=1&ArticleID=31257&SectionID=13&SubSectionID=84&S=1

www.vcnewsreview.com/threlakes/pollinator-program-offered-reiter-center-friday

# Free Workshop at the Forest Service Office

This Saturday!

500 Hanson Lake Road, Rhinelander

**10-11 AM** Presentation with
Optional **11-Noon** Hands-on Activities

## July 23 — Helping Pollinators and Other Wildlife

with featured speakers, Nicole Shutt (USDA FS) and Baerbel Ehrig (Oneida County Land & Water Conservation)

**Discover** the native wildlife that can serve as yard and garden helpers, from bumblebees that pollinate many of our crops, to predatory insects and bats that eat farm and forest pests.

**Learn** how to invite these critters to your landscape by providing foraging and nesting habitat.

**Get Inspired** by the successful Roadside Pollinator Habitat Improvement Project in Three Lakes.

**Experience** how to survey for pollinators at the Native Plant and Pollinator Program garden at the Forest Service Supervisors Office.

**Receive** a variety of free hand-outs and materials.

Mark Your Calendar for Upcoming Workshops in this Series:

August 13 — Rain Gardens and other Special Situations

August 27 — How to Control Non-native Invasive Species

September 24 — Collect Your Own Native Plant Seeds

Brought to you by The Rhinelander Greenspaces Project supported by the USDA Forest Service and other partners.

**Flyer 1 Rhinelander Greenspaces Project**

**Oneida County/Three Lakes Pollinator Partnership**
**presents**

# Pollinators in the Northwoods

**August 26, 2016**
**Reiter Center**
**1858 Michigan St., Three Lakes, WI 54562**

**9:00 am** ***"Pollinators: Who are they, what is their status, and what can we do to protect them?"***

**Dr. Christelle Guédot, UW Madison Dept. of Entomology**

**10:00 am** ***"Gardening with native plants for pollinators and other wildlife in the Northwoods"***

**Patrick Goggin, UW-Extension Lakes**

**10:40 am** ***"Roadside Pollinator Habitat Improvement Project"***

**Baerbel Ehrig, Oneida County Land & Water Conservation**

**11:00 am** **Pollinator garden tour with all speakers**

***This project made possible by a grant from Lumberjack RC & D***

**www.oclw.org • (715) 369-7835**

Flyer 2 Pollinators in the Northwoods

***Appendix 3 – Grant Payment Worksheets***