



MICHIGAN NATURAL SHORELINE PARTNERSHIP

Promoting Natural Shoreline Landscaping to Protect Michigan's Inland Lakes

Volume II, Issue 1

The Michigan Natural Shoreline Partnership Newsletter

January 1, 2012

2007 National Lakes Assessment – Michigan Results

by Ralph Bednarz, MDEQ Limnologist (Retired)

In the summer of 2007 the Michigan Department of Environmental Quality (MDEQ) participated in the first-ever baseline study of the condition of the nation's lakes. The U.S. Environmental Protection Agency (EPA)-sponsored National Lakes Assessment (NLA) Survey examined ecological, water quality and recreational indicators in lakes across the country. Using a statistical survey design, lakes were selected at random to represent the condition of the larger population of lakes across the lower 48 states. A total of 1,028 lakes were sampled for the NLA, representing about 50,000 lakes nationwide. In Michigan, 50 lakes were sampled; representing approximately 6,600 lakes ten acres in size statewide (**Figure 1**).

Field crews collected samples using the same methods at all lakes to ensure that results can be compared across the country, as well as statewide. MDEQ staff and U.S. EPA researchers analyzed thousands of measurements on the Michigan lakes, including water quality indicators such as nutrients, dissolved oxygen and chlorophyll-*a*; biological indicators such as phytoplankton and zooplankton; recreational indicators such as algal toxins and pathogens; and physical habitat indicators such as lakeshore and shallow water habitat cover.

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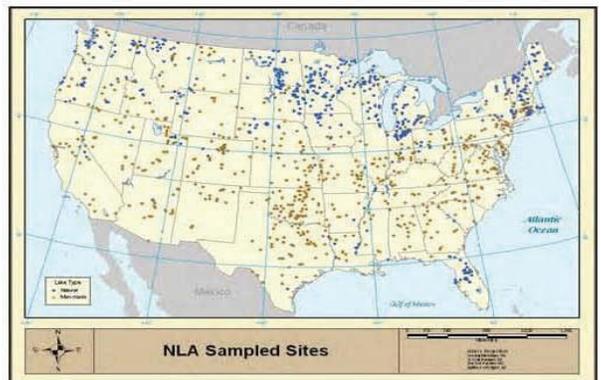


Figure 1. NLA Survey Lakes

News and Notes from the Facilitator

Compiled by John Skubinna, MNSP Facilitator

Certified Natural Shoreline Professional (CNSP) Training Will be Held In Grand Rapids

The Shoreline Partnership is excited to announce that the 2012 offerings of the CNSP training will include a course in Grand Rapids, Michigan. Coursework will occur on **February 21, 22, & 23** at the Kent Co. Extension Offices in Grand Rapids, and fieldwork will include construction of a demonstration project on the north shoreline of Crockery Lake at Grose Park in Ottawa County on **June 6**. Registration is now open for both 2012 CNSP courses in the UP and in Grand Rapids. Go to www.mishorelinepartnership.org for a copy of the registration form.

Michigan Nursery and Landscape Association and Michigan Turfgrass Foundation offer CNSP Continuing Education Credits at the 2012 Great Lakes Trade Expo

Six educational sessions have been approved by the Michigan Natural Shoreline Partnership's Contractor training committee for credit towards renewal of CNSP certification during the **Great Lakes Trade Expo** on **Jan. 9 and 10** at DeVos Place in Grand Rapids. Topics include basic soils and plant biology, use of plant material at the shoreline, and construction of buffers, filter strips and bio-swales. For more information about topics, speakers, and times, go to www.glte.org.

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News and Notes from the Facilitator

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MNSP Web Site has been Updated with a New Shoreline Demo Site Locator

MNSP web site has updated the shoreline demo site locator that allows you to search by location from a map of Michigan. Current photos of the demo sites have been added, as well. This web site will be used in the future to highlight demonstration sites, particularly on public properties, that are available to visit. This web site will help those shoreline educators and contractors looking to show interested individuals soft engineered shoreline projects to locate those in their area. To view the web site, select the ***Natural Shorelines in Michigan*** link on the MNSP web site.

The Shoreline Partnership Welcomes the Watershed Center Grand Traverse Bay as its Newest Voting Member

MNSP partners approved the membership request of the Watershed Center on November 22. The Watershed Center is a nonprofit organization that advocates for clean water in Grand Traverse Bay. Expressing their interest in soft engineering programs, Sarah U'Ren, Program Director, the Watershed Center, writes, *"The top two pollutants in our watershed are sediment and nutrients. Major sources of those are shoreline erosion and the lack of riparian buffers. Our [US EPA and DEQ approved watershed] plan outlines the need to protect and restore riparian buffers as one of the fundamental tools to protecting water quality in the lakes, rivers, and streams throughout the watershed."* Already a member of the Shoreline Educator Network, the Watershed Center joins our strong and growing membership in the Northern Lower Peninsula.

Q & A

Julia Kirkwood

DEQ - NPS Program

How can I find other MNSP Educators close to me?

One of the goals for the MNSP Outreach and Education Sub-Committee is to help make it easier for you to connect with other "MNSP Educators" around the state. It is also important to the sub-committee to build a network of "Educators" that the general public are able to contact when they have questions about natural shorelines. The intent is to have contact information available on the MNSP website. However, we recognize that not everyone that went through the "MNSP Educator Training" wants their contact information publicly available for a variety of reasons. So, to solve this problem, a letter was sent out over the summer asking each participant how they want to be involved. From these results we were going to be making three lists. One of these lists will be posted on the MNSP website for the public to view and will contain the contact information of those people that indicated they wanted to be contacted by the general public. A second list will be posted on the MNSP website in the password protected location so only other "MNSP Educators" can see it. The third list will be just for "internal use only" by the MNSP for communication of such items as this newsletter. These lists are still in progress. We have not had a response from everyone yet and we will be sending out a reminder to those folks soon. In the meantime, you may contact either John Skubinna (MNSP Facilitator) skubinnaj@michigan.gov or Julia Kirkwood (Co-Chair Outreach and Education Sub-Committee) kirkwoodj@michigan.gov

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What are the Key Findings of the National Lakes Assessment - Michigan?

(Continued from page 1)

Biological Health

The NLA-Michigan finds that 86% of Michigan’s lakes support healthy communities when compared to least disturbed “reference” sites (**Figure 2**) Another 10% of lakes are in fair condition, while only 3% are in poor biological condition. This rating is based on an index of phytoplankton and zooplankton taxa loss – the percentage of taxa observed (O) compared to those that are expected (E), based on conditions at least-disturbed “reference” lakes.

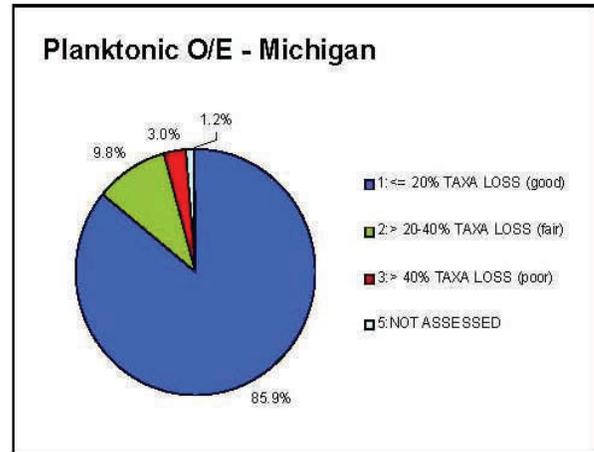


Figure 2. Biological Condition of Michigan Lakes

Lake Condition Stressors

The survey measured a set of key stressors to lake condition to determine their extent across the nation as well as statewide. Each lake stressor or indicator was classified as either “good”, “fair”, or “poor” relative to the conditions found in the set of “reference” sites established for the NLA survey.

Similar to the national estimates, the most wide spread stressors measured in Michigan lakes are related to habitat. **Figure 3** shows the percentage of lakes in Michigan that assessed as poor (i.e. less than 5% of the low end of the NLA “reference” lakes distribution) for each of the key stressors measured during the NLA survey. By far, lakeshore habitat and physical lakeshore complexity are major stressors for Michigan lakes. Nutrients and turbidity show lesser but significant impact, while salinity/conductivity, acid neutralizing capacity, and dissolved oxygen stressors as measured in the NLA are minor in Michigan lakes statewide.

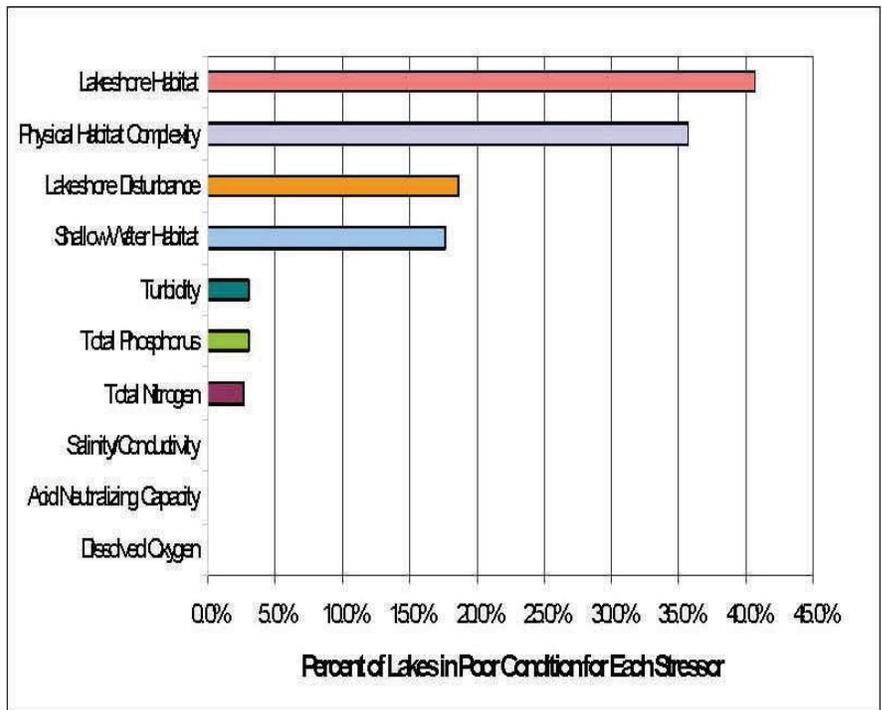


Figure 3. Extent of Stressors in Michigan Lakes

Trophic Condition

Another approach the NLA used to assess the condition of lakes is in respect to their primary biological productivity, or trophic status.

What are the Key Findings of the National Lakes Assessment - Michigan?

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Figures 4 and 5 illustrate the trophic status distribution in Michigan lakes compared to lakes across the nation and lakes in the Upper Midwest (UMW) eco-region based on chlorophyll-*a* and total phosphorus indicators. These results indicate that 83-84% of Michigan lakes are low (oligotrophic) to moderately (mesotrophic) productive and less than 4% exhibit excessive biological productivity (hypereutrophic).

Recreational Condition

An important aspect of lake health includes suitability for public use and recreation. As part of the NLA, three indicators of potential risk from harmful algae were evaluated, including microcystins, an algal toxin; cyanobacteria, a type of algae (blue-green algae) that can produce algal toxins; and chlorophyll-*a*, a measure of all algae present.

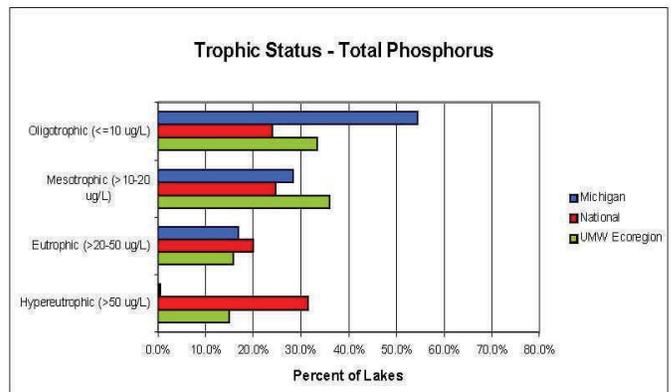
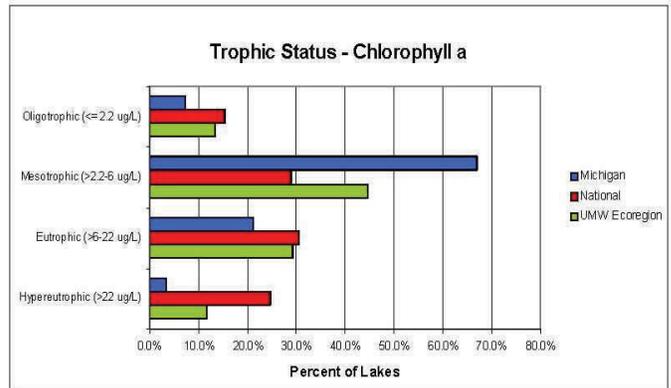
Results for Michigan show that microcystins levels were present in about the same percent of lakes as they are nationally (approximately 30% for all lakes), but slightly greater than found in the UMW eco-region lakes (Fig. 6). However, for each of the indicators of risk, Michigan lakes showed a lower percentage of lakes in the moderate risk category when compared to the nation and UMW eco-region results and no lakes in the high risk category.

The thresholds (low, moderate, and high risk) associated with each indicator of potential risk are based on the World Health Organization criteria as indicated in Table 1.

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Table 1. World Health Organization Thresholds of Risk Associated with Potential Exposure to Cyanotoxins.

| Indicator (units) | Low Risk of Exposure | Moderate Risk of Exposure | High Risk of Exposure |
|---------------------------------|----------------------|---------------------------|-----------------------|
| Chlorophyll- <i>a</i> (ug/L) | < 10 | 10 - < 50 | > 50 |
| Cyanobacteria cell counts (#/L) | < 20,000 | 20,000 - < 100,000 | ≥ 100,000 |
| Microcystin (ug/L) | < 10 | 10 - ≤ 20 | > 20 |



Figures 4 and 5. Trophic Condition of Michigan Lakes (Chlorophyll-*a* and Total Phosphorus indicators)

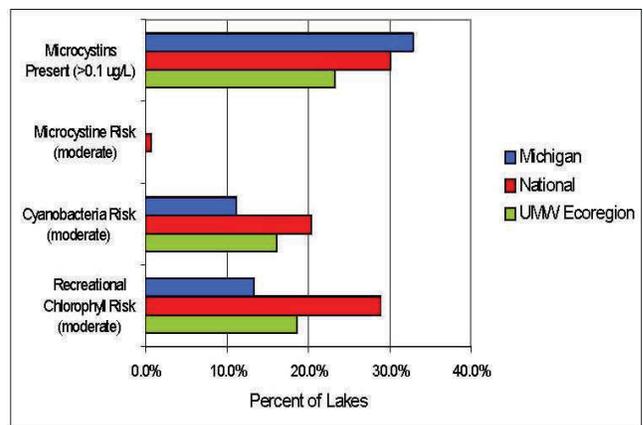


Figure 6. Recreational Condition (Harmful Algae Risk) of Michigan Lakes

What are the Key Findings of the National Lakes Assessment - Michigan?

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Chemical Condition

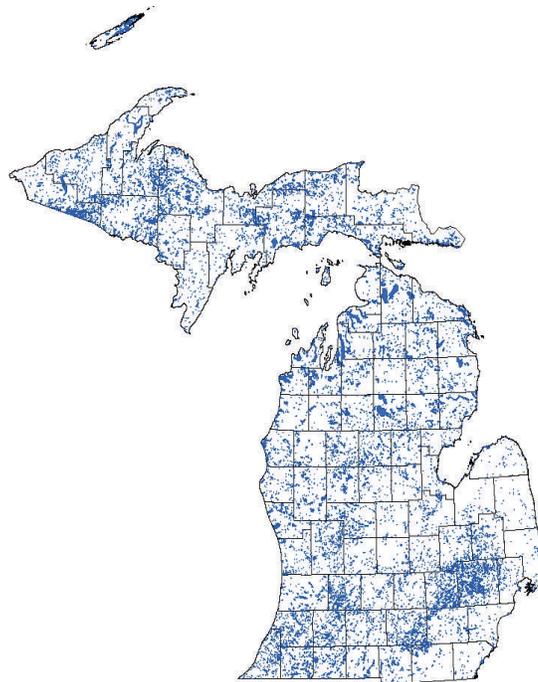
The chemical condition of Michigan and UMW eco-region lakes is a consequence of their glacial origin and Great Lakes basin geology. The dominant limestone geology and thick glacial deposits in Michigan's Lower Peninsula and eastern Upper Peninsula establishes the base chemistry and buffering capacity for the mostly hard-water lakes in this region while the Canadian Shield igneous bedrock and sandstone geology of the western U.P. creates a much different water chemistry pattern with a greater percentage of soft-water lakes. Water concentration of total phosphorus in Michigan lakes is low as compared to all UMW eco-region lakes while total nitrogen concentration is similar. Chlorophyll-*a* levels are also lower for Michigan lakes as compared to all lakes in the UMW eco-region. The relative phosphorus-rich to phosphorus-poor south to north lakes distribution pattern previously found for the Lower Peninsula is reinforced by the NLA results. Michigan's Upper Peninsula lakes show a more variable pattern for nutrients. These patterns are mirrored by the chlorophyll-*a* results.

Next Steps

The next round of the NLA Survey is scheduled for summer 2012. The MDEQ will again participate in the survey and likely conduct a state-scale assessment to add to the 2007 NLA-Michigan findings.

For more information on the NLA Survey see: http://water.epa.gov/type/lakes/lakessurvey_index.cfm; and the **Michigan National Lakes Assessment Project: Summary of Results** Project Report (Bednarz 2011)

Reported by Ralph Bednarz, Limnologist, Michigan Department of Environmental Quality (Retired)



Q & A

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TKU: Tool Kit Update

Presentations:

As you know, there are seven Power Point presentations available for the Educator Network to use. Each one goes along with a chapter in the MNSP Property Owner Guidebook. We will be working over the winter to update the presentations to correct any errors or provide additional information. The first presentation that is being worked on is *Chapter 7: Rules and Regulations*. There have been some changes to the permit so we want to make sure that this presentation provides that information. Some of the slides will also have a new look to make them more “user friendly”. When the presentations are re-posted on the website a version/date will be put in the file title so you will know if you have the correct version or not. In the meantime, if you have any specific corrections, suggestions or comments for the other presentations, please forward those to Julia Kirkwood kirkwoodj@michigan.gov .

Landscaping for Water Quality Booklet

One piece of the overall “MNSP Toolkit” is the “**Landscaping for Water Quality Booklet**” that was originally produced almost ten years ago now! It is a very popular booklet in need of an update which is currently in progress. The DEQ-Non-Point Source Program has awarded the **Van Buren Conservation District** a small grant with one of the tasks being to assist in the production of this new version. The booklet will have the same general message but have a more inviting and appealing layout. In addition, it will have some new graphics to better illustrate the overall content and message. While the grant will only be able to provide a small number of printed copies, the booklet will still be available for free download on the DEQ Non-Point Source website. This update is expected to be completed by the end of summer 2012.

Links to Webcasts

We have posted two links to webcasts you might be interested in. You can find these links in the MNSP Library on the website. Both of these have archived versions, a MP4 version and a Power Point presentation for your learning enjoyment.

"Healthy Lakeshores Through Better Shoreline Stewardship", July 15, 2010 by Fred Rozumalski, Landscape Ecologist, Barr Engineering Company; Liesa Lehmann, Waterway Protection Section Chief, Wisconsin Department of Natural Resources; and Barbara Welch, Outreach Coordinator, Land & Water Bureau, Maine Department of Environmental Protection.

Description: This exciting webcast was in honor of Lakes Appreciation Month held to encourage folks to learn about improving lakeshore habitat through better shoreline stewardship. Experts from Minnesota, Wisconsin and Maine share innovative local and statewide lakeshore protection initiatives, touching on both voluntary and regulatory measures. All those who care about lakes—lake and homeowner associations, natural resource agencies, state and local governments, fishermen/women, realtors and others—are invited to learn about threats to our freshwater lakes and ways to make a difference.

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Q & A

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"[National Lakes Assessment: Reporting on the Condition of the Nation's Lakes](#)", January 5, 2010 by Sarah Lehmann, Team Leader for National Aquatic Resource Surveys, Monitoring Branch, EPA's Office of Water and Neil C. Kamman, Chief, Water Quality Monitoring, Assessment and Planning, Vermont Department of Environmental Conservation. This webcast will focus on the first-ever assessment of the condition of the nation's lakes - the U.S. EPA sponsored National Lakes Assessment. The final report shows that 56% of the nation's lakes support healthy biological communities. The report also identifies poor lakeshore habitat conditions and high levels of nutrients as widespread stressors impacting lake water quality in the United States.

Tune into this webcast to learn more about the National Lakes Assessment (NLA), which is the latest in a series of surveys of the nation's aquatic resources being conducted by EPA and its state and tribal partners. The NLA provides unbiased estimates of the condition of natural and man-made freshwater lakes, ponds and reservoirs greater than 10 acres and at least one meter deep. Using a statistical survey design, 1,028 lakes were selected at random to represent the condition of the larger population of lakes across the lower 48 states. The NLA presents data on the extent of lakes that support healthy biological communities, selected stressors impacting lake quality, and information on recreational indicators of lake condition such as microcystin, an algal toxin which can harm humans, pets, and wildlife. The NLA also reports on lake trophic status and includes comparisons of current data to 1972 data on wastewater-impacted lakes.



Save the Dates ! Michigan Lake and Stream Associations

51st Annual Conference

Boyne Mountain Resort
Boyne Falls, Michigan

*Friday & Saturday
April 27th & 28th, 2012*



Conference Topics

- Developing a First Order Lake Management Plan
- Inland Lakes Management
- Inland Lake Fisheries Assessment and Classification
- Lake Friendly Shoreline Management Techniques
- Annual Michigan Riparian Rights Review
- The Role of Townships in Inland Lake Management
- Lake Friendly Planning and Zoning Ordinances
- Cold Water Streams Habitat Management

Conference Registration

For more information about the ML&SA
51st Annual Conference and /or to register
point your browser toward:

www.mymlsa.org



2nd Annual
 Shoreline and Shallows Conference
 "Climate Change and Lakeshore Landscaping"

Wednesday, March 7, 2012; 9-4 pm
 Kellogg Hotel & Conference Center
 Michigan State University
 East Lansing, Michigan

To Register: www.mishorelinepartnership.org

Featured Topics:

Climate Change in the Great Lakes

Shoreline Plant Selection Research and Case Studies

Low Impact Development Techniques for Shoreline Properties

Local Ordinances Affecting Shoreline Development

Certified Natural Shoreline Professional continuing education credits can be earned towards renewal of your certification

Directions and Lodging information available at www.kelloggcenter.com

Registration Fee: \$35; Questions: Contact Lois Wolfson, wolfson1@msu.edu, 517-353-9222

Conference Sponsors and Endorsements



[To register for the 2nd Annual Shoreline and Shallows Conference, click here](#)

Michigan Certified Natural Shoreline Professional (MCNSP) 2012 Training and Certification Opportunities

Upper Peninsula

Comfort Inn
Manistique, Michigan

Classroom Dates
March 21, 22 & 23, 2012

Field Exercise Date & Location
June 13, 2012
South Manistique Lake
Curtis, Michigan

Lower Peninsula

MSU Kent County Extension Office
775 Ball Avenue NE
Grand Rapids, Michigan

Classroom Dates
February 21, 22 & 23, 2012

Field Exercise Date & Location
June 6, 2012
Crockery Lake
Ottawa County

To register for one of these 2012 training and certification events, [click here](#) to download a CNSP registration form or contact Michigan Nursery and Landscape Association Executive Director Amy Frankmann at e-mail: amyf@mmla.org .

Michigan Natural Shoreline Partnership

Promoting natural shoreline landscaping to protect Michigan's inland lakes



John Skubinna
Facilitator
DEQ
Constitution Hall
525 West Allegan
Lansing, MI 48913
517-241-8370
skubinnaj@michigan.gov

Principal Contacts

Jane Herbert
MSU Extension
Kellogg Biological Station
3700 East Gull Lake Drive
Hickory Corners, MI 49060
269-671-2412 x-260
jherbert@anr.msu.edu



www.mishorelinepartnership.org