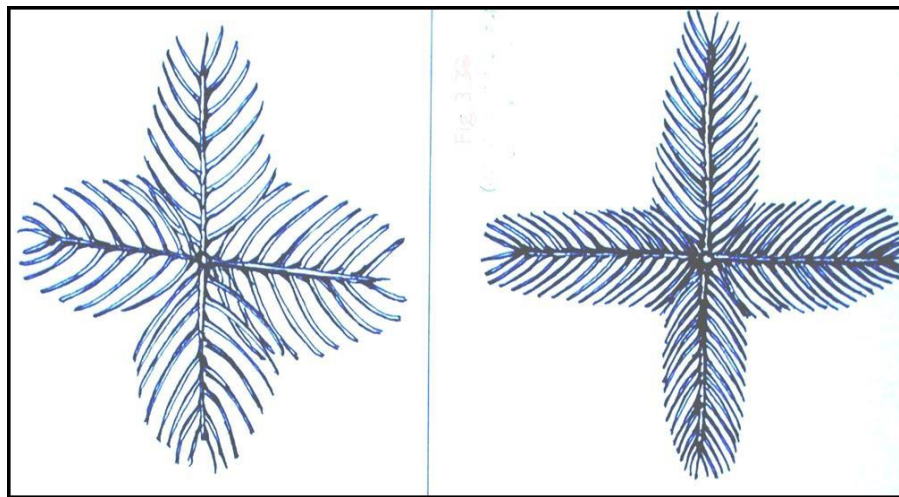


EXOTIC AQUATIC PLANT WATCH

Introduction

Rooted aquatic plants are a natural and essential part of the lake, just as grasses, shrubs and trees are a natural part of the land. Their roots are a fabric for holding sediments in place, reducing erosion and maintaining bottom stability. They provide habitat for fish, including structure for food organisms, nursery areas, foraging and predator avoidance. Waterfowl, shore birds and aquatic mammals use plants to forage on and within, and as nesting materials and cover. However, sometimes a lake is invaded by an aquatic plant species that is not native to Michigan. Some of these exotic plants, like Curly-leaf Pondweed, Eurasian Milfoil, Starry Stonewort and Hydrilla can be extremely disruptive to the lake's ecosystem and recreational activities.



Stem cross sections at a leaf node of a typical native milfoil (left) and Eurasian milfoil, an invasive, non-native plant (right). Note that Eurasian milfoil has more leaflets on each leaf than native milfoils. Eurasian milfoil generally has more than 12 leaflets on one side of the leaf's central axis, while native milfoils have fewer than 12.

To avoid a takeover by exotic plants, it is necessary to use Integrated Pest Management (IPM) strategies: monitoring, early detection, rapid response, maintenance control and preventive management. For more information on these strategies, check out Integrated Pest Management for Nuisance Exotics in Michigan Inland Lakes (MSU Extension Water Quality Publication WQ-56, available electronically at <https://micorps.net/lake-monitoring/clmp-documents/> .

The purpose of this monitoring project is to provide lake communities with a strategy for monitoring for extremely troublesome exotic aquatic plants, so the community can detect early infestations of these disruptive species. If detected early the community can use IPM strategies

to reduce the probability that the exotic infestation will cause significant disruptions to the lake ecosystem and recreational uses. Monitoring by the lake community is recommended even if a professional plant management company has been hired. Independent monitoring will help the community verify the success of plant management efforts and identify future needs.

If exotic plant populations are found early before they become widespread around the lake, rapid response to the infestations will improve the options for management. The cost for treating small infestations will be considerably less than waiting until the exotic, invasive plants are covering large areas of the lake.

Volunteer participants are trained to identify select exotic aquatic plants of concern for Michigan lakes: currently, curly-leaf pondweed, Eurasian milfoil, starry stonewort and Hydrilla. Using a GPS unit, volunteers survey their lakes and map the location of any exotic plant beds with the GPS unit, or by hand.

Training

Training is required for this parameter. Michigan State University will be hosting a training session for this annual spring Michigan Lakes and Streams Association conference.

At this training, volunteers will receive training in exotic plant identification, detailed instruction on the sampling procedures, and have a chance to ask questions about invasive plant monitoring and management with experts and volunteers from other lake communities.

Equipment Checklist

- boating safety equipment and anchor
- copy of these monitoring procedures
- copy of data form
- plant identification guides (*A Michigan Boater's Guide to Invasive Aquatic Plants*, [MSU Extension E-31891], and other supplemental materials)
- a depth map of the lake
- global positioning system (GPS) unit (optional)
- camera (digital preferred)
- weighted sounding line
- weighted rake and retrieving line (see Appendix)
- zip-lock bags, and marker for labeling
- trash bags
- clipboard
- pencil or indelible ink pen

Sample Collection

Collect your samples on the first available day in mid-June to early-July that the weather is

good. (Additional surveys later in the summer can be conducted, but are not required.) On the chosen monitoring day, prepare the boat, safety equipment, monitoring equipment, and supplies. If the lake to be monitored is large, multiple sampling teams may be needed or one sampling team may require several days.

Develop a systematic procedure for covering the lake from shore out to the 15-foot depth contour (in most lakes, rooted aquatic plants do not grow well in water deeper than 15 feet). Space sampling locations evenly across the lake to get good coverage. Also, be sure to sample in areas where there is a high likelihood that invasive species could be introduced to your lake, including near boat launches, marinas, and stream inlets that connect to lakes upstream.

To sample, carefully toss your collection rake into the water and pull up plants. (Instructions for building your own rake are on page 48.)

Be sure to also look around the area for plants you may not have collected with your rake. While moving around your lake, collect plants and compare them with the identification guides. If you find an exotic plant, use your GPS unit to identify the colony's coordinates. (*You may use your unit's default coordinate system, but if possible, report coordinates in decimal degrees.*)

Also, use pencil or indelible pen to mark the location of the plant on a paper lake depth map. Use a numbering system to identify each location on the map, and on a separate sheet identify each numbered location's GPS coordinates and the species found there.

(Alternatively, use your GPS coordinates and Google Maps or Google Earth online to create a map. For more information on using Google Earth visit the following links for "marking places" (earth.google.com/userguide/v4/ug_placemarks.html) and "Importing data from GPS devices" (<https://support.google.com/earth/answer/148095?hl=en>).)

If you find a plant that you are uncertain about, you can send a small sample of the plant to Michigan State University. Take a six-inch piece of the plant, pat it dry but not completely dry, wrap in slightly damp paper towel, and place in a small plastic bag. Contact MSU support staff prior to sending plant samples for mailing instructions and timing (contact information on page 2). Your samples will be identified and you will be contacted with the results.

Do not throw exotic aquatic plants that you collect on your sampling rake back into the lake. Keep the plants in the bottom of the boat, or place in trash bags, and dispose when you return to shore.

Continue sampling and locating exotic plant colonies until the entire lake has been sampled. If time permits you may want to do two surveys, one in early summer (mid-June to July) and a second in late summer (September).

Photographs

Photographs are an excellent way to document the plants you find. When photographing plants, it helps to lay the plant on a light-colored background, with the leaves spread out so that distinguishing features can easily be seen (leaf shape, size, number of leaflets, etc.). If you are unsure of the identity of a plant, a few good photos could eliminate the need to ship actual specimens to MSU for identification; instead, a quick email with a few digital photos may be sufficient for expert identification, and a faster response. Photographs of plants from your lake can also be a useful tool for educating neighbors and members of your lake community about the plants that are found in your lake, and a good reference for you for future surveys.



A volunteer on Murray Lake (Kent County) removes aquatic plants from a sampling rake while conducting the Exotic Aquatic Plant Watch. Volunteers learn to survey their lakes for invasive plants that can adversely impact lake health (MiCorps photo by Angela De Palma-Dow).

Monitoring Report

Volunteers with the exotic aquatic plant watch should create a monitoring report. Use the Exotic Aquatic Plant Watch data sheet as the cover for your report. Complete the data sheet and attach your lake map or Google Earth map and GPS coordinate sheet. You may also wish to include photographs or other supporting materials.

Please note – **a report should be completed even if no exotic plants are found.** Simply fill out the Exotic Aquatic Plant Watch data sheet and indicate that the survey was conducted, but no exotic plants were found.

When your report is complete, send a copy to the contact listed on the Exotic Plant Watch data sheet. You may send a paper copy, or provide an electronic copy via email. Be sure to keep a complete copy of the report for your own records!

Quality Assurance/Quality Control

As part of the quality assurance/quality control (QA/QC) process for this parameter, you may be asked to submit plant samples, or staff may coordinate with you to conduct side-by-side sampling on your lake. If your lake is selected for the QA/QC process, you will be contacted directly.