Michigan’s 2020 Lake Monitoring
Michigan Clean Water Corps

MiCorps
Monitoring Michigan’s Water Quality

www.micorps.net

Cooperative Lakes Monitoring Program
The CLMP is on hiatus until 2021, but there are lake monitoring options for the summer of 2020.

Monitoring and Coronavirus

• Don’t be silly. Follow State Guidelines
  https://www.michigan.gov/coronavirus/
Water Transparency & Secchi Disk
Water clarity provides clues to your lake

![Bar graph showing water depth measurements for May, July, and September. The graph indicates that the water depth is deepest in May and shallowest in July and September.](image)
Water clarity changes over time

- 40 year data record
- CLMP and EPA

![Graph showing water clarity changes over time with management action at 1980]
Perch Lake (Otsego Co.), 690150
Water Clarity Impacts Property Values

• Lakes with 3 feet greater clarity have 2.6% - 6.5% higher property values

• A one meter decrease in minimum clarity can cause a 3.3 – 8.5% decrease in property values

Boyle et al. 2003
How it works

- **Secchi disk**
- Clear water
- Cloudy water
The Protocol
1. Drift your boat approximately over the deepest part of the lake

2. Slowly lower disk until it disappears from view
2. Slowly raise disk until it reappears
3. The official measurement is the average of the 2 depths.
Don’t use sunglasses!
Pick the shadow side!

Yes!

No!
Measure between 10 am and 4 pm
8 measurements required across entire summer

Evenly space monitoring through May - Sept

Seasonal Succession of Lake Algae in a Mesotrophic Lake

Abundance

Winter | Spring | Summer | Fall | Winter

Credit: Water on the Web
**SECCHI DISK TRANSPARENCY**

2020 Data Form

<table>
<thead>
<tr>
<th>WEEKLY SAMPLING INTERVAL</th>
<th>DATE SAMPLED</th>
<th>TIME OF DAY</th>
<th>SECCHI DEPTH (to nearest 1/4 foot)</th>
<th>WEATHER CONDITIONS (sunny, cloudy, windy)</th>
<th>UNUSUAL CONDITIONS (secchi disk is on bottom of lake, heavy rain, boating, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 10-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 17-23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 24-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 31-June 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 7-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 14-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 21-27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 28-July 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 5-11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 12-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the box below draw an outline of your lake (i.e. lake map)

On the lake map outline, mark your Secchi disk sampling location (this should be at the deepest basin in the lake) and write in the total LAKE DEPTH at this location.

Surface Area of Lake (if known): ________________ (acres)

---

DATA SHEET TURN IN

Hold onto your datasheet. It is our intention to get these uploaded into the new MiCorps database in 2021.
Important 2020 Information

• No registration required
• No enrollment fees
• We will provide technical support
• Datasheets found here:
  • hrwc.org/what-we-do/programs/2020-lake-monitoring/
• Hold onto your datasheets!
  • Hopefully, we will incorporate them into the new database
• If you need a Secchi Disk – visit MLSA
  • mymlsa.org/2020-volunteer-lake-monitoring-for-michigan/
• Procedures and training videos found here:
  • hrwc.org/what-we-do/programs/2020-lake-monitoring/
MICHIGAN'S 2020 LAKE MONITORING PROGRAM PRESENTS

Exotic Aquatic Plant Watch

REGISTER TODAY!
EAPW is an Early Detection Survey

- The earlier you find an invasive species, the better the chance of eradication
- Early intervention typically means lower management costs
Where do I start?

1. Locate:
   1) Boat Ramps
   2) Public Beaches / Parks
   3) Attached inlets (streams, creeks, canals)
   4) Quiet Bays and Coves
Early Detection Surveys are Adaptable!

How many transects?
- Less than 100 acres
  - 5-15 transects
- 100 – 500 acres
  - 15-30 transects
- Over 500 acres
  - 30-50 transects
- At the very least high priority areas
Sample different depths along an imaginary transect.

- ~15 ft deep
- ~8 ft deep
- ~3 ft deep

Transect #1

Sheridan Twp Boat Ramp
When to sample?
Fill out the data sheet


EXOTIC AQUATIC PLANT WATCH

Lake Name: ___________________________ County: ___________________________
Township: ___________________________
Lake Sampling Site (Field ID) Number: ___________________________
 Volunteer Monitor Name(s): ___________________________
 Date(s) of Survey: ______________ Time: ______________
 Comments (unusual conditions, recent weed treatments, etc.): ___________________________
If no exotic aquatic plants were found during the survey, check here: [ ]
Use Page 2 to document the locations you surveyed on your lake.

If exotic plants were found, check the species found below:

☐ Eurasian milfoil
☐ Curly-leaf pondweed
☐ Hydrilla

☐ Starry Stonewort
☐ European frog-bit
☐ Other ________________

Include the following items in your report:

☐ This completed data form (Pages 1 and 2)
☐ Lake map with numbered site locations
☐ Any photographs taken of collected plants

Email this data form as a PDF to Jo Latimore at latimor1@msu.edu,
Or mail a copy to:

Dr. Jo Latimore, MSU
480 Wilson Rd Room 13
East Lansing, MI 48824
Use this table to document the results of your survey. You may also create your own table; just be sure to include a copy in your Survey Report.

<table>
<thead>
<tr>
<th>Site / Transect #</th>
<th>Latitude</th>
<th>Longitude</th>
<th>List any exotics found in this transect (or “None”)</th>
<th>Any photos taken at this site?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>43°40′16.34N</td>
<td>89°15′48.24W</td>
<td>CLP, EWM</td>
<td>Yes (2)</td>
<td>Sparse</td>
</tr>
<tr>
<td>2</td>
<td>43°40′21.38N</td>
<td>89°15′47.02W</td>
<td>None</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Mapping Options: By Hand
Mapping Options: Computer
Mapping Options: Google Maps
Plant Identification Photography

- Take lots of pictures
  - Delete blurry photos
- Include key characteristics
  - Ex.) milfoil leaflets
- Scale
- Location
Use photography guide

Volunteer photos:
(Left) Lotus & Maceday Lake in Oakland Co.
(Top) Bristol Lake in Barry Co.
No ruler? A hand will do!
Exotic Aquatic Plant Watch

Registration is required in 2020

- Contact Jo Latimore
  latimor1@msu.edu
  517-432-1491

- Provide:
  - Your name and contact info
  - Lake name
  - County

- We provide training, plant identification help, and limited lake visits
Plant Identification

Leaflet

Leaf
The key to **Early Detection**?

*Know the Exotics!*

- Eurasian Watermilfoil
- Curly-leaf Pondweed
- Starry Stonewort
- Hydrilla
- European Frog-bit
EAPW Watch List Species
Eurasian Watermilfoil— *Myriophyllum spicatum*

Key Characters:
- Feather-like leaves
- Whorled
- Leaves with **12 – 21** pairs of leaflets
- Leaves limp out of water
What about “Hybrid Milfoils”??
Is this Eurasian Milfoil?

Eurasian watermilfoil
EAPW Watch List Species
Curly-leaf Pondweed – *Potamogeton crispus*

Key Characters:
- Leaves 2-3 inches long and ¼ to 3/8 inch wide
- Alternate leaf arrangement
- Serrated leaf margin
Is this Curly-leaf Pondweed?

*Potamogeton crispus*
curly pondweed
Photo by Frank Koshere
EAPW Watch List Species
Starry stonewort – *Nitellopsis obtusa*

- Tiny star-shaped, tan or white **bulbils** produced on rhizoids (clear filaments)
- Long, **uneven** length branchlets
- Smooth stem
- Brittle
STARRY LOOK-A-LIKE: NATIVE MUSKGRASS (CHARA)

- Macroalgae
- No **star** bulbils
- “Smells skunky”
- Shorter ‘branching’ (i.e. reach) of the plant compared to Starry
- Rough feel

No Smell? Then it might be Starry!
STARRY LOOK-A-LIKE:  NATIVE Nitella

- Macroalgae
- No star bulbils
- Even branching
- Shorter ‘branching’ (i.e. reach) of the plant compared to Starry
**HYDRILLA**

*Hydrilla verticillata*

- Whorls of 4-8 leaves around the stem
- Serrated leaf edge
- Teeth are also produced underneath the leaf, along the midvein

Illustration by Bruce Kerr
Is this Hydrilla?

Native: Elodea
Hydrilla (exotic)  Elodea (native)

Leaves margins clearly toothed and spines on mid vein.

Leaves margins not clearly toothed and no spines on mid vein.
NEW THREAT:
EUROPEAN FROG-BIT
Hydrocharis morsus-ranae

- First discovered in 1996 in Southeast Michigan
- Currently predominantly in Great Lakes wetlands
- High threat to our inland waters
EUROPEAN FROGBIT

*Hydrocharis morsus-ranae*

- **Free-floating rosette**, roots hang below
- Small, heart-shaped leaves (2-3”)
- Small, white flower, 3 petals
EUROPEAN FROG-BIT IDENTIFICATION

- Narrow-leaf cattail
- European Frog-bit
- White Water Lily
Is this European Frog-bit?

White Water Lily

Yellow Water Lily or Spadderdock
Is this European Frog-bit?

Floating-leaf pondweed

Water Shield
WATCH FOR THESE
Aquatic Invaders!

**HYDRILLA**
Leaves are whorled in groups of 4-9.
Leaves are rough and have visible saw-toothed margins.

**WATER CHESTNUT**
Green, floating leaves with sharply serrated edges.
Small, white 4-petaled flowers.

**BRAZILIAN ELODEA**
Generally 4 leaves per whorl.
Submerged.

**EUROPEAN FROGBIT**
Leathery, heart-shaped leaves.
Free-floating.
Leaf size 1½ - 2 ¾ in. across.

**WATER HYACINTH**
Rounded, shiny green leaves with spongy stalks.
Lavender flowers with central yellow fleck.
Free-floating.

**WATER SOLDIER**
Leaves are 16 in. long, sword-shaped, sharply serrated edges, bright green.
Leaves may be emergent or submerged.

**WATER LETTUCE**
Free-floating – forms a rosette of leaves that resembles an open head of lettuce.
Fuzzy light green leaves with long foliage roots.

**PARROT FEATHER**
Spikes of stiff, feathery leaves grow in whorls of 4-6.
Bright green upper stem emerges up to 1 foot above water.

**EUROPEAN WATER CLOVER**
Reminisces a four leaf clover.
Leaves are smooth and can be floating, submerged, or emergent.
Leaf size up to 1 in. across.

**YELLOW FLOATING HEART**
Flowers are bright yellow with 5 petals.
Leaves are 2-4 in. across with scalloped edges.

These 3 species are legal for sale and possession. Please only report sightings outside of cultivation.

For more information and to report sightings, visit michigan.gov/invasives
Check out our training video!

https://youtu.be/-i7 IvA7gK-I
Questions?

Dr. Jo Latimore
• 517-432-1491
• latimor1@msu.edu

Erick Elgin
• 231-928-1053
• elgineri@msu.edu