## Welcome to MiCorps Cooperative Lakes Monitoring Program's Annual Training.

 For CLMP procedures and data forms please visit: micorps.net/lake-monitoring/clmp-documents/ and then click on the name of the parameter.

#### Today's Agenda:

9:00 AM – 9:30 AM	Welcome and Introduction to CLMP
9:30 – 10:00 AM	Secchi Disk
10:00 - 10:15 AM	BREAK
10:15 – 10:45 AM	Spring and Summer Phosphorus
10:45 AM – Noon	Dissolved Oxygen & Temperature
Noon – 1:00 PM	Lunch Break
1:00 – 2:00 PM	Score the Shore
2:00 – 3:00 PM	Chlorophyll-a
3:00 – 3:15 PM	BREAK
3:15 PM – 4:30 PM	Exotic Aquatic Plant Watch

#### **Getting Started**

- Audio is through your computer speakers or headset:
   You may not hear sound until training begins.
- Use the **Audio Settings** option to do a sound check.
- During the webinar if you do not hear audio, make sure your sound is turned on then contact the **Help Desk.**



#### **How to Ask Questions**

Click on the Chat Icon to submit a question to the presenters.

#### **Help Desk**

Call the MSU Distance Learning Help Desk 844-678-6200 for technical support.





## Training Agenda

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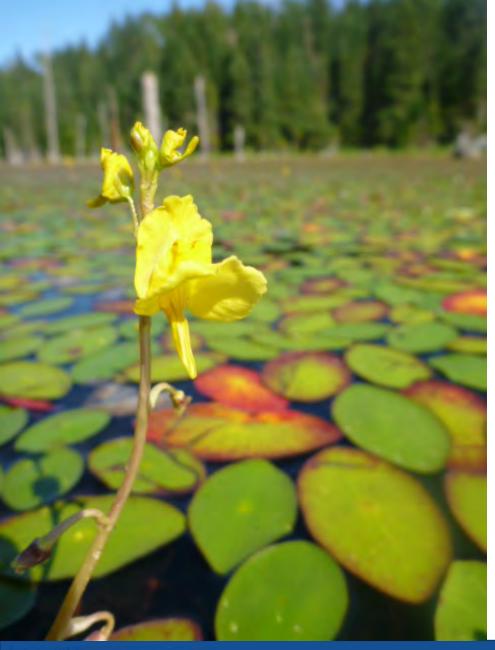


## **Exotic Aquatic Plant Watch**

Erick Elgin and Jo Latimore







## Erick Elgin

#### Contact:

- 218-340-5731
- elgineri@msu.edu









## Jo Latimore

#### Contact:

- 517-432-1491
- latimor1@msu.edu

MICHIGAN STATE U N I V E R S I T Y











## **AQUATIC INVASIVE PLANTS**















## **Proactive Approach: Prevention**



**Mobile Boat Wash** 



Educational Materials and Resources



Clean Boats, Clean Waters
Grants



About

HELP KEEP MICHIGAN'S WATER PURE







## Prevention is not guaranteed

#### Popular lake closed due to infestation

Lake Manitou has been infested and closed to boating and fishing activities, possibly for years

Bud Fields Mar 1, 2007





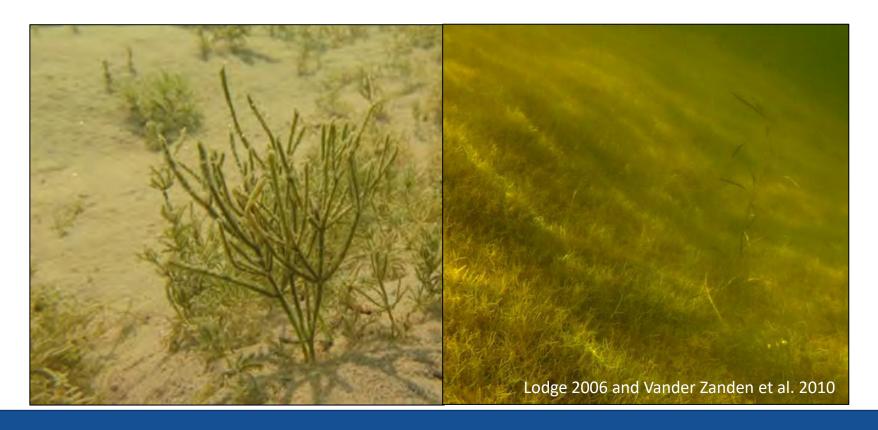




## The next line of defense: Early Detection

Early Detection Goal: maximize the potential for eradication

The sooner you can detect the better







## **Early Detection Programs**

- 1. Focus on most probable invaders
- 2. Target high risk areas for new invasions
- 3. Require continuous monitoring









## Michigan's Early Detection Monitoring

**MiCorps** 

**Cooperative Lakes Monitoring Program** 

# Exotic Aquatic Plant Watch

Visit MiCorps.net

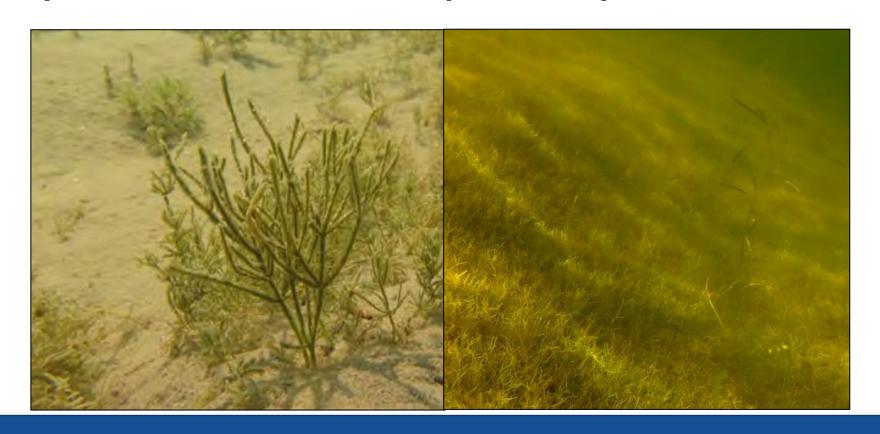






# Why get involved with the Exotic Aquatic Plant Watch?

Early Detection and Rapid Response Works!







# The key to **Early Detection**? Know the Exotics!

- Eurasian Watermilfoil
- Curly-leaf Pondweed
- Starry Stonewort
- Hydrilla
- European Frog-bit



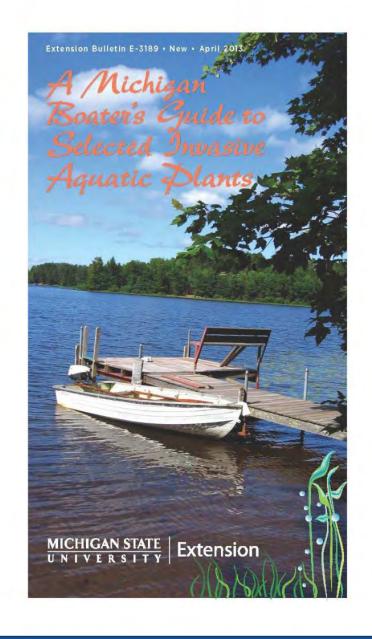




Additional copies available for \$13.30
(or free download)
through the
MSU Extension Bookstore

http://shop.msu.edu

Search for "E3189"







### Video!

- Program description
- ID tips and tricks
- Sampling protocol
- On the "Lake Training" page on <u>www.micorps.net</u>, and our YouTube channel!















# Established Aquatic Invasive Plants in Michigan

Eurasian milfoil

Myriophyllum spicatum



Curly-leaf pondweed

Potamogeton crispus



Starry stonewort

Nitellopsis obtusa







### Recent invaders

Hydrilla Hydrilla verticillata



### European Frog-bit

Hydrocharis morsus-ranae

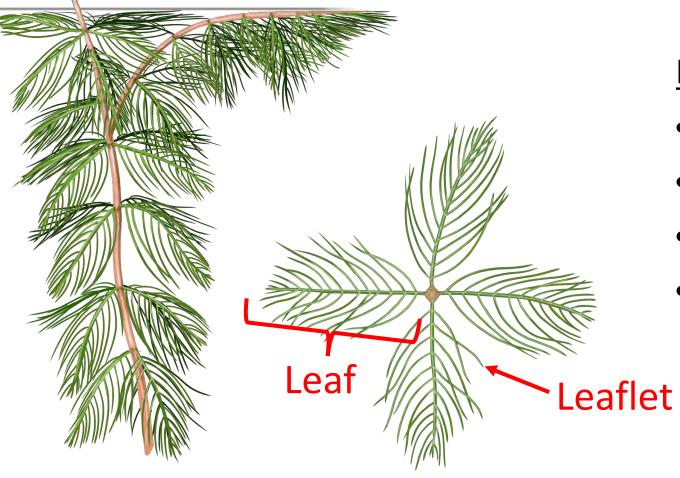






## **EAPW Watch List Species**

Eurasian Watermilfoil- Myriophyllum spicatum



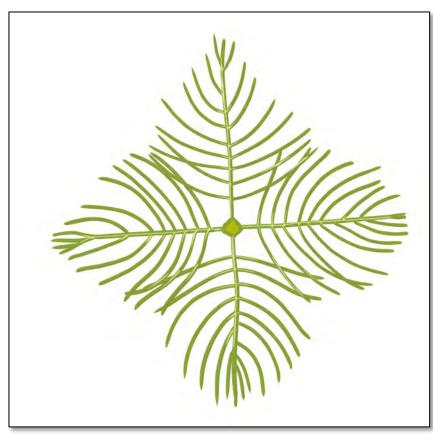
#### **Key Characters:**

- Feather-like leaves
- Whorled leaf arrangement
- Leaves with **12 21** pairs of leaflets
- Leaves limp out of water





## What about "Hybrid Milfoils"??



Native northern watermilfoil

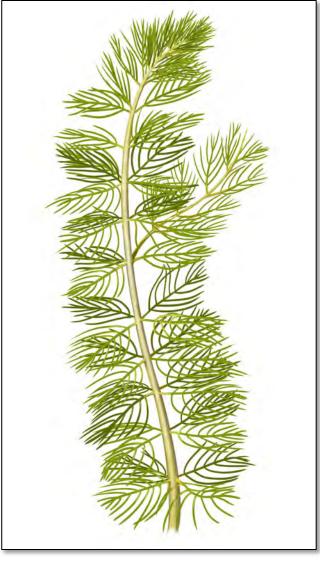


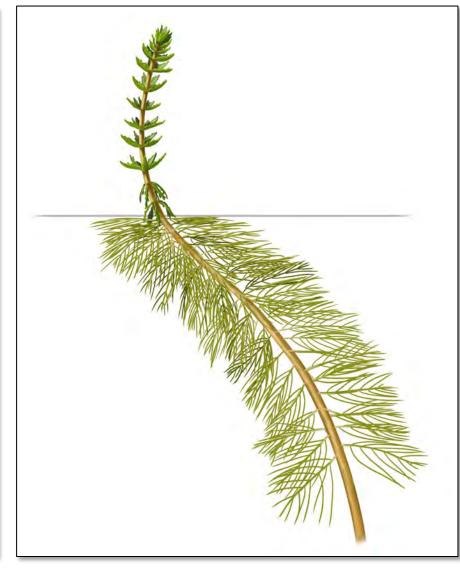
Invasive Eurasian watermilfoil











Tight whorls

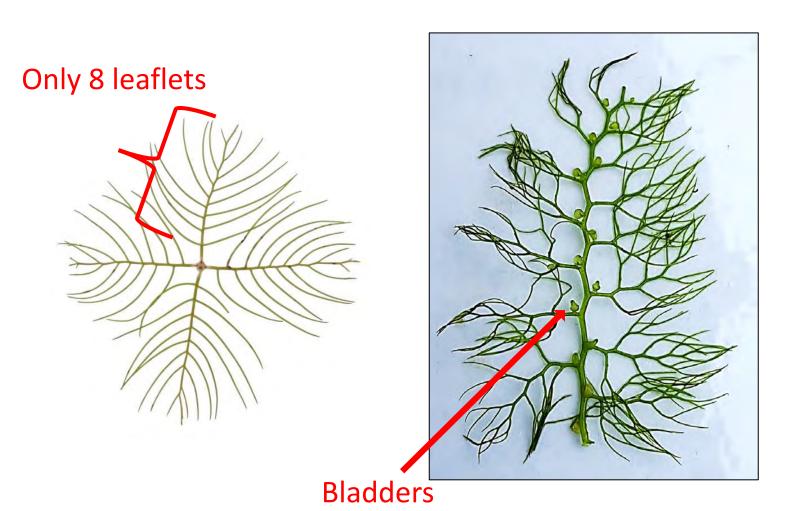
Under 12 leaflets

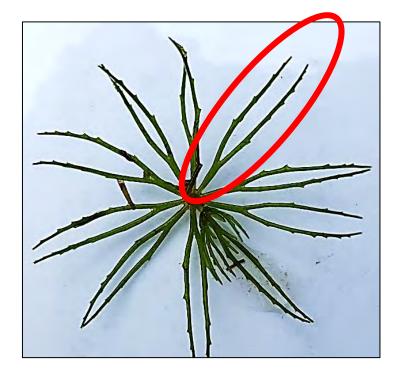
Some leaves not whorled





### These are not Eurasian Watermilfoil





Leaf looks like a wishbone

Also, too much branching to look like a feather





## Which plant is Eurasian watermilfoil?

A



B









## **EAPW Watch List Species**

### Curly-leaf Pondweed – Potamogeton crispus

#### **Key Characters:**

- Leaves 2-3 inches long and ¼ to 3/8 inch wide
- Prominent midvein
- Alternate leaf arrangement
- Serrated leaf margin







## These are not Curly-leaf pondweed









No obvious midvein







## Which plant is Curly-leaf Pondweed?

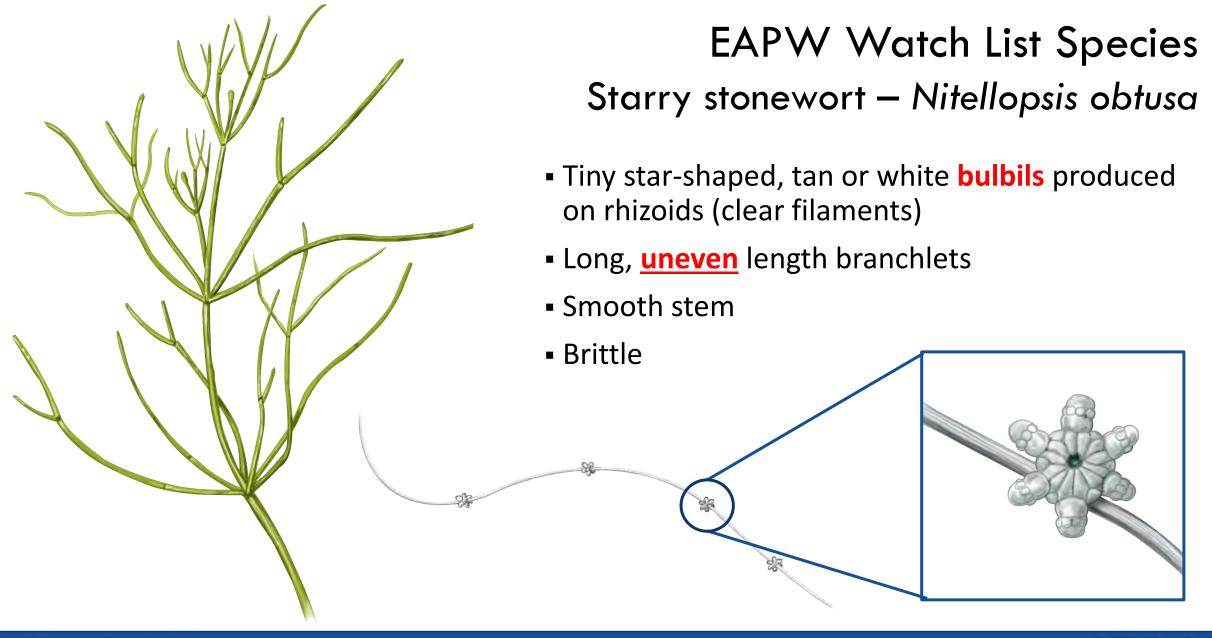
**A** B











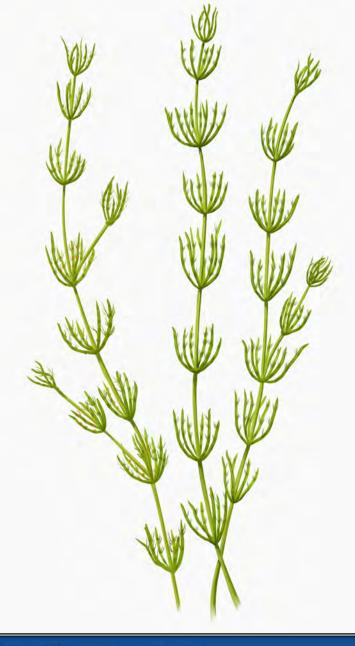












### Starry Look-a-like: Native Muskgrass (Chara)

- Macroalgae
- No <u>star</u> bulbils
- "Smells skunky"
- Shorter 'branching' (i.e. reach)
   of the plant compared to Starry
- Rough feel









#### Nitella furcata stem section.

J. M. DITOM



della clavata stem section.



# STARRY LOOK-A-LIKE: NATIVE NITELLA

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







## Which one is Starry stonewort?

A



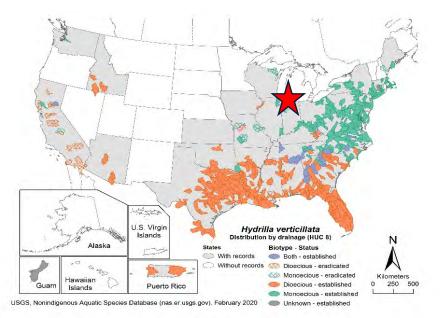






## EAPW Watch List Species Hydrilla (Hydrilla verticillata)

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





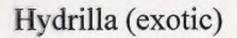


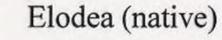




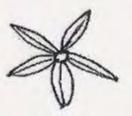
Four or more leaves at each node.

Leaves margins clearly toothed and spines on mid vein.

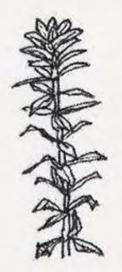


















Three leaves at each node.

Leaves margins not clearly toothed and no spines on mid vein.





# THIS IS NOT HYDRILLA



Only 3 leaves per whorl





# Which plant is Hydrilla?

A B



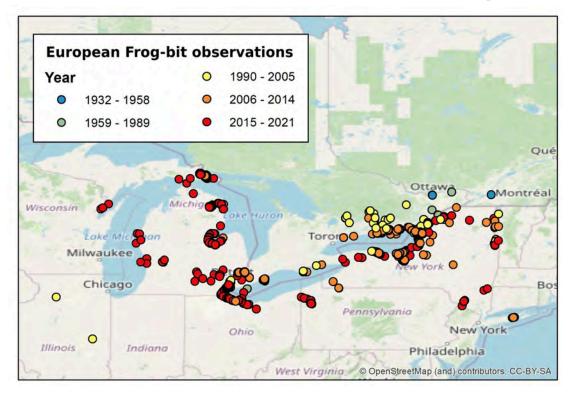






### European Frog-bit

Hydrocharis morsus-ranae





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



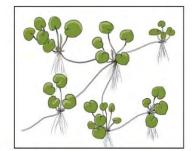


### EAPW Watch List Species: European Frog-bit

Hydrocharis morsus-ranae

- Free-floating rosette, roots hang below
- Small, heart-shaped leaves (2-3")
- Small, white flower, 3 petals

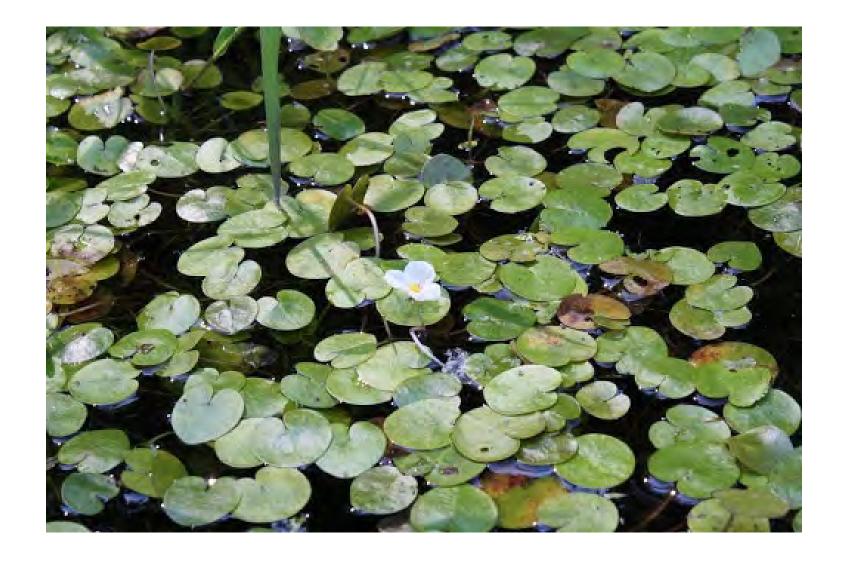






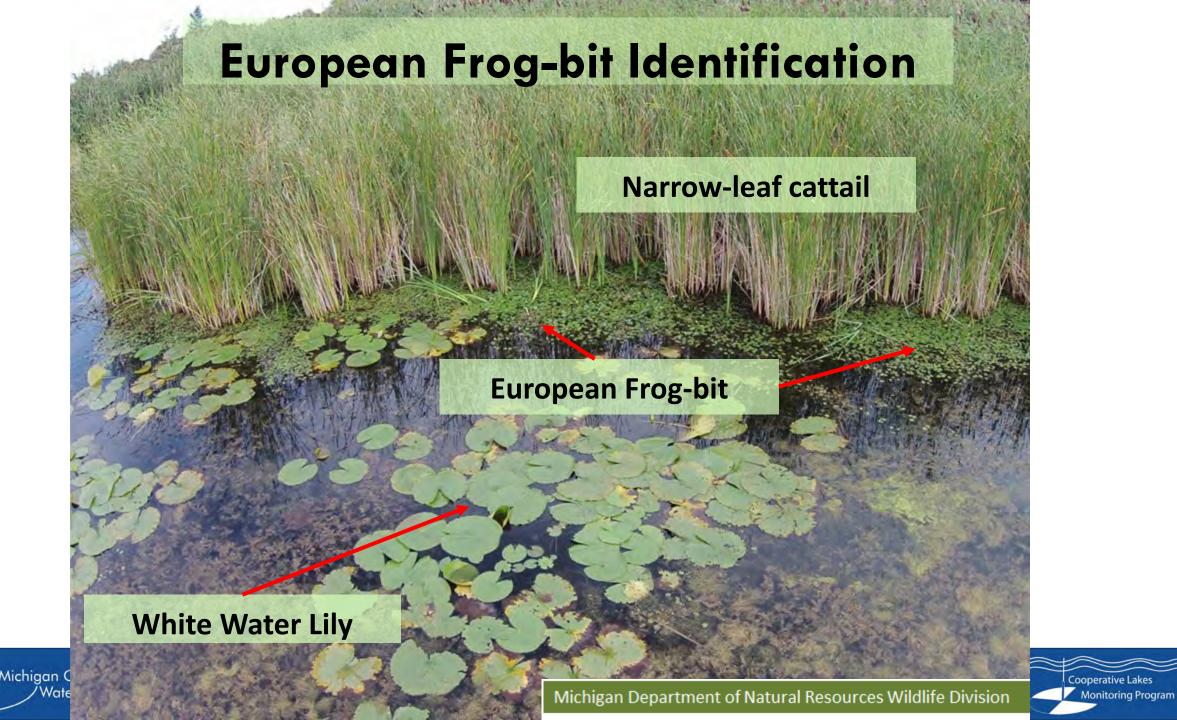












## Which plant is European frog-bit?

A B









### WATCH FOR THESE **Aquatic Invaders!**

### HYDRILLA



Leaves are whorled in groups of 4-8

Leaves are rough and have risible saw-toothed margins

### WATER CHESTNUT



reen, floating leaves with sharply serrated edges Small, white 4-petaled flowers

### **BRAZILIAN ELODEA**



Generally 4 leaves per whorl

### **EUROPEAN FROGBIT**



Leathery, heart-shaped leaves Leaf size: 1/2 - 2 1/4 in. across

Photo: V. Mordan, PSU-CLR

### WATER HYACINTH



Rounded, shiny green leaves avender flowers with

### WATER SOLDIER



Leaves are 16 in, long, swordshaped, 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

uzzy light green leaves with ong feathery roots



Spikes of stiff, feathery leaves

Photo: MCEQ

### **EUROPEAN WATER CLOVER**



Resembles a four leaf dover Leaves are smooth and can be floating, submerged, eaf size up to 1 in, across

### YELLOW FLOATING HEART



Flowers are bright yellow Leaves are 2-6 in. across with scalloped edges

Photo: MDN R

For more information and to report sightings, visit michigan.gov/invasives

# MICHIGAN WATCH LIST SPECIES

- Never detected in the wild or
- Limited distribution
- High potential for negative impacts
- Early detection and response





# EAPW Protocol: Mapping Exotic Plants in Your Lake





### **Exotic Watch Packet**

All paperwork needed can be found at

www.micorps.net under Lakes > CLMP Documents

- Data Form
- Rake building instructions
- A Michigan Boater's Guide to Selected Aquatic Invasive Plants
- Plant photography card (to laminate)
- Michigan's Aquatic Invasive Plant Watch List
- EAPW brochure





## Additional Equipment Checklist

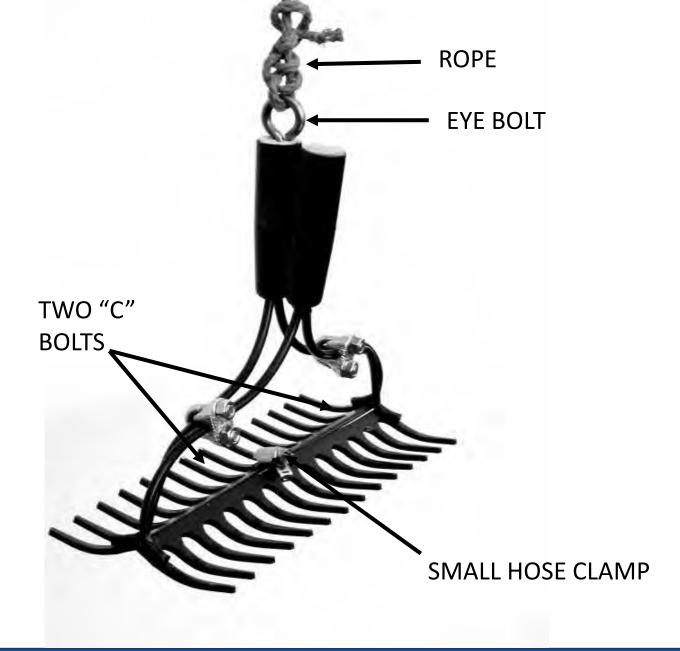
- Boating safety equipment and anchor
- Plant ID guide(s)
- Depth map of lake
- GPS unit (optional)
- Camera
- Weighted sounding line
- Rake and retrieving line
- Zip-lock bags, and marker for labeling
- Trash bags
- Clipboard
  - Data forms/note paper
  - Monitoring procedures
- Pencil or indelible ink pen





# AQUATIC PLANT SAMPLING RAKE

Cut the handles off of two garden rakes and bolt the rakes back to back with two "C" bolts. Use a small hose clamp between the rake tines to prevent side to side slipping. Drill a hole in the remaining wooden handle core and twist into the hole a moderately large eye bolt. The rope should be about 20 feet long. File off any sharp edges. Wear gloves when using the rake to protect the hands from cuts.

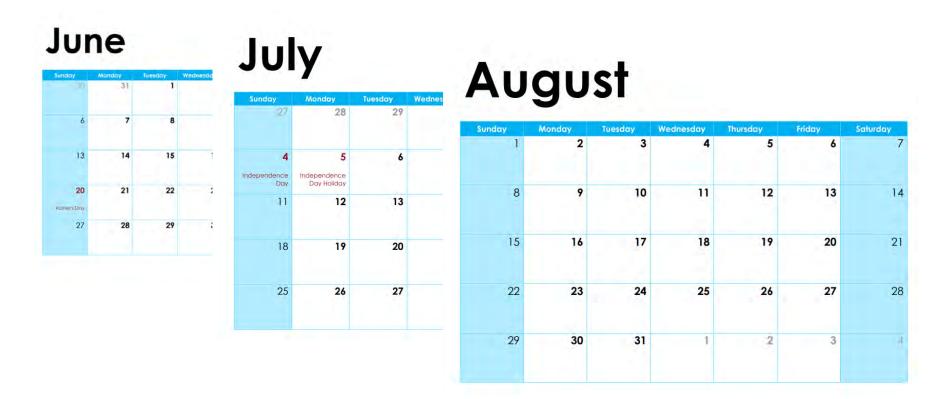






## When to sample?

- Mid-June to August
  - Northern lakes can begin later
- Additional surveys can be done later in the summer



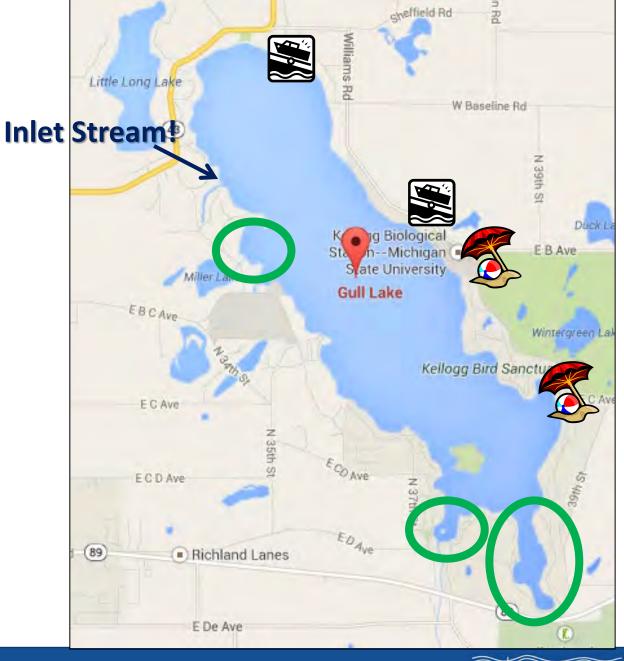




### Where to sample?

### How do I start?

- Get a map!
- Locate:
  - 1) Boat Ramps
  - 2) Public Beaches / Parks
  - 3) Attached inlets (streams, creeks, canals)
  - 4) Quiet Bays and Coves
  - 5) In between transects

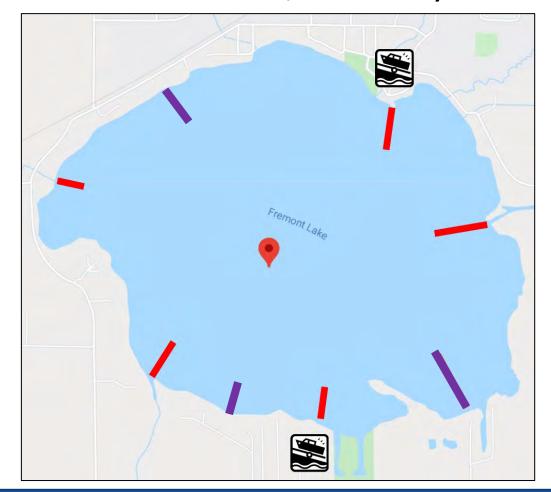






## Focus on high-risk areas

REMEMBER: Even some data is useful; it's ok if you can't cover the entire lake

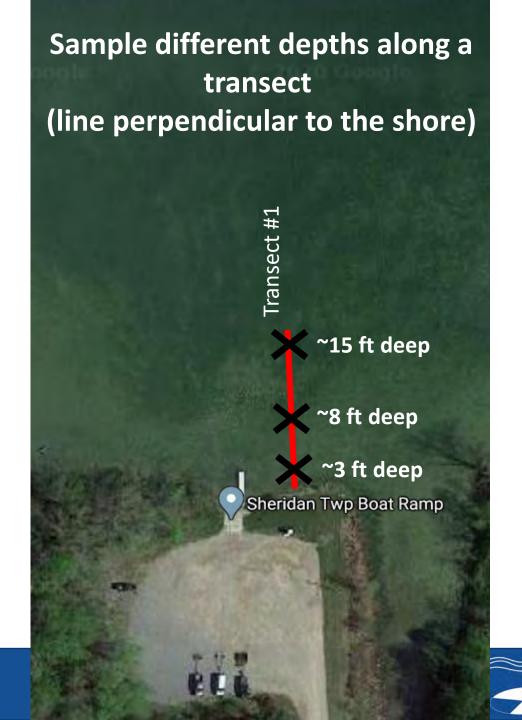






### How to sample

- How to sample a transect?
- How many tosses?
- How far do I throw it?
- How do I dispose of the plants?



Monitoring Program









### **EXOTIC AQUATIC PLANT WATCH**





ke Name:	County:
wnship:	
ke Sampling Site (Field ID) Numb	per:
olunteer Monitor Name(s):	
te(s) of Survey :	Time:
mments (unusual conditions re	cent 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.

•	
•	
	1

٠	If exotic pla	nts were fou	und, ch	ieck tł	ne speci	es fou	nd be	elow:	
	- Furas	sian milfail					Ctar	ry Ctanawar	+

Ш	Lurasian militon	Ш	Starry Storie wort
	Curly-leaf pondweed		European frog-bit (*new
П	Hydrilla	П	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

Send your complete report to the CLMP contact listed in the project procedures. Keep a copy of the report for your records.





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.

Site / Transect # (match to sites on your map)	Latitude (or location description)	Longitude	List any exotics found in this transect (or "None")	Any photos taken at this site?	Notes
1	43°40′16.34N	89 15'48.24W	CLP, EWM	Yes (2)	Sparse
2	43°40′21.38N	89 15'47.02W	None	No	





### Plant Identification Photography

- Required Photographs:
  - At minimum, one representative photo of each invasive species found in your lake
- Label photos
- Make sure the photos are clear
  - \*\*\*Need to show identifying characters\*\*\*
- Great for ID verification and documentation

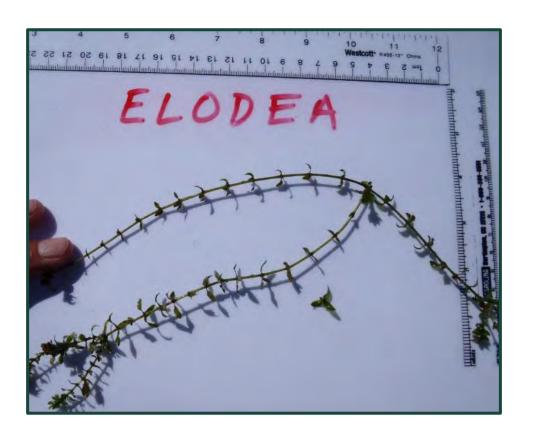






## Use photography card







(Left) Lotus & Maceday Lake in Oakland Co. (Top) Bristol Lake in Barry Co.





### No ruler? A hand will do!

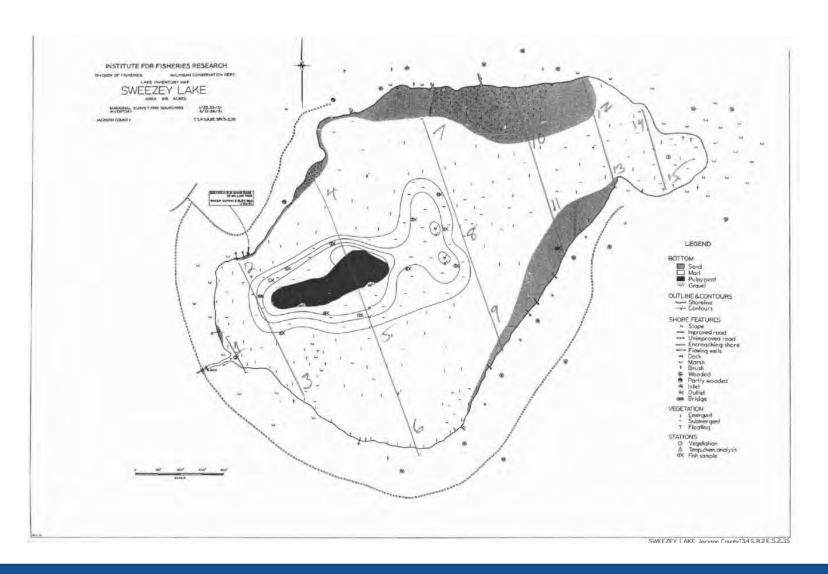








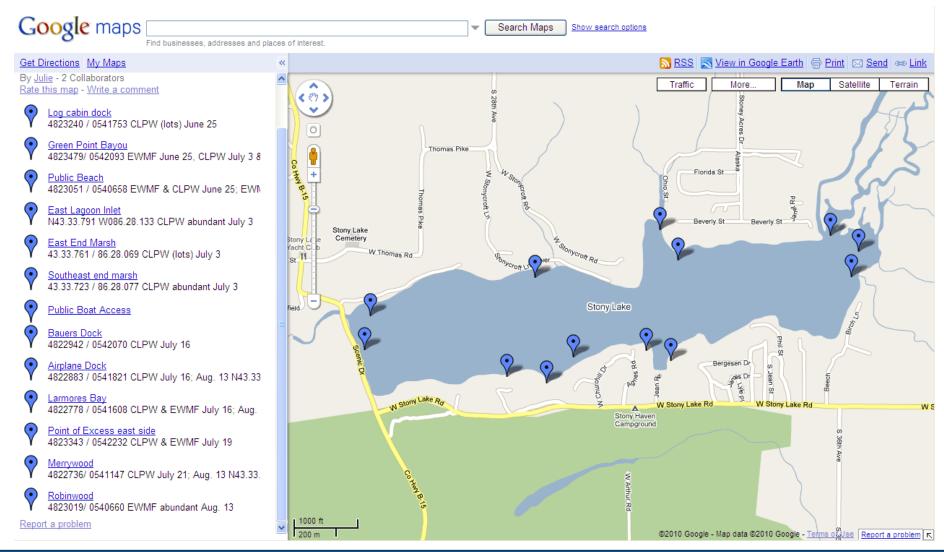
## Mapping Options: By Hand







## Mapping Options: Google Maps







## Submitting Your Data

- Make copies of your data for your records.
- Enter your data into the online MiCorps Data Exchange (www.micorps.net) by October 31.
- 3. Send complete report to MiCorps
  - a. Completed data form (pages 1 and 2)
  - b. Lake map with numbered locations
  - c. Any photographs





# Value of Teamwork

 Many volunteers struggle when attempting EAPW alone

 Volunteer teams are more likely to complete sampling, submit data and continue in the program

• Fun = The more the merrier!



### Staff Field Visits

- We may visit your lake to:
  - Help kick off your survey
  - Assist with plant identification
  - Answer questions and get your feedback
- Will be arranged in early summer
  - Not all lakes can be visited
  - New lakes are top priority





## Questions?

To learn more about the Cooperative Lakes Monitoring Program, visit:

## MiCorps.net











