



L.J. Mehrhoff, Univ. of Connecticut, Bugwood.org

Aquatic Invasive Species: What's New?

Bill Keiper – EGLE
Kelsey Bockelman – MSUE
Erick Elgin – MSUE
Jo Latimore – MSU

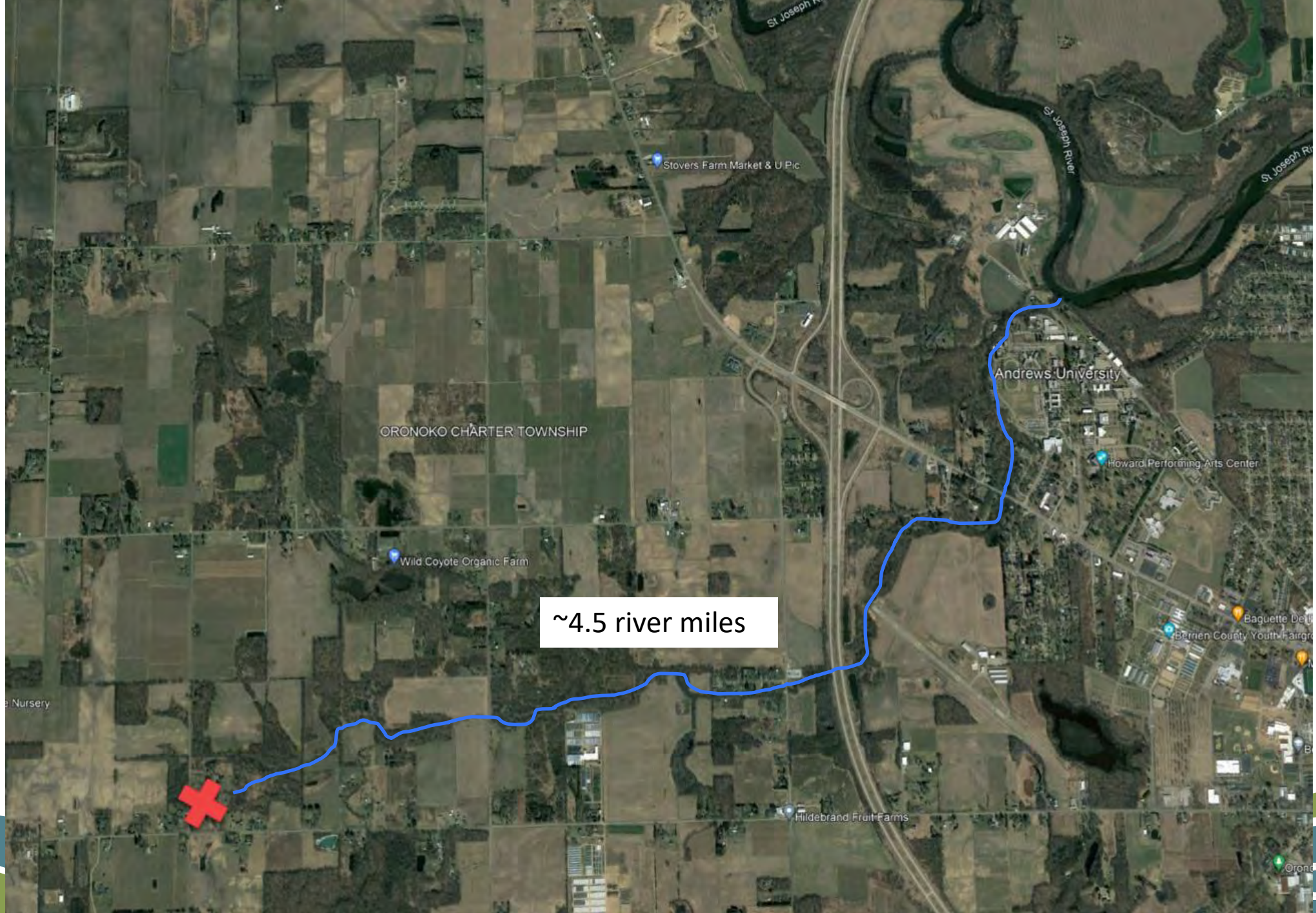
Hydrilla in Michigan: Update

Michigan Inland Lake Partnership Meeting

October 18, 2023

Billy Keiper, Sarah LeSage, Tom Alwin

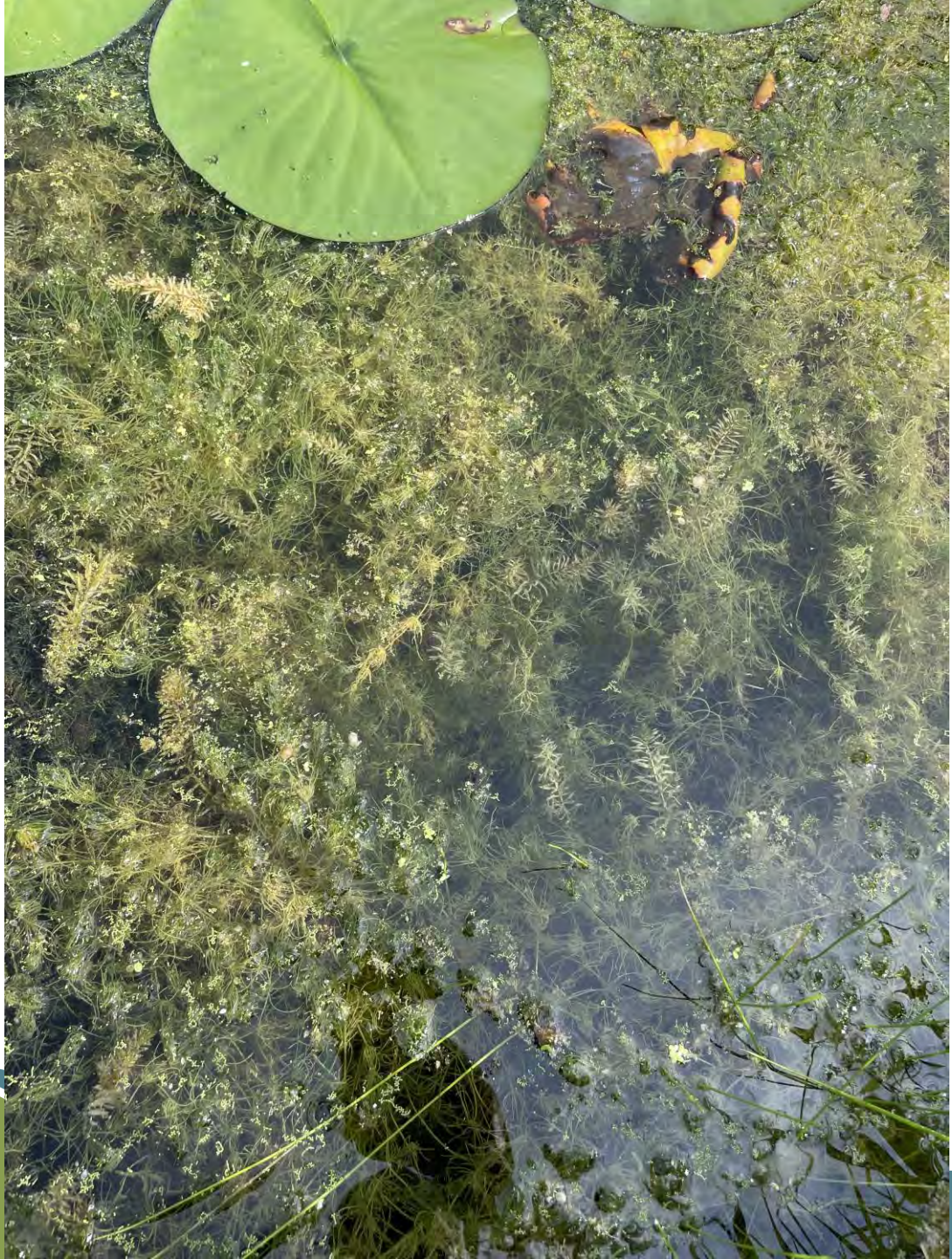
EGLE Water Resources Division



~4.5 river miles

Infested ponds





Response Goals

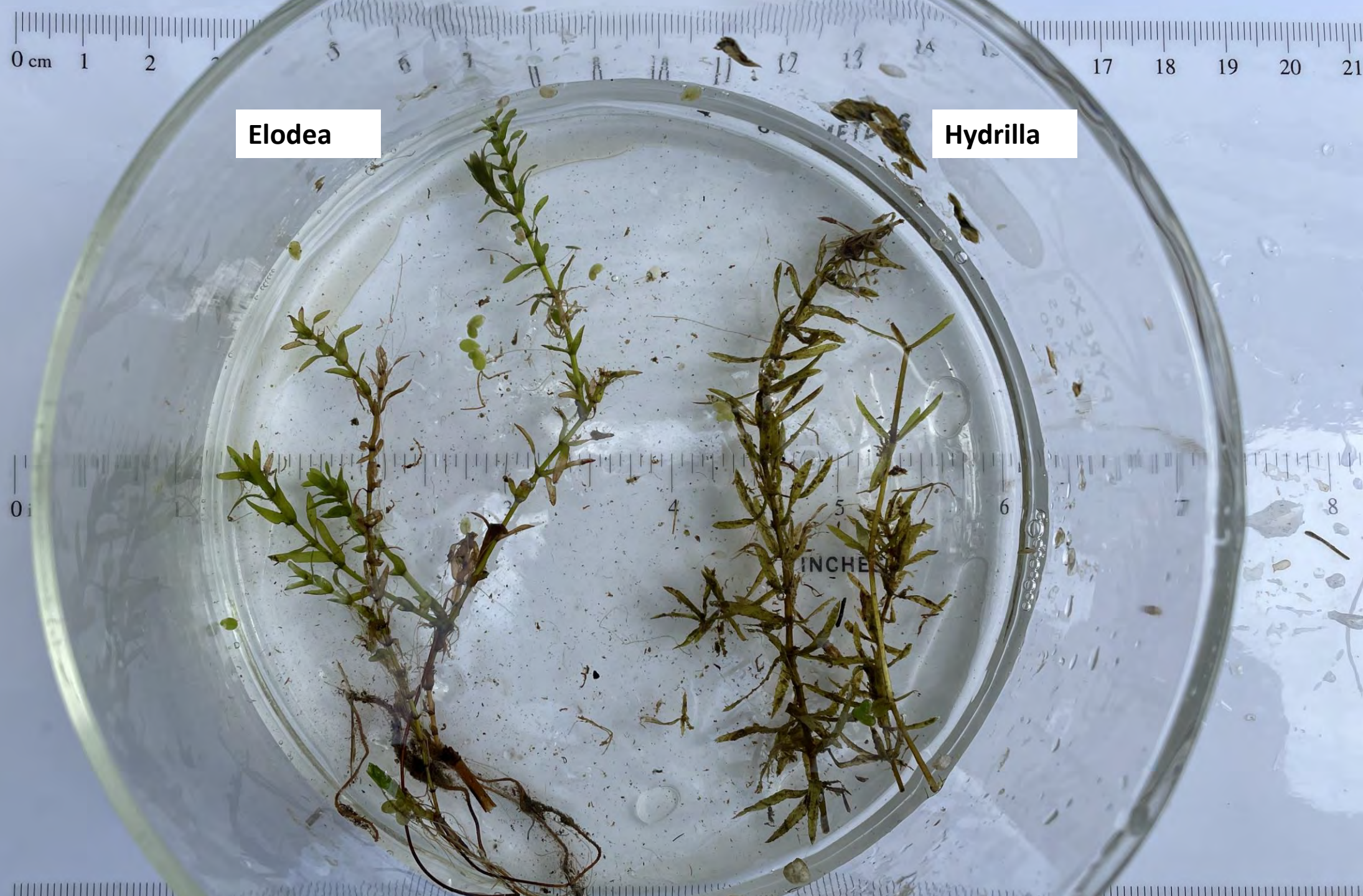
1. Chemically treat hydrilla in ponds to prevent off site spread and limit further tuber production
2. Monitor surrounding waterbodies for spread

Overall goal: Eradicate hydrilla

ID







Elodea

Hydrilla

Questions

Please report any suspicious aquatic plants
EGLE-WRD-AIP@MI.GOV

- Sept 20- Hydrilla found in Pond 1
- Sept 28- Intensive surveys on all ponds w/ MSUE
 - Hydrilla found in Pond 2
 - No hydrilla in Pond 3



Flower and Tubers



Site layout

- Private residential ponds
- $\frac{1}{4}$ acre in size each
- Connected through small outlet
- Flows north
- Discharge into Lemon Creek
- Lemon Creek flows 4.5 miles to St. Joseph River



Herbicide treatment

- Sept 29- Herbicide treatment in both hydrilla ponds
- Goal: Reduce hydrilla biomass to prevent spread and slow tuber production
- Aquathol K @ 3ppm
- ProcellaCOR @ 25 PDU
- Both max rates
- Whole pond treatments
- Pre and post-treatment monitoring



Sediment Sampling for tubers

- Searching for tubers at depth
- Cores and ponar dredge
- Very few tubers in cores
- All near sediment surface



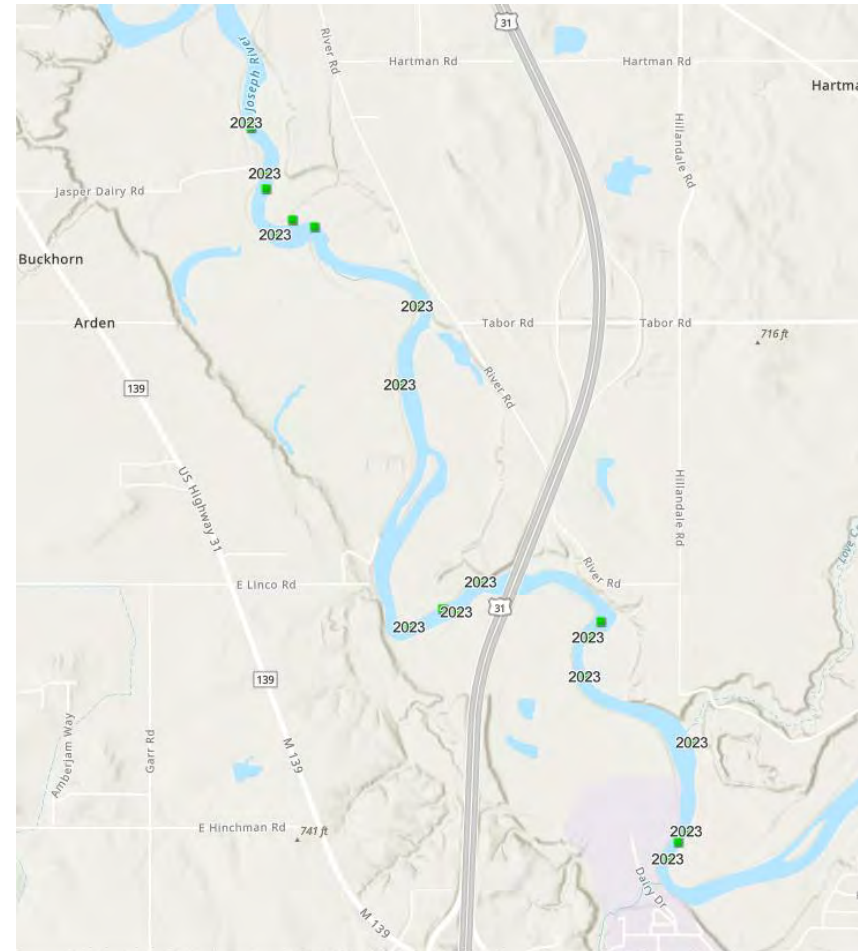
Monitoring- Lemon Creek

- Very few plants found
- Not favorable habitat/substrate for aquatic plant growth



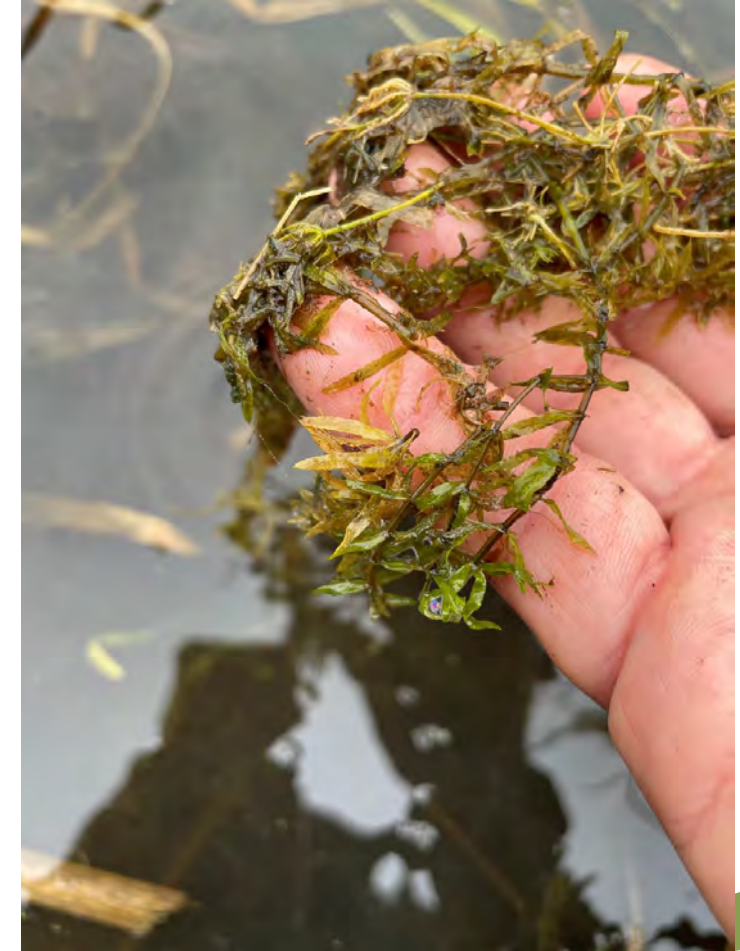
Monitoring- St. Joseph River

- Surveyed 5-mile stretch from Lemon Creek confluence
- Mapped aquatic plant beds
- Focus on depositional areas
- Most river habitat not favorable for aquatic plants
- No hydrilla found



2 weeks post-treatment

- Hydrilla mostly dead
- Stems brown and falling apart
- A few green meristems
- Additional treatment not recommended at this point
- Additional monitoring planned



Next steps



- Continued monitoring
- Treatment if needed
- Genetic testing to determine type (Monocious or Dioecious)
- Develop long term plan for containment and eradication



CLEAN BOATS CLEAN WATERS



Focuses on AIS Prevention education and outreach directed at boating pathways in Michigan through:

- Educational Programs and Presentations
- Communication and Resources
- Funding Opportunities

CONSISTENT MESSAGING IS KEY!

- Regulatory information
- Recommended practices



STOP AQUATIC HITCHHIKERS!

Be A Good Steward.
Clean. Drain. Dry.

StopAquaticHitchhikers.org

CLEAN

- Boats, trailers, and gear
- Remove all weeds, mud, and hitchhiking contaminants from axles, wheels, undercarriage, motor, prop, nets, and gear before leaving boat landing

DRAIN

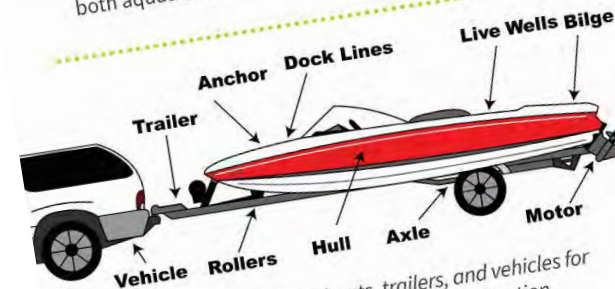
- Water from boat, bilge, motor, and live well
- Remove drain plug and open all water draining devices
- Trash unused bait

DRY

- Everything at least five days before going to other waters
- (Or) Decontaminate with high pressure water (120°F or warmer)

Prevent the spread of ecologically and economically harmful aquatic invasive species such as zebra mussels and Eurasian watermilfoil with the following simple steps:

- ✓ **CLEAN** boats, trailers and equipment and remove all mud, debris and aquatic plant material from trailers and watercraft before launching or retrieving a watercraft. Use a hose or power washer when available.
- ✓ **DRAIN** live wells, bilges, ballast tanks, and all water from boats before leaving the access site. Consider disinfecting live wells and bilges with a bleach solution (1/2 cup bleach to 5 gallons of water) when possible. Fish diseases and microscopic life stages of aquatic invasive species can be hiding in seemingly clean water, so draining is an important step.
- ✓ **DRY** all boats and equipment thoroughly before leaving an access area and prior to relaunching in a new waterbody.
- ✓ **DISPOSE** of bait in the trash. Do not release bait into the water. Release of bait and minnows can lead to the unintended introduction of diseases and aquatic invasive species.
- ✓ **DO NOT TRANSFER FISH** to water bodies other than where they were caught. This helps prevent the spread of both aquatic invasive species and fish diseases.



Inspection points on boats, trailers, and vehicles for aquatic invasive species decontamination.

HELP STOP AQUATIC HITCHHIKERS!



Avoid spreading aquatic invasive species.
Recommended Actions:

- ✓ **CLEAN** boats, trailers and equipment
- ✓ **DRAIN** live wells, bilges and all water
- ✓ **DRY** boats and equipment
- ✓ **DISPOSE** of unwanted bait in the trash

IT'S THE LAW

Violation of the law is a state civil infraction. Violators may be subject to fines.

DO NOT launch or transport watercraft or trailers unless they are free of aquatic organisms, including plants.
DO NOT transport a watercraft without removing all drain plugs and draining all water from bilges, ballast tanks, and live wells.
DO NOT release unwanted bait into the water.

Michigan.gov/InvasiveSpecies







MOBILE BOAT WASH

- Trailer mounted high pressure cleaning station
- Raise awareness of boat cleaning practices
- Includes two staff who operate the washer and assist with outreach
- Provide on-site outreach materials (rack cards, towels, coozies, etc.)



WWW.MICBCW.ORG

BOAT CLEANING GUIDANCE

-  **CLEAN** boats, trailers and equipment and remove all mud, debris and aquatic plants from trailers and watercraft. Use a hose or power washer when available.
-  **DRAIN** live wells, bilges, ballast tanks, and all water from boats before leaving the access site. Consider disinfecting live wells and bilges with a bleach solution (1/2 cup bleach to 5 gallons of water) when possible.
-  **DRY** all boats and equipment thoroughly before leaving an access area and prior to relaunching in a new waterbody.
-  **DISPOSE** of bait in the trash, never release into the water.



GRANTS

Provide \$1K-\$3K grants to local organizations to conduct boater outreach and develop educational materials

For the 2023 season, we had 13 grantees across Michigan

WWW.MICBCW.ORG



CBCW Resources

- Handouts, CBCW goodies like lures or towels, and current regulation brochures
- Boat launch and decontamination signs
- Communication resources and social media

New Michigan Boating Law

Effective 2019

New requirements to stop the introduction and spread of Aquatic Invasive Species!



It's the law:

- ✗ **DO NOT** launch or transport watercraft or trailers unless they are free of aquatic organisms, including plants.
- ✗ **DO NOT** transport a watercraft without removing all drain plugs and draining all water from bilges, ballast tanks, and live wells.
- ✗ **DO NOT** release bait into the water.

Violation of the law is a state civil infraction. Violators may be subject to fines.


Follow these steps:

1. **CLEAN** boats, trailers and equipment.
2. **DRAIN** live wells, bilges, ballast tanks, and all water by pulling drain plugs.
3. **DRY** boats and equipment.
4. **DISPOSE** of unwanted bait in the trash.

MICHIGAN WATCH LIST

AQUATIC INVASIVE PLANTS

A Guide for Identification



Illustrations by Bruce Kerr



HELP STOP THE SPREAD OF Aquatic Invasive Species IN MICHIGAN





42%
of threatened or endangered species are considered at risk due to non-native species



180+
non-native aquatic organisms have colonized the Great Lakes since the 1800s

\$24 million per year
SPENT TO CONTROL AQUATIC PLANTS IN MICHIGAN, INCLUDING EURASIAN WATERMILFOIL

\$200 million per year
LOST BY THE GREAT LAKES REGION DUE TO THE EFFECTS OF SHIP-BORN INVASIVE SPECIES ON SPORT FISHING, COMMERCIAL FISHING, WILDLIFE WATCHING, AND RAW WATER USAGE

\$5.7 billion per year
AMOUNT OF TOTAL ECONOMIC IMPACT OF AQUATIC INVASIVE SPECIES IN THE GREAT LAKES REGION

Priceless
INSPECTING AND CLEANING YOUR BOAT AND EQUIPMENT TO PREVENT THE SPREAD OF AQUATIC INVASIVE SPECIES

REQUIRED ACTIONS - IT'S THE LAW IN MICHIGAN!



REMOVE
aquatic plants from boats, boating equipment, and boat trailers before launching or placing in the water.
(MI REG Part 415 Sec. 41523)



DRAIN
live wells, bilges and all water from boats before leaving the access site.
(MI GWR Fisheries Order 245)



DISPOSE
of unused bait in the trash. Do not release bait into the water.
(MI GWR Fisheries Order 245)



DON'T TRANSFER
fish to water bodies other than where they were caught.
(MI GWR Fisheries Order 245)

ADDITIONAL RECOMMENDED ACTIONS - PROTECT OUR NATURAL RESOURCES!

- Inspect and remove plants and mud from boats, trailers, and equipment before leaving the access area. Dispose of the material in a trash receptacle or otherwise away from the water body, if possible.
- Power wash boats and trailers before leaving the access site. Alternatively, use a nearby car wash or wash at home.
- Allow the boat to dry for at least 5 days before launching into a different body of water.
- Disinfect livewells and bilges with bleach solution (1/2 cup bleach to 5 gallons water).

HELP STOP AQUATIC HITCHHIKERS!



Avoid spreading aquatic invasive species. Recommended Actions:

- ✓ CLEAN boats, trailers and equipment
- ✓ DRAIN live wells, bilges and all water
- ✓ DRY boats and equipment
- ✓ DISPOSE of unwanted bait in the trash

IT'S THE LAW
Violation of the law is a state civil infraction. Violators may be subject to fines.

www.mi.gov/InvasiveSpecies

Michigan Department of Natural Resources
Michigan Department of Agriculture

BOAT AND TRAILER INVASIVE SPECIES CLEANING STATION

SEARCH THESE AREAS FOR INVASIVE SPECIES



FOLLOW THESE STEPS

- 1. CLEAN boats, trailers and equipment.
- 2. DRAIN live wells, bilges, ballast tanks and all water by pulling drain plugs.
- 3. DRY boats and equipment.
- 4. DISPOSE of unwanted bait in the trash.

IT'S THE LAW
VIOLATION OF THE LAW IS A CIVIL INFRACTION INCLUDING A FINE OF SUBJECT TO FINES.

- DO NOT launch or transport watercraft or trailers unless they are free of aquatic organisms, including plants.
- DO NOT transport a watercraft without removing all drain plugs and draining all water from bilges, ballast tanks, and live wells.
- DO NOT release bait into the water.

TOOLS

- Use tools to remove vegetation from boats and trailers.
- Place vegetation in the trash.
- These tools help protect our lakes. We have confidence in the honor system. Please return them.

STOP AQUATIC HITCHHIKERS!

CLEAN BOATS CLEAN WATERS

Michigan Department of Natural Resources
Michigan Department of Agriculture
Great Lakes Restoration Initiative

Decontamination signs and EGLE boat launch signs are all available through CBCW!

Celebrate

MICHIGAN

CONNECT WITH CLEAN BOATS, CLEAN WATERS



www.micbcw.org



[@michiganbcw](https://www.facebook.com/michiganbcw)



[@michigan_cbcw](https://www.instagram.com/michigan_cbcw)



2023 changes to the AIS Watchlist

- Off the list: European frog-bit



- On the list: Water-primrose



Hybrid watermilfoil



December 2022

MICHIGAN STATE UNIVERSITY | Extension

For additional information, visit extension.msu.edu

Identifying and managing invasive Eurasian and hybrid watermilfoils in Michigan lakes: A response to differential sensitivity to herbicides

Jo Latimore¹, Erick Elgin², James McNair³, Syndell Parks³, and Ryan Thum⁴

¹Michigan State University, ²Michigan State University Extension, ³Grand Valley State University, ⁴Montana State University

Summary

We genetically analyzed hybrid watermilfoil collected from lakes across Michigan and tested the hybrid plants' susceptibility to a common herbicide, fluridone. We made two important determinations. First, there are many different genetic strains of hybrid watermilfoil in Michigan lakes. Second, these strains respond differently to fluridone, and some are highly resistant to it. Therefore, knowledge of what strain(s) of watermilfoil are present in a lake is very important when developing a management plan that includes control with herbicides.

Background



include herbicide application, biological control, and physical removal. Recently, lake managers and scientists observed that traditionally effective herbicides were failing to control invasive watermilfoil in some lakes (Berger et al. 2012, Chorak et al. 2020, Thum et al. 2012). Genetic studies of these lakes revealed that

MILFOILMAPPER



Map Instructions

Pick a State *(Delete 'All' First)*

Michigan

Pick A County *(Delete 'All' First)*

All

Pick A Lake *(Delete 'All' First)*

All

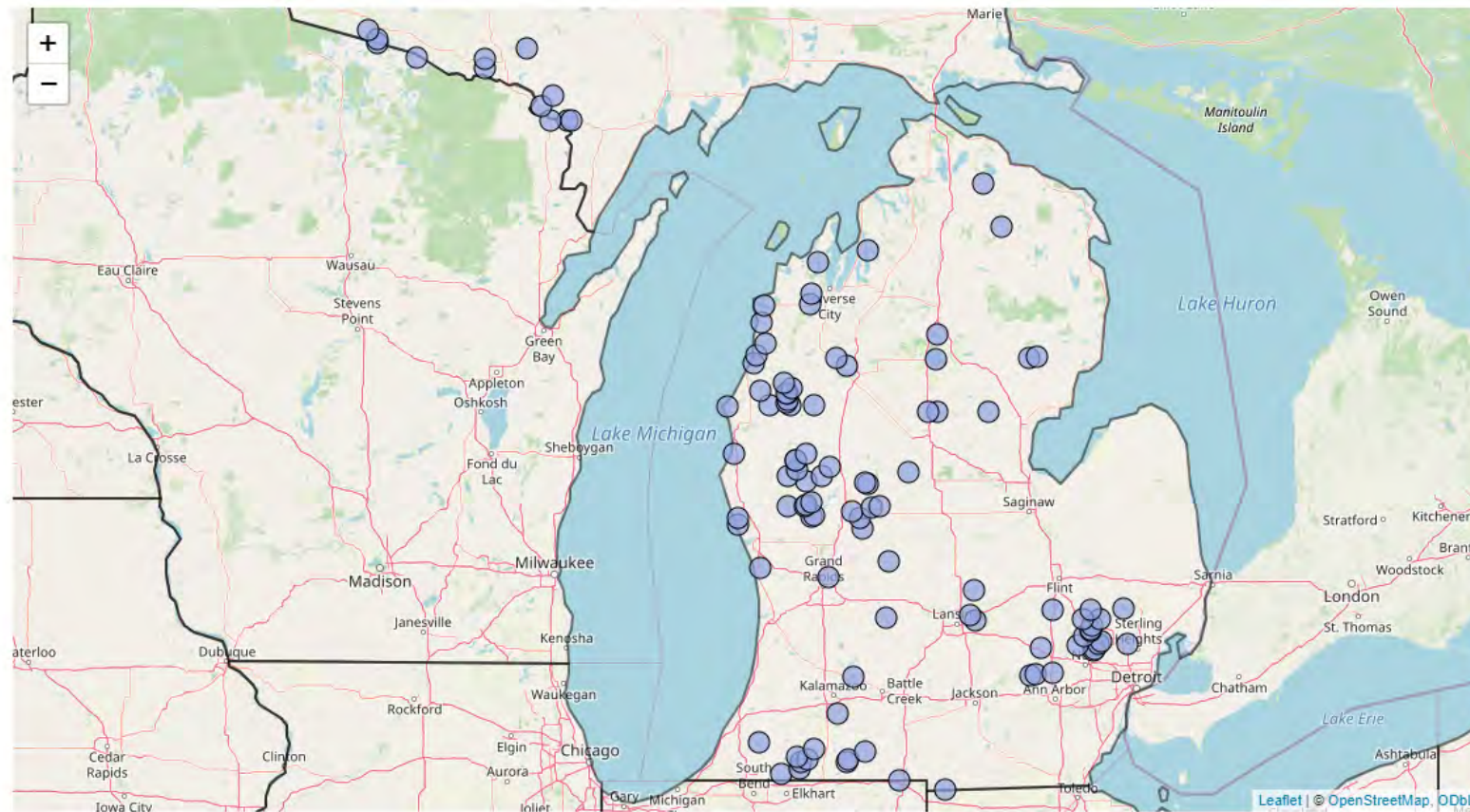
Pick A Known Taxon *(Delete 'All' First)*

All

Strain Nomenclature

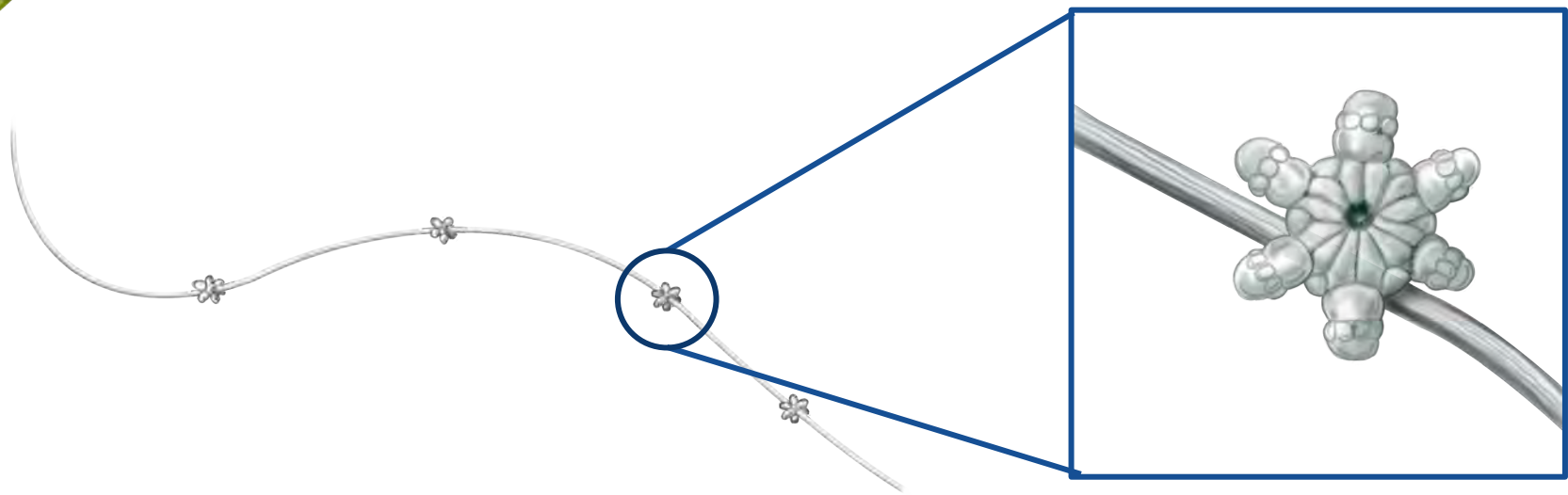
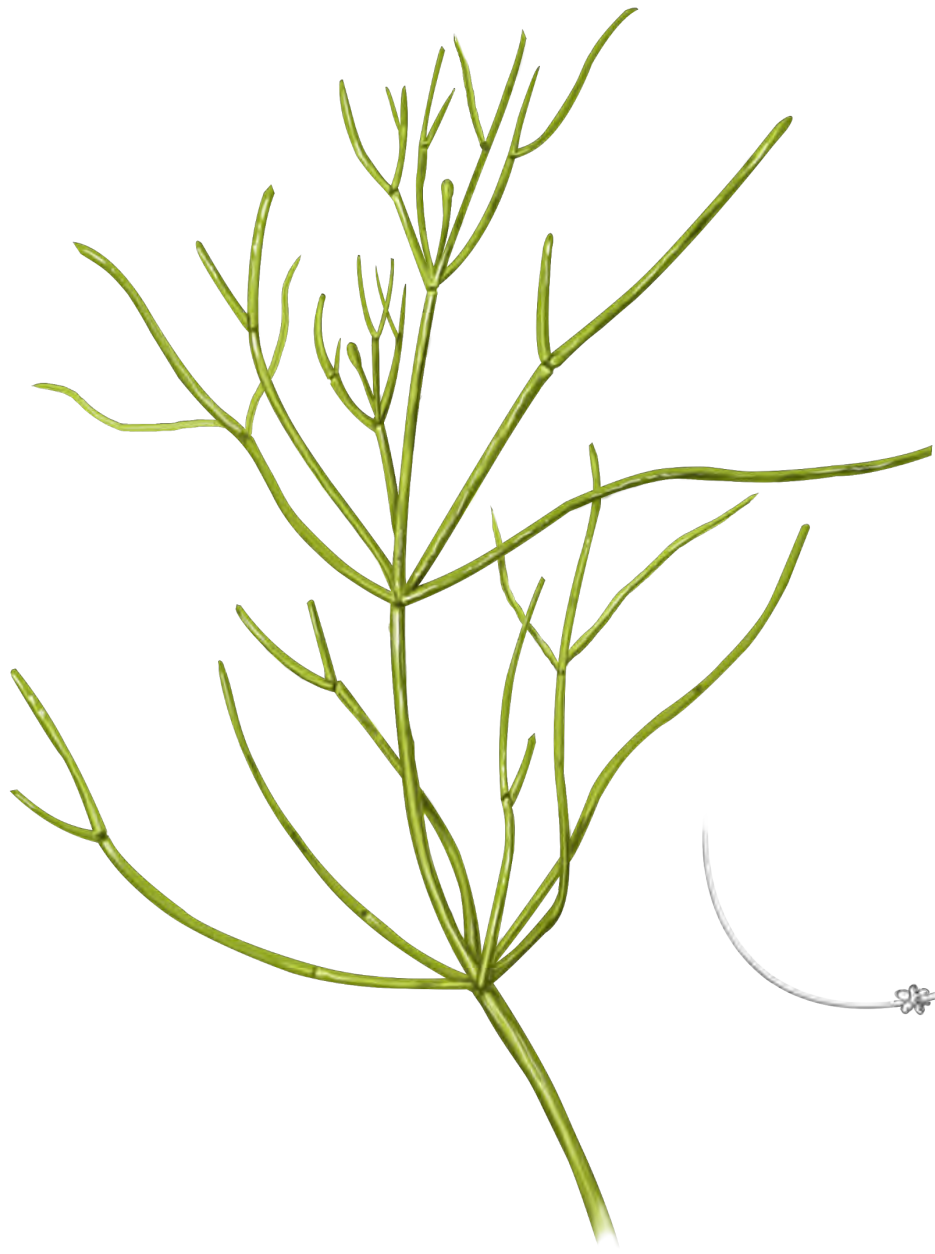
→ The first letter in the strain ID refers to the taxon, distinguishing between Eurasian (*Myriophyllum spicatum*), northern (*M. sibiricum*) or hybrid (*M. spicatum* × *M. sibiricum*) watermilfoil.

→ Additionally, 'MISGP' or 'MYR' in the ID represents the original database this sample is from, primarily for in-house purposes, but it is included for cross referencing convenience.



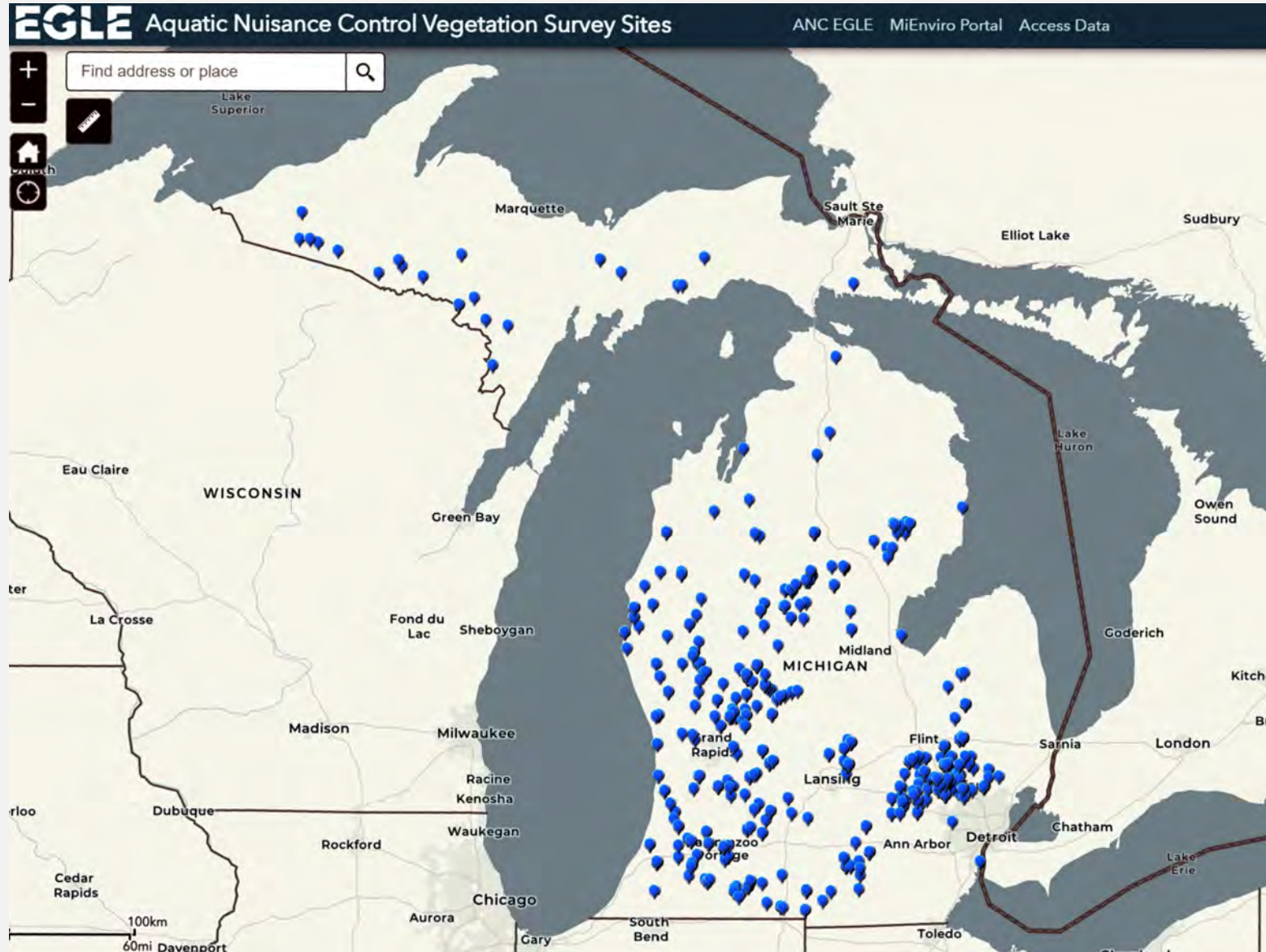
Questions, suggestions or bugs? Please email them to Ashley at ashley.wolfe3@montana.edu.
The data on this website was last updated 10/1/2023
Version 1 published 9/20/2023

Starry stonewort *Nitellopsis obtusa*



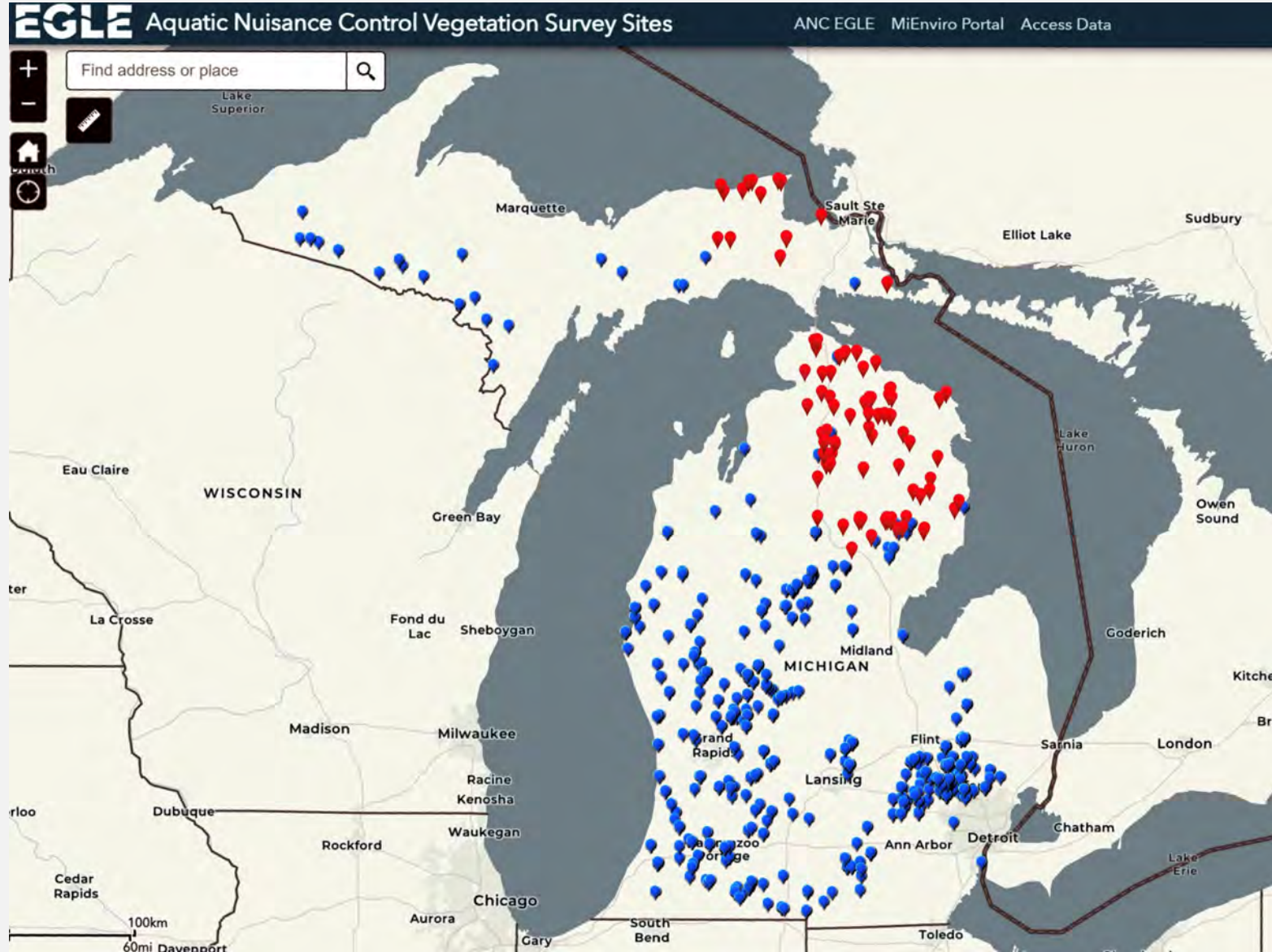
THE NEED FOR A STANDARDIZED, STATEWIDE PROTOCOL

lacking data across the state



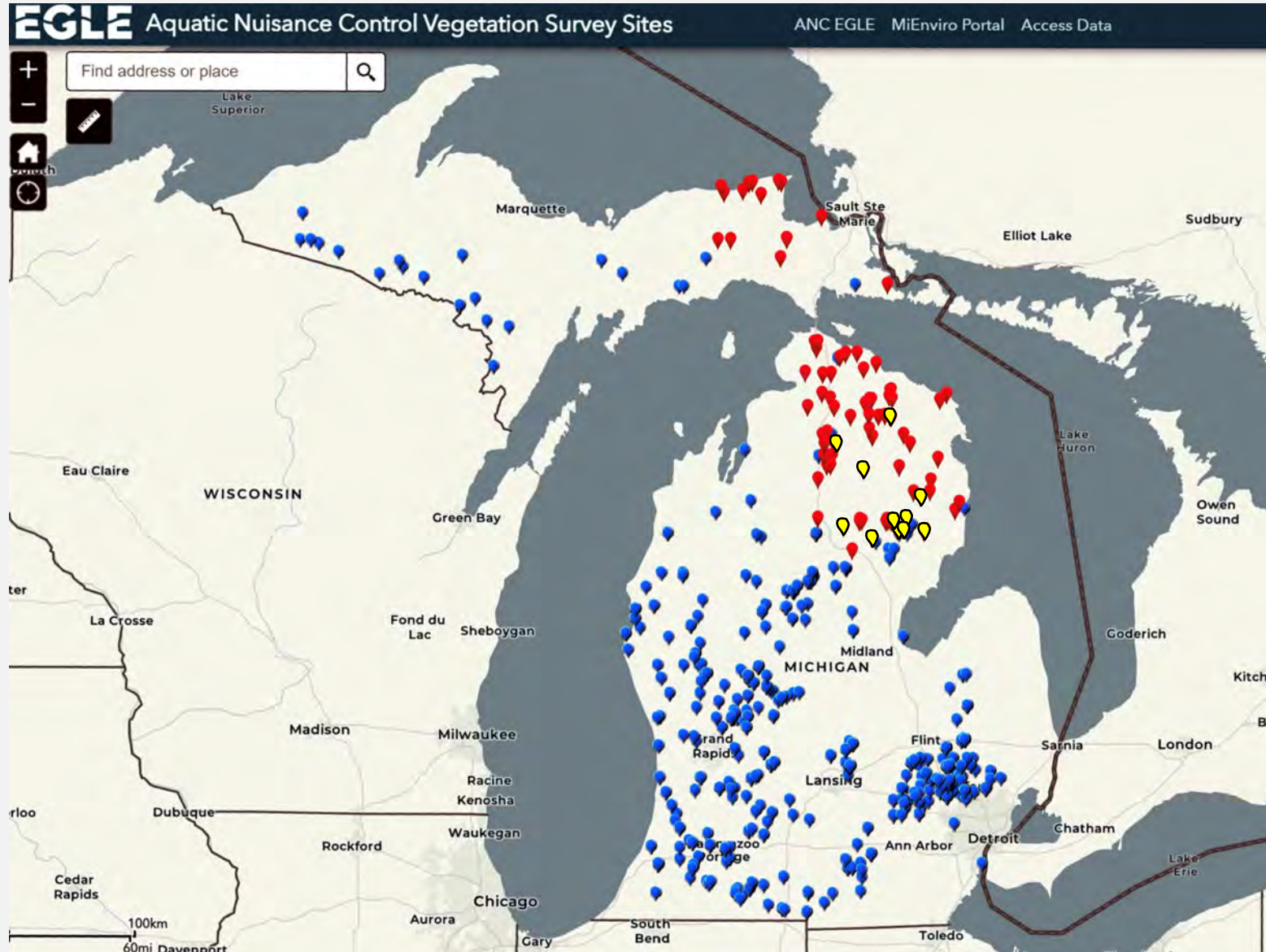
THE NEED FOR A STANDARDIZED, STATEWIDE PROTOCOL

lacking data across the state



THE NEED FOR A STANDARDIZED, STATEWIDE PROTOCOL

lacking data across the state





- AuSable Lake – Ogemaw Co.
- Peach Lake – Ogemaw Co.
- North Lake – Ogemaw Co.
- Sage Lake – Ogemaw Co.
- Rifle Lake – Ogemaw Co.
- Long Lake – Ogemaw Co.
- Lake George – Ogemaw Co.
- Lake St. Helen – Roscommon Co.
- Fletcher Pond – Montmorency Co.
- Big Lake – Otsego Co.
- Little Bass Lake – Otsego Co.
- East Lake – Luce Co.*
- Trout Lake – Luce Co.*
- *Needs identification confirmation

Didymo (rock snot)

- Locations
 - Boardman River (2022)
 - Upper Manistee River (2021)
 - St. Marys River (2015)



New Zealand Mudsnail

- Locations
 - Pere Marquette River
 - 2015 – 1st discovery
 - Au Sable River
 - Boardman River
 - Grass River
 - Pine River
 - Upper Manistee River
 - Mitchell Creek (Gr. Traverse Bay)
 - 2023

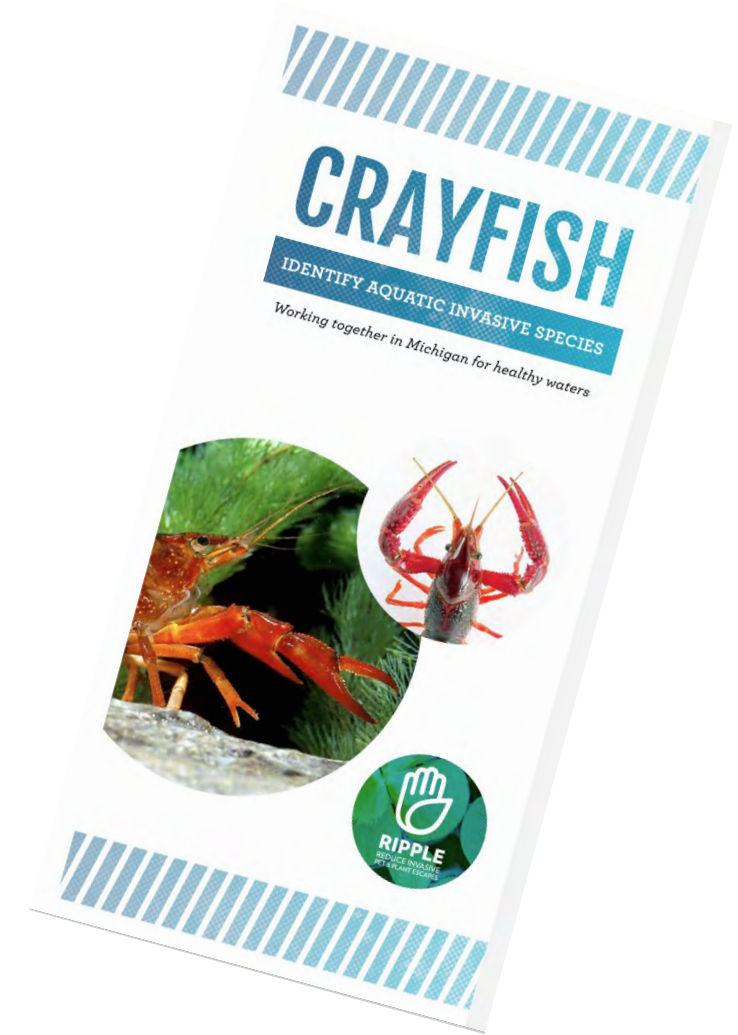
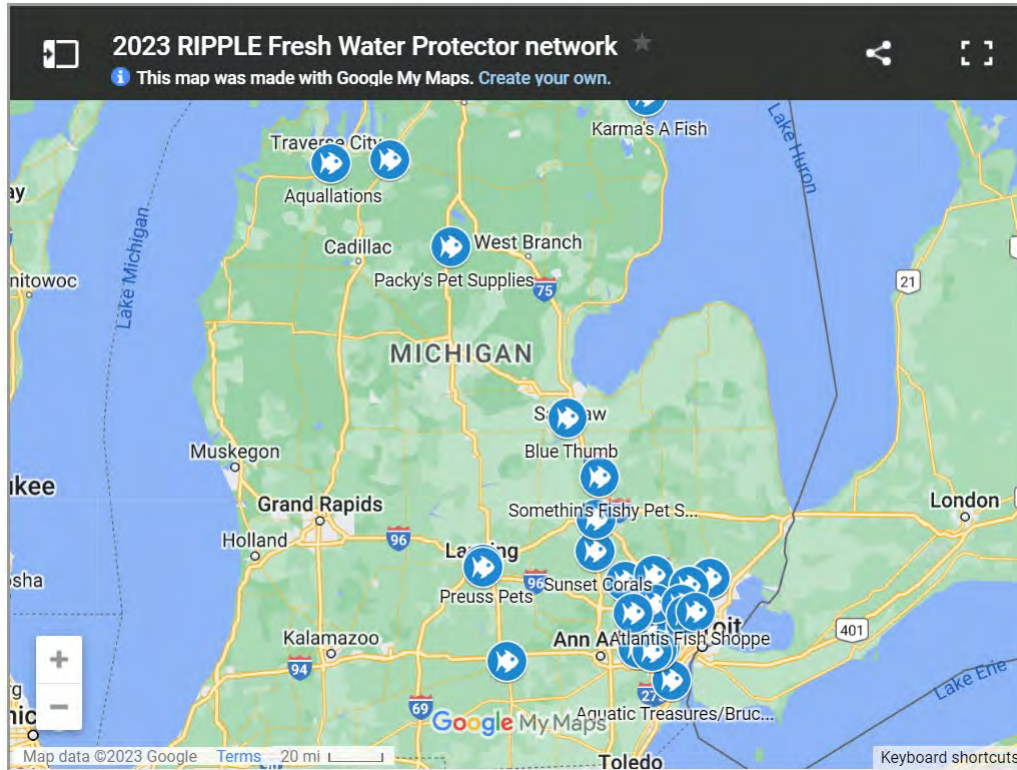


Michigan EGLE



Exotic Aquatic Plant Watch

Enroll Today!



RIPPLE (Reduce Invasive Pet and Plant Escapes)