

# Invasive Species

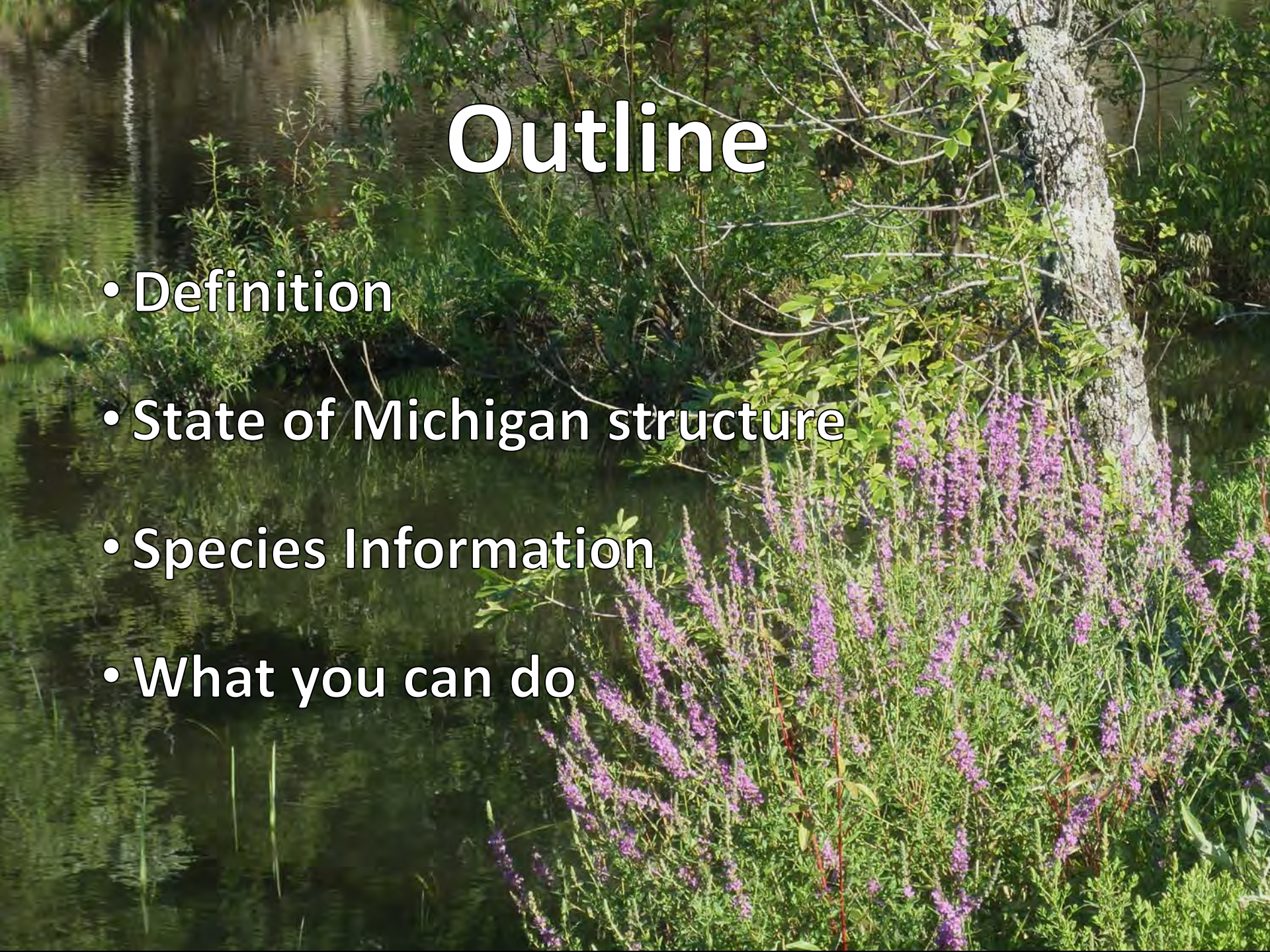


# Acronym Soup



# Outline

- Definition
- State of Michigan structure
- Species Information
- What you can do





# Invasive Species

...a species that is **not native** and whose introduction causes, or is likely to cause, economic or environmental **harm** or harm to human health.



# State of Michigan Invasive Species Core Teams





# Michigan's AIS State Management Plan

Goal 1: **Prevent new introductions** of AIS into Michigan waters

Goal 2: **Limit the spread** of established

Goal 3: Develop an **early detection and rapid response** program to address new invasions

Goal 4: **Manage and control** AIS to lessen the harmful ecological, economic, social and public health impacts





# Michigan Invasive Species



Overview

Search and Report

Take Action

Laws

Permits

Control & Management

Education & Outreach

Grants

Media Center

Contacts

Local Resources

## What are Invasive Species?

An invasive species is one that is **not native** and whose introduction **causes harm**, or is likely to cause harm to Michigan's economy, environment, or human health.

Many non-native species in Michigan, including fruits, vegetables, field crops, livestock and domestic animals, are important to our economy and lifestyle. Most non-native species are not harmful and may provide economic benefits. Invasive species cause harm when they out-compete native species by reproducing and spreading rapidly in areas where they have no natural predators and change the balance of the ecosystems we rely on.



Species Profiles  
& Reporting  
Information



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Species Updates

## Spotlight

- Michigan Invasive Species Grant Program funding opportunities for 2016
- REGISTER for the Michigan Invasive Species Grant Program webinar on May 12
- DNR advises caution to prevent spread of oak wilt disease
- Hemlock Woolly Adelgid Bulletin
- Aquatic Invasive Species Landing Blitz



Michigan's Invasive Species Program is cooperatively implemented by the Michigan Departments of Agriculture & Rural Development, Environmental Quality and Natural Resources.

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# Parrot Feather

- Watermilfoil species
- Native to South America
- Prohibited in Michigan
- Habitat: slow moving waters. High light
- Impacts: Outcompetes native species, impede recreation.
- Source: captive release
- Spread via fragments

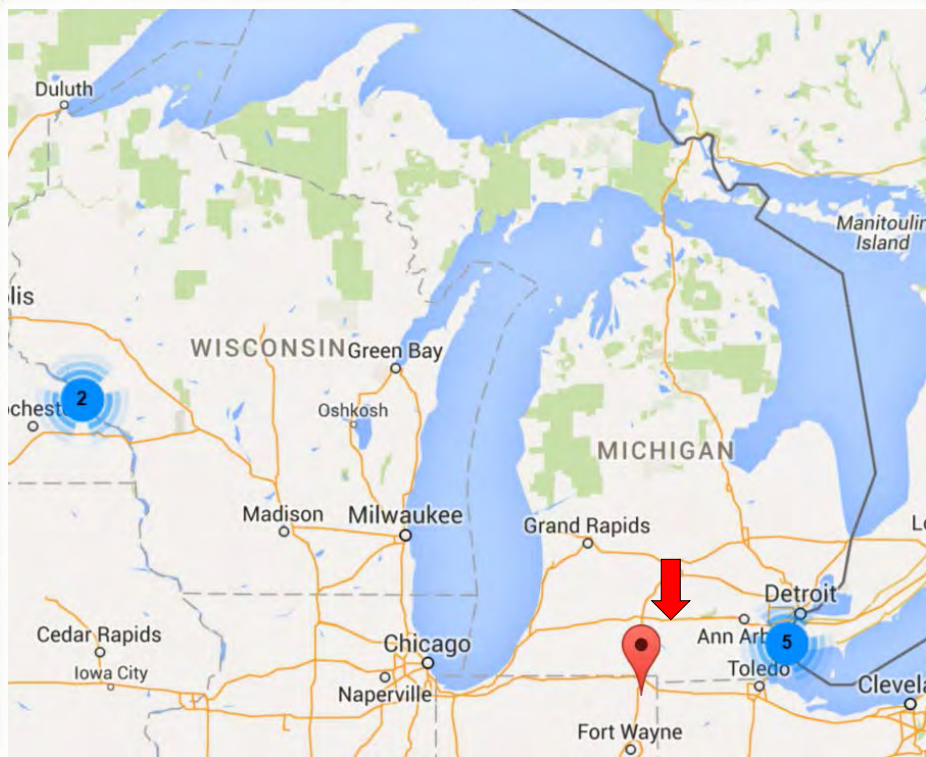


- 
- Rooted
  - Bright green
  - Leaves above water
  - Whorls of 4-6 leaflets
  - Leaves are feathery
  - Underwater portions may be reddish











# Yellow Floating Heart









- Rooted with floating leaves
- Native to Europe and Asia
- Prohibited in Michigan
- Habitat: slow moving waters
- Sources: captive release
- Spread: fragments and seeds?



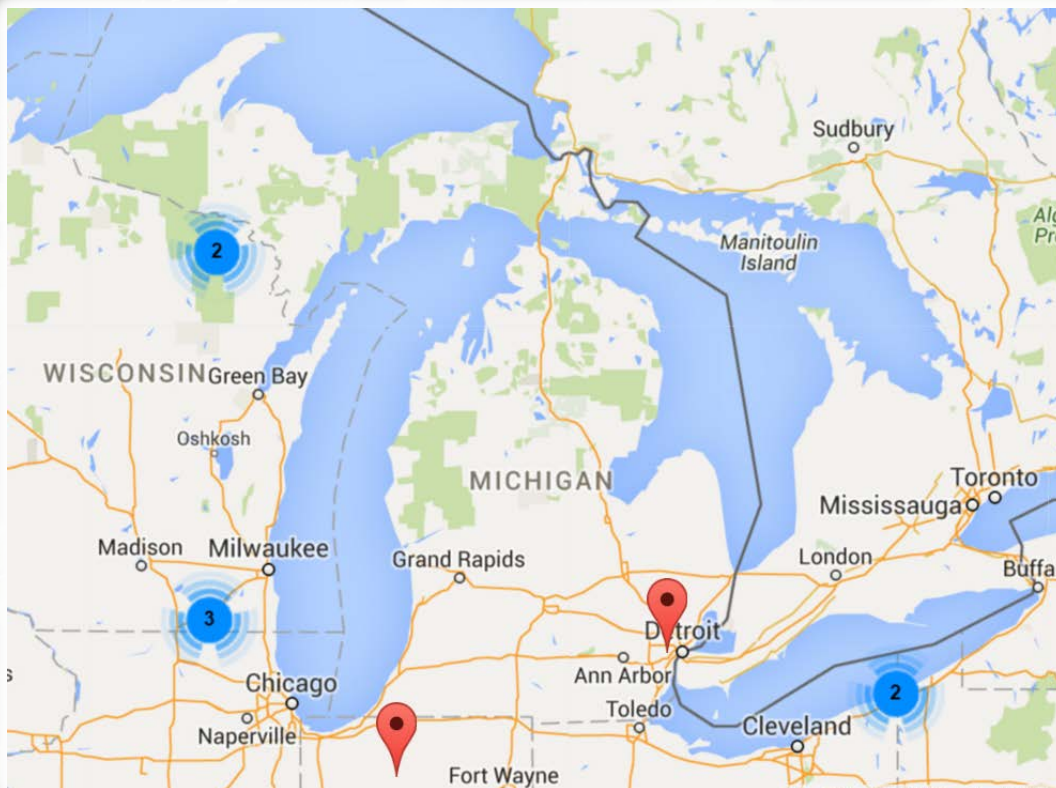
- 
- Flowers:
    - Bright yellow
    - 5 petals
    - Fringed edges



- 
- Leaves
    - Circular or heart-shaped
    - 1-4 inches across
    - Wavy edges



# Yellow Floating Heart





# European Frogbit

- Free floating or rooted leaf plant
- Native to Europe, Asia, and Africa
- Prohibited in Michigan
- Habitat: slow moving waters
- Sources: water fowl and/or
- Spread: fragments, turions, and seeds

07.17.2013 16:00





- Reproduction
- Turions
  - ½ inch structures



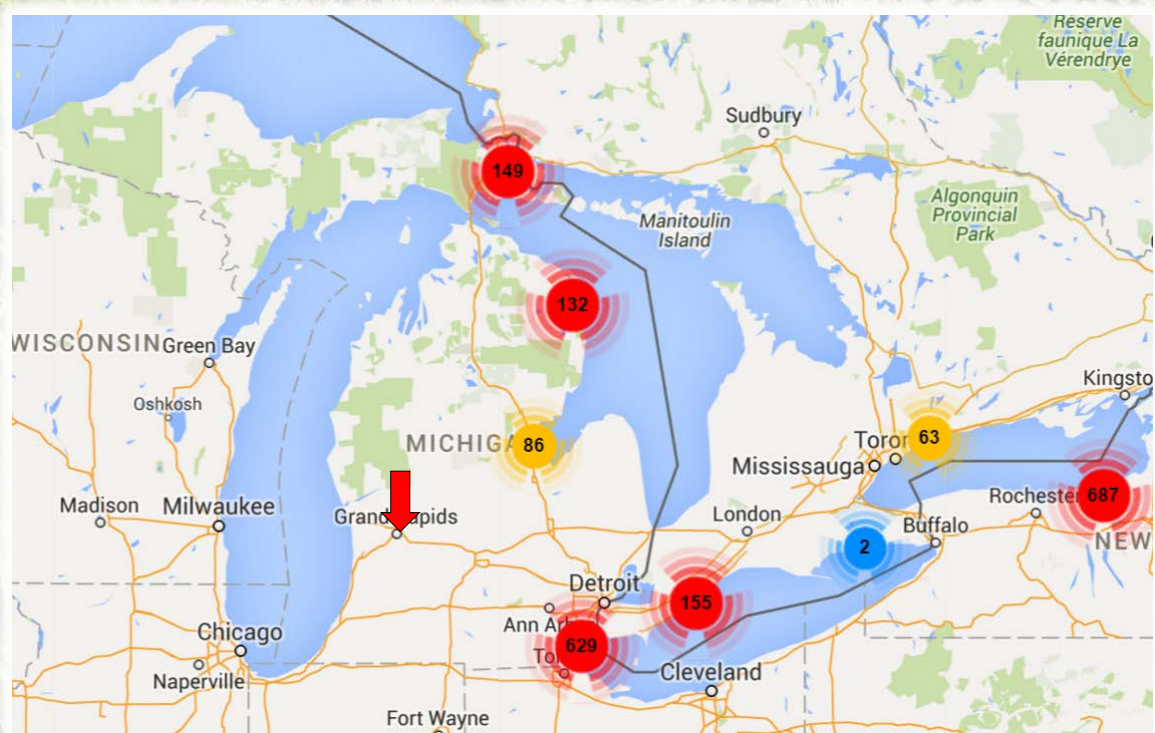
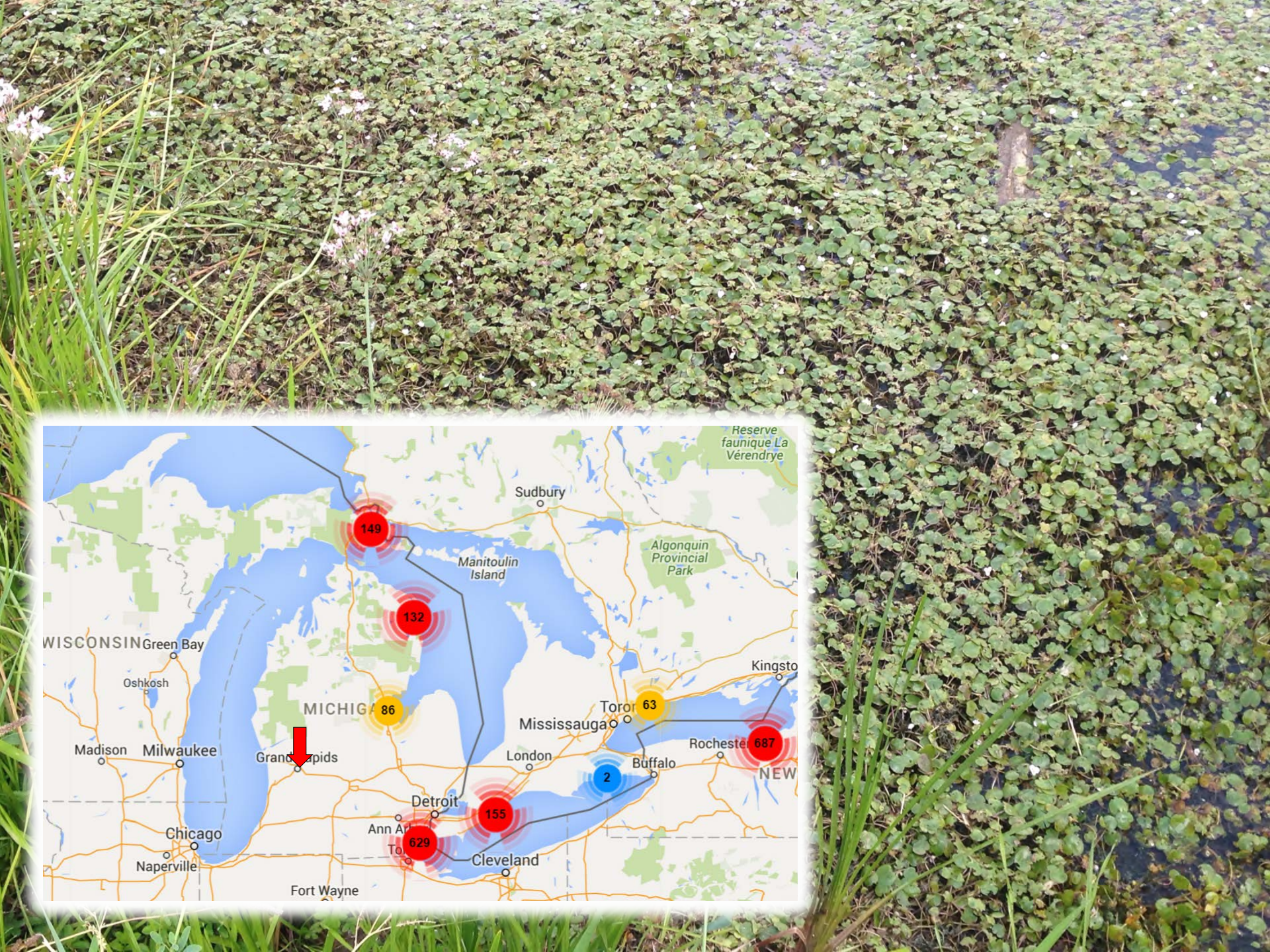


- Leaves:
  - Heart-shape
  - Quarter sized



- 
- Flowers:
- White petals with yellow center
  - Three petals







# European Water Clover

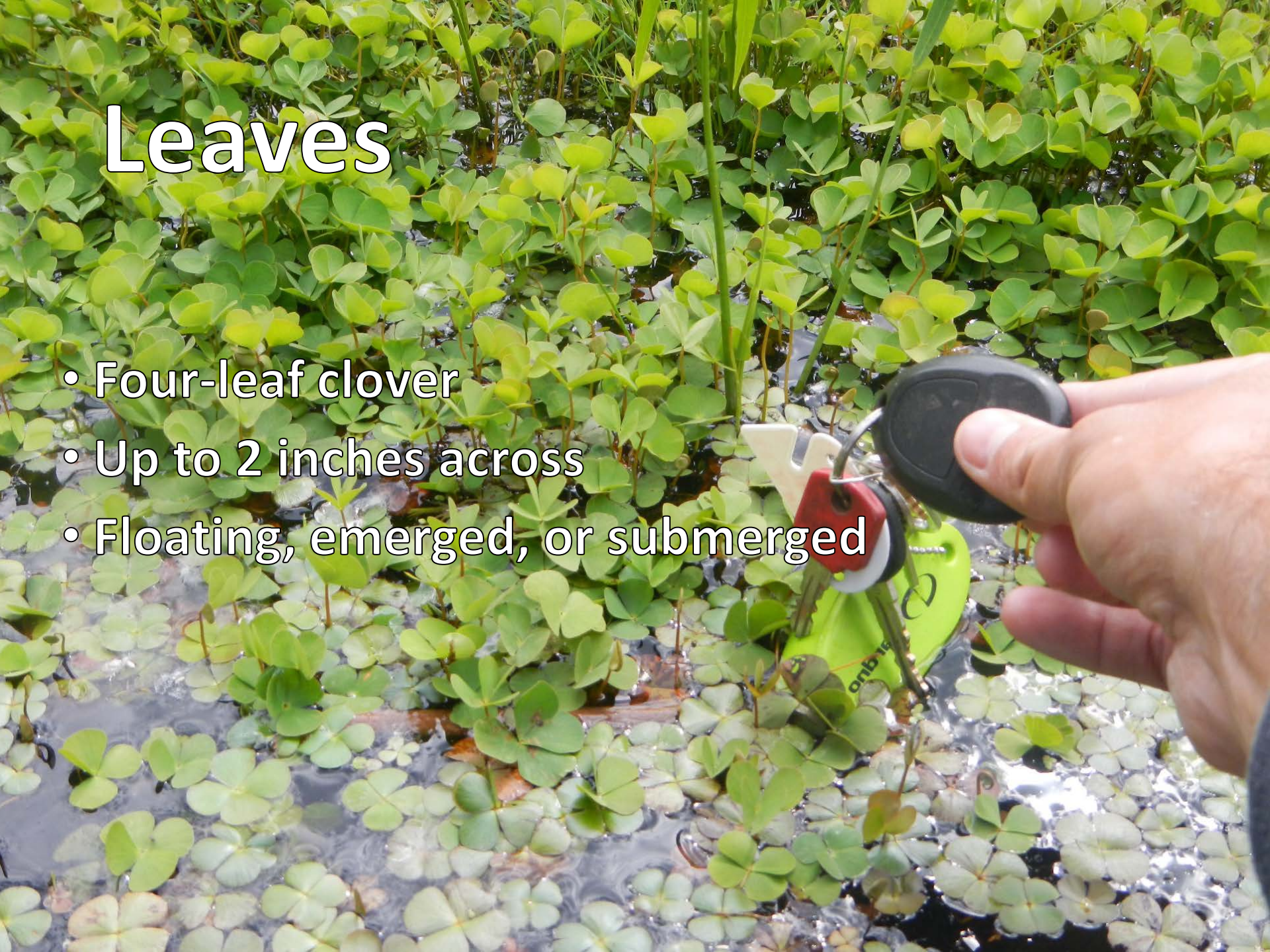
- Rooted fern
- Native to Europe and Asia
- Michigan Watch List species
- Habitat: Shallow, slow moving waters.
- Impacts: Outcompetes native species
- Sources: Captive release
- Spread: Fragments and sporocarps





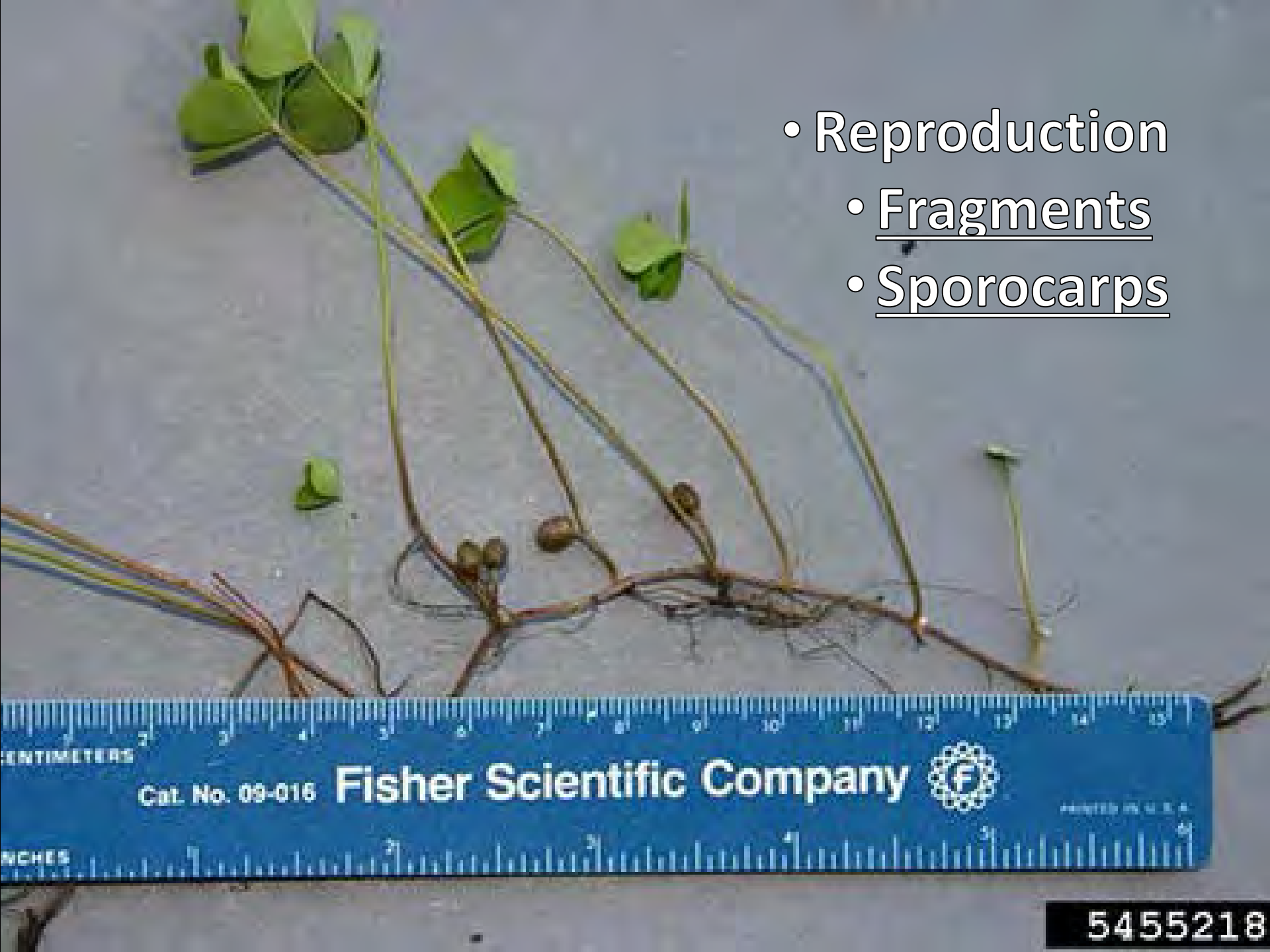
# Leaves

- Four-leaf clover
- Up to 2 inches across
- Floating, emerged, or submerged

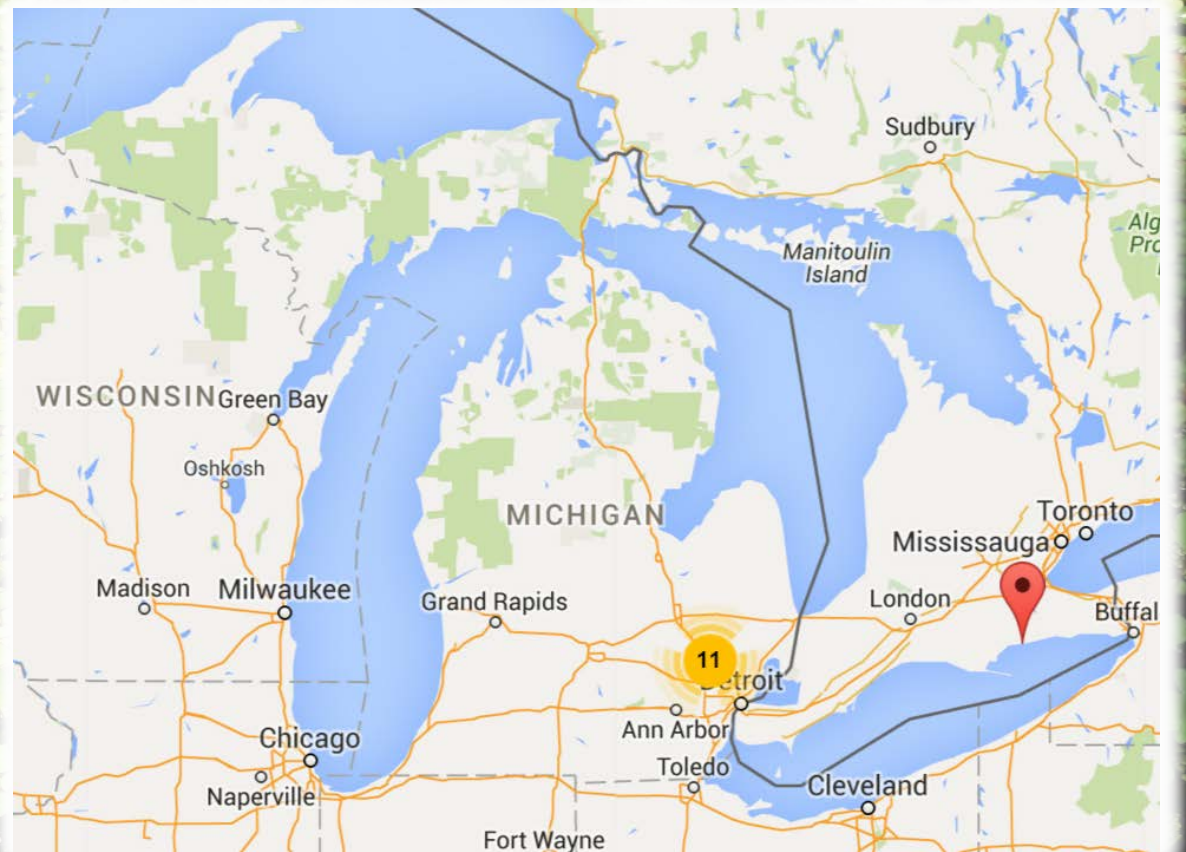




- Reproduction
  - Fragments
  - Sporocarps









# Water Lettuce

- Free floating
- Native to tropics
- Michigan status: Watch List
- Habitat: Ponds, lakes, rivers, & streams
- Sources: Captive release
- Spread: hydrologic connections, seed?



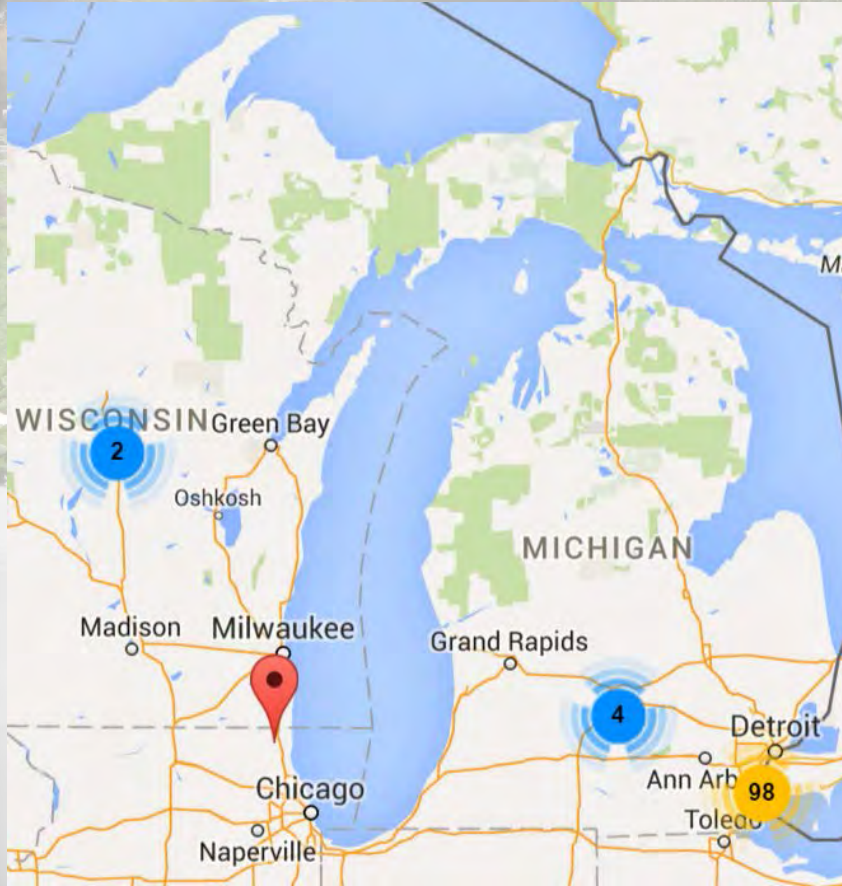
- Leaves
  - Bright green
  - Ridges
  - Fuzzy







Flower





# Water Hyacinth

- Free floating
- Native to tropics
- Michigan Watch List species
- Habitat: Ponds, lakes, rivers, and streams
- Sources: Captive release
- Spread: hydrologic connections



# Leaves

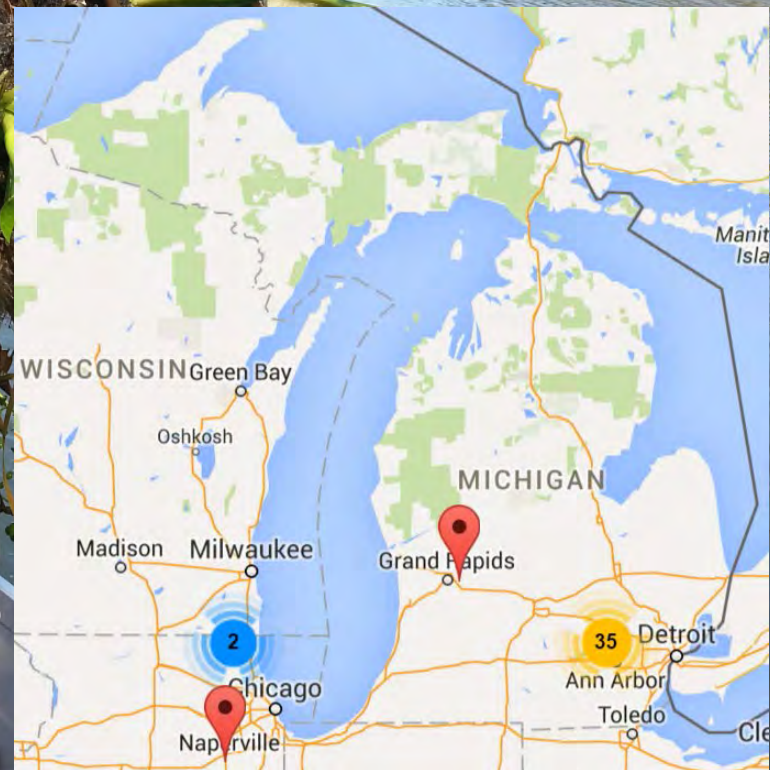




# Flowers










# New Zealand Mud Snail

- Aquatic snail
- Native to New Zealand
- Prohibited in Michigan





- 
- A close-up photograph of a forest floor covered with fallen leaves in various shades of brown, tan, and green. The ground is densely populated with thousands of small, dark, segmented larvae, likely black fly pupae, which are scattered across the leaves and in the shallow water between them. Some small, bright green plants are visible growing through the leaf litter.
- Habitat: Rivers, lakes, estuaries
  - Sources: recreation or fish movement
  - Spread: Asexual reproduction



- **Habitat: Rivers, lakes, estuaries**
- **Compete with native invertebrates**
- **Alter food webs**



Native snail

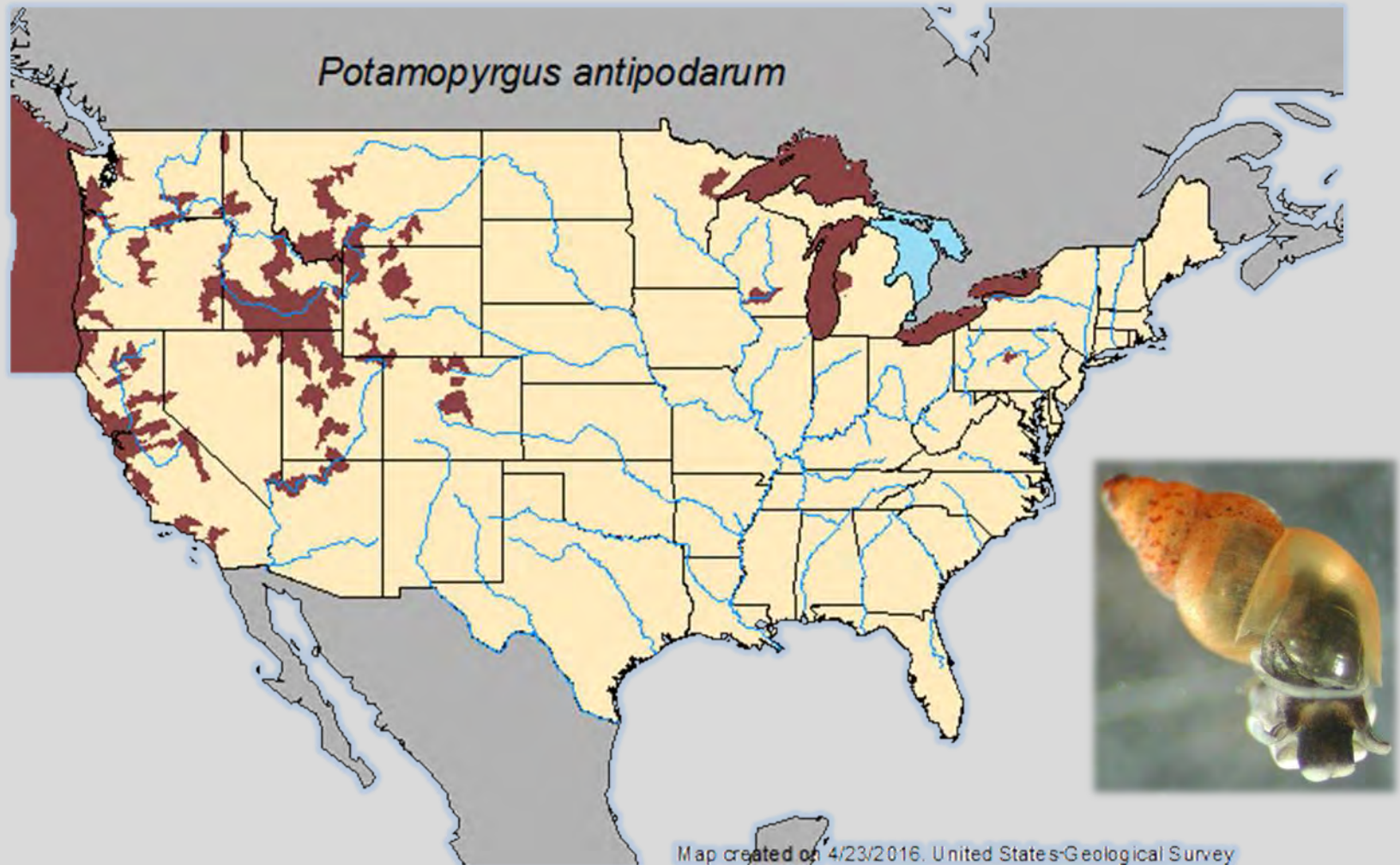
New Zealand Mud Snail



- 
- A US penny is shown for scale, with the Lincoln Memorial and the words "IN GOD WE TRUST" visible. The penny is placed next to several tiny, dark, spiral-shaped snail shells to illustrate their small size.
- Tiny... 1/8 inch
  - Reproduce quickly
  - Asexual reproduction



# 2015 Known Distribution



\* At least 2 clones in US



# New Zealand mudsnails discovered in Michigan

BY SARAH ROEBUCK | SUNDAY, NOVEMBER 29TH 2015



New Zealand mudsnails. Courtesy: National Park Service Yellowstone Park



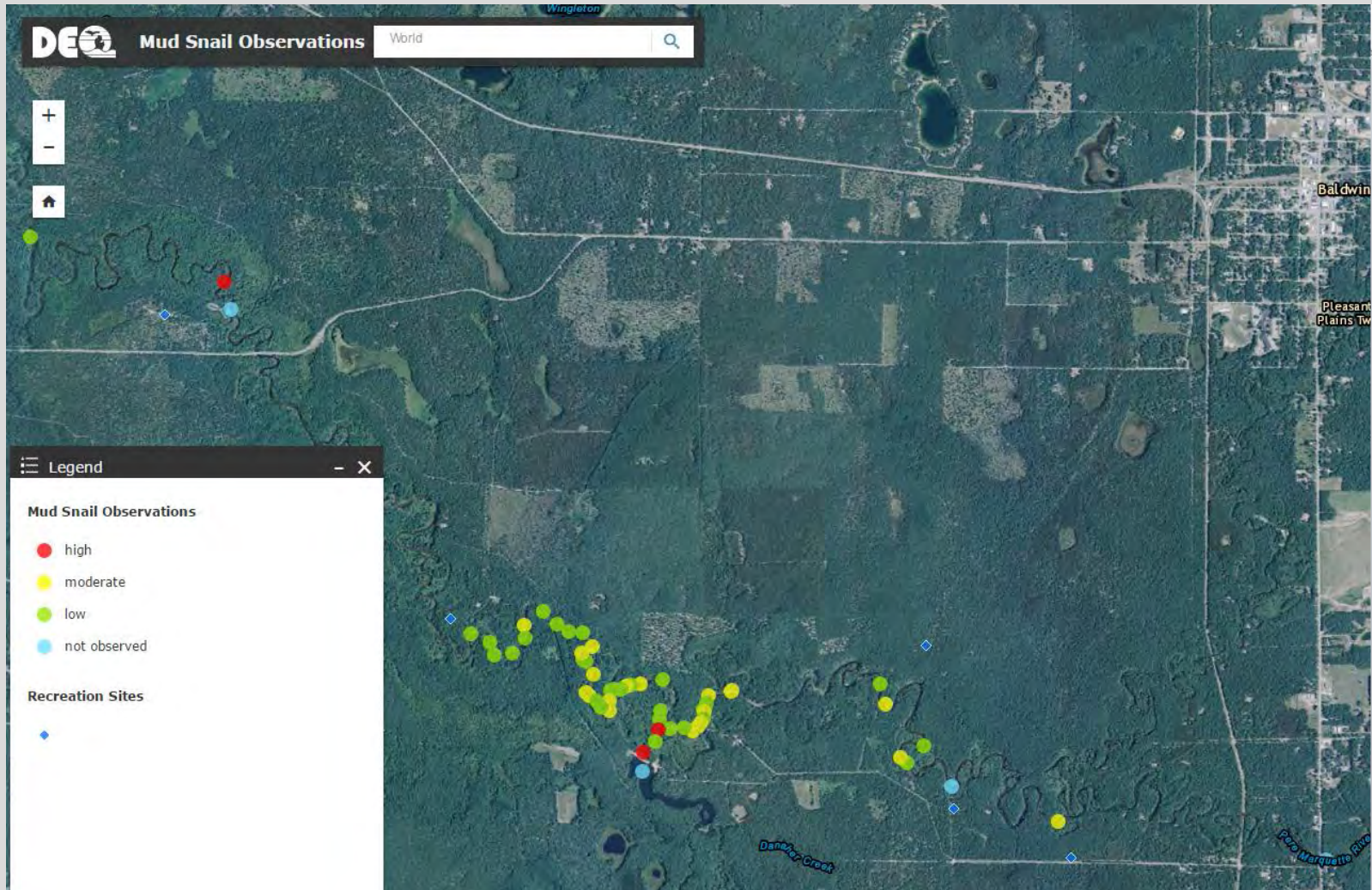
# Next Steps

- Nature and extent surveys
- Increase awareness
- Outreach





# 2015 Survey Results



More wide spread that originally thought



# 2016 Monitoring

- Identified high risk watersheds
  - High traffic foot access areas
- Identified 10 watersheds
- Sampled 47 locations
- Qualitative 20 minute searches





# 2016 Survey Results

- = Monitoring sites
- ★ = NZMS population





# The Future

- Further Monitoring
- Outreach and education
- Working with partners

## Angler NOTICE!

### HELP STOP Aquatic Hitchhikers



*New Zealand Mudsnail is a prohibited invasive species.*

Already Detected in some Michigan waters; including the Pere Marquette, AuSable rivers.

These snails easily attach themselves to fishing and boating equipment and often go unrecognized.



**CLEAN** Your gear with HOT water and remove any visible plants, mud and aquatic life

**DRAIN** The water from all equipment before transporting elsewhere

**DRY** All your gear for at least 5-days before going to a new body of water

This species causes negative impacts as it reproduces in large numbers and displaces native species.

[mi.gov/invasives](http://mi.gov/invasives)









# Learn, Identify, Report, Map



Free

**MISIN** Midwest Invasive Species Information Network

[www.misin.msu.edu](http://www.misin.msu.edu)



# Decontaminate





# Don't Release...



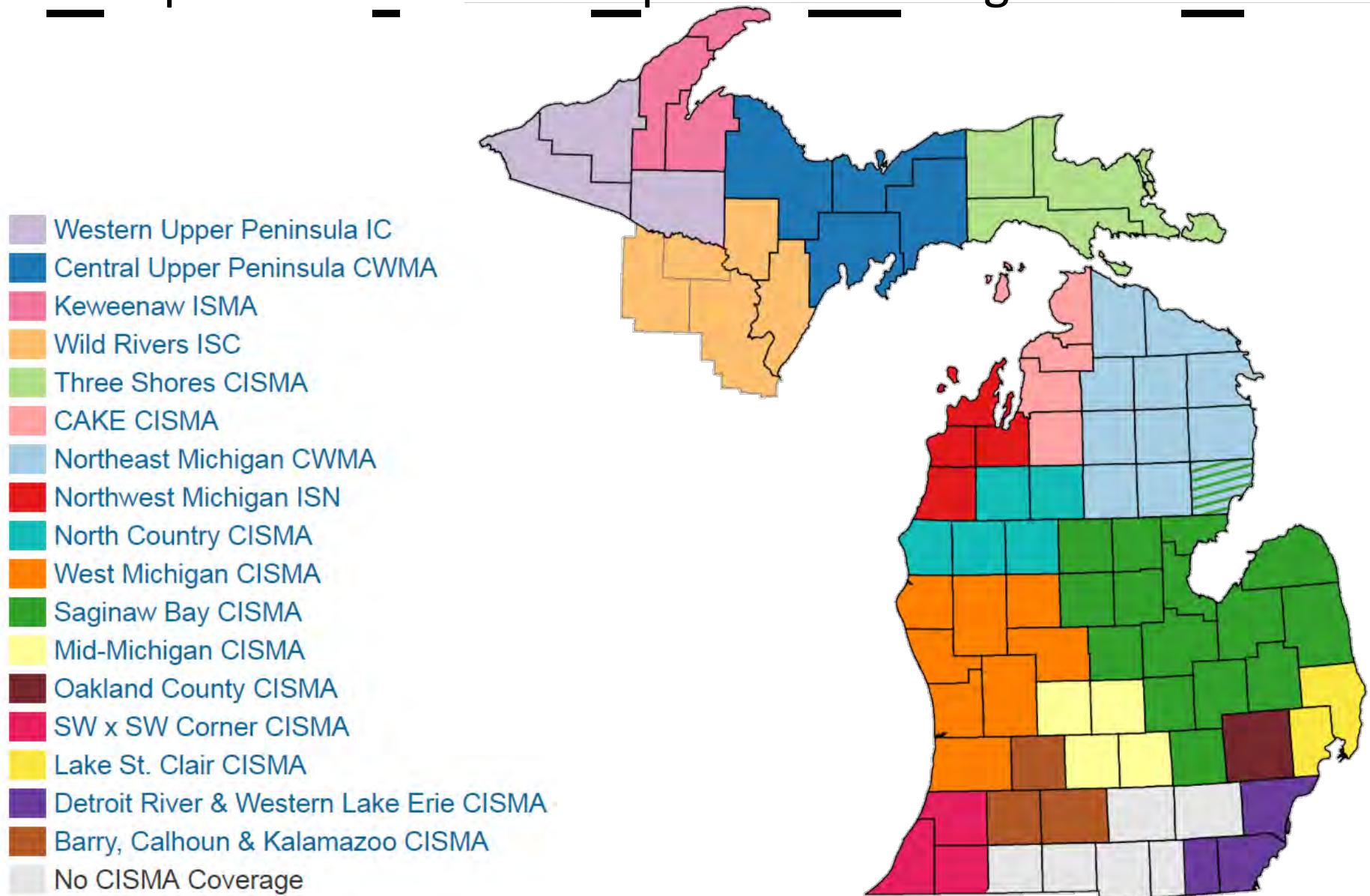


# Use local firewood



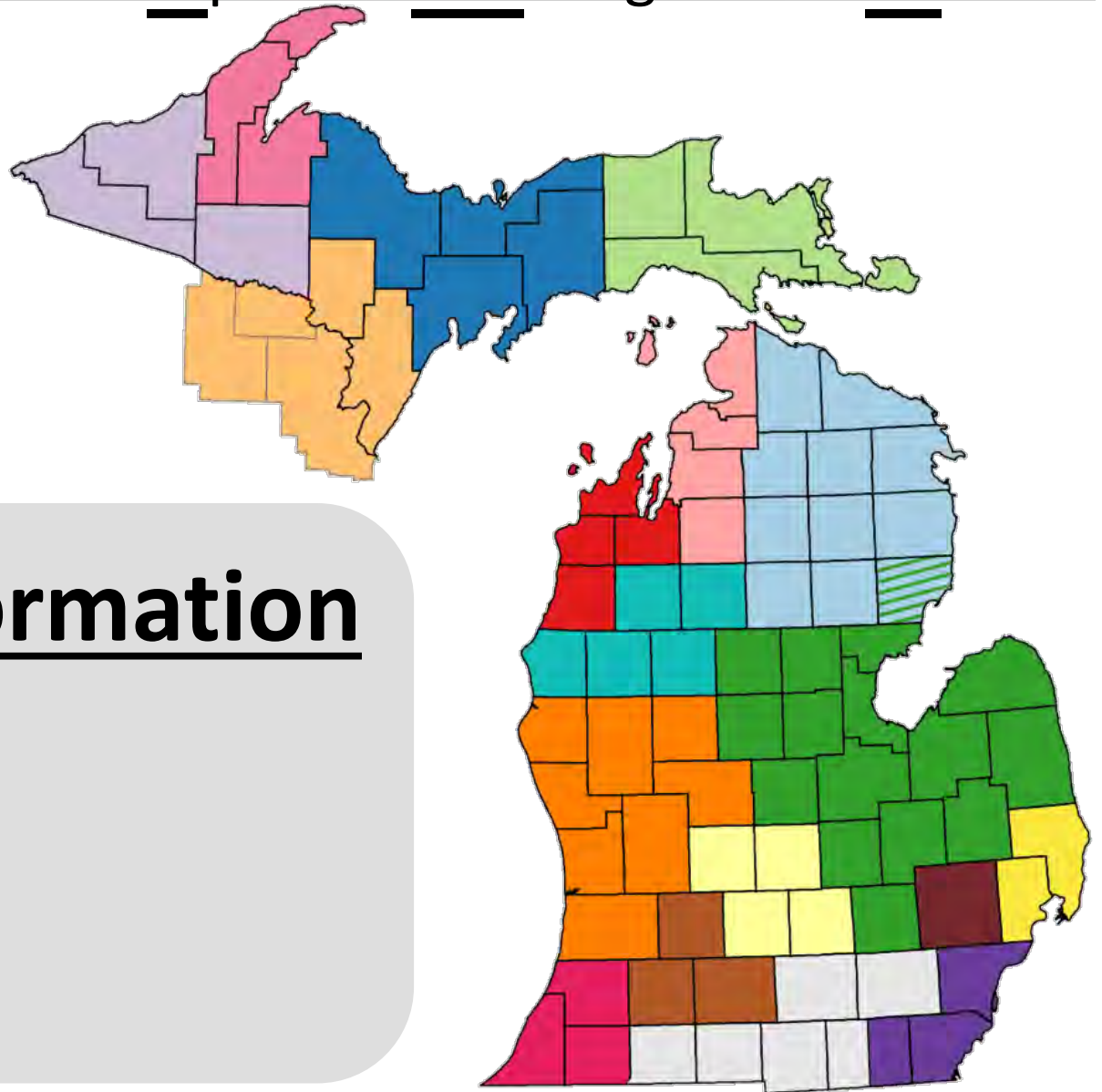


# Cooperative Invasive Species Management Areas





# Cooperative Invasive Species Management Areas



## Provide information

- Prevention
- Identification
- Reporting
- Management



Search



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A vibrant sunset scene with a body of water in the foreground. The sky is filled with streaks of orange, red, and blue, with the sun low on the horizon. The water reflects the colors of the sky. Silhouettes of trees are visible along the horizon line.

# Thank You!

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