

PROTECTING MICHIGAN LAKES AND RIVERS FROM INVASIVE SPECIES

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Michigan State University

Kellogg Biological Station – April 11, 2017

Invaders

Asian carps



Zebra & Quagga Mussels



Eurasian Watermilfoil



Curly-leaf Pondweed



Starry stonewort



European Frog-bit



Water lettuce



Water hyacinth



Fanwort (*Cabomba*)



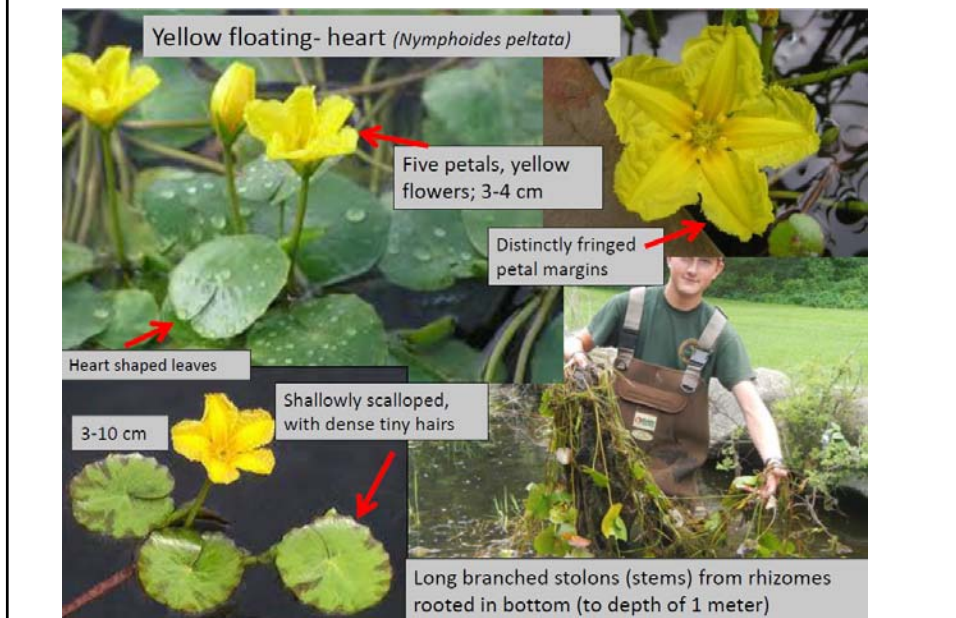
Parrot feather milfoil



European water clover



Yellow floating-heart



Red swamp crayfish



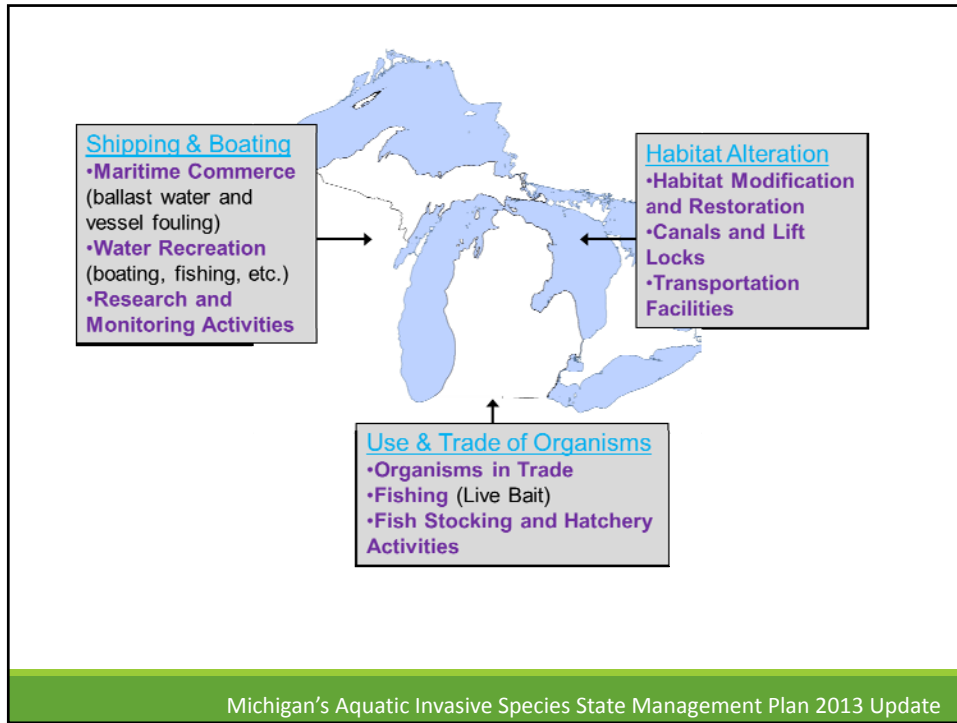
New Zealand Mudsnail



Hydrilla



Pathways



Boating and Angling



Organisms in Trade



Prevention

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 a watercraft or place a trailer in the water if aquatic plants are attached.
- Do not release unused bait into the water.
- Do not transport water over land in bilges and live wells.

www.mi.gov/InvasiveSpecies

DEQ Michigan Department of **AGRICULTURE & Rural Development**

STOP Aquatic Hitchhikers!
✓ Clean ✓ Drain ✓ Dry
WildlifeForever.org

CLEAN BOATS CLEAN WATERS

HELP!
Prevent the spread of aquatic invasive species. Clean, drain, and dry your boat before launching.





RIPPLE
REDUCE INVASIVE
PET & PLANT ESCAPES

HOW TO PREVENT ESCAPES

Remember—never release your aquatic plants and animals into local waterways or compost piles. For more information on aquatic invasive species, visit mi.gov/invasivespecies

Inspect and rinse new aquatic plants to rid them of seeds, plant fragments, snails and fish.

Build water gardens well away from other waters.

Seal aquatic plants for disposal in a plastic bag in the trash. Do not compost.

Give or trade unwanted fish or plants with another hobbyist, environmental learning center, aquarium or zoo.

Contact a veterinarian or pet retailer for guidance on humane disposal of animals.

GET TO KNOW

THE INVADERS


REGULATED PLANT SPECIES

Michigan laws regulate the possession and sale of certain plant species which are considered undesirable. These unwanted species are listed in Part 413 of the Natural Resources and Environmental Protection Act (NREPA), or Act 461 of 1994, as amended.

Prohibited or restricted plant species identified in NREPA Part 413 cannot be sold or imported into Michigan. These species, however, could be sold unintentionally if they are misidentified or mislabeled, or when plant fragments hitchhike in the transport or growing media of otherwise allowable species.


All of the following plants, fragments, seeds or a hybrid or genetically engineered variant thereof are specifically prohibited or restricted and cannot be sold or imported.

European frog-bit | *Hydrocharitaceae*




- Leafy, heart-shaped leaves are 1 to 2 inches wide, resemble a miniature water lily
- Free-floating, not typically anchored into a substrate
- Flowers have 3 white petals, bloom in summer

Hydrilla | *Hydrilla verticillata*




- Leaf margins are distinctly saw-toothed and often have one or more deep teeth along the length of the leaf midrib
- Leaves grow in whorls of 4 to 8 around the stem
- Gender roots with potato-like tubers

Yellow floating heart | *Nymphoides peltata*



- Bottom-rooted with long branched stems up to one meter in length just below the water's surface
- Heart-shaped leaves are 1-4 inches long on long stalks
- Bright yellow 5-petaled flowers are about 1 inch in diameter; flower edges are distinctively fringed
- Leaves are often purplish underneath, with slightly wavy margins



RIPPLE
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Detection

Citizen Monitoring





Michigan's Aquatic Invasive Plant Watch List

Aquatic invasive species on the watch list have been identified as being an immediate and significant threat to Michigan's natural resources. These species either have never been confirmed in the wild in Michigan or have a limited known distribution. Early detection and timely reporting are crucial for preventing establishment and limiting impacts. For more information on these plants, visit: www.misin.msu.edu

Be on the lookout for these invasive species!

<p>Yellow Floating Heart <i>Nymphaea peltata</i></p> 	<p>Water-chestnut <i>Trapa natans</i></p> 	<p>Parrot Feather Water-milfoil <i>Myriophyllum aquaticum</i></p> 	<p>Water Soldier <i>Stratiotes aloides</i></p> 	<p>Hydrilla <i>Hydrilla verticillata</i></p> 
<p>Brazilian Water-weed <i>Egeria densa</i></p> 	<p>European Frog-bit <i>Hydrocharis morsus-ranae</i></p> 	<p>Water Lettuce <i>Pistia stratiotes</i></p> 	<p>Water Hyacinth <i>Eichhornia crassipes</i></p> 	<p>European Water-clover <i>Marileia quadrifolia</i></p> 

Three species are currently allowable for sale and possession. Please contact the DNR if these plants are observed outside of cultivation.

If you have seen any of these aquatic invaders, note their location and contact:

Michigan DNR Wildlife Division
Phone: (517) 641-4903 ext. 260
www.mi.gov/invasivespecies



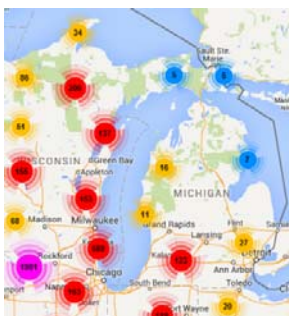



Questions about other aquatic invasive plants? Contact the DEQ Aquatic Nuisance Control Program at 517-284-5593, www.mi.gov/anc

Response

Information Management

MISIN Midwest Invasive Species
Information Network



Treatment



What can we do?

- Learn

Water lettuce

Midwest Invasive Species Information Network (MISIN)

Educational Module and Assessment:

Water lettuce,
Pistia stratiotes L.



MSU Agricultural Research Service
IOWA Agricultural Research Service
iowaresearch.org

Forest & Kim Starr
Starr Environmental, Bugwood.org

< PREV NEXT >



www.Michigan.gov/invasives

Michigan Invasive Species

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.

Spotlight

- DNR releases update on health of Michigan's forest land
- Invasive Species Newsletter Spring 2017
- Bring the Mobile Boat Wash to your community!
- State awards more than \$3.5 million to battle invasive species
- State agencies ask people to check trees for hemlock woolly adelgid

Subscribe to Invasive Species Updates

DEQ DNR Michigan Department of AGRICULTURE & Rural Development

Exotic Aquatic Plant Watch
Cooperative Lakes Monitoring Program (CLMP)

[YouTube.com](https://www.youtube.com/watch?v=...)

Search for:
Michigan DEQ Invasive Species

INVASIVE SPECIES DECONTAMINATION

mdeq minute
NEW ZEALAND MUD SNAILS

What can we do?

- Learn
- Be vigilant



What can we do?

- Learn
- Be vigilant
- Report



Michigan's Aquatic Invasive Plant Watch List

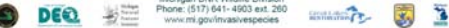
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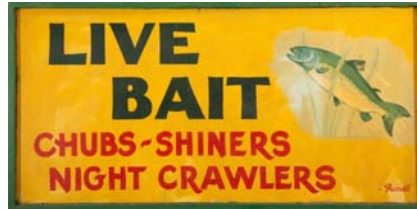


Questions about other aquatic invasive plants? Contact the DEQ Aquatic Invasive Control Program at 517-284-3393, www.mi.gov/aic



What can we do?

- Learn
- Be vigilant
- Report
- Be informed consumers



What can we do?

- Learn
- Be vigilant
- Report
- Be informed consumers
- Clean recreational gear





Contact

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www.micorps.net