

Aquatic Invasive Species (AIS)



Healthy Lake Ecosystems

A healthy lake has an abundance of plants and fish native to our area.

When non-native plants and animals are introduced to the lake, it upsets the natural Ecosystem balance.

**Aquatic invasive species
cause harm to our
environment, our economy
and our health.**

The presence of an invasive species may:

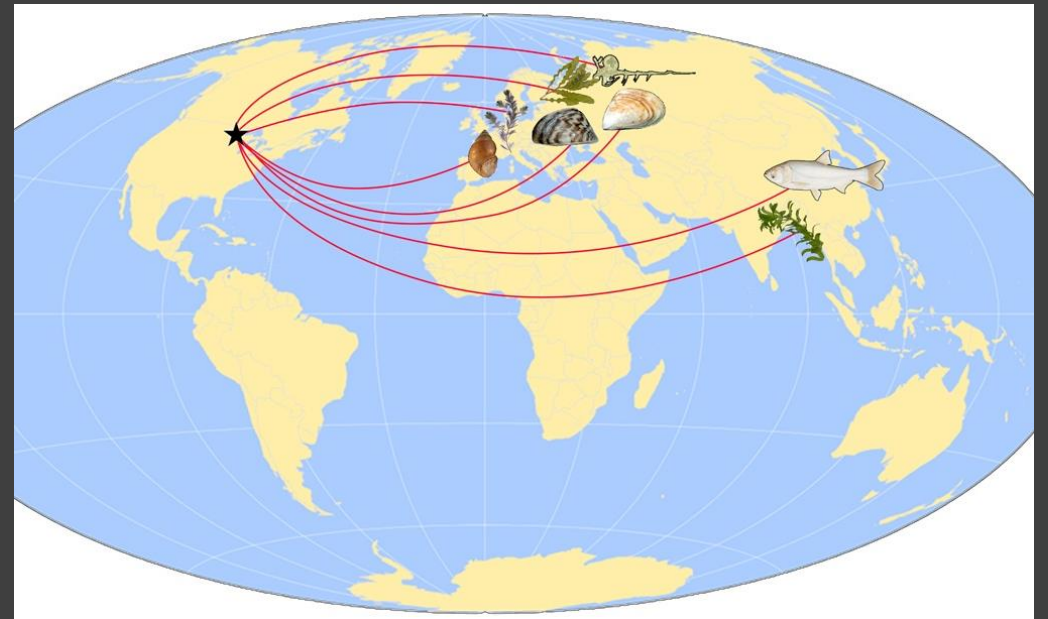
- damage wildlife and communities by altering habitats.
- reduce production of fisheries.
- block transportation routes.
- choke irrigation canals.
- foul industrial and public water supply pipelines.
- degrade water quality.
- decrease property values.



Where did they come from and how did they get into our Minnesota lakes and rivers?

They came mostly from Eastern Europe in the ballast water of cargo ships. In the last 60 years, maritime shipping has been the most prolific pathway of unintentional introduction of aquatic invasive species to the Great Lakes region.

Ballast water is used by ships to maintain stability on the open ocean. Ballast tanks are filled with water at the start of the voyage- sometimes with millions of gallons- and that water is released or exchanged when the final destination is reached.

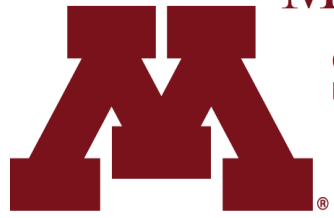


AIS in the Great Lakes...180 & Counting

- AIS impacts in the Great Lakes cost more the \$200 million annually in lost revenue and prevention strategies.
- The places where waterways connect are vulnerable to the movement of AIS.
- 30% of AIS in the Great Lakes have been introduced through ship ballast water.
- Ballast water release is now strictly regulated in the Great Lakes.



Sea lampreys, one of the first recorded Great Lakes invaders, have been successfully controlled at about 10% of their highest population levels, through expensive annual combative measures. To date, sea lampreys are the only AIS in the Great Lakes that intentional control efforts have significantly reduced.



MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Created in 2012 through funds from the Minnesota legislature, our Center has grown into a respected partner and national leader in the fight against AIS.

MAISRC is a multidisciplinary team that plays a central role for AIS research in Minnesota.





AIS in the Pelican River
Watershed District



CURLY LEAF PONDWEED

This invasive plant has been in our area for 100+ years.

The Watershed District used harvesters on the lakes for many years to cut it back so boaters could navigate through the thick patches.

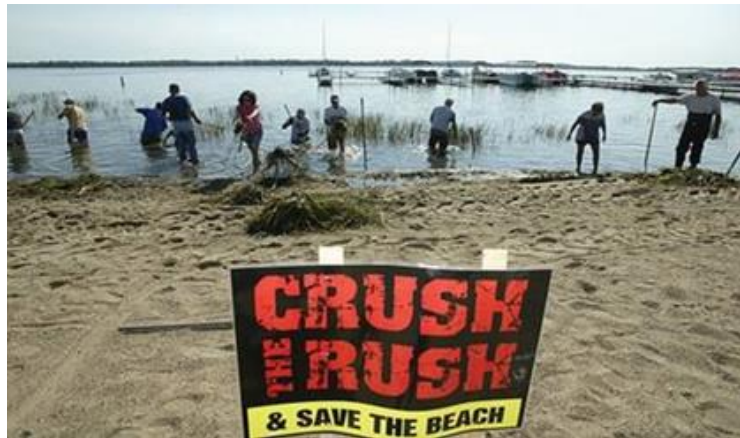
Now it is treated with chemicals in late May or early June, while the water temperature is below 60 degrees.

Flowering Rush

An AIS Success Story

That included many partners

- MN Dept of Natural Resources
- City of Detroit Lakes
- Lake Detroiters Lake Association
- Sallie-Melissa Lake Association
- Mississippi State University
- University of Montana
- Concordia College in Moorhead
- US Army Corps of Engineers
- Aquatic Ecosystem Restoration Foundation





Flowering Research Study

2010-2011 – Mississippi State University and Concordia College study plant life and growth cycle. Hundreds of sediment core samples were collected year-round and analyzed.

2013-2014 – Treatment areas were greatly expanded on all lakes.

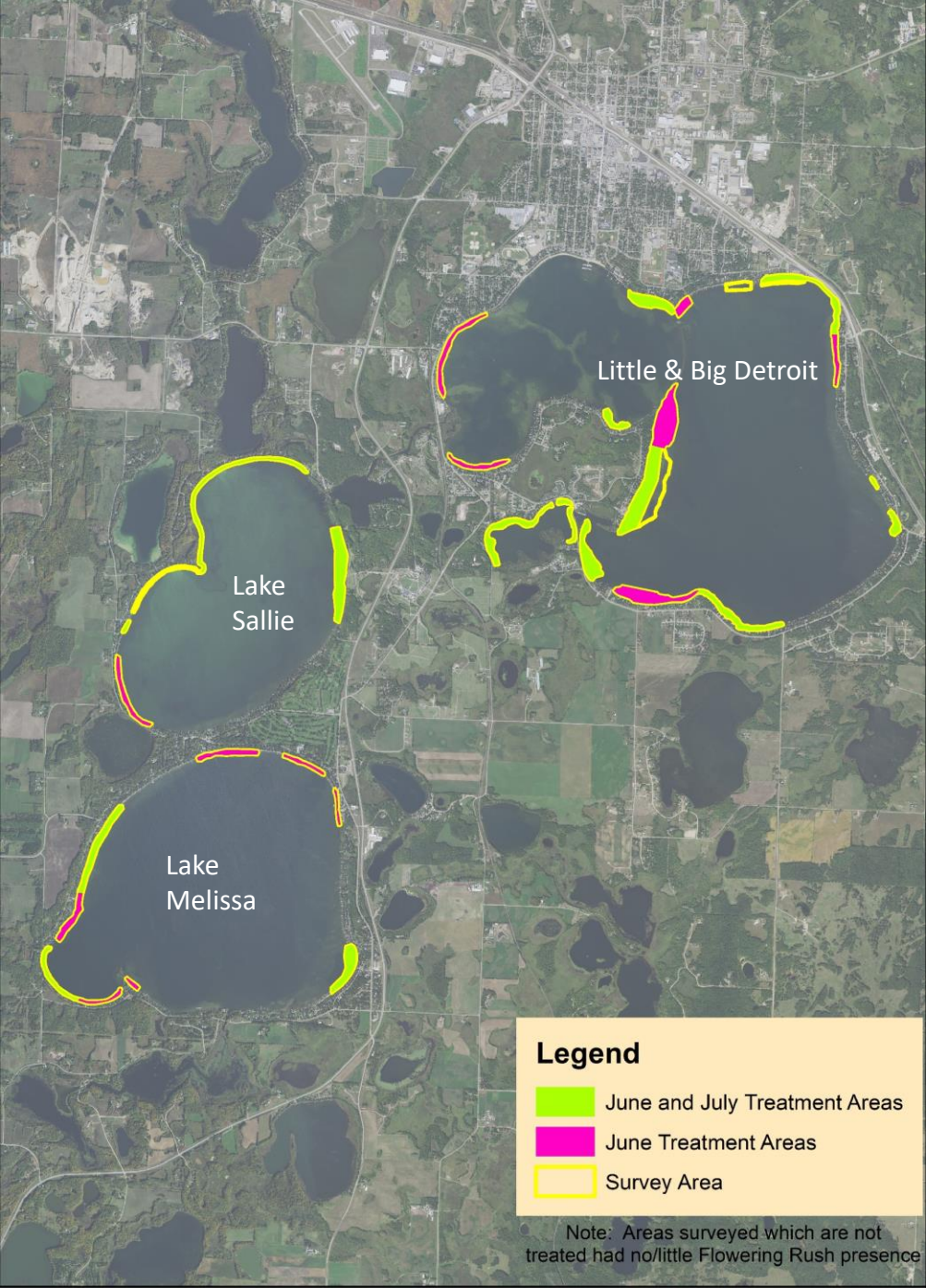
2010 – Met with research scientists and federal government to discuss herbicide controls.

2011 – Small scale in-lake test plot pilot study was conducted.

2015-2016 – A plan to determine where, when and how often to treat the plant to manage plant populations was developed.

2010-Army Corps of Engineers and Aquatic Ecosystem Restoration Foundation conduct in-tank herbicide studies.

2012 – Based upon the pilot test plot study, small scale near-shore in-lake treatments were conducted on Detroit, Curfman, Sallie and Melissa Lakes.



2017 Total cost of Flowering Rush Treatment = \$59,664

2017	Detroit	Curfman	Sallie	Melissa
June –FR Acres/Cost	146.9 Acres \$20,213	15 Acres \$2,064	42.7 Acres \$5,876	53.7 Acres \$7,369
July—FR Acres/Cost	83.6 Acres \$11,598	15 Acres \$2,064	44.7 Acres \$6,151	28.4 Acres \$4,329

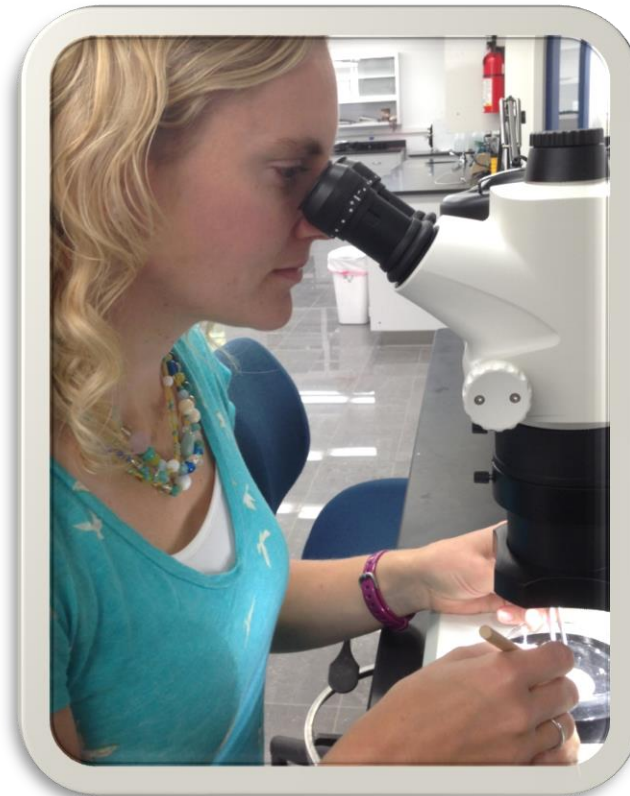
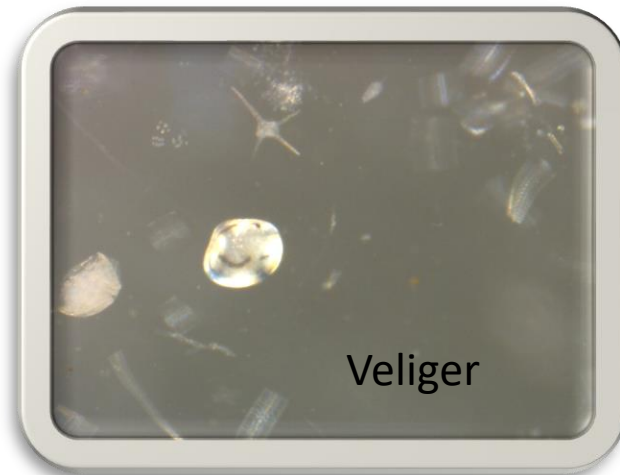
The Pelican River Watershed District must submit treatment maps to the Minnesota Department of Natural Resources (MN DNR) indicating where and how many acres we would like to treat on each lake. The MN DNR will often verify our request before issuing permits. Only a limited number of herbicides are allowed to be used to treat AIS and only a limited number of permits are issued on each lake.

Zebra Mussels

- The invasive mollusk was first found in the District in 2014 in Lake Melissa.
- It has since been found in Sallie, Detroit, Curfman, Long and the Floyd Lakes.
- Currently there is no management strategy to control zebra mussels, however, researchers are studying the mollusks to try and find one.
- The Watershed District has collected Zooplankton samples on area lakes for MN DNR analysis to see how the local lakes have been changed by the infestation of zebra mussels.



- *D-shaped shell
- *Brown stripes
- * $\frac{1}{4}$ - $1\frac{1}{2}$ inches long
- *Females produce up to a million eggs/year
- *Byssal threads attach to hard objects
- *Compete with native zooplankton



Chinese Mystery Snail

Chinese mystery snail is a **regulated invasive species**.

Regulated Invasive Species (MN DNR) are legal to buy, sell, transport, and possess, but may not be introduced into a free-living state, such as released into public waters.

Locally, Detroit Lake was infested with Chinese Mystery snails in the mid-1980's.

Chinese mystery snail populations can reach large numbers, which may foul beaches and shore land during die-offs.

They can carry parasites that impact native mussels.

Females live up to 5 years and males live 3-4 years.

Females give birth to live, crawling young from June – October.





What are we most afraid of in Becker County? Starry Stonewort

- 1978 – St. Lawrence River
- 2015- Lake Koronis, MN in Stearns County

*Starry stonewort grows in tall and dense colonies.

*It is known to form mats on the surface of the water that can interfere with recreation and potentially displace native plant species.

*When it was first found in Minnesota in 2015, MAISRC researchers had to act quickly to learn the basics of invasive alga.

Using a risk model developed by the Minnesota AIS Research Center, the top 25 lakes in Becker County predicted for starry stonewort invasion are being targeted for monitoring and management.

Starry Stonewort Management

Mechanical and algaecide treatments greatly reduced starry stonewort biomass, but that their star-shaped bulbils, which can regenerate into new plants, remained viable after treatment. This reinforces the importance of a multi-pronged approach to starry stonewort control.



INVASIVE CARP



- Grass, Bighead, Silver and Black carp were brought to the United States in the 1970s as a biological control for plants, algae and snails in aquaculture, wastewater and retention ponds.
- Grass, Bighead and Silver Carp have all been confirmed in Minnesota by the MN DNR.
- A total of 2-7 individual invasive carp captures each spring from 2013 to 2018
- In 2019 – 18 invasive carp
- In 2020 – 83 invasive carp
- In 2021 – 71 invasive carp



Government agencies across the country work together to:

- Prevent Introductions
- Detect and Monitor
- Stop the Spread
- Suppress Infestations
- Educate the Public

What is needed to fight AIS? MONEY and lots of it!

In 2014, the Minnesota legislature passed a county tax bill that divides \$10 million between all Minnesota counties. How much each county receives is based upon the number of lakes in each county.

Becker County receives \$334,200 each year. Becker and Otter Tail Counties receive higher than average amounts.

- ❖ \$221,836 is budgeted for Watercraft inspections (Inspectors, field supplies, etc.)
- ❖ \$16,573 is for decontamination of equipment
- ❖ \$73,453 is Professional /Technical
- ❖ \$11,840 is Monitoring/Treatment/Response (grants for chemical treatments)
- ❖ \$3,470 is for Outreach/Education
- ❖ \$7,028 is for insurance and supplies





The Watercraft Inspection Program was created in 1992 to prevent the spread of AIS within Minnesota through

- boater education
- watercraft inspections
- watercraft decontaminations at public water accesses.

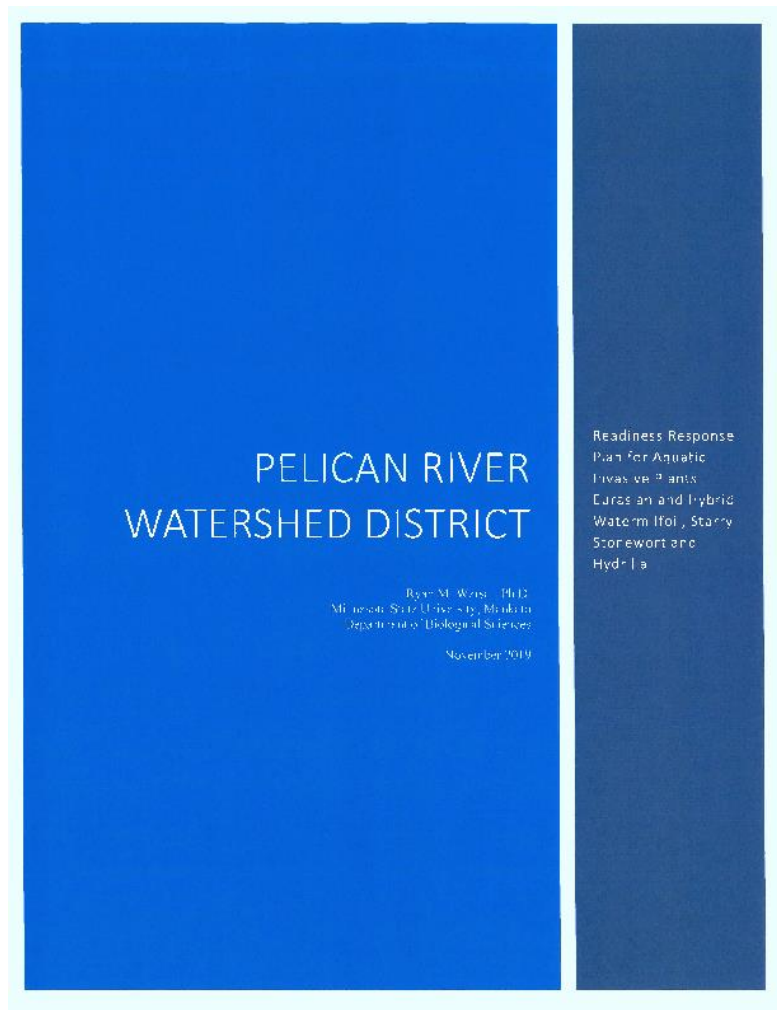
Inspectors can

- Visually inspect water related equipment
- Prohibit launching of water-related equipment
- Require a watercraft to be decontaminated prior to launching into Minnesota waters.



The MN DNR has created two levels of authorized inspectors:

- Level one – Inspect watercraft and deny access if necessary.
- Level two – Same as level one + use decontamination equipment at the access.

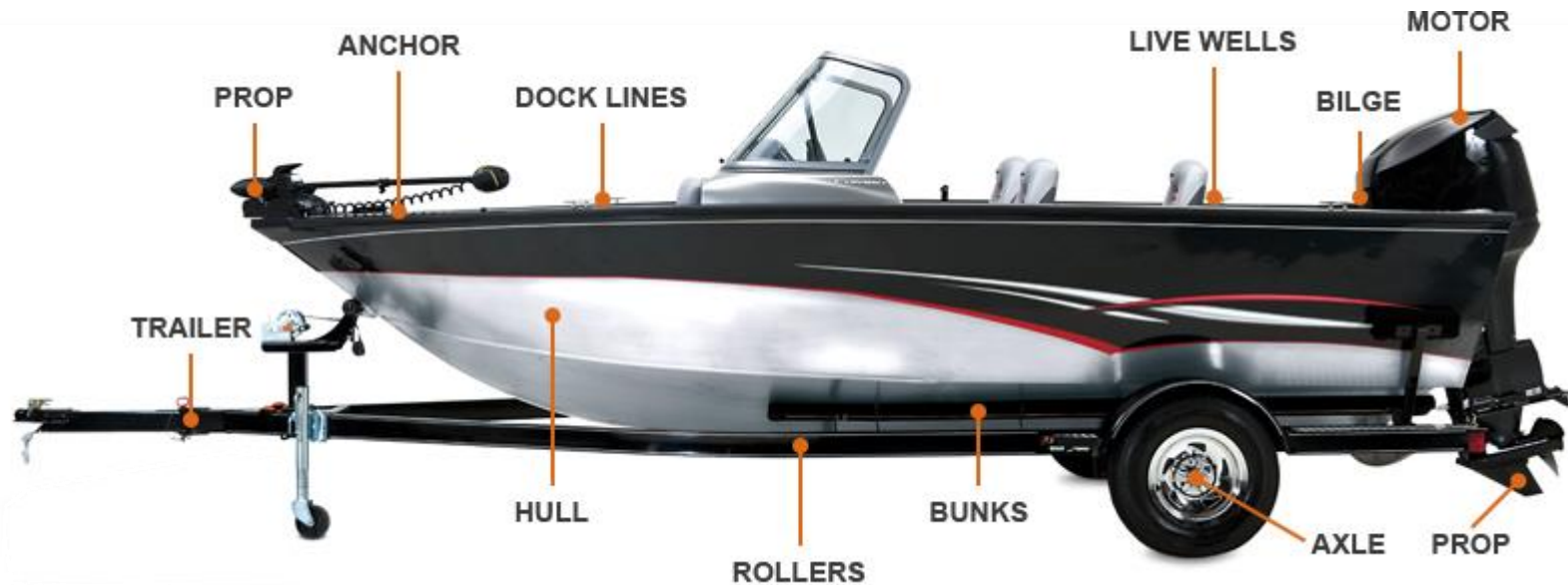


Surveillance: One way to win the fight against non-native species is to recognize an invasion while it's small and stop it before it spreads. This approach is often referred to as “early detection and rapid response”.

With the assistance of Ryan M. Wersal, Ph.D. from Minnesota State University, Mankato, the Watershed District outlined a Rapid Response Plan in 2019 for non-native plants and it is operational today.

What can you do?

CLEAN, DRAIN, DRY



Dispose of unwanted bait and pets in the trash.

Never release live bait into a waterbody.

Never release aquatic animals from one waterbody into another.

MINNESOTA LAWS

You must let any water-related equipment (dock, lift, swim raft) sit out for 21 days before putting in another water body.

Dry your boat for a minimum of five days or decontaminate it.

You May Not:

- Travel down the road or arrive at a boat access with your boat plug in.
- Move aquatic plants, zebra mussels or prohibited species from one lake to another.
- Transport water from one lake or river to another.

