Master Water Stewards

Community Leadership for Clean Water

Aquatic Invasive Species

Course Introduction: https://www.youtube.com/watch?v=zb3LUV52Z0w

April Rust's Webinar (6/28/16): https://www.youtube.com/watch?v=VHUU2Ixlabg

Invasive Species in Minnesota

According to Minnesota state statutes, an "Invasive species" is a species:

- that is non-native (or alien) to the ecosystem under consideration, and
- whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Aquatic invasive species (AIS) are not generally connected with traditional science-based definitions of water quality--they are more tied in with broader health of a whole system.

Invasives have a huge impact on ecological systems and alter our experience with natural resources.

Minnesota's IS Goals

Minnesotans want to care for Minnesota's waters--all 69,200 miles of natural rivers and 11,842 lakes (10+ acres). Public support has continued to grow for stronger clean water and aquatic invasive species laws.

Minnesota is working to slow and prevent the spread of invasive species (IS), and the state's goals are to:

1. **Prevent** the introduction of new invasive species in MN, and

2. **Contain** infestations where eradication is not possible.

For a good introduction to some species and issues, watch the first five minutes of this video: https://www.youtube.com/watch?v=93wgqTVzym4

Primary IS Regulators

The main invasive species regulators in Minnesota are the Department of Natural Resources (DNR) and Minnesota Department of Agriculture (MDA).

Minnesota law tasks the DNR with aquatic invasive species law and the MDA with most of the terrestrial invasive species law. MDA manages terrestrial plants (noxious weeds) and other plant pests.

See the DNR's AIS laws and terrestrial invasive species laws web page for more information.

Federal Agencies (USDA, Coast Guard, EPA, USFWS) and tribal governments are also involved in invasive species management, but do not oversee the most common regulations or laws for AIS in Minnesota.

Active Partners

Although the DNR regulates and manages AIS, a lot of involvement, research and prevention work is done by partners and citizens. Some of the most active partners are:

- The Minnesota Aquatic Invasive Species Research Center (University of Minnesota): new in 2012, a highly collaborative, multidisciplinary team that is working to find innovative solutions to Minnesota's AIS problems
- Minnesota Sea Grant provides education and outreach materials
- UMN Extension service provides AIS identification and early detector training and materials to citizen volunteers
- Local governments, such as watershed districts, cities, park districts, counties
- Lake associations and other citizen groups
- Lake service provider businesses like resorts, outfitters, marinas and dock installers

State IS Management Plan

Minnesota Statutes require the Departments of Agriculture and Natural Resources to establish statewide coordinating programs for invasive species. The statutes also require DNR and MDA to prepare a statewide invasive species management plan to coordinate the aspects of invasive species activities in Minnesota.

Under the leadership of Minnesota Invasive Species Advisory Council (MISAC)—a diverse group with a common interest in battling invasive species in Minnesota—an ad hoc team developed the MN State Management Plan for Invasive Species. MISAC is cochaired by the Minnesota Department of Agriculture (MDA) and Minnesota Department of Natural Resources (DNR) and is composed of 35 members and representatives.

The purpose of Minnesota's management plan for invasive species is to **provide a framework to coordinate and guide efforts to prevent the introduction, to reduce the spread, and to promote appropriate management of invasive species** populations within the State of Minnesota by state, federal, tribal, and local governments, as well as the private sector.

The benefit of implementing a state plan is: "Minimizing the negative impacts caused by invasive species to native plants and animals, natural ecosystems, recreation, tourism, agriculture, businesses, and human health in Minnesota".

This plan is intended to cover the full range of species: aquatic animals, aquatic plants, terrestrial animals, terrestrial plants, and pathogens. The plan addresses:

1. Prevention: Examples include establishing AIS laws, outreach and communication about AIS, a statewide watercraft inspection and decontamination program, AIS prevention permit and training for relevant businesses.

2. Early detection, rapid response and containment: Examples include DNR AIS Specialists, biologists and other field staff actively monitoring, responding to notices of possible new infestations, and researching treatment options for infestations.

3. Management and control (physical, chemical, biological): Examples include AIS specialists monitoring lakes and rivers for AIS, working with individuals and groups to issue plant control permits and checking up on those treatments, enforcement of AIS laws.

4. Leadership and coordination: Examples include coordination and planning with local, regional and national stakeholders, other government agencies and organizations, citizens and lawmakers to set AIS law, policy and management plans.

Containment Strategies

The DNR’s statewide containment strategies for aquatic invasive species include:

- Public awareness
- Watercraft Inspection
- Signage
- Watercraft decontamination
- Laws and regulations
- Permits and conditions

- Enforcement

Infested Waters List

People can find out which waters are infested by checking:

- DNR Fishing Regulations booklet*
- Infested waters list on DNR website
- Ask local DNR staff

* Information in the DNR booklet can be outdated depending on the time of year, because the books are only printed once a year and updates to AIS infestations can happen at any time of the year. Additions or corrections to the booklet are posted on the DNR website.

Signs at the public access points are also used to inform people. The Invasive Species Alert sign identifies infested waters at public waters access points. The Stop Aquatic Hitchhikers Sign informs public how to prevent the spread of AIS.

AIS Law in Minnesota

MN Legal Classification

Minnesota legally categorizes different invasive species to help manage them. This classification system establishes the level of regulation and allowable uses for each species. The MN DNR has regulatory authority over aquatic plants and animals and terrestrial vertebrates:

- Prohibited invasive species
- Regulated invasive species
- Unregulated nonnative species (Not subject to regulation under Minnesota Statutes)

- Unlisted nonnative species (those that are not prohibited, regulated, or unregulated)

Several steps must occur before an unlisted nonnative species may be legally released into a free-living state:

1. The individual proposing to release the species must file an application and supporting information with the DNR;
2. The DNR must conduct a thorough evaluation; and
3. The species must be designated into an appropriate classification.

Prohibited IS

According to statute, "*A person may not possess, import, purchase, sell, propagate, transport, or introduce a prohibited invasive species.*"

Examples in this category include:

- Zebra and quagga mussels
- Invasive carp (bighead, silver, grass and black carp)
- Faucet snail
- Round goby
- Eurasian watermilfoil
- Flowering rush

Regulated IS

Minnesota statute states, *"A person may not introduce a regulated invasive species."*

Examples in this category include:

- Rusty crayfish
- Mystery snails
- Spiny waterfleas

One of the key differences between prohibited and regulated is that people can legally possess regulated species (e.g., Chinese mystery snails from a pet store for an aquarium, crayfish caught to eat), but just can't release them in a free-living state.

Definitions

In order to understand MN AIS law, it helps to know a few legal definitions.

Transport—to cause or attempt to cause a species to be carried or moved into or within the state, and includes accepting or receiving the species for transportation or shipment. *Transport does not include the movement of infested water or a nonnative species within a water of the state or to a connected water of the state where the species being transported is already present.*

Introduce—to place, release, or allow the escape of a nonnative species into a free-living state. *Introduce does not include the immediate return of a nonnative species to waters of the state from which the nonnative species was removed.*

Do Not Transport

A person may not transport aquatic macrophytes (excluding duckweed).

"Aquatic macrophyte" means a macroscopic nonwoody plant, either a submerged, floating leafed, floating, or emergent plant that naturally grows in water.

If you move watercraft or water-related equipment with AIS attached, other than within a waterbody, you have transported the species.

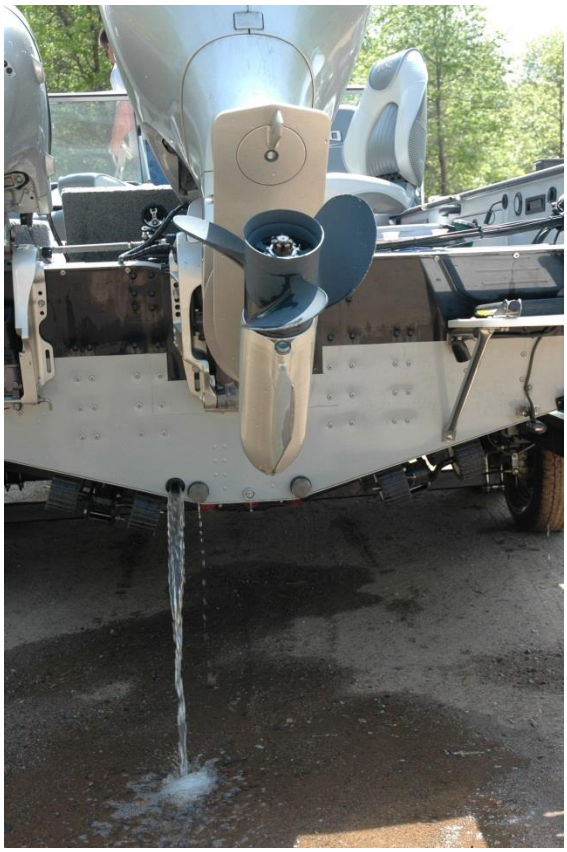
Do Not Introduce

A person may not place or attempt to place into waters of the state water-related equipment that has aquatic macrophytes, zebra mussels, or prohibited invasive species attached.

If you place water-related equipment into a lake or river with AIS attached, you have introduced the species into the water body.

Drain Water and Pull Plug

When leaving waters of the state and transporting water-related equipment a person must **drain all water-related equipment,** holding water, and live wells and bilges by removing the drain plug before transporting the water-related equipment off the water access site or riparian property. **Drain plugs must be removed** and bailers, valves, or other devices used to control the draining of water from ballast tanks, bilges, and live wells must be left open while transporting water-related equipment.



Comply with Inspections

Compliance with aquatic invasive species inspection requirements is an express condition of operating or transporting water-related equipment.

An inspector may prohibit an individual from placing or operating water-related equipment in waters of the state if the individual refuses to allow an inspection of the individual's water-related equipment or refuses to remove and dispose of aquatic invasive species, aquatic macrophytes, and water.

21-Day Dry Time

As of July 1, 2012, any boat lift, dock, swim raft, or associated equipment that has been removed from any water body may not be placed in another water body until a minimum of 21 days has passed.

Riparian Property Exception

One exception to the introduce and transport laws allows individuals and service providers to return water-related equipment such as docks and lifts that have aquatic invasive species such as zebra or quagga mussels attached back into the water from which they came as long as they only came off that same riparian (shoreline) property.

One example is a cabin owner pulling their dock up on shore for the winter and putting it back in the water in the spring.

This exception DOES NOT allow people to transport water-related equipment with aquatic plants or prohibited invasive species attached to an access and down the road to a person's riparian property.

Penalties

As with all laws, violation of these AIS laws come with potential penalties.

Here are the civil and criminal penalties for AIS violation in Minnesota.

Civil Citation	Penalty
Transport aquatic plants on public road	$100
Launch with plants attached	$200
Transport or possess prohibited species	$500
Launch into non-infested waters with AIS attached	$500
Failure to drain water/have plug out	$100
Transport infested water w/o permit	$200
Subsequent offenses	Amounts double

Criminal Citation	Penalty
Misdemeanor	Up to $1,000 and/or 90 days
Gross Misdemeanor	Up to $1,000 and/or 90 days

Inspection and Decontamination

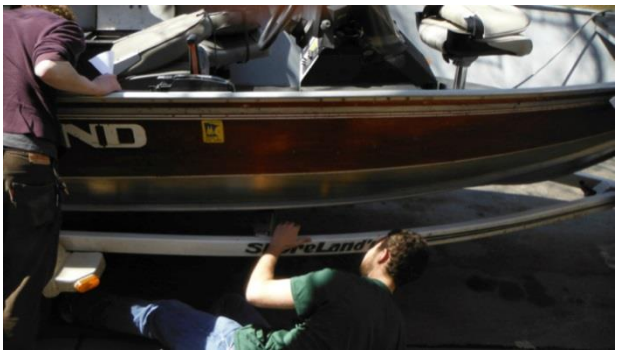
One of the key tools to prevent the spread of AIS is to inspect and decontaminate water-related equipment.

Minnesota law requires some inspection and decontamination, and people can take these additional steps to lower the risk of spreading species between our waters:

1. Inspect
2. Clean
3. Drain
4. Dispose
5. Dry

Inspect

Regardless of the type of equipment, be methodical and be sure to inspect regularly as a part of your routine.



- Watercraft (motorized and non-motorized)
- Docks and lifts
- Personal gear (such as waders)

Clean and Dispose

1. Remove plants, animals, and sediment
2. Use boot brushes
3. Spray equipment with clean water, if needed

Drain and Dry

By law, docks and lifts have to sit out of water 21 days before being placed in a new water. A best practice is to let equipment dry for 5 days (especially for zebra mussel waters). After use, allow equipment like waders and rope hang and fully dry out. If in spiny waterflea waters, air dry 5 days or wipe down with towels between sites.

Personal Gear

In addition to large equipment, remember to inspect and decontaminate all other gear (such as waders) for attached plants or hidden invasive species in any sediment or muck. Clean all equipment between sites.

How Can Citizens Help?

1) Receive Volunteer Training

Citizens who are interested in informing the public about aquatic invasive species and how to slow their spread can receive AIS volunteer training from the Watercraft Inspection Program staff.

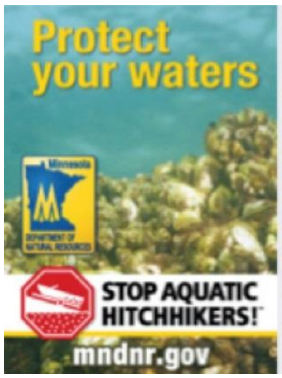
2) Get the Word Out

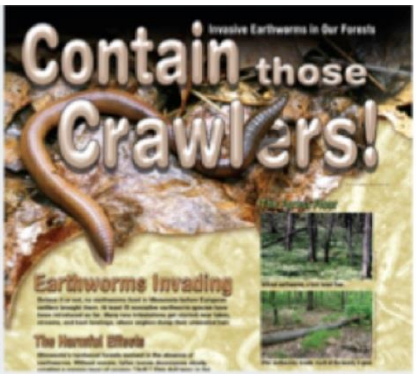
Other resources for citizens include online educational materials (for both aquatic and terrestrial invasive species) and grants for signage, controls, watercraft inspections, volunteer training (and hopefully in future, public awareness projects).

Visit these sites for more information:

Minnesota Department of Natural Resources

Minnesota Sea Grant Program





3) Report Infestations

How do you report any suspected AIS that you see?

- Know infested waters, which are marked with signs at public accesses. You can also find the latest infested waters list at the DNR website.
- Contact your local Invasive Species Specialist.

To help your local DNR Invasive Species Program field staff confirm a potential new AIS infestation, it is helpful to have a few pieces of information at hand:

1. **Image**: A digital photograph of the organism with some way of suggesting scale will give the AIS staff an idea of the size of the plant or animal.
2. **Location**: A GPS coordinate of the potential AIS is great, but if that is not possible, then a detailed description with landmarks is helpful.
3. **Sample:** If you think you have found a new infestation, especially zebra or quagga mussels, transport a sample to a DNR Office. Place a specimen in a jar with a label of the lake, where it was collected, and your contact information. A digital photograph also works, but a sample is recommended and more helpful.

AIS Glossary

Curly Leaf Pond Weed

Curly-leaf pondweed is a submersed aquatic plant that generally grows in 3-10 feet of water. It has been in Minnesota so long that most people do not realize that it is a nonnative species. The weed spreads from one body of water to another primarily by the unintentional transfer of hardened stem tips, on plant fragments carried on watercraft and trailers.

Impacts

- In spring, it can form dense mats that may interfere with boating and other recreation on lakes.
- It also can cause ecological problems by displacing native plants.
- In midsummer, it usually dies back, resulting in rafts of dying plants piling up on shorelines, and often is followed by an increase of the nutrient phosphorus in the water, creating undesirable algal blooms.

Eurasian Milfoil

Eurasian milfoil is an invasive submerged aquatic plant that looks similar to the native northern watermilfoil. It only takes a small plant fragment to start a new infestation, and is now found in over 270 Minnesota waterbodies.

Impacts

- Eurasian milfoil can limit recreational activities.
- In nutrient-rich lakes it can form thick underwater stands of tangled stems and vast mats of vegetation at the water's surface.
- In shallow areas the plant can interfere with water recreation such as boating, fishing, and swimming.
- The plant's floating canopy can also crowd out and displace important native water plants.

Faucet Snail

Faucet snail is a little newer on the AIS radar. Faucet snails are a host for parasitic trematode that can kill waterfowl. They contributed to the deaths of about 9,000 scaup and coots in 2007 and 2008 on Lake Winnibigoshish.

Mussels (Zebra and Quagga)

Zebra and quagga mussels are similar looking freshwater mollusks, and it can be difficult for a non-expert to tell the two species apart.

Both species have a shell color that alternates between a yellowish and darker brown, often forming stripes. They range in size from microscopic up to 2" long.

Zebra Mussels are D-shaped, nearly triangular. Quagga Mussels are more rounded.

Common Impacts

- Clogged intakes for home irrigation systems
- Clogged boat motors, intakes, water cooling areas
- Clogged intake pipes, trash screens, canals, aqueducts, and dams—disrupting the water supply to homes, farms, factories, and power plants
- Altered taste and smell of drinking water

- Cuts from shells on rocks, swim rafts, ladders, or washed up on beaches
- Native mussels smothered and killed by Zebra mussels attaching to them

Why is it so hard to prevent the spread of zebra mussels?

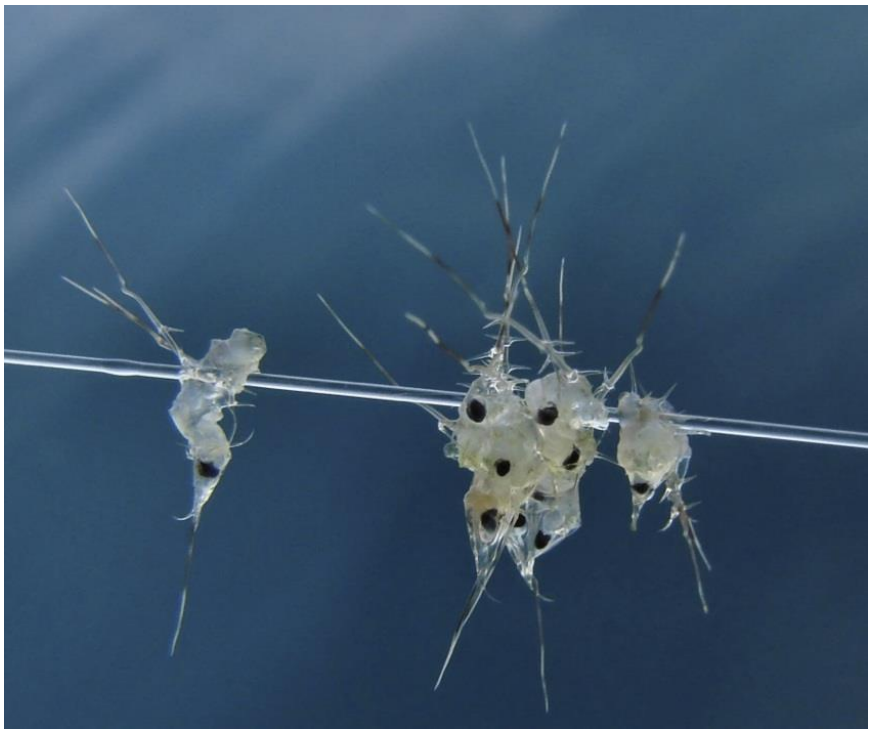
- ZM start out as veligers, drift in water. ZM veliger's are invisible to the naked eye.
- Once they form shell they can attach to hard surfaces (including plants) with byssal threads.
- They can easily be transported in mud on the soles of waders without being able to see them!
- They grow and reproduce quickly.
- Adults can survive out of water for a few days to weeks, depending on conditions.

Purple Loosestrife

Spiny Waterflea

Spiny waterfleas are zooplankton (microscopic animals)that measure up to 3/8” long. Spiny waterfleas have been found in some lakes in Northern Minnesota including lakes in Cook, Lake of the Woods, Koochiching and St. Louis counties.

While female waterfleas die out of water, under certain conditions they produce eggs that resist drying and freezing, and can establish a new infestation.



Impacts

- Spiny waterfleas eat small animals (zooplankton), including Daphnia, which are an important food for native fishes.
- Their spines make it difficult for small fish to eat them.
- They clog fishing line.
- They can spread by attaching to fishing lines, downriggers, anchor ropes, and fishing nets.

If you want more information about this AIS, read this article.

Viral hemorrhagic septicemia (VHS)

Viral hemorrhagic septicemia is a virus of fresh and saltwater fish. Fish can get the virus from water or infected fish. Fish die from stress and can hemorrhage to death.

Fish with VHS have been identified in Western Lake Superior in 2012, and the virus is on its way toward Minnesota. VHS has not been confirmed on any inland lakes in Minnesota yet, and MN DNR is actively testing waters.