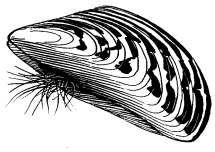
Aquatic Invasive Species — Zebra mussel

(*Dreissena polymorpha)*

What are zebra mussels?

Zebra mussels are small freshwater mussels that are not native to Minnesota. Adults range from ¼ to 1 ½ inches long and have yellow and brown striped shells. Unlike native mussels, they can attach themselves to hard surfaces in the water.



Zebra mussel (*Dreissena polymorpha*)

Where did zebra mussels come from?

Zebra mussels are native to Eastern Europe and Western Russia. They have spread throughout much of Europe and Asia over the past 200 years. They were likely brought to North America in the ballast water of ships and were discovered in Lake Erie in 1988.

What problems can they cause?

Zebra mussels can:

- clog irrigation intakes and other pipes,
- attach to boat motors and boat hulls, reducing performance and efficiency,
- attach to rocks, swim rafts and ladders where swimmers can cut their feet on the mussel shells,
- attach to and smother native mussels, and
- eat tiny food particles that they filter out of the water, which can reduce available food for larval fish and other animals, and cause more aquatic vegetation to grow as a result of increased water clarity.

Zebra mussels in Minnesota

Zebra mussels were discovered in the Duluth harbor in 1989. As of 2014, the DNR had documented zebra mussels in fewer than 100 water bodies in Minnesota. The DNR has listed a total of 213 water bodies as “infested” with zebra mussels, a regulatory classification which includes some water bodies that are connected to water bodies where zebra mussels have been found.

How do they spread?

Zebra mussels can attach to boats or aquatic vegetation and be carried to a different lake or upstream in a river. The microscopic larvae (called “veligers”) may be carried in bait buckets, live wells, or other water.

Zebra mussels attached to a native mussel

What should you do to prevent their spread?

Before you leave any water access, clean weeds and debris from your boat, remove drain plugs and keep them out while traveling, and dispose of unused bait in the trash. For additional recommendations see mndnr.gov/AIS.

Regulatory classification

Zebra mussels and quagga mussels (a related species) are both classified as *prohibited invasive species* in Minnesota. It is illegal to import, possess, buy, sell, transport, or introduce them into state waters.

Aquatic Invasive Species *Best Management Practices*

Zebra mussel

(*Dreissena polymorpha*)

What can be done to control zebra mussels?

In the U.S. and Canada, facility managers use pesticides to control zebra mussels in closed systems, such as water-cooling systems of power plants, in order to maintain functioning infrastructure. Many of the pesticides used in closed systems are not allowed for use in open water. In open systems such as natural lakes, attempts to control zebra mussels are uncommon and considered experimental at this time.

To date, we have documentation of less than ten attempts to control zebra mussels by treatment with pesticides in North America outside Minnesota.

Attempts to control zebra mussels in Minnesota

In Minnesota, we have documentation of five lakes where people attempted to eradicate zebra mussels using pesticide treatments. In addition, one Minnesota lake was drawn down in an attempt to reduce zebra mussels.

Pesticides and zebra mussels

The pesticides that have been used for zebra mussel control in Minnesota are: Zequanox®; copper products such as copper sulfate; and potassium chloride (also known as potash; use in open water requires review and approval from the U.S. Environmental Protection Agency).

What might be achieved by controlling zebra mussels?

Because pesticides have rarely been used to control zebra mussels in open water, pilot projects in Minnesota will help answer this question. In situations where zebra mussels are found in an isolated area or in a small water body, it may be possible to kill all the target zebra mussels using pesticides. Even if the mussels are killed, their shells will persist and can remain attached to surfaces even after the animals are dead.

What control of zebra mussels will the DNR permit?

Most lakes that are currently infested with zebra mussels are not good candidates for these pilot projects and permits. Pilot projects would be more likely to be permitted in situations where:

- the water body has been surveyed, and the survey finds zebra mussel populations are limited in size and localized, not scattered throughout the water body (the DNR may require third-party verification of zebra mussel distribution); and
- there are sufficient resources or partners (e.g., watershed districts, local units of government, lake groups) available to fulfill monitoring requirements.

We will assess all proposed projects on a case-by-case basis.

Permits and technical assistance

If you would like more information on management of zebra mussels or other aquatic invasive species, contact your local invasive species specialist:

Park Rapids	218-699-7293
Fergus Falls	218-739-7576 ext. 254
Grand Rapids	218-999-7805
Brainerd	218-203-4354
Saint Cloud	320-223-7847
Saint Paul	651-259-5828
Hutchinson	320-234-2550 ext. 238
Waterville	507-362-8786

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500 Lafayette Road, Box 25
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www.mndnr.gov/AIS

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