



## ZEBRA MUSSELS

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### What is a zebra mussel?

The zebra mussel is a small, non-native mussel originally found in Russia. In 1985, the zebra mussel was introduced into the Great Lakes most likely via the ballast water of one or more transoceanic ships. The temperate, plankton-rich waters of Lake St. Clair and Lake Erie provided an ideal environment for the prolific species. In less than 10 years zebra mussels spread to all five Great Lakes, the Ohio River Basin and the Mississippi River Basin.

### What do zebra mussels look like?

Zebra mussels get their name from the striped pattern of their shells. However, the pattern varies greatly to where there are no stripes, only dark or light colored shells. Zebra mussels can grow to a maximum length of about 50mm and live four to five years.

### Why are zebra mussels a problem?

Zebra mussels affect natural ecosystems both directly and indirectly. The greatest direct impact is caused by their feeding habits. They are voracious "filter feeders" processing up to 1 gallon of water per day per mussel. Inland lakes, no matter the size, present unique ecological systems. When zebra mussels disrupt these fragile systems, their filter feeding process depletes critical microscopic organisms necessary for a healthy food web. Zebra mussels are similar to other mussel species because they attach themselves to hard surfaces, but unlike other species they will also easily attach to native mussels. This behavior, called bio-fouling, has greatly reduced native mussel populations.

### What is the habitat and history of the zebra mussel?

Today more than 100 lakes and inland waters in Michigan are infested with zebra mussels. The zebra mussel is a very successful invader—they live and feed in many different aquatic habitats, breed prolifically, and have a "planktonic larva" stage when they are young, which makes them invisible to the naked eye.

Zebra mussels' affinity for hard surfaces has made water treatment plants and power structures vulnerable to colonization. Since 1989, in areas of extensive zebra mussel colonization, some plants have reported reduced pumping capabilities and plant shutdowns. As gluttonous filter feeders, zebra mussels may increase human and wildlife exposure to organic pollutants. Zebra mussels can quickly accumulate organic pollutants within their tissues to levels more than 300,000 times greater than natural environmental concentrations. These contaminants can be passed up the food chain to any fish and waterfowl eating zebra mussels.

- Zebra mussels have disrupted the traditional aquatic food chains of many inland lakes.
- Regardless of their size, inland lakes represent unique ecological systems.
- When zebra mussels enter into these fragile system, their voracious filter feeding depletes the availability of microscopic organisms that play a critical part in each lake's ecological food web.



*Quagga mussel*

*Zebra mussel*

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## Can the spread of zebra mussels be controlled?

Zebra mussels can spread to other inland waters in their immature form known as "veligers," which are microscopic and free-floating. As adults, zebra mussels attach to boat hulls, engines aquatic weeds, or other surfaces. Adult mussels are very hardy and can survive out of water for extended periods depending upon temperature, humidity, wind, and sunlight. Maximum out-of-water survival time in ideal conditions is about 10 days for adults and 3 days for newly settled juveniles.

## How can you help prevent the spread of zebra mussels?

- Remove any visible vegetation from items that were in the water, including the boat trailer, and all equipment.
- Flush engine cooling system, live wells, and bilge with tap water. If possible, use hot water.
- Do not re-use bait if exposed to infested waters.
- Dry boat and other equipment for at least 48 hours before using in uninfested waters.
- Examine boat exterior for mussels if it has been docked in infested waters; if mussels are found or exterior is heavily fouled by algae, either clean fouled surfaces or leave boat out of the water for at least 5 days before entering uninfested waters.

## References

"Protect Your Waters." Harmful Aquatic Hitchhikers: Mollusks: Zebra Mussel. Last updated: April 2006. [www.protectyourwaters.net/hitchhikers/mollusks](http://www.protectyourwaters.net/hitchhikers/mollusks)

"Zebra Mussel." USGS Great Lakes Science Center. Last updated: August 10, 2004. [www.glsc.usgs.gov/main](http://www.glsc.usgs.gov/main)

Kelch, David O. and Hilgendorf, Maran Brainard. "Boaters: Take Action Against Zebra Mussels." Sea Grant. Ohio Sea Grant College Program. Last updated: January 1996. [www.ohiosg.osc.edu/OhioSeagrant](http://www.ohiosg.osc.edu/OhioSeagrant)