



Zebra in the lake?

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Zebra mussels in the lake can make for a bad day.

“No, no, no!” protested our almost two-year-old daughter as her dad struggled to put water shoes on her before wading into the lake. “No, shoe!”

“Sorry, dear,” Dad tried to console, “But, Grandma’s lake has zebra mussels—these shoes will protect your feet.”

She paused, sucked back the tears, and then asked inquisitively, “Zebras in lake?”

What are zebra mussels and what do they look like? The zebra mussel (scientifically known as *Dreissena polymorpha*) is a freshwater mollusk. This “D” shaped creature, with two shells hinged together that typically grow to the size of a pistachio nut, got its name from the zigzag striped pattern on its shells. (However, the pattern varies considerably, and some zebra mussels have no stripes at all—just light or dark colored shells.) They attach themselves to hard surfaces with the use of ‘strings’ which they excrete—making it very difficult to remove from any surface it attaches to. Unlike most freshwater mussels, they grow in clustered colonies—some reportedly live in colonies made up of millions of individuals! They are filter feeders, using a siphon to obtain algae



A colony of zebra mussels.

and other microscopic creatures for nourishment from their host waterbody, and they live approximately 4 to 5 years.

Where did they come from? The zebra mussel is native (meaning it evolved naturally) to freshwater lakes rivers and lakes in Eastern Europe. Unfortunately, this species has been accidentally introduced and has become an invasive exotic species in other countries where there are no natural predators or climatic factors to keep the zebra mussel population in a healthy balance with the native organisms of the ecosystem.

They hitchhiked their way to the U.S. Zebra mussels were first found in North America in 1988 in Lake St. Clair, a small water body connecting the Great Lakes of Lake Huron and Lake Erie. Most scientists believe at least one ocean-going ship discharged ballast water picked up in a freshwater European port which contained zebra mussels into Lake St. Clair. (Ballast water is used to keep ships stable in the water. Typically, boats empty their ballast water in port as cargo is loaded.) Unfortunately, the zebra mussels liked the plankton-rich lake as well as nearby Lake Erie. Thanks to barge traffic, they spread rapidly throughout the Great Lakes Region and in large navigable rivers including the Mississippi, Tennessee, Colorado, Ohio, Arkansas, Illinois and Hudson rivers. Recreational activity including boating and fishing has helped spread them to lakes in these regions. They spread to Seneca Lake, the largest of the Finger Lakes and known in my family as 'Grandma's lake,' in the early 1990s and are currently found in at least 30 states.

Why are they a problem? Among the many problems they cause, zebra mussels upset ecosystems, threaten native wildlife, damage structures, pose human health threats, and reduce human enjoyment of waterbodies. As voracious filter feeders, they feast on microscopic creatures which are the base of the aquatic food chain, leaving little food for other native creatures in the waterbody to eat. They attach themselves to any hard surface, including: boat hulls and propellers, sometimes causing boats to sink due to their added weight; docks, pilings, and navigational buoys causing structural and safety problems; pipes, particularly water intake pipes; and even native creatures in the water, including the freshwater mussel making it difficult, if not impossible, for these desirable native mussels to eat and survive. And, their razor-sharp edged shells can make deep cuts in bare feet, resulting in the need for people to wear water shoes when recreating in a zebra mussel infested waterbody.



Water shoes help protect swimmer's and wader's feet from being cut by razor-sharp zebra mussel shells.

Their damage outweighs their positive impact. When zebra mussels first entered Seneca Lake, in New York, my in-laws report seeing an immediate positive impact—by filtering the water, the zebra mussels removed algae making the lake much clearer. However, my in-laws agree with scientists who have concluded that their short-term positive impacts are far outweighed by their long-term, irreversible negative impacts. While zebra mussels caused Seneca Lake became much clearer, the clearer water allowed sunlight to reach the lake bottom to a much greater depth, allowing the undesirable invasive aquatic plant, Eurasian milfoil, to grow more densely and to greater depths in the lake. Now, with the help of the zebra mussel, the lake's almost 80 miles of shoreline is ringed with this long, stringy plant up to a depth of approximately 15 feet. Not only does this make swimming and boating difficult, dangerous, and unpleasant, it has degraded habitat for fish and

other aquatic organisms, and has cost shoreline property owners vast amounts of time and money mitigating the problems they cause. When people visit my in-laws at the lake for the first time, they are typically greeted with, “Welcome to the lake, please help yourself to a pair of water shoes and watch out for the weeds.”

Have they invaded New Hampshire yet? The good news is that zebra mussels have not been found in any of New Hampshire’s approximately 1,000 lakes and more than 40,000 miles of rivers and streams. The bad news is that they are found in waterbodies in nearby states including Connecticut, Vermont, and Massachusetts. However, a number of years ago, a colony of zebra mussels was discovered by an eagle-eyed marina owner on the hull of boat from Ohio that was about to enter Lake Winnepesaukee, and just a few summers ago a NH LAKES Lake Host found zebra mussels on a boat that was about to be launched into Lake Sunapee.

Unfortunately, the New Hampshire Department of Environmental Services (DES) anticipates that the invasion of zebra mussels into New Hampshire’s waterbodies is “just a matter of time.” Fortunately, however, DES biologists believe that “only a few of New Hampshire’s waterbodies are at risk for infestation.” These creatures seem to prefer waterbodies with at least moderate levels of calcium (more than native mussel populations require) to build their shells and reproduce. With New Hampshire being known as the Granite State, most of our waterbodies contain little calcium since granite contains little calcium. However, the Connecticut and Merrimack rivers, and lakes and ponds along the western border of the state, do contain higher levels of calcium due to the presence of limestone, which is rich in calcium—these areas are most at risk for zebra mussel infestations.

What can be done? Because of their biology (a female zebra mussel can lay up to a million eggs in a single spawning season!) they have a high probability of spreading. Zebra mussels are tolerant and tough creatures and, with the current technology available, are impossible to get rid of. Attempts to get rid of them have failed—nationally, taxpayers pay billions of dollars each year to make infestations less problematic. Considered among the country’s most significant invasive species, it is likely that zebra mussels will become a permanent component in the bodies of water when they are introduced.

You can help. The harder we all work together to prevent the spread of zebra mussels into New Hampshire, the better off the lakes, the economy and we will all be. Even if you don’t boat in a zebra mussel infested waterbody, you can minimize the chances of this nuisance species (and other invasive exotic species) from invading our waterbodies, as follows:

- Remove all fragments of vegetation hitchhiking on your boat and trailer and dispose of fragments in an area where they won’t wash back into the lake.
- Be on the look-out for zebra mussel colonies on boat hulls and in waterbodies. Report suspicious infestations to DES at (603) 271-2248.
- If you have out-of-state friends who bring their boat into New Hampshire, tell them about the zebra mussel and how they can prevent its spread by following the procedures listed below.
- If you boat out-of-state, know if the waterbody you are boating on is infested with zebra mussels. They can withstand several days out of the water in moist, humid weather, and zebra mussel larvae are microscopic in size and can’t be seen by the naked eye. If you boat in infested waterbodies, clean and de-mussel your boat, trailer and recreational gear away from any surface water each time you take your boat out of the water. Here’s how:

- Wash the outside of the boat on the trailer with hot water (140 degrees Fahrenheit) and allow them to dry for a few days.
- Drain and flush engine cooling system, live wells and bilge with hot water or bleach solution.
- Rinse all recreational gear with hot water or bleach solution.
- Refrain from reusing bait and dump bait buckets away from water bodies.

NH LAKES is the only statewide, member-supported nonprofit organization working to keep New Hampshire's lakes clean and healthy, now and in the future. The organization works with partners, promotes clean water policies and responsible use, and inspires the public to care for our lakes. For information, visit www.nhlakes.org, email info@nhlakes.org, or call 603.226.0299.

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