

Iowa Great Lakes - Zebra Mussel FAQ's

Iowa Department of Natural Resources 12/18/2012



Photo courtesy of USGS



Distribution of zebra mussels in the US

Biology

What are zebra mussels? Zebra mussels and a related species, the quagga mussel, are small, fingernail-sized animals that attach to solid surfaces in water. Adults are 1/4 to 1 1/2 inches long and have D-shaped shells with alternating yellow and brownish colored stripes.

Where did they come from? Zebra mussels are native to Eastern Europe and Western Russia and were brought over to the North American Great Lakes in the ballast water of freighters. Populations of zebra mussels were first discovered in the Great Lakes around 1988.

What makes them different from native mussels (clams)? Zebra mussels are the only freshwater mollusc that can attach to solid underwater surfaces using glue-like fibers called byssal threads. They also reproduce differently than native mussels. Female zebra mussels can produce up to 1 million eggs per year. These develop into microscopic, free-swimming larvae (called veligers) that begin to form shells. After two to three weeks the microscopic veligers start to settle and attach to any firm surface.

How are zebra mussels spread? Veligers can travel (drift) great distances within waterbodies or be transported from one waterbody to another in water in livewells, bilges, or bait buckets. Adult zebra mussels can also attach to boats or other equipment and be transported to uninfested waters.

Iowa Great Lakes Zebra Mussels

How were the zebra mussels discovered? Following the discovery of a single zebra mussel in September in Upper Gar Lake, Fisheries employees have been working with lake service providers to examine boats hoists and docks being removed from the lakes this fall. During the inspection of boat hoists from East Okoboji Lake, DNR officials found three additional juvenile

mussels on two boat hoists that came from East Okoboji Lake.

Does this additional discovery mean the lakes are infested? It is impossible to know whether the small number of zebra mussels that have been found represent a sustainable population. Additional sampling and monitoring is needed to gain more knowledge and is planned for this next year. To date, no adult zebra mussels have been found and no veligers were detected in water samples taken from each of the Iowa Great Lakes last fall.

Infestation Effects

What does the DNR mean by “infestation”? The DNR considers a lake “infested” if several adults are found in close proximity to each other or if zebra mussel veligers are sampled during two consecutive years. An infestation means that a reproducing population is present. Populations often reach high numbers in infested lakes. Veligers can be sampled when water temperatures exceed 50 degrees; however, peak densities of veligers in the water typically occur in July or August. If no more zebra mussels are found or veligers are not found in coming years, an infestation may not occur.

What are the results of an infestation? Zebra mussels tolerate a wide range of conditions and can significantly alter the ecosystem of waterbodies where they become established. Areas with large densities can have up to 6,000 zebra mussels per square foot. In addition to competing with other aquatic organisms for food and covering beaches with dead shells, zebra mussels kill native mussels by colonizing on their shells. They have severely reduced native mussel populations in some lakes and rivers. Zebra mussels also attach to water intakes of water supply and hydropower facilities.

Will an infestation affect water quality or fishing? It is hard to predict how water quality and fishing may be affected by an infestation. Zebra mussels feed by filtering water. High densities of zebra mussels can filter large volumes of water and in some other lakes where infestations have occurred, water clarity has improved, thus changing the ecology of those lakes. Increased water clarity may increase the amount of aquatic vegetation. Food available for some species of adult fish and the young fish of many species may decrease. Zebra mussels have the ability to selectively filter algae and zooplankton. As a result, undesirable organisms such as blue-green algae can increase in abundance.

How will an infestation affect recreation and tourism? In lakes like Clear Lake near Mason City, there have been negligible impacts to recreation and tourism despite the presence of zebra mussels. In fact, according to the most recent (2009-10) economic survey completed by the ISU Center for Agricultural & Rural Development (CARD) remains one of the most visited lakes in Iowa.

In Ohio, a study found that although people perceived zebra mussels as having a negative impact on water related activities, few visitors changed their visits to the lake.

How will zebra mussels affect those who pump water from the lake? Municipalities that draw drinking water from the lake and the State Fish Hatchery may be the most affected. Zebra mussels can quickly colonize intake screens and the inside of pipes potentially clogging them. Although expensive, these impacts can be managed. Local municipalities have plans in place in the event an infestation occurs.

How will zebra mussels affect my dock, boat and hoist? Marinas may be most impacted by an infestation. The hulls of boats that remain in the water can become covered with mussels and may need to be scraped off regularly. Boats that are kept in a hoist out of the water will not accumulate zebra mussels. Nearly any surface left under the water will accumulate zebra mussels. Taking docks and hoists out of the water over the winter will kill the mussels, and they can be scraped or power-washed off.

Next Steps

What can be done to control zebra mussels if an infestation occurs? Zebra mussels have few natural controls to limit their growth and spread in Iowa. Diving ducks, freshwater drum, and other fish eat zebra mussels but cannot control population densities. Control efforts therefore focus on preventing the introduction of zebra mussels into new waterbodies. Once established, there are no selective molluscides (compounds that kill mussels) or environmentally safe methods to eradicate zebra mussel populations. Water utilities use a variety of methods, typically potassium permanganate and other chemicals to clean or prevent zebra mussels from colonizing the intake screens and raw water pipes.

What can we do while we wait to see if an infestation occurs? The local community and the DNR should continue to focus on prevention and education. If a population of zebra mussels does not develop, preventing future introductions needs to remain the top priority. Boaters should continue to clean, dry, and drain their watercraft before moving between lakes or rivers. Unused bait should be disposed of in the trash and should not be moved from one lake or river to another.

How will the DNR monitor the situation? The DNR will resume monitoring efforts next spring including sampling water for veligers and re-deploying surveillance plates under a number of navigation buoys. The DNR also asks that local residents and dock and hoist service providers be on the lookout for zebra mussels on lake shores, hoists and docks. Many other animals and invertebrates can be found on docks and hoists. Zebra mussels are a D-shaped clam with a yellow and brown striped pattern on their shell. They range in size from a ¼ inch to 1½ inches. If a zebra mussel is found it should be reported to the DNR's Regional Headquarters at the Spirit Lake Fish Hatchery. 122 252nd Ave, Spirit Lake. Phone 712-336-1840.

What has been done to prevent an infestation from occurring? Local lake organizations, private individuals, and local government entities have partnered with the Iowa Department

of Natural Resources for many years to strengthen aquatic invasive species laws, funding, and education. Because of those efforts, most boaters in Iowa are aware of aquatic invasive species. Over the past three years, boat ramp inspectors have volunteered or have been hired to inspect and educate boaters at boat ramps around the state. As an example, in the Iowa Great Lakes in 2012 seven interns and DNR employees contacted and inspected thousands of boats entering the lakes at major boat ramps. In addition, Iowa's laws make it illegal to transport live aquatic invasive species.