

AQUATIC INVADERS

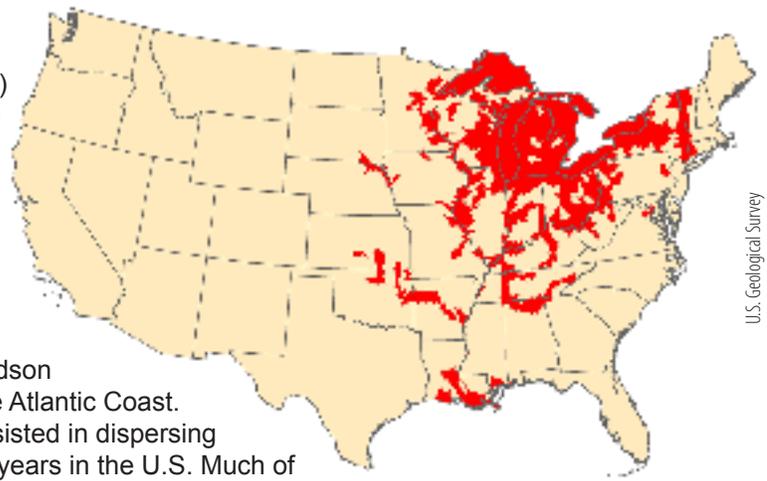


COMMON NAME: Zebra mussel

SCIENTIFIC NAME: *Dreissena polymorpha* (Pallas 1769)

NATIVE DISTRIBUTION: Freshwater rivers and lakes in eastern Europe and western Asia.

U.S. distribution: The species was first discovered in Lake St. Clair (between Lake Huron and Lake Erie) in 1988 and since has been found in 23 states. Individuals have spread rapidly throughout the Great Lakes region and in the large navigable rivers of the eastern Mississippi drainage including the Mississippi, Tennessee, Cumberland, Ohio, Arkansas and Illinois rivers. The species can also be found in the Hudson River and Lake Champlain along the Atlantic Coast. Barge traffic in these large rivers assisted in dispersing the zebra mussel during its first few years in the U.S. Much of this recent dispersal has been attributed to recreational activities such as boating and fishing.



Habitat: Zebra mussels prefer large lakes and rivers with plenty of flow passing over them, which ensures a steady supply of algae. It was first thought that they needed to attach to a firm bottom. However, scientists have found zebra mussels on sandy-bottomed portions of the Great Lakes where they attach to each other.

Life cycle: Generally, individuals are small, averaging only about 2 to 3 cm (about 1 inch) in length. The maximum size is approximately 5 cm (2 inches). The life span of the zebra mussel is four to five years. Females generally reproduce in their second year. Eggs are expelled by the females and fertilized outside the body by the males; this process usually occurs in the spring or summer. Females can produce 1 million eggs over the course of a spawning season. After the eggs are fertilized, the larvae (veligers) emerge within three to five days and are free-swimming for up to a month. Dispersal of larvae is normally by river or lake currents. The larvae begin their juvenile stage by settling to the bottom where they crawl about on the bottom by means of a foot, searching for suitable surfaces. Juveniles then attach themselves to the surface with their byssus, an external organ made up of threads capable of holding fast.

Cool facts:

- Once they attach themselves to a surface, they are difficult to remove. This is a common trait of mussels that live in marine (saltwater) ecosystems, but not of freshwater mussels.

- They can withstand short periods (up to a week) out of the water if conditions are cool, moist and humid.
- They have a saltwater relative, the dark false mussel (*Mytilopsis leucophaeata*), which is native to our Atlantic coast. This relative looks very much like the zebra mussel and is often mistaken for it. Should you find what appears to be a zebra mussel in saltwater, it is probably the dark false mussel.
- Zebra mussel larvae are microscopic in size and are undetectable by the human eye. They can be unknowingly transported in boat live wells and bait buckets or anything that carries small amounts of water, even on SCUBA equipment.
- Each mussel can filter about a quart of water per day.

Pathways of invasion: Scientists generally agree that zebra mussels entered the Great Lakes from ballast water dumped by large ocean-going vessels from Europe. Ballast water is used to keep ships stable in the water. A ship will carry large amounts of ballast water when there is no cargo, then will dump water in port as cargo is loaded.

Subsequent movement within the U.S. has been through recreational boaters and fishermen. Microscopic larvae may be moved to new water bodies via bait buckets, live wells, bilges or anything holding water. Juvenile zebra mussels may attach to boats, trailers or other objects and be transferred as hitchhikers.

Impacts: The zebra mussel is notorious for its biofouling capabilities. Large numbers of individuals may colonize water supply pipes of hydroelectric and nuclear power plants, public water supply plants and industrial facilities. Many affected facilities have had to spend millions of dollars cleaning out zebra mussels that have lodged in the water pipes and clogged them. In addition, many of these facilities have had to add devices to monitor for and keep out zebra mussels.

The species has the potential to severely impact native mussels by interfering with their feeding, growth, locomotion, respiration and reproduction. According to early studies, the zebra mussel is having a minimal effect on fish populations in the Great Lakes. Lake Erie has shown a drastic improvement in water clarity, sometimes four to six times what it was before the arrival of the zebra mussel. This is because the zebra mussel feeds on algae filtered from the water. Unfortunately, this increase in water clarity equates to a loss of plankton that would have otherwise served as food for native species.

Ways to prevent its spread:

- Because zebra mussel larvae are microscopic and therefore undetectable by the human eye, they can be unknowingly transported in boat live wells and bait buckets or anything that carries small amounts of water (even on scuba equipment). Water from live wells and bait buckets should never be moved from one water body to another.
- Good boat hygiene is critical – boats that have been washed with warm, soapy water or mild bleach are less likely to spread zebra mussels.
- Report invasive species to local officials and the USGS online at <http://nas.er.usgs.gov/> or by calling 877-7867-267 (877-STOP-ANS).

These tips apply to ALL non-native species.

Don't forget: Clean your boat after each use.