

Missouri River

National Park Service
U.S. Department of the Interior

Missouri National Recreational River
www.nps.gov/mnrr



Don't Move a Mussel!

The zebra mussel has infested the Mississippi River, the Great Lakes, and other Midwest rivers. This invasive shellfish has already caused millions of dollars of environmental and economic damage in the United States. If the mussel population continues to grow in numbers, it could cause a great deal of costly damage to the Missouri River. The rich native mussel populations of the river may be lost; fish and humans will also be impacted. Your help is needed to prevent the infestation from spreading upstream.

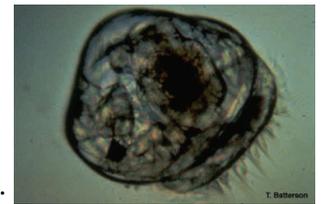
What are they?



Photo of zebra mussel showing byssal threads

Zebra mussels are small, two-shelled clams, typically $\frac{3}{8}$ to $\frac{3}{4}$ inches long, that can grow up to two inches (5 cm) in length. Light and dark bands give the D-shaped shell a zebra-striped appearance. They produce a tuft of fiber known as byssal threads that allow the adults to attach to hard surfaces. Adults often attach to vessels in large clusters, like

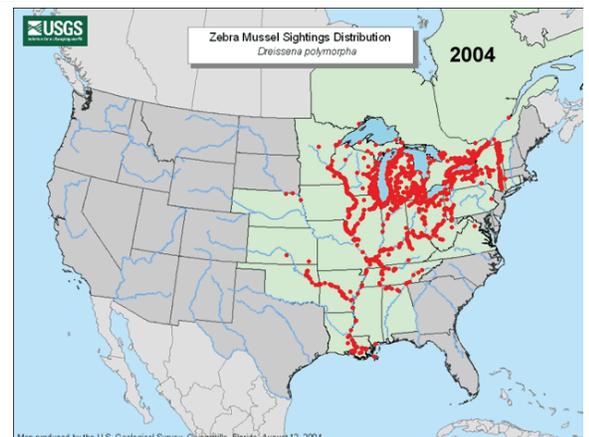
branches. Immature zebra mussels, called veligers, are microscopic larvae that float in the water with the current.



Veliger (magnified)
Michigan State Univ. photo
By T. Batterson

Where did they come from?

Zebra mussels are native to southern Russia. Ships transported them in their ballast water from Europe to the Great Lakes where they spread rapidly. First found in 1988, in Lake St. Clair near Detroit, zebra mussels have been spread throughout the Great Lakes and Mississippi River drainages by commercial and recreational boats. The size and growth rate of the infestation in the U.S. and Canada is much greater and more severe than in Europe. The predators and diseases that control zebra mussels in southern Russia are not found in any numbers in North America.



Map produced by the U.S. Geological Survey, Gainesville, Florida, August 12, 2004
Zebra mussel invasion in 2004

Why are they a



Zebra mussels on native clam

The zebra mussel is well adapted for explosive population growth and concentrates in large numbers. Their presence can starve or smother native mussels. Nationwide, native mussels are the most imperiled group of animals, and are declining at an alarming rate. Zebra mussels are accelerating this decline. They consume significant amounts of plankton, altering the available food on which fish and wildlife depend, including the paddlefish native to the Missouri River.

Zebra mussels can damage boat engines, docks, and breakwaters. They also can clog water intake systems of industries, power facilities, and engine outdrives, causing expensive shutdowns, repairs and replacement of treatment systems. They have interrupted

the flow of drinking water to entire communities.



Mussels on outboard motor

NPS photo



Zebra mussels on crayfish

What are we doing?

Zebra mussel adults and veligers cannot move upstream against the current without human assistance. Public and private interests at the federal, state and local levels formed a consortium in 2004 whose purpose is to attempt to forestall

the spread of zebra mussels along the Missouri River. Park staffs monitor the river for these aquatic hitchhikers and educate the public about the importance of preventing zebra mussel infestations.

The future?

At this time there are no methods for eliminating zebra mussels once they establish a reproducing population. Some native species, such as ducks and fish, eat

the mussels, but not in enough quantities to limit the spread. Scientists are looking for ways to reduce or eliminate zebra mussel populations.

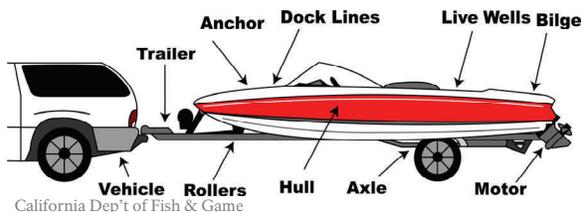
What you can do to help



Before returning to the Missouri River, check your boat and trailer for zebra mussels.

Visual Inspection and Removal

Look for zebra mussels attached to your trim tabs, swim platform, motor mounts, hull, and equipment. The young are too small to see with the naked eye, but newly settled ones feel like fine sandpaper on smooth boat hulls. Treat zebra mussels like litter and dispose of them in a trash can. Remember to remove all plant material you find while looking for zebra mussels, because they can attach to plants, including milfoil. Put plants in trash if possible.



Decontaminate Your Boat

Thoroughly hose down the hull surface, transom, keels, drive units, wet wells, bilges, trailer, bait buckets, etc. with hot water (120 to 140 degrees F). Zebra mussels are intolerant of heat and a good soaking will kill both young larvae and adults. As an alternative to hosing down your boat, let it and equipment dry completely for five days before you use it in uninfested waters. Add a day to the number of drying days for each day of rain. Drain all areas where water may collect. Using both hot water treatment and drying adds additional protection.



Pressure washing to remove mussels

Photo: idahostatesman.com

Be on the Lookout!

If you find zebra mussels in the Missouri River or if you would like more information, please call Missouri National Recreational River at 605-665-0209. Gia Wagner, Chief of Resources Management, can also be contacted at gia_wagner@nps.gov

Web Resources

www.invasivespecies.gov

www.100thmeridian.org

www.protectyourwaters.net

www.nps.gov/mnrr