

Quagga/Zebra Mussel Frequently Asked Questions

March 2009

What are Quagga and Zebra Mussels?



Quagga mussels (*Dreissena bugensis*) and Zebra mussels (*Dreissena polymorpha*) are small fresh water bi-valve mollusks (relatives to clams and oysters) that are triangular with black or dark brown, and white or cream striped markings that appear on its shell. Both species can be referred to as “zebra mussels.” They are the only freshwater mussel in the USA that attaches to hard surfaces.

Where did Quagga and Zebra mussels come from?

Quagga and Zebra mussels are native to the Caspian, Black, and Azov Seas of Eastern Europe. Zebra mussels were first discovered in the US in Lake St. Clair, Michigan in 1988. It is believed they were introduced through ballast water discharge from ocean-going ships. Since their initial discovery, Zebra and Quagga mussels have spread rapidly throughout the Great Lakes, Mississippi River basin States, and other watersheds throughout the eastern and central US. In 2007, quagga mussels were detected for the first time in water bodies west of the Rocky Mountains.

How do Quagga/Zebra mussels spread from one place to another?

Quagga and Zebra mussels are most commonly spread from one body of water to another by attaching themselves to boats that are launched in one lake and later move into a different lake. Proper cleaning and drying of boats and all equipment that may come into contact with infested water is the most important step boaters can take to prevent inadvertently spreading mussels and other aquatic nuisance species. General instructions that all boaters should follow for cleaning boats and other gear are available at www.ProtectYourWaters.net. Detailed instructions can be found at http://www.wildlife.utah.gov/quagga/pdf/boat_inspection.pdf.

Veligers (larvae) spread by drifting with the water currents either downstream or within a body of water. Once they mature enough to attach to a hard surface, they generally remain stationary.

What are Veligers?

Veligers are the microscopic, larval stage of a Quagga or Zebra mussel's lifecycle. As veligers mature, they search for firm locations within the water to which they can attach themselves. If

they can find a place to attach and all other ecological conditions are right (sufficient food, mineral content of water, proper water temperature...), it can grow into an adult mussel.

Have Quagga and/or Zebra mussels been found in Lake Powell?

In 2007, we experienced a false-positive. Further testing through the collaborative efforts of the National Park Service, US Geological Survey, Arizona Game and Fish Department, Utah Division of Wildlife Research, and the Bureau of Reclamation have concluded that to this day Lake Powell remains Quagga and Zebra mussel free.

How would Lake Powell be affected if Quagga/Zebra mussels were introduced?

Quagga and Zebra mussels are known to attach themselves to underwater structures including, marina facilities, boat hulls, and engine crevices. In other areas, they have fouled boat motors and clogged intake pipes at reservoirs. Quagga and Zebra mussels voraciously filter out the phytoplankton and zooplankton from the water, altering the ecological balance of a water body. This can have a negative effect on fish populations.

If Mussels invaded Lake Powell ... what it would mean to you!

-  Decline in quality of fishing due to disruption of the food chain
-  Foul marina facilities, docks, and ramps
-  Equipment damage from clogged engines and encrusted boats
-  Ugly beaches and shorelines covered with sharp smelly shells
-  Clogged water and power facilities increasing water and power costs

What prevention efforts are in place to protect Lake Powell from the Quagga and Zebra mussel threat?

Boaters are now required by State, Federal, and Park regulation to be certified as Quagga and Zebra mussel free before launching into Lake Powell. Vessels that have been used within 30 days in states infested with zebra mussels as identified in park information material will not be allowed on park waters until the risk of spreading Zebra mussels has been removed. Failure to comply with zebra mussel free certification regulations could result in a mandatory court appearance, six months in jail, and a \$5,000.00 fine.

Compliance is monitored through the collaborative efforts of the Utah Division of Wildlife Services (UDWR) and the National Park Service.

What has the Utah Department of Natural Resources done to combat this new threat?

Utah (UDNR) has worked extensively with other UT state agencies and legislation to confront this threat. A policy plan was developed to provide direction on how to lessen the chance of infestation by Quagga and Zebra mussels in UT waters.

They have developed an extensive public outreach program in the model of Minnesota's zebra mussel education plan. As part of the public outreach program UT distributed nearly 250,000 "Zap the Zebra" brochures across Utah, primarily at state parks, private marinas and within National Recreation Areas, including Glen Canyon.

The threat of Quagga and Zebra mussels, and other aquatic nuisance species (ANS), has been addressed in several of Utah's state laws. Listed in Utah's prohibited species list is *Dreissena*, the scientific name (Genus) for both Quagga and Zebra mussels. The Utah ANS Act requires that all boats that have been in infested waters within 30 days be cleaned, drained, and dried, or professionally decontaminated, requires all boaters be self-certified throughout the state of Utah, gives UDWR authorities to inspect and quarantine vessels and to close access to infested water bodies, creates a framework for a Memorandum of Understanding with UT DOT for highway vessel inspections, and requires immediate notification to UDWR of any Zebra or Quagga mussel sightings.

Where can I get more information about Quagga and Zebra mussels?

www.100thmeridian.org and www.ProtectYourWaters.net

Quagga and Zebra mussel timeline at Glen Canyon National Recreation Area:

1998: Scientists predict Lake Powell would be the first western body of water infested with zebra mussels.

1999: Glen Canyon begins risk assessment and monitoring efforts. Boat trailer license plates from infested states were counted in parking lots. Visual monitoring efforts include looking for quagga or zebra mussels on buoys, docks, and other substrates.

2000: Glen Canyon NRA begins screening visitor boats at entrance stations to determine which boats are a risk for spreading zebra mussels. High-risk boats are asked to receive a free decontamination, voluntarily. ARAMARK begins offering free hot water boat decontaminations at Wahweap, Bullfrog, and Hall's Crossing marinas to prevent quagga or zebra mussels from infesting Lake Powell.

2002: The first documented boat with adult zebra mussels attached is found and decontaminated at Lake Powell. Monitoring for zebra mussels in Lake Powell was improved with 9-15 artificial substrate samplers continuously maintained at marina areas lake-wide.

2003: Glen Canyon NRA established new regulations that require any vessel coming from states with quagga or zebra mussel infested waters within 30 days to be decontaminated before launching in Lake Powell. (Decontamination is no longer voluntary).

2005: Antelope Point Marina opens and begins offering hot water boat washes to prevent quagga or zebra mussels from infesting Lake Powell. Quagga mussels became established Lake Mead, but would not be discovered until 2007.

2007: Quagga mussels are detected for the first time west of the Rocky Mountains in Lake Mead. Glen Canyon NRA requires all vessels to be certified “MUSSEL FREE” prior to launching.

2007 - 2009: Glen Canyon NRA has continued to improve the zebra mussel prevention program and fostered a multi-organization cooperative effort focused on protecting Lake Powell. Coordination, Education/Outreach, Monitoring, and Interdiction are the four main aspects of Glen Canyon’s prevention program.

- **Coordination:** public relations, funding opportunities, overseeing internal and external partnerships (over 20 local, state, and federal organizations work together at Lake Powell to combat this threat), ensuring effective inspection and decontamination services, and providing training opportunities for NPS, state, and concessioner staff.
- **Education and Outreach:** an educated boating community is the best defense against spreading zebra mussels. At Glen Canyon NRA, signs and information are at entrance booths, self-certification stations, and launch ramps to inform visitors of the threat and of vessel requirements. We use a variety of media and interpretive outlets in educational and outreach efforts by participating in boat shows, public awareness days, service learning projects, and promoting partnerships with the Stop Aquatic Hitchhikers campaign.
- **Monitoring:** Lake Powell is monitored extensively by Glen Canyon NRA, Bureau of Reclamation, and Utah Division of Wildlife Resources. Plankton samples and artificial substrates are used for early detection of larvae and settling mussels. Plankton samples are processed by NPS Staff in the Glen Canyon Lake Powell Water Laboratory.
- **Interdiction:** Every vessel that comes to Lake Powell is screened to ensure that high-risk vessels are identified and do not launch without inspection. Screening involves questions regarding the vessel’s history. Vessels that are determined to be high risk are inspected and decontaminated, if needed, before being allowed to launch. All vehicles with watercraft trailers must display a “MUSSEL FREE” certificate on the dashboard. Certificates are issued once the vessel has been screened. Visitor self-screening and certification is required when NPS staff is not available. Failure to comply with the park’s prevention efforts can lead to a \$5,000 fine, a mandatory court appearance, and up to 6 months in jail.