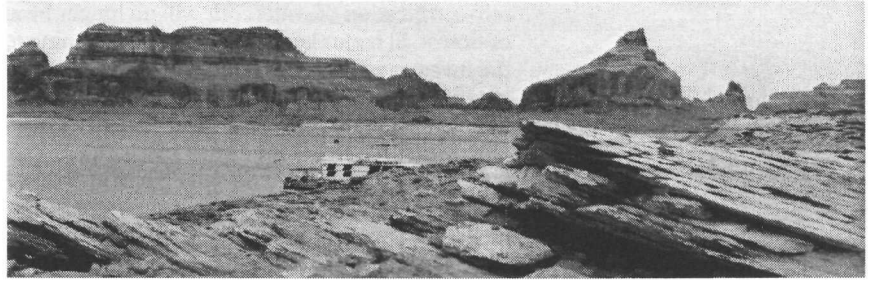




Mussel Fact Sheet

The National Park Service is very concerned with protecting its valuable aquatic resources from invasive mussels.



Lake Powell

What are Quagga and Zebra Mussels?

Zebra and quagga mussels are defined as freshwater bivalve mollusks - animals with two shells. The shell of both mussels alternates between a yellowish and darker brown, often forming stripes. They range in size from microscopic to two inches long. Adult zebra and quagga mussels can attach via tiny threads - byssal threads - to hard surfaces, such as boats.

Both zebra and quagga mussels can survive cold waters, but need waters above 48 degrees F to

reproduce. Both species were discovered in the Great Lakes in the late 1980's, when they were discharged in ballast water of ocean-going ships.

They "hitched rides" to other waters in the United States on boats, trailers and the equipment people transport from place to place. Until three years ago, these mussels were not known to have spread west of the Rocky Mountains.

Why are we Concerned?

Zebra and quagga mussels pose a great ecological and financial threat!

They grow and reproduce exponentially. A single female can produce up to one million eggs a year. Even if only one percent of the offspring survive, there would be over 10 septillion mussels in the waterway at the end of five years.

They clog water infrastructure, impacting water supply and quality. They attach to most underwater structures and can form dense clusters that impair facilities and impede the flow of water. They clog intake pipes and trash screen, canals, aqueducts and dams. The mussels also degrade water quality and can alter the taste and smell of drinking water.

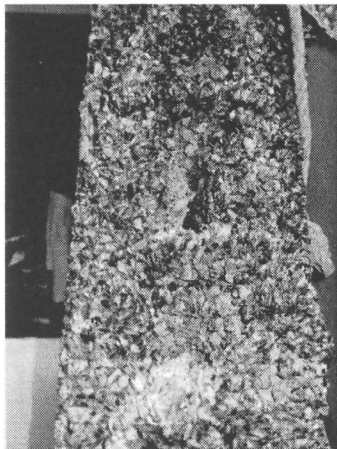
They have significant ecological impact. They have the ability to change aquatic ecosystems and native plant and animal communities. The amount of food they eat and the waste they produce have life-altering effects on the ecosystem and can harm fisheries. As filter feeders, these species remove large amounts of microscopic plants and animals that form the base of the food chain, leaving little or nothing for other aquatic species.

They have recreational impact. These mussels encrust docks and boats, and can get into engine cooling systems causing overheating and damage. The weight of attached mussels can sink navigational buoys, breakwaters, docks and small vessels. Beaches become covered with sharp smelly shells.

They have significant economic impact. The maintenance costs for power plants, water treatment facilities and water delivery infrastructures increase, so does the cost of food and utilities. In the Great Lakes area, maintenance costs in water treatment plants, power plant intakes and dams have been in the billions of dollars. The destruction of fisheries also has a wider economic impact in terms of tourism and recreation dollars not spent.

They are very difficult to kill. In only one instance have managers been successful in eradicating zebra mussels, and that was an isolated 12-acre quarry in Virginia. A large volume of chemical was used to treat the water and kill adults and larvae. Eradicating or treating zebra or quagga mussels in large water bodies and/or connected waterways may not be possible, so prevention is very important.

They spread very quickly to other water bodies. Mussels can spread to other bodies of water by attaching to boat hulls and anchors, trailers, and boating and fishing equipment. Larvae can be transported in bilge water, ballast water or live wells. Mussel larvae also disperse naturally and can be carried by water currents to other lakes or reservoirs downstream or through water diversion.



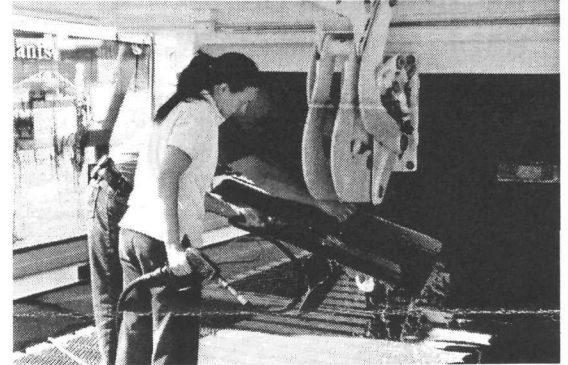
Close-up view of a boat engine's lower unit from Lake Mead

What Must You Do?

In response to the continued and growing threat of the introduction of quagga and zebra mussels at Glen Canyon National Recreation Area, new requirements for Lake Powell boaters will be in effect during the main boating season of 2009. Effective June 29, 2009, self-certification of watercraft will no longer be an option at all major launch ramps and screening for the invasive mussels by trained personnel will be mandatory for all vessels. Trained personnel will be available daily for screening from 4:30 a.m. until 9:00 p.m. Mountain Standard Time (5:30 a.m. until 10:00 p.m. Mountain Daylight Savings Time) at Wahweap, including Stateline, Lone Rock Beach, and Bullfrog, including Stanton Creek. The screening hours for Antelope Point and Hall's Crossing will be more restricted than the other large marinas, but will cover core hours during the busiest times of the day. Hours will be extended as staffing allows. Launching will be prohibited outside of these hours.

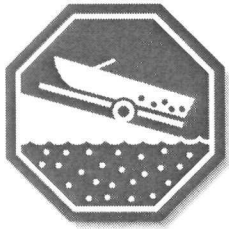
Through this interagency effort, boaters arriving to Lake Powell will be required to be screened by National Park Service (NPS) personnel or designated state and concessions employees prior to launching.

Boat screening takes less than a minute and involves asking questions of boaters as they enter the recreation area to identify potential high-risk boats. High-risk boats will be fully inspected and, if necessary, decontaminated by trained personnel. Decontamination is available at each marina. Additional screening hours will be available during the busy holiday weekends to accommodate the increase in visitation. Boaters will be allowed to take boats off the water at any time.



Decontamination station and boat

More Information



STOP AQUATIC HITCHHIKERS!™

Prevent the transport of nuisance species.
Clean **all** recreational equipment.
www.ProtectYourWaters.net

Additional Information Provided on the Internet:

For Glen Canyon National Recreation Area procedures and updates visit www.nps.gov/glca.

For boater education and invasive mussel prevention visit www.protectyourwaters.net.

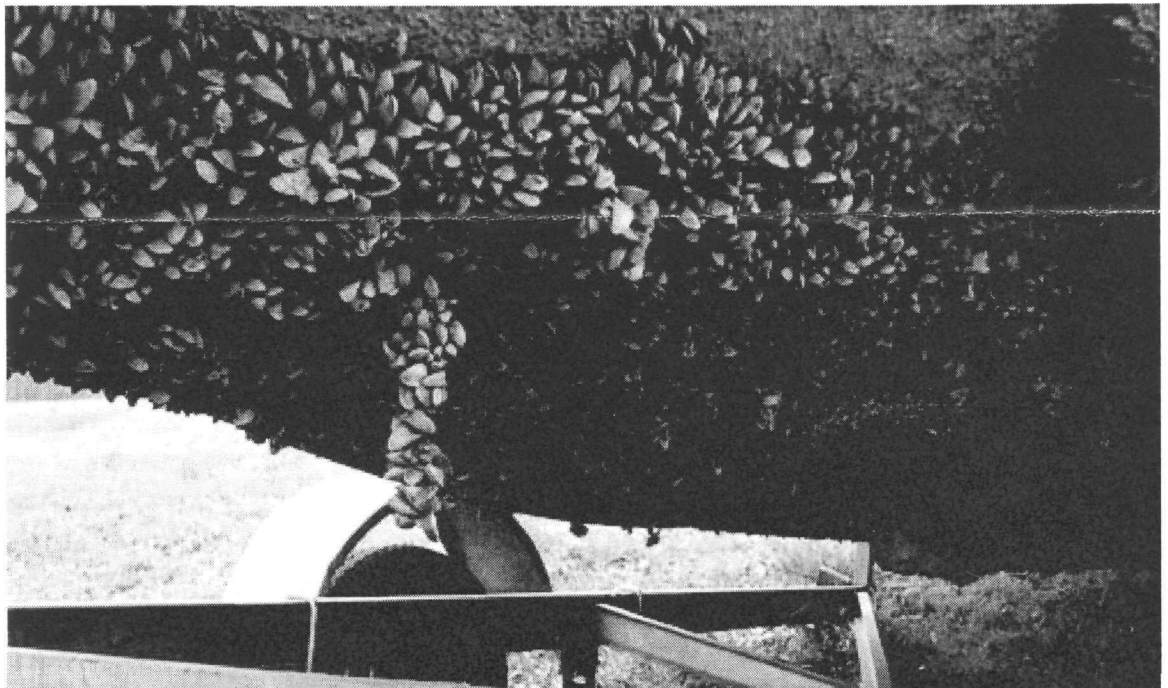
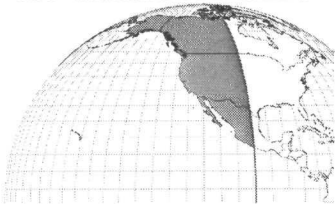
To learn about the cooperative effort by agencies to prevent the westward spread of zebra and quagga mussels visit www.100thmeridian.org.

For details on state legislation and Aquatic Nuisance Species regulations, visit wildlife.utah.gov

Contact Information for Glen Canyon National Recreation Area:

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100th Meridian Initiative



Mussel-encrusted boat hull