

## FREQUENTLY ASKED QUESTIONS QUAGGA/ZEBRA MUSSELS



What are quagga/zebra mussels?

*Dreissena bugensis* (quagga) and *Dreissena polymorpha* (zebra) are destructive invasive aquatic species that grows to about an inch in diameter. Sometimes they are larger, sometimes they are microscopic. The small, freshwater bivalve mollusks are triangular with a ridge between the side and bottom. It has black, cream, or white bands, and often features dark rings on its shell almost like stripes.

Why should we be concerned about quagga/zebra mussels in California?

They reproduce quickly and in large numbers. Once established, eradication is extremely difficult though new technologies are becoming available. Their establishment in California waters could result in an environmental and economic disaster.

What is the environmental impact of the quagga?

The quagga will upset the food chain by consuming phytoplankton that other species need to survive. They are filter feeders that consume large portions of the microscopic plants and animals that form the base of the food web. Their consumption of significant amounts of phytoplankton from the water decreases zooplankton and can cause a shift in native species and a disruption of the ecological balance of entire bodies of water. In addition, they can displace native species, further upsetting the natural food web.

What is the economic impact of the quagga?

Quagga/zebra mussels can colonize on hulls, engines and steering components of boats, other recreational equipment, and if left unchecked, can damage boat motors and restrict cooling. They also attach to aquatic plants, and submerged sediment and surfaces such as piers, pilings, water intakes, and fish screens. In doing this they can clog water intake structures hampering the flow of water. They frequently settle in massive colonies that can block water intake and threaten municipal water supply, agricultural irrigation and power plant operations. U.S. Congressional researchers estimated that an infestation of the closely-related zebra mussel in the Great Lakes area cost the power industry \$3.1 billion in the 1993-1999 period, with an economic impact to industries, businesses, and communities of more than \$5 billion. California could spend hundreds of millions of dollars protecting the state's water system from a quagga/zebra infestation.

How did the quagga/zebra mussels get to California?

The quagga/zebra mussels primarily move from one place to another through human-related activities. They attach to hard surfaces and can survive out of water for up to a week. The microscopic larvae also can be transported in bilges, ballast water, live wells, or other equipment that holds water.

Authorities discovered quagga mussels living in the Colorado River at Lake Mead, Lake Mohave and Lake Havasu in January. It is likely they were originally transported on the hull of a recreational boat into Lake Mead.

Where are the mussels now?

As of October 2007, quagga mussels have been found in many of the waters of the Colorado River drainage including Lake Havasu, Gene Wash, Copper Basin, and others that receive raw water through the Colorado River Aqueduct, including San Vicente Reservoir, Lake Murray Reservoir, Lower Otay, Dixon Lake, Lake Skinner, Lake Mathews and Miramar Reservoir. In January 2008, zebra mussels were discovered in San Justo Reservoir, San

Benito County.

Where did the quagga/zebra mussels come from?

Zebra and quagga mussels are native to the Ukraine and Russia. Zebra mussel were first discovered in the Great Lakes in 1988, and a year later, quagga mussels were discovered in the same area. It is believed they arrived in America via ballast water discharge.

Are quagga mussels similar to zebra mussels?

The quagga is a close relative of the zebra mussel and is very similar in appearance and in environmental and economic impact. Since the 1980s zebra mussels have spread throughout much of the eastern United States. Quagga mussels differ from zebra mussels in that they are heartier and can live at greater depths and in colder temperatures. Quagga mussels have actually displaced zebra mussel populations in some infested areas.

Do quagga/zebra mussels have predators?

Quagga/zebra mussels have few natural predators in North America. It has been documented that several species of fish and diving ducks have been known to eat them, but these species are not an effective control. In some cases, the mussels concentrate botulism toxin causing bird die offs.

How can we get rid of them?

It may be possible to eradicate quagga/zebra mussels if they are in small masses and low density. However, preventing their spread is the best course of action. Since their larvae are free drifting, preventing their spread downstream from known infestations may not be possible.

What is being done in response to the spread of quagga mussels?

State and federal agencies are mounting a unified response using the Incident Command System. The principal involved agencies include the Departments of Fish and Game (DFG), Water Resources, Food and Agriculture, Boating and Waterways, Parks and Recreation; U.S. Fish and Wildlife, National Park Service, and Bureau of Reclamation; Metropolitan Water District and City of San Diego Water Department; and multiple local authorities. Actions include:

- Increased inspections at California Department of Food and Agriculture border stations
- Training and deployment of survey teams to inspect other California water bodies
- Development and implementation of monitoring plans for high risk waters in the state
- Training of DFG wardens and biologists and other agencies' staff to conduct inspections
- Purchase and deployment of portable wash stations
- Public information and education efforts including direct mailings to boat owners, posting of notifications at water bodies, distribution of informational cards in multiple locations, and efforts with the media

For more information

Quagga hotline – 866-440-9530

<http://www.dfg.ca.gov/invasives/quaggamussel/>