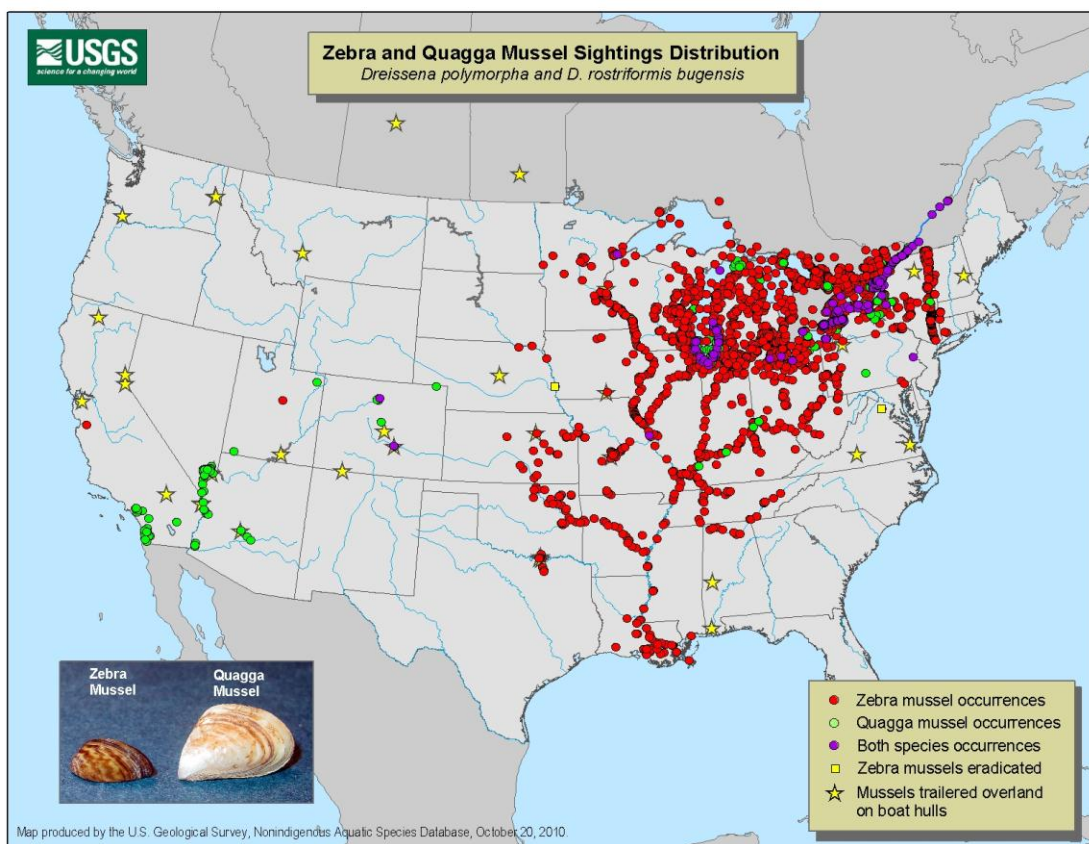




**Frequently Asked Questions**  
**Destructive Quagga and Zebra Mussels Threaten Oregon**  
Feb. 22, 2011

In 2009, the Oregon Legislature passed legislation that requires resident and nonresident boaters to fund an Aquatic Invasive Species Program to prevent the spread of costly invasive species, including quagga and zebra mussels. Rulemaking associated with the legislation went into effect on Jan. 1, 2010.



This map was created Oct. 20, 2010. Distribution maps for quagga and zebra mussels are maintained and updated regularly by the [US Geologic Survey](#). Visit the [Zebra and Quagga Mussel Information Resource Page](#) to view them.

**Q. What are quagga and zebra mussels?**

A. Quagga mussel and zebra mussels are small, freshwater mollusks, native to the Caspian Sea in Eurasia.

- Size: Microscopic to about two inches long
- Lifespan: Typically up to 5 years
- Reproductive potential: May spawn all year if conditions are favorable, generally late March to early November. Individuals can produce millions of eggs and sperm
- Adult stage attaches to hard surfaces with threads (like marine mussels), but can detach and move to new habitat
- Zebra mussel identification., [US Army Corp of Engineers Web site](#)
- Quagga and zebra mussel identification, [US Army Corp of Engineers Web site](#)

### Q. What's the difference between Quagga Mussels and Zebra Mussels?

A. These two species are within the same genus *Dreissena*

- Zebra Mussels invaded North America (in mid-1980s) from the Black and Caspian Sea Drainages
- Quagga Mussels invaded a few years later (1989) from the Dneiper River Drainage in the Ukraine
- There are morphological differences, but they are subtle
- The practical implications of zebra and quagga mussels are essentially identical (Source: U.S. Fish and Wildlife Service)



### Q. Why are quagga/zebra mussels a problem?

A. Quagga and zebra mussels arrived in the U.S. in the ballast water of ocean going ships in the 1980s. Once established in the Great Lakes, they clogged the pipes of water and power plant systems, causing hundreds of millions of dollars in damage annually. They can also have severe impacts to the ecosystems they invade.

- **Economic**
  - These species clog pipes of power plants, water and irrigation systems
  - They ruin boat motors, due to overheating caused by clogging water intake
  - Once established in a waterbody, routine maintenance is necessary and ongoing
  - These species are virtually impossible to eradicate and expensive to control
  - Management costs are enormous, particularly for industrial water users like power stations and water supply agencies
- **Ecological**
  - Quagga mussels colonize fresh water in dense mats, smothering native plants and animals, filtering out food and altering the ecosystem.
  - As filter feeders, they remove food and nutrients from the water very efficiently, leaving little or nothing for native aquatic species
  - They have the potential of collapsing entire food webs, reducing fish populations and devastating fisheries
  - Razor-sharp shells cover beaches, inhibiting recreational use

## **Q. What is the economic cost of quagga mussel infestation?**

A. U.S. Congressional researchers have estimated that Dreissenid (quagga and zebra) mussel infestations in the Great Lakes area has cost the power industry \$3.1 billion between 1993-1999, with an economic impact to industries, businesses and communities of more than \$5 billion. In the West, there is a vast infrastructure of water conveyance systems. Quagga and zebra mussels can clog water intake and delivery pipes, foul dam intake gates and pipes, and as a result impact water delivery systems. An infestation requires reoccurring, costly mechanical removal of mussels and the decay of dead mussels can corrode steel and cast iron pipelines, resulting in increased maintenance costs.

A study prepared for the Bonneville Power Administration indicates costs for cleaning and maintaining the turbines of 13 hydropower facilities on the Columbia River to be in the region of \$25.5 million annually—not including lost revenues from interruptions in power generation. The costs to clean and maintain fish screens, ladders, hatcheries, and locks are even greater. Source: Phillips, S., *Potential economic impacts of zebra mussels on the hydropower facilities in the Columbia River Basin*, prepared for the Bonneville Power Administration, February 2005.

Quagga and zebra mussels also negatively impact recreation and commercial fishing, and thus local economies. Attached mussels can increase drag on the bottom of watercraft, reducing speed, wasting fuel, and requiring scraping and repainting the watercraft's hull. Mussels attached in and around the steering components can jam watercraft steering equipment, and mussels can block the cooling system in engines causing them to overheat. Degraded habitats also reduce sport-fishing opportunities, which affect recreation opportunities and tourism. Many communities depend on an influx of tourism dollars, and even the presence of quagga and/or zebra mussels, let alone a full-blown infestation, may drive those dollars elsewhere. Source: *Quagga-Zebra Mussel Action Plan for Western U.S. Water* (PDF), October 2009.

## **Q. What can boaters do about the problem?**

A. The Oregon Marine Board recommends that boaters—including personal watercraft, canoe, drift boat and kayak users—and anglers follow these guidelines to ensure that their boats, vehicles, trailers and other equipment are not contaminated by aquatic nuisance species:

- Never launch a dirty boat! Remove all aquatic plants and animals inside and out.
- Drain the water from your motor, live well, and bilge on land *before* leaving the immediate area of the waterbody.
- Wash the hull, live well, equipment, and any other exposed surface, and flush the motor and bilges. If you boated in infested waterways, use hot (over 140°F) soapy water or use a (5%) solution of 1 part household bleach to 20 parts water.
- Completely inspect your vessel and trailer, removing any visible mussels, mud, and plants but also feel for any rough or gritty spots on the hull. These may be young mussels that can be hard to see.
- Wash the hull, equipment, bilge and any other equipment that comes in contact with lake water. Mussels can live in small pockets anywhere water collects.
- If a hot wash or bleach flush isn't available, air-dry the boat and other equipment for at least *five days* before launching in any other waterway. Cooler temperatures and moist conditions can require a longer drying period.
- Dispose of unwanted bait in the trash, and do not use bait that has been exposed to infested waters or imported from out of the state.

### **Q. Where do I get an Aquatic Invasive Species Permit?**

A. Permits boats are available through Oregon Department of Fish and Wildlife fishing and hunting license agents, ODFW offices that sell licenses and on the ODFW Web site. An FAQ document is available on the [Oregon Marine Board Web site](#).

### **Invasive species in Oregon**

The Oregon Conservation Strategy identifies invasive species as one of six key statewide conservation issues, large-scale issues that present the greatest threats to fish and wildlife populations and their habitats throughout Oregon.

To learn more about the invasive species problem in Oregon, visit the Strategy Web page, <http://www.dfw.state.or.us/conservationstrategy/>

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