

Cleaning/ Disinfecting solutions

Disinfectant	Concentration	Contact time
Vinegar	100%	20 minutes
Bleach	½ oz. per gallon of water	10 minutes
Power wash with hot water	> 104°F	20 minutes
Steam/Scalding hot wash	> 140°F	3 minutes
Freeze	< 32°F	24 hours
Salt bath	½ cup per gallon of water	24 hours
Ethanol	50%	10 minutes
Lysol	follow label	10 minutes

Boating/ Diving Regulations

The boating and diving regulations have recently changed due to discovery of zebra mussels in Isle Royale waters. The following are excerpts of the new regulations:

36 CFR §1.5-Public Use Limits, Boating:

- All vessels... [being transported to Isle Royale] must be decontaminated prior to being loaded at the Houghton dock....
- All vessels ... and trailers visiting or transiting within the boundaries of Isle Royale National Park must be decontaminated...

“Decontamination” can be accomplished by either:

-cleaning and drying the watercraft and/or all associated gear and equipment so that they are dry and free of any vegetation, animals and mud and that the bilges, live wells and other compartments are also clean, dry and free of all organic material. A minimum of 5 days of drying before loading is required.

-Wash your boat, including bilge and equipment with hot (>104° F) and/or high pressure water.

-Wash your boat, including bilge and equipment with disinfectant.

- The Chickenbone Lake outlet, an unnamed stream between Chickenbone Lake and McCargoe Cove is closed to all vessels...

36 CFR §1.5-Public Use Limits, Boating:

- All SCUBA diving equipment, regardless of dive locations prior to arriving at the Park, must be cleaned and clear of aquatic nuisance species...

Why should I care?

Zebra and quagga mussels are the most ecologically and economically damaging aquatic organisms to invade the United States. Much of their destructive power comes from sheer numbers and the ability to attach to hard surfaces like intake pipes, propellers, boat hulls, docks, rocks, shipwrecks, and even other aquatic animals.

- Native mussels, fish and other wildlife are threatened. Zebra mussels consume huge quantities of food and negatively alter



Mussel encrusted boat engine, Steve Krynock

the ecology of infested waters. They are a direct threat to our native mussels by growing on and smothering them, While native mussels are food for Great Lakes fish, zebra mussels are not. As zebra mussels replace native mussels, fish stocks decline.

- Boat engines can be ruined by zebra mussels growing on and in the engines, clogging water flows, reducing performance and ultimately destroying the engine. They can also jam steering equipment and attached zebra mussels create drag which then increases fuel use dramatically, costing you more money at the pump.

Help stop the spread

As with any invasive species, it is easier and cheaper to prevent the spread of zebra mussels than to try to eradicate or control them later . Limit your time in infested waterways, plan your trips so that you can disinfect your boat periodically, remove your boat from the water as often as is practical and allow it to dry completely for at least 1 week in hot weather and 4 weeks in cool, wet weather. Most importantly, always disinfect your boat before launching into a new body of water.



Mussels found at Isle Royale National Park in 2009
Byron Karns, NPS

US Dept. of the Interior



Isle Royale National Park

Division of Natural Resource Management

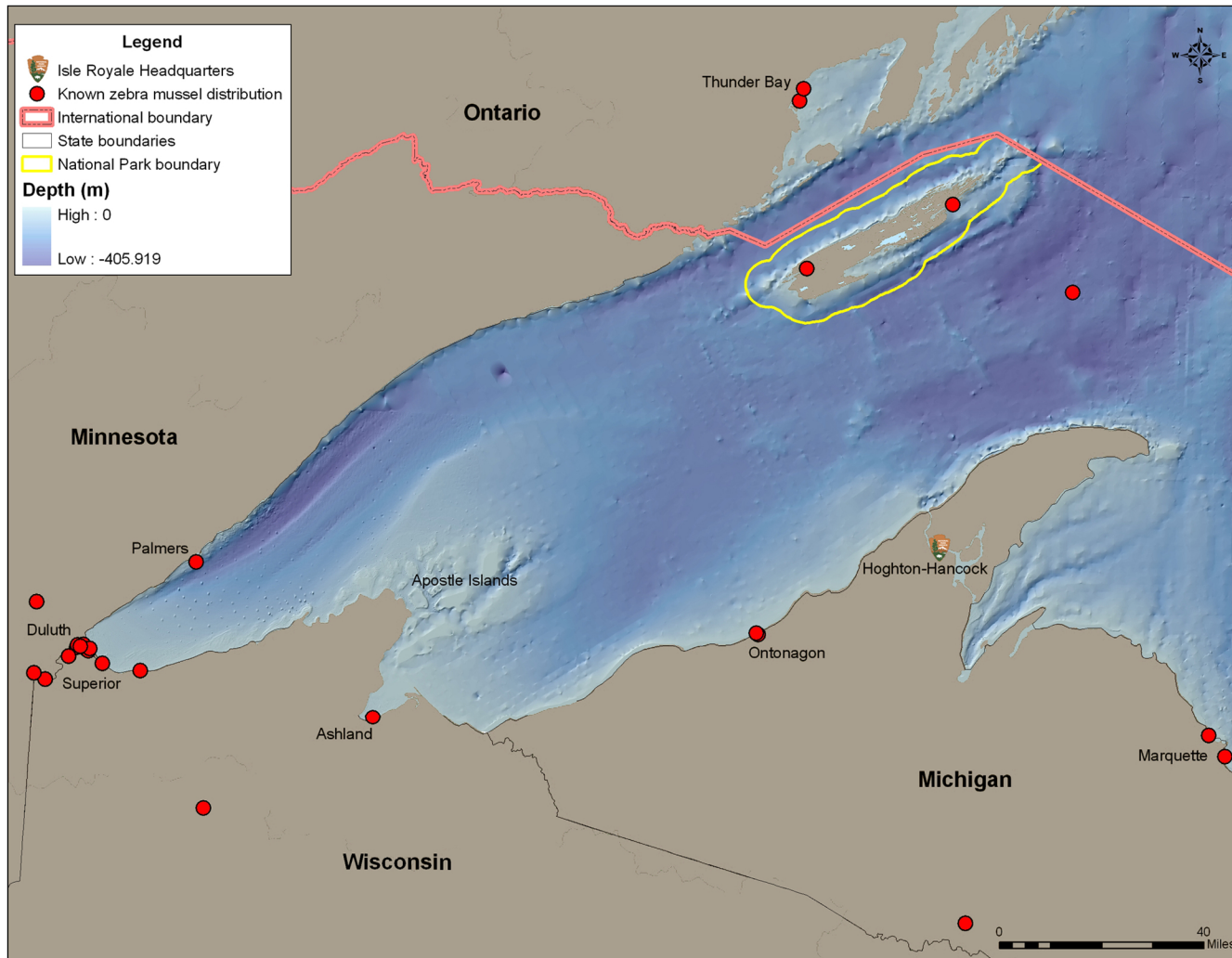


Stop the spread of

Zebra mussels

Dreissena polymorpha

ATTENTION BOATERS!



Known zebra mussel distribution as of Dec. 2009

What is a zebra mussel?

Zebra mussels (and the related quagga mussel) are small (~1 inch) non-native freshwater molluscs originally from Eastern Europe. They feed by filtering microscopic organisms out of the water. Zebra mussels live for about 4-5 years and females may produce 30,000 to 1 million eggs per year. They arrived in the Great Lakes in 1988 from the ballast tanks of trans-Atlantic ships. These aquatic nuisance species are highly invasive and are able to outcompete native mussels. Combating zebra and quagga mussels costs taxpayers hundreds of millions each year.



Prevent the spread of zebra mussels

CLEAN, DRAIN, DRY

- You cannot see zebra mussel larvae. You must disinfect.
- Inspect and clean your boat after removing your boat from the water and preferably away from the boat ramp.
- Completely inspect all of your boat and trailer. If you find any mussels scrape them off and crush them, then dispose of them in the trash. Do not throw dead mussels into the water.
- Remove all plants AND mud from your boat, trailer, and equipment. Dispose of any material in the trash.
- Carefully feel the hull for rough or gritty spots, which could be mussel larvae attached to your hull. The microscopic larvae feel like sandpaper.
- **AWAY FROM THE WATER** drain all areas of your boat and dry thoroughly. Pull all plugs, drain motor, ballast, cooling systems, live wells, bilges, and any other space that could hold water.
- Inspect, clean, and dry all life jackets, anchors, ropes, and any other items that have gotten wet.
- Wash, dry and brush pets that may have gotten wet.
- **DIVERS**- completely disinfect all dive gear including regulators, BCDs, exposure suits, mask, fins, snorkel, and any other gear. Be sure to clean inside and outside of BCDs and make sure all seams are dried. After disinfecting allow gear to dry completely before diving at new sites. Zebra mussel larvae can survive hours or days on wet dive gear.

To report a zebra mussel sighting at Isle Royale National Park, contact any National Park staff member or contact the Natural Resource Division directly at 906-487-7154 or www.nps.gov/isro



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