

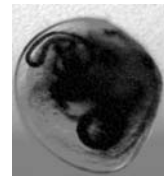


Protect your boat and engine from zebra mussels



Is your boat protected against zebra mussels? Do you know what to do? Unfortunately, some boat owners are seeing and feeling the damage caused by zebra mussels first hand. Their boat hulls are being damaged and their motors are overheating because they do not know how to minimize the impacts zebra mussels can cause. These small invasive mussels attach to hard surfaces including boats and motors! There are simple and proactive steps owners may implement to protect their investment and prevent the spread of invasive species into more of Wisconsin's waters.

Proper boat hull, engine maintenance and cleaning are key to saving thousands of dollars in repair costs resulting from damage caused by zebra mussels. Juvenile and adult zebra mussels have the ability to attach to many different types of substrate including fiberglass, aluminum, wood, and steel. This ability to attach decreases fuel efficiency and damages the boat's finish. Their larvae (called veligers) are extremely small – too small to see without a microscope. When veligers are present in the water they can be drawn into engine passages or can move into them on their own. Once they settle out in the engine cooling system, they can grow into adults and may block intake screens, internal passages, hoses, seacocks, and strainers. The best ways in which boat owners may avoid this type of damage are:



Zebra mussel veliger

Use a boatlift to completely remove the watercraft from the water. Boatlifts prevent the attachment of zebra mussels by lifting the boat out of the water when it is not being used. This helps reduce the need to scrape mussels off of the boat at the end of the season and allows the boat to be inspected, washed, or completely dried between uses.

Use your boat. If boats are left moored in zebra mussel infested waters run the engine at least twice a week at slow speeds (about 4-½ mph) for 10 to 15 minutes. The hot water will kill the zebra mussels in your engine's cooling systems. Keep an eye on your engine temperatures – if you notice an increase, it may



mean that zebra mussels are clogging your cooling system. Immediately inspect the system inside and out, and remove any zebra mussels disposing of them in the trash.



Lift the motor out of the water between uses if mooring. By lifting the motor out of the water you will reduce the chances of zebra mussels colonizing the intake grate. Fully discharge any water that may still remain in the lower portion of the cooling system as this water may contain veligers.

Photo by Steve Krynock

Tip down the motor and discharge the water when leaving a waterbody. This will reduce the chances of zebra mussels being carried to a new location in the trapped water. Don't forget to remove all aquatic plants and animals from the boat, motor, trailer, and equipment. Aquatic plants and animals will often have zebra mussel veligers or juvenile mussels attached that will hitch a ride to a new location. Also remember that the plant itself could be an invasive species such as Eurasian Water Milfoil.

Motor "muffs", also known as motor flushers, are another tool designed to remove zebra mussels and other materials from your boat engine or personal watercraft.



Motor "muffs" flush away soil particles and other foreign materials, preventing clogging, corrosion and helping to extend the life of your engine. They are important for boat



maintenance and are simple to use. Clamp the motor flusher onto the lower unit over the cooling inlets on either side of the motor, and screw the nozzle of your garden hose into it. This allows you to run the motor on land without worrying about heat buildup. Run the boat engine for approximately 10

minutes or as suggested by the manufacturer (Remember to turn the water on before running the engine!).

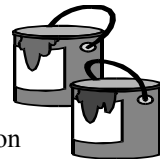
Foreign materials, including zebra mussels, will be "flushed" out of the engine. To prevent veligers from reentering the engine when the boat is placed back in the water and docked, tip the engine up, keeping it out of the water when not in use. Motor flushers may be purchased for around \$4.00 at area marinas, boat retail outlets, hardware stores and local sporting goods stores. They may also be purchased online.



Rinse boat and equipment. Adult zebra mussels should be removed from your boat, trailer, and equipment by hand (whenever possible) and discarded in the trash before rinsing the boat. Boats and equipment may be pressure washed to remove veligers and juvenile zebra mussels. Biologists who have studied zebra mussels recommend using high-pressure hot water to remove and kill zebra mussels that are attached to your boat hull (use water >104 degrees F if possible). It is okay to use high-pressure cold water if hot water is not available. Avoid pressure washing classic and wooden boats that are not made of metal. For these boats, manually remove plant and animal materials, drain all water, and dry in the sun for 5 days.

Apply antifouling paints to the hull and the engine's cooling system. In-line strainers can also be installed in the engines cooling system. Anti-fouling paints are routinely applied to boat hulls to

prevent zebra mussel attachment, algae growth and other marine organisms from attaching to the hulls of watercraft. An evaluation of hull paints by Ohio Sea Grant Extension in 1990 demonstrated that commercially available antifouling coatings could provide season long protection from zebra mussels in the Great Lakes region. Periodic inspections should be done throughout the year to check for and repair cracks or chips in the paint. Reapplication of the anti-fouling paint should be done according to the manufactures' recommendations every couple of years to provide the maximum level of protection possible. Alternatively, protective coatings that contain an epoxy or silicon type material are effective in preventing zebra mussel attachment, and have the added benefit of deterring plants and algae from attaching to the boat hull. Anti-fouling paints that are copper based are okay to use in Wisconsin. It is best to purchase anti-fouling paints or protective coatings from an area boat dealer or your local marina. Please follow all labeled directions when applying these materials to protect our surface waters.



Adult zebra mussels can be carried to new water bodies when attached to boats and plant fragments.

Veligers can be transported in water.



Please take the following steps to prevent the transport of zebra mussels and other aquatic invasive species to new waters:

- ❖ **Inspect** and **remove** aquatic plants, animals, and mud from your boat, trailer, and equipment.
- ❖ **Drain** all water from your motor, livewell, bilge, transom, etc.
- ❖ **Dispose** of unused bait in the trash.
- ❖ **Wash** your boat and equipment with hot and/or high pressure water, particularly if moored for more than one day, OR
- ❖ **Dry** your boat and equipment thoroughly (in the sun) for five days.

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