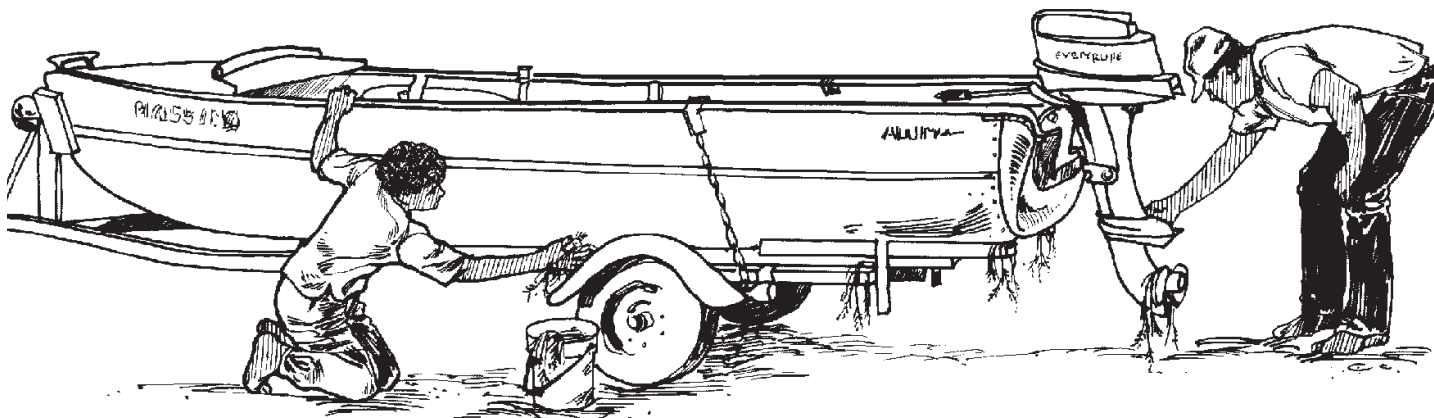


# BEYOND CLEAN, DRAIN & DRY:

## ADVANCED DECONTAMINATION PROTOCOLS for boats, trailers, and gear

*adapted from Wisconsin Department of Natural Resources*



**A**re you a lake steward who participates (with your boat and survey gear) in 'away' workshops and/or screening survey projects? If yes, the last thing you will want to do is inadvertently become a vector for less-visible aquatic hitchhikers, such as young Chinese mystery snails. When your good work takes you and your boat away from home, we recommend the following advanced decontamination protocols.

In a location, distant from (and not draining directly to) a waterbody, please **CLEAN**, and **DRAIN** your boats, trailers, and all survey gear and **DRY** for at least 5 days in advance of launching into a new waterbody. If the 5-day drying period is not possible, please decontaminate your gear using the following three steps:

### **Step 1. Make sure all gear to be disinfected is clean and free of algae and/or debris.**

Scrubbing with detergent at a high-power wash facility may be needed to properly clean all gear.

### **Step 2. Spray and/or wipe down all gear with freshly mixed chlorine solution; let stand at least 10 minutes.**

Create a ~0.5% bleach solution by mixing 1.5 tablespoons of fresh household bleach with one gallon of clean potable water. (The use of lake water may greatly reduce efficacy.) Chlorine solution in the form of household bleach (8.25% sodium hypochlorite) can be purchased from most grocery stores. (Use only bleach that is labeled: 'disinfectant'.)

Bleach solutions begin to lose disinfecting properties after 24 hours, and the more diluted the chlorine solution, the quicker it will deteriorate. It is important to use 0.5% bleach solutions that are less than 24 hours old. Chlorine solutions also deteriorate with exposure to light, heat, contact with air, metals, metallic ions and organic materials. *Bleach and bleach solutions are best stored out of heat and sun.* If stored at a temperature between 50 and 70°F, household bleach retains its disinfection properties for about six months, after which, it

begins to degrade. If bleach is stored in locations with higher temperatures, such as a garage or the back of a truck, it will lose its disinfection properties at a faster pace. Therefore, new bleach should be purchased for purposes of decontamination at the beginning of each field season. If using bleach year-round for decontamination, new bleach should be purchased every 6 months.

Label the container holding the diluted bleach solution with the words "Bleach Solution" and record the date and time of dilution on the label. The solution should be used within 2 months.

Small amounts of bleach solution may be disposed of in the sink, provided you follow with plenty of water.

### **Step 3. Rinse everything with fresh water.**

Caution must be taken to not mix chlorine bleach with other chemicals (e.g., vinegar). After using bleach, it is important to carefully rinse all contaminated gear with water.

### **Step 3. Spray and/or wipe down all gear with white vinegar.**

There have been no peer-reviewed studies investigating vinegar as a disinfectant for invasive species; therefore, it must be used in tandem with other disinfection, such as chlorine bleach. While bleach is effective in killing most invasive species, it may not kill all of them, especially some mollusks. Vinegar will dissolve mollusk shells, including those of zebra and quagga mussel veligers. Vinegar should definitely be used on nets or gear that are used to collect samples for zebra/quagga mussel analysis after sampling to prevent false positive detections in uninfected lakes.

Use white distilled vinegar without dilution. Apply by spraying, or use a sponge, so surface is thoroughly exposed to the vinegar. Contact time should be at least 10 minutes.

Store in a cool, dry area. Shelf life is indefinite if stored properly. Dispose of small amounts of unused vinegar in the sink; follow with plenty of water. 🌿