Zebra Mussel / Quagga Mussel Monitoring Methods for Wisconsin Lakes

The Wisconsin Citizen Lake Monitoring Network uses two protocols to monitor zebra mussels in inland lakes of Wisconsin. At this time, quagga mussels do not occur in inland waters, but the same protocols can be used to monitor for quagga mussels as well.

The Presence/Absence Protocol is used on lakes where zebra mussels are not yet known to occur. This protocol provides an easy and fast way to detect a new population early in its establishment. Once zebra mussels are found, the Quantitative Monitoring Protocol should be used.

The Quantitative Monitoring Protocol should be used on lakes where zebra mussels are known to have an established population. This method provides a way to track the abundance of zebra mussels over time while remaining relatively fast and simple for volunteers to conduct.

Presence/Absence Monitoring for Zebra Mussels and Quagga Mussels

Equipment Needed:
- Standard brick or paver (approximately 8" x 4" x 2.5")
- Rope (length sufficient to reach the bottom of the lake and tie off to a pier)
- Pier or dock
- Camera to photograph zebra mussels
- Citizen Aquatic Invasives Surveillance Monitoring Form (Form #3200-133)

Monitoring Location and Schedule
The best location for monitoring zebra mussels is in an area with gentle flow. This is most often near an inlet or outlet, but any area with gentle water movement from wave action is also a good location. Monitoring should occur from June through September.

Monitoring Procedure
Tie the rope to the brick. Placing the knot in the center of the brick will allow it to hang fairly level in the water. Lower the brick down into the water until it is 1 foot off of the lake bottom. This will minimize snails, crayfish, and other bottom-dwellers from potentially impacting or colonizing the brick. Tie the other end of the rope to the pier, making sure that the brick is still hanging about 1 foot above the lake bottom once the rope is secured to the pier. Lift the brick up onto the pier once per month, checking for signs of zebra mussels on any side of the brick by visually inspecting the brick and gently rubbing it with your hands. If there are no zebra mussels present, return the brick to the water again for another month. Complete form #3200-133 to report no zebra mussels found and enter these results into the SWIMS database or send the results to your local Aquatic Invasive Species (AIS) Coordinator or Regional DNR AIS Coordinator for entry into SWIMS. If no mussels are found for the entire monitoring season (June-Sept), the monitoring form only needs to be completed once.

If Zebra Mussels are Detected
Take several photographs of the brick, including closeup photographs of the zebra mussels on your hand or other contrasting background with something in the photo for scale (hand, coin, ruler, etc.). Make sure that the zebra mussels are facing the sun or other light source for easier recognition and identification.

Send these photographs to your local Aquatic Invasive Species Coordinator or Regional DNR AIS Coordinator. If you don't know who this is, contact the Citizen Lake Monitoring Network Statewide Educator Paul Skawinski at pskawins@uwsp.edu. Complete form #3200-133 to report that zebra mussels were found and enter these results into the SWIMS database or send the results to your local Aquatic Invasive Species (AIS) Coordinator or Regional DNR AIS Coordinator for entry into SWIMS.
You should then begin the Quantitative Monitoring Method described in the next section.

Quantitative Monitoring for Zebra/Quagga Mussels

Equipment Needed:
- PVC plate sampler
- Rope (length sufficient to reach the bottom of the lake and tie off to a pier)
- Pier or dock
- Camera to photograph zebra mussels
- Zebra Mussel Quantitative Monitoring Datasheet (Form #3200-127)

Monitoring Location and Schedule
The best location for monitoring zebra mussels is in an area with gentle flow. This is most often near an inlet or outlet, but any area with gentle water movement from wave action is also a good location. Monitoring should occur from June through September.

Monitoring Procedure
Tie the rope to the PVC plate sampler. Lower the PVC pyramid sampler into the water until it is 1 foot off of the lake bottom. This will minimize snails, crayfish, and other bottom-dwellers from potentially impacting or colonizing the sampler. Tie the other end of the rope to the pier, making sure that the sampler is still hanging about 1 foot above the lake bottom once the rope is secured to the pier. Lift the sampler up in September to examine it for zebra mussels. Keep in mind that young zebra mussels are very small and may be very difficult to see. Gently rubbing the plate with your fingers can be an effective way to detect tiny zebra mussels, which feel like sandpaper.

Follow the steps below to examine the plate sampler for zebra mussels:
- Untie the rope from the eye bolt.
- Unscrew the nut at the bottom of the sampler.
- Pull the eye bolt out of the top of the sampler.
- Separate the plates and spacer rings.
- Examine the top and bottom of each plate and record density of zebra mussels on the top and bottom sides of each plate. (**0** = no mussels, **1** = <1/3 covered, **2** = between 1/3 and 2/3 covered, **3** = 2/3 to completely covered).
- Complete Form #3200-127 to report the densities of zebra mussels present on your plate sampler.
- Enter these results into the SWIMS database or send the results to your local Aquatic Invasive Species (AIS) Coordinator or Regional DNR AIS Coordinator for entry into SWIMS.
- Dry the sampler plates in the sun to kill the zebra mussels, and clean them off with a stiff-bristled brush, plastic paint scraper, or scrubbing pad. Do not use steel wool or metal paint scrapers, as this will damage the sampler plates and make later cleaning more difficult.
- Re-assemble the plate sampler for next season and store it in a dry place.