Zebra Mussel Settling Plate
Community Science Project Guide

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Maine Department of Inland Fisheries & Wildlife
Aquatic Invasive Species Program

Maine is facing nearby infestations of invasive zebra mussels in Quebec and New Brunswick, leaving many Maine waters at risk of introduction. Early detection of zebra mussels if they establish in any Maine waters will be crucial in preventing further spread and mitigating the impacts they may have on our natural systems. The use of settling plates, outlined within this guide, is intended to provide a way for residents, associations, or other interested parties to monitor the lakes or ponds they are commonly at for the presence of zebra mussels. Please visit the Maine Department of Inland Fisheries & Wildlife's website for more information on zebra mussels and other aquatic invasive species.

Zebra Mussel Identification

Zebra mussel adults are ¼ - 1 ½ inches long and have D-shaped shells with a pointed hinge. Their shells are a light tan to light yellow with brown/black stripes, but the amount of striping and exact coloration can vary quite a bit. Zebra mussel larvae are free floating in the water column. You will not see unattached larvae; they are too small to see with the naked eye.

Once zebra mussels reach maturity, they will begin attaching to hard surfaces by tiny fibers called "byssal threads". Zebra mussel adults can attach to a variety of hard surfaces including boats, docks, or rocks in the water. This attachment allows for the use of samplers, like those described in this document, to detect and monitor zebra mussel populations. No other native mussel species should be this small and adhered to a hard surface, so there should be very minimal to no possibility for misidentification from other species in Maine.

Photos show the variation in coloration and striping that can occur.

Location Selection & Deployment

Settling plates should be deployed in an area with the following conditions:

- Avoid areas with strong currents
- Primarily shaded
- Preferably in water about 6 ft deep, can be shallower
- Near high-use sites, without risk of interfering with boating or swimming

Attach via rope to a dock, buoy, marker, etc. Do not attach to a structure you do not own or do not have permission to attach to. Settling plates should be attached to the structure via a 3 ft rope and sit about 2 ft below the surface of the water.

Initial deployment should occur in May or early June. Please use the online reporting form (information below) at the time of initial deployment to notify us of the active settling plate monitoring.

Settling Plate Monitoring

Settling plates should ideally be checked every 2-3 weeks or once a month at a minimum from deployment in spring to final retrieval in October.

To check the sampler:

1. Slowly pull up from the water, being careful not to disturb the surfaces of the plates and place in a bucket or over another container that will catch any organism which may fall off.
2. Closely inspect the surfaces of the plates on both the top and bottom, pay particular attention to the holes, the washer/nut, and the rope.
3. If nothing is visible, carefully run your fingers gently over the surfaces – if the surfaces that were previously smooth feel rough, like sandpaper, this could indicate the presence of juvenile mussels. Do not clean off the settling plate (biofilm/algae are necessary for zebra mussels to attach).
4. If you find any suspected zebra mussels attached to the plate (refer to the beginning of this document for identification), please remove the organisms and **place them in a sealed plastic bag, take photographs, and immediately report to AIS.IFW@maine.gov. When reporting to our email, please include photographs, location of the settling plate they were found on, and your contact information.**
5. If no mussels are found, redeploy the settling plate. *Remember, do not clean off the settling plate (biofilm/algae are necessary for zebra mussels to attach).
6. Fill out the online reporting form (information below) each time a settling plate is checked.

Settling plates should be removed from the water for the season in October. After doing a final inspection and report per monitoring protocol, completely remove the settling plate and the rope from the structure it was tied

to. Remove any visible vegetation or other debris. Clean by soaking in hot water for about 10 minutes, then scrub all surfaces. Allow the settling plate to dry completely before storing for winter.

Online Reporting

Every time you deploy, check, or retrieve a settling plate, regardless of whether you find a potential invasive mussel or not, you should fill out the online reporting form found at:

https://forms.office.com/g/XvKa99D9ti

The survey form will require you to input your name, your contact details, the waterbody in which the settling plate is deployed (if you are in a lake that is not listed as one of our pilot priority waters, please choose "other" and type in the waterbody name), the date on which you checked the settling plate, a brief description of the plate's deployment location, the GPS location of the plate, results, and any additional information.

Please submit a new report for every check and a new report for every settling plate you maintain. Thank you for your help as we aim to keep Maine's lakes healthy!

Supplemental Information

For the 2025 season, MDIFW will be able to provide settling plates to volunteers at high priority, high risk waters. To review the full list of priority waters, visit our website at: https://www.maine.gov/ifw/fish-wildlife/fisheries/aquatic-invasive-species/zebra-mussel-monitoring.html

If you did not volunteer to maintain a plate on a high risk, high priority water and/or were not allocated a settling plate due to resource limitations, we still invite you to participate in the project by either purchasing a pre-made settling plate as described below, or using one of the following sets of instructions to construct your own settling plate.

Pre-Made Settling Plates

Pre-made settling plates can be found from online retailers. The following is an example but does not represent product endorsement from MDIFW.

https://dynamicaquasupply.com/en-us/products/zebra-mussel-sampler?_pos=1&_sid=d14897930&_ss=r - (Note that the price upon checkout is set to Canadian dollars and will automatically update when the Country/Region is changed to the US).

Settling Plate Construction – Vermont & Minnesota Designs

Construction Supplies

- Plastic trash can (dark plastic, Figure 1 & 2) or PVC plates, 1/8” thick (dark PVC, Figure 3)
- PVC Pipe (¾” x 1” spacers, three per sampler)
- Washer (3/8” x 1”) and locknut (3/8”)
- Tape measure
- Multiuse tool
- Drill (3/8” drill bit)
- 3/8-inch diameter x 8-inch long stainless steel eye hook
- ½" PVC caps (two per sampler)
- 3 feet of nylon rope

Figure 1. Vermont design sampler constructed with plastic trash can pieces.

Construction Methods

1. Cut the plastic trashcan, excluding the rims of the trashcan or PVC plastic plates into 6” x 6” pieces with the multiuse tool. Four pieces will be needed to make one sampler.
2. Drill a hole into the middle of all the pieces of the trashcan or PVC plates using a 3/8” drill bit.
3. Drill holes into the middle of the PVC caps using the same drill bit.
4. Cut the PVC pipe into 1-inch pieces, these will be used to separate the plastic squares.
5. Put the stainless-steel eyehook through a PVC cap with a hole drilled into the middle, followed by the 6”x 6” plastic squares spaced approximately 1” apart using PVC pipe pieces to separate layers. The sampler has four layers of plastic squares or “plates”.

Figure 2. Vermont design sampler constructed with plastic trash can pieces, angled view.

6. After the fourth plastic plate, attach the second PVC cap with a hole drilled in it, followed by the washer and the locknut. Tighten the locknut to secure all pieces of the sampler together.
7. Attach the three feet of rope to the eyehook to be suspended in water from docks and other objects.

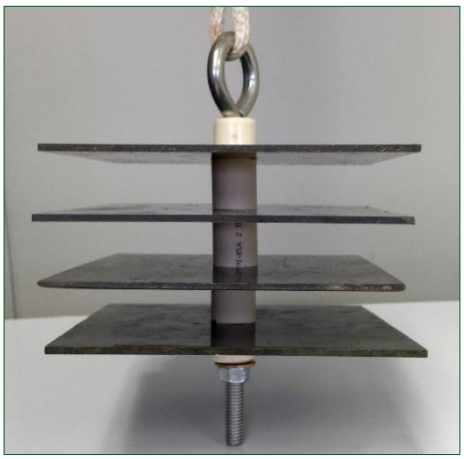

Figure 3. Minnesota design sampler constructed with PVC plates.