

Equipment and Steps for Benthic Macroinvertebrate Monitoring

Kick seine or kick net

Large white plastic buckets

Large white plastic sheet

Ice cube trays

Forceps or tweezers

Hand-held magnifiers

Rubber boots, hip waders, or shoes with a good grip

Meter stick or yard stick

Thermometer

Data sheets, pencils, clipboard

Field guides

Stop watch

pH Strips

Other things you will need:

Towels, change of clothes, socks, and shoes

Don't forget the camera!

1. Choose a site. Lay the white plastic sheet out in a level place.
2. Write the current weather, recent weather, surface condition of water, color and odor of water, clarity of water, wildlife observations, latitude, longitude, time of day, and depth of water on the data sheet.
3. Fill the large white buckets and the ice trays with water from the monitoring site.
4. Check the water temperature and pH.

Be sure to hold the water thermometer under the water and stir it for 2 minutes.

Use pH strips to test the pH of the water.

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No more than 10 minutes should pass between taking the water temperature and pH and collecting the samples.

5. Choose an area 3 feet by 3 feet or 1 meter by 1 meter in a regular part of the stream.

It is better to choose a place with small and large rocks since macroinvertebrates like to attach themselves to the rocks in the water.

12. Two people should enter the stream with each holding the pole attached to the kick net.

One side of the kick net should be flat on the stream floor. It should lean backward (downstream) at an angle. Students should face the net upstream so the water runs through the net.

13. One person should enter the water upstream and walk gently until they stand about 2 or 3 feet in front of the net.

14. Kick or shuffle the feet forward toward the kick net for 5 minutes. Use the stop watch as a timer.

Stir up the sediment. Pick up any rocks, sticks, or leaves and rake them off into the net.

15. After 5 minutes, carefully lift the net from the bottom in a scooping motion so that the organisms will not fall out of the net. The net should not lay flat on the water.

16. Carry the net out of the water and place it on the white sheet of plastic.

We used a white plastic shower curtain. It's inexpensive and dries quickly.

17. Use the tweezers, forceps, or your fingers to look through everything that was collected in the net.

Be sure to look carefully. Look for wiggly creatures. Look through algae or anything slimy. There might be a something hiding there.

18. If you find something, pick it up carefully with the tweezers or forceps and place it in the ice tray compartment. Be careful not to harm the defenseless creatures!

19. When the macros have been collected, take the field guide and study the shape, size, and color of each one. Compare them to the pictures in the field guide. Decide what species they are and mark it on the data sheet.

20. When all of the macros have been identified, place them back in the water.

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Some people who use this method take the macroinvertebrates back to the classroom to identify them, but we did not want them to die. We always put them back into the water where we found them.

21. Rinse the ice trays and buckets, kick net, and the plastic sheet. When you get back to the school, rinse them with water and make sure they are dry before you put them away.

22. Now, evaluate your findings using the Pollution Tolerance Index. You will find the directions on the data sheet.

SAFETY FIRST

Always take an adult with you.

Wash your hands when you are finished.

Do not go into the water with open cuts.

Wear boots and rubber gloves. If the water is unhealthy it could be dangerous to get the water on your skin.

Sources:

Benthic Monitoring Guide. Retrieved October 2007 from http://www.green.org/files.cgi/234_Benthic_Monitoring_Guide.html .

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