



Macroinvertebrate Station Instructions

The purpose of this station is to demonstrate how aquatic animals are integral to the riparian forest buffer ecosystem and are indicators of water quality. You will explore what lives in the stream, using scientific methods to conduct a **macroinvertebrate** assessment. Macroinvertebrates include all of the insects, **crustaceans**, worms, and **mollusks** that live in and around the bottom of the stream and can be seen with the naked eye.

After completing this station, you will understand that the macroinvertebrate composition of a stream is one of the best indicators of water quality.

To complete this station, follow the instructions below.

Collection

Collect macroinvertebrates that live in the stream by following these steps to perform a kick-seine sample:

1. Select a three-foot by three-foot section of riffle (where the stream is more rapidly flowing, not pooling) that has not been sampled.
2. Have two people hold each pole of the net immediately downstream from the area to be sampled. The net should be stretched its full width and the bottom of the net should be as close to the stream bottom as possible.
3. Have others pick up all rocks in the three-foot-square section upstream of the net and brush their surfaces while holding the rocks in the stream current. Place the “washed” rocks out of the sampling area. Do this procedure for 45 seconds and then kick the bottom of the stream in the sample area for 15 seconds.
4. Remove the net from the stream, being careful not to lose any of the animals captured in the net. Do this by lifting the net gently with a forward scooping motion.
5. Take the net to the stream bank and spread it out flat. Carefully remove any macroinvertebrates from net and gently place them into a plastic bucket of water. Look carefully, as many of the macroinvertebrates are small and difficult to see. Be gentle because the animals are fragile.
6. Mark the area you have sampled with one of the colored flags so that you do not sample the same stretch of stream again.

Identification

After you have placed all of the macroinvertebrates into the bucket of water, identify each one using the macroinvertebrate identification place mats. Place a Petri dish with water in each of the circles on the four place mats. Using the pictures on the mats, work in groups to identify and place each macroinvertebrate in the appropriate section of the Petri dish. Use the identification flash cards for examples if you need help.

Record the number of each type of species identified in the proper area of the “Macroinvertebrate Data Sheet.” Once you have identified all of the animals, gently return them to the stream, downstream of the sampling area. Clean the net and Petri dishes so that they are ready for the next sample. Use the data sheet to calculate the water quality rating index value of the stream.