Virginia Save Our Streams
Muddy Bottom Monitoring Method Instructions

Choosing where to sample within the stream

Volunteers identify habitat areas within the stream. The habitat areas are: woody snags, banks, submerged aquatic vegetation, and riffle areas (cobble-stone sized rocks). These habitat areas will be sampled in proportion to their abundance in the stream segment sampled.

Submerged Woody Debris

Stream Banks

Riffle

Submerged Aquatic Vegetation

How to Sample

A single sample of macroinvertebrates consists of collecting 20 jabs in productive habitats. A single sample is what is recorded on the data sheets.

A single jab consists of aggressively thrusting the net into the target habitat for a distance of approximately 1 meter; i.e. the distance the net can be swept while standing in one place. This initial “jab” is followed by 2-3 sweeps of the same area to collect the dislodged organisms. The following techniques are recommended for sampling the three major productive habitats in coastal plain streams.

1. Woody snags – snags or submerged woody debris, are sampled by jabbing in medium sized snag material (sticks and branches). Large material (e.g., logs) may be sampling by scraping the net along the surface. Woody debris may be picked up, held in the net, and rubbed by hand.
2. Banks – Stream banks with roots and snag material are sampled similar to snags. Vegetated banks are preferred over unvegetated banks. If the bank is undercut, be sure to jab back under the bank, drawing the net from the stream bottom to the top of the undercut bank.
3. Submerged aquatic vegetation – submerged macrophytes are sampled in deep water by drawing the net through the vegetation from the bottom to the surface of the water. Macrophytes in shallow water are sampled by bumping the net along the bottom in the macrophyte bed.
4. Riffle areas should be sampled by placing the net firmly along the bottom of the stream and using your hand or foot to "rub" around the cobbles in the riffle.

The sample is transferred to the sieve bucket (or other seining device) by banging the net over the bucket opening or by inverting the net into a partially submerged bucket. Contents of the net are transferred into the sieve bucket after each jab

Processing the Sample

Thoroughly mix the sample in the sieve bucket by swishing it around in shallow water. Be sure to keep the entire sample in the bucket!

Empty the contents of your sieve bucket onto a flat, light colored surface, such as a white sheet, or table. This makes the organisms easier to see. Spread the sample across a square portion of your surface (as large an area as needed so that the material is not clumped into piles). Using a stick as a guide, divide your sample into 4 grids to make 4 squares of the same size. Randomly select one of these squares to start your picking and identification. You may want to decide which square you will use before you start sampling, to avoid bias.

Using tweezers or your fingers, gently pick all the macroinvertebrates from selected grid and place them in your collecting container. Carefully look on both sides of any debris in the grid, as many insects will cling to any available litter. You may want to use a squirt bottle filled with water from the stream to wash away some of the mud that might hide organisms. Any moving creature is considered a part of the sample. Look closely for very small organisms and take your time. It is important to thoroughly pick all the organisms from the grid.

As you are picking the grid, separate the organisms into look-alike groups. Use primarily body shape and number of legs and tails, since the same family or order can vary considerably in size and color. Use the tally sheet and macroinvertebrate key to aid in the identification process.

Record the number of individuals you find in each taxonomic group on the tally sheet. Our tally sheet and metric calculations should be based on a sample size of at least 100 organisms. **COUNT THE SCUDS FOUND IN YOUR SAMPLE BUT DO NOT COUNT THEM TOWARDS THE 100 ORGANISMS REQUIRED! In other words you need at least 100 non-scud organisms for your sample.** If you did not pick 100 organisms from the grid. You must select another grid to pick. The second grid must be picked in its entirety.

Record the number of individuals in each taxonomic group on the tally sheet for the second grid. If you do not have 100 organisms after you have picked the second grid, continue onto the 3rd and pick that grid in its entirety. Continue picking grids in their entirety until you have at least 100 organisms **OR** you have picked the entire sample.

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