

Sampling hyporheic invertebrates

Freshwater invertebrates can help in understanding ecological relationships within a stream because of their importance as a fundamental link between organic matter resources such as algae, leaf litter and detritus. One can use invertebrates as indicators of water quality based on the premise that pollution tolerance differs among various benthic organisms (Hauer & Lamberti, 1996).

Materials

Braided PVC tubing with attached carboy lid

63 Micron mesh strainer in 5 gallon bucket top

4 liter Nalgene carboy

Extra caps for wells (in case one is missing)

Metal scoop

Squirt bottle

Guzzler self-priming bilge pump

Leak proof bug jars (Nalgene works best)

Cooler and ice

Formalin for preservation

Silicon sealant

Methods

Put braided PVC tubing into well and attach other piece of tubing to the guzzler input (listed as input/output)



Pump water from well to desired volume (usually 4L)

Pour sample into mesh while holding the squirt bottle underneath to collect filtered water (needed to wash out 4 liter container).

Use filtered water to completely rinse the material from the carboy into the mesh.

Transfer material retained on the mesh into the bug jar. The metal scoop can be used to deposit sediment from mesh into the container. Use the filtered water to out the mesh material into the bug jar.



Place samples on ice or into the stream to keep cool.

If desired, preserve samples using formalin. You want the final concentration to be ~5%.

Notes

Rinse off mesh to keep clean and ALWAYS check for holes.

Hold sample from jug, not tubing, to prevent the seal from cracking.

Be careful when removing the tubing from the well so as to not pull the well up.

Always recap the well when finished.

If measuring water chemistry, dissolved oxygen, electrical conductivity, and/or temperature -- measure first prior to invert sampling.

The mesh size is a guide for collecting meiofauna along with the macrofauna. If your study is specific to an organism, you can create new sieves of the desired mesh size.

Formalin works best for staining with the Rose Bengal. It does, however, affect the organisms for taxonomy purposes. If you want to do taxonomy it is better to pick live and preserve the organisms as needed by taxon (consult literature for best methods). For example, Wolcott's solution (a mix of glycerin and ethanol) is best for water mites while ethanol is best for insects.

If the seals attaching the tubing to the carboy lid are not intact, it will be difficult to maintain the vacuum necessary for pumping the well - carry extra sealant to repair the seals in the field as necessary.

Be careful not to put holes in the mesh when using the metal scoop.

References

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