Benthic Macroinvertebrate Sampling Procedure

Select 5 riffles from a random number table along the 150 meter reach. Use the D-net to collect kick samples at ¼, ½ and ¾ of the stream width (always start at the location furthest downstream and work up). Kick an area approximately 30 square centimeters directly above the net (a square area with sides equal to net width). Continue this kick for about 10-15 seconds, then rub the rocks by hand for an additional 10-15 seconds (total 20-30 seconds at each of 3 positions = 1-1.5 minutes). If shallow enough just use hands for the full time. After each sample position remove large rocks or wood debris after washing them in the current into the net. For streams less than 1-2 meters wide, take the 3 kick samples from both sides and middle above or singly one above another at the random number location (instead of taking all 3 across the stream when widths are greater than 1-2 meters). Keep in mind that we are trying to sample across different microhabitat types in the stream including varied depth, current, substrate types – the three composited samples should represent the variety of habitat present. One or two composits may be taken if samples are dense with debris. The label should then indicate the number of kicks used (1 or 2), assume 3 if not noted on label. If riffle is not available across the line of each transect, select representative locations to collect the needed composite sample.

If sampling in pools, take only a single collection within the tail zone of the pool (i.e. downstream third of pool zone) by sweeping or brushing the sample area into the mouth of the net -this flushing by hand will facilitate collection of the invertebrates. The net may also be used to scoop through sample area after the sweep. More than a single area sampled will usually produce too much sample volume to process and preserve.

Quickly dip the net into the stream to consolidate the material to the bottom of the D-net. Pick out any remaining large debris being sure to remove any attached insects. Invert the net into a bucket with 1/4 to 1/3 full of water. Shake out the net to collect all the debris and insects (do not dip in bucket water since insects will adhere). Dip net into the stream again to consolidate remaining contents and flick inverted net into the bucket.

Elutriate (pour off lighter material) with a swirling motion into the other bucket five times. Use only a small volume of water in each elutriation so the receiving bucket does not overflow. Only rocks and sand should be left in the original bucket. Empty these rocks into a shallow white pan (or closely examine the bottom of the bucket). Search for cased caddisflies/snails and add to sample if found (they are heavier and may not pour-off).

Strain collected material through a fine mesh aquarium net supported on one bucket (this may also serve as elutriation since some sand usually remains). Empty contents of aquarium net into a sample container. Use BioQuip forceps to scrape any remaining debris into vial. Fill container with ethanol to preserve the bugs. Fill to a level that just covers the amount of debris. Add a small volume of rose bengal stain.

Label sample jar as shown below, and move on to next sample. (identify as riffle or pool if both are sampled e.g. riffle #1)

Stream / Date / Site / Replicate #

Example: Convict Creek
lower SNARL
6 VII 95 #1

Equipment

Waders and D-net (250 micron)
Buckets (2)and aquarium nets
BioQuip forceps and white exam tray
100% ethanol and Rose Bengal stain