

## Biological

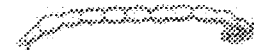
Benthic macroinvertebrates were collected from riffle habitats using a 1 meter x 1 meter kick seine held downstream with the lower edge in the bottom substrate of a riffle. An individual upstream disturbed the stream bottom by vigorously shuffling their feet as



they walked toward the seine. An area only as wide as the seine was disturbed. Bottom disturbance occurred for approximately one minute. Rocks in the sample area were rubbed by hand to collect additional organisms potentially not found in the bottom substrate. The seine was raised bottom first out of the water and spread in a flat portion of the bank to collect the organisms off the seine. This procedure (referred to as a "kick") was done twice at each sample location in two separate riffles. The

results of each kick was recorded on PADEP's "Unassessed Waters Field Form: Wadable Streams" (see Appendix E, Unassessed Waters Field Form: Wadable Streams) and the information gathered was used to answer additional questions on the field data form. The organisms were identified to family and classified on Relative Abundance as (R)are < 3 individuals, (P)resent 3-9 individuals, (C)ommon 10-24 individuals, (A)bundant 25-100 individuals, (VA) Very Abundant >100.

In addition to the "Unassessed Waters" procedure, a more in-depth Hilsenoff Biotic Index was done in fall 2001 to evaluate the relative pollution tolerance of biological communities at 30 of the sample locations. We followed the procedure outlined in Hilsenhoff's article, "An Improved Biotic Index of Organic Stream Pollution" (Hilsenhoff 1987) and in the EPA's Rapid



Midge larva

Illustrations Provided by: Aquatic Project WILD; *Water, Water Everywhere, But...*, from Hach Inc.; "Sport Fishes of Pennsylvania."

Bioassessment Protocols for Use in Wadeable Streams and Rivers:

Periphyton, Benthic Macroinvertebrates, and Fish Second Edition. Macroinvertebrates were sampled from two riffles at each location using the procedure mentioned above. The net was rinsed into a bucket and then poured through a No. 30 standard testing sieve. All large debris items were washed off into the bucket and then discarded prior to straining the sample. Samples were then bagged and preserved with enough 90% ethanol



to produce a concentration of about 70% ethanol when combined with the water in the debris. The samples were taken back to the office where the liquid mixture was replaced with 70% ethanol. A flat pan marked with a 5 cm numbered grid was used to select macroinvertebrates for identification. Four grid squares were randomly chosen for sampling and all arthropods in those four squares were selected. The target sample was 300 macroinvertebrates. If four squares did not yield this number, additional grids

were chosen at random until the sample target was met. All chosen grids were sampled completely. If greater than 360 were "picked", then the sample was sub-sampled to achieve the target. Sorted macroinvertebrates were identified to genus using a dissecting scope and key and were recorded on a data form (See Appendix F, Macroinvertebrate Data Form).

