

## Benthic Macro-invertebrate Creek Study

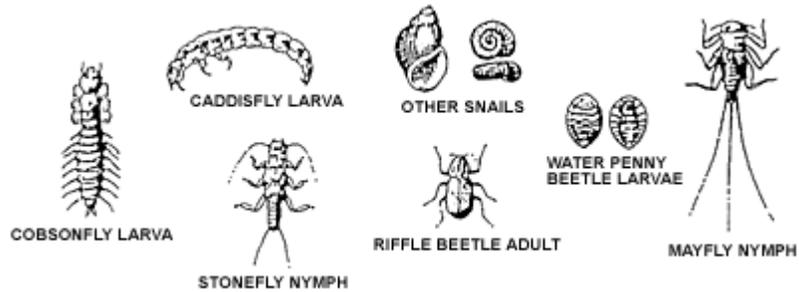
**Materials:** map of aquatic ecosystem  
D net (or other aquatic net)  
Meter stick  
life jacket (and rope?)  
pail or tray to put sample in  
camera  
Macroinvertebrate Group Sheet  
Data Collection Sheet

### Methods:

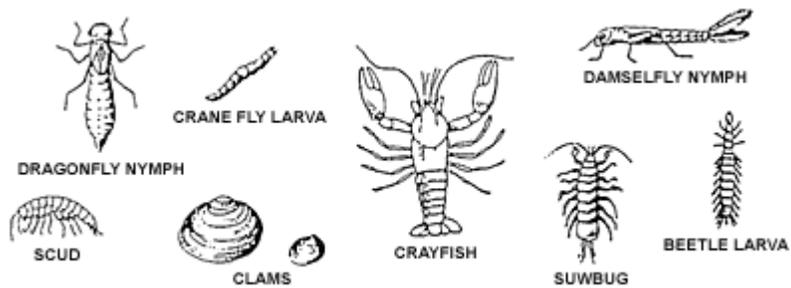
1. Note sampling location on map of the reach.
2. Document site description, weather conditions, land use.
3. Determine site habitat (cobble, snags, vegetated banks, submerged macrophytes or sand & fine sediment) along the river. Record on sheet.
4. Start sampling downstream and move upstream in the run. Take four samples per site, separated by one meter, moving upstream. Collect in vegetation where possible. Only collect close to shore. Area to be sampled is 30cm x 30 cm.
5. Technique: Sweep with net while stomping for 10 seconds. Clean the silt out of the net. Dump organisms into a white pan. Count the number of taxa and the number of individuals per taxa. Record the common names of the organisms collected. Record the number of different species. Some organisms collected may not be in the groups on the taxa sheet because they are not considered indicator species.
6. Measure and record the depth of the water.
7. Document aquatic vegetation on the collection sheet.
8. Take a picture of the organisms collected and insert the picture in the lab report. Return the specimens to the water body after they have been identified, recorded and photographed.
9. Determine site physical (abiotic) characteristics: (optional)
  - a. In the field: pH, temperature
  - b. In the lab: conductivity, alkalinity (bring back a water sample)
10. Determine the water quality index for each sample. Multiply the number of species of group 1 organisms by 3, the number of species of group 2 organisms by 2, the number of species of group 3 organisms by 1. Add all three numbers together to determine the water quality index for that sample. Find an average for the four samples taken at a site and determine the water quality rating.
11. Compare the Water Quality Index or rating for each site by plotting the number on the map of the reach of the river being investigated.
12. State a conclusion regarding the surface water quality or the health of the aquatic ecosystem. Consider the watershed contributing to reach of the river investigated and suggest reasons for the findings.

## Macroinvertebrate Taxa Groups

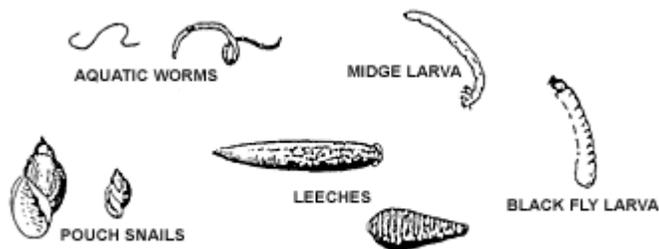
**GROUP 1** (These organisms are generally pollution-intolerant. Their dominance generally signifies GOOD WATER QUALITY.)



**GROUP 2** (These organisms can exist in a wide range of water quality conditions.)



**GROUP 3** (These organisms are generally tolerant of pollution. Their dominance usually signifies POOR WATER QUALITY.)



## Observations

Site description:

Site habitat (cobble, snags, vegetated banks, submerged macrophytes (large aquatic plants) or sand & fine sediment)

| <b>Data Table 1: Macroinvertebrates _____ River, site _____</b> |                   |        |                   |        |                   |        |
|---|-------------------|--------|-------------------|--------|-------------------|--------|
| Sample  | Group 1 Organisms |        | Group 2 Organisms |        | Group 3 Organisms |        |
|   | Names             | Number | Names             | Number | Names             | Number |
| 1   |                   |        |                   |        |                   |        |
| 2   |                   |        |                   |        |                   |        |
| 3   |                   |        |                   |        |                   |        |
| 4   |                   |        |                   |        |                   |        |

## Analysis

| <b>Data Table 2: Calculation of Water Quality Index _____ River, Site _____</b> |                       |                       |                       |                           |                      |
|---|-----------------------|-----------------------|-----------------------|---------------------------|----------------------|
| Sample  | Group 1               | Group 2               | Group 3               | Water Quality Index       | Water Quality Rating |
|   | Number of species x 3 | Number of species x 2 | Number of species x 1 | Sum of groups (1 + 2 + 3) |                      |
| 1   |                       |                       |                       |                           |                      |
| 2   |                       |                       |                       |                           |                      |
| 3   |                       |                       |                       |                           |                      |
| 4   |                       |                       |                       |                           |                      |

Water Quality Rating: >20 = excellent    16-20 = good    11-15 = fair    <11 = poor

Calculate an average Quarter Quality Index for the