



Benthic Macroinvertebrates

NGSS Standards: 3-LS1-1, 3-LS2-1, 3-LS3-2, 3-LS4-3, 4-LS1-1

Level: 3 & 4 grade

Time: 60 minutes (Spring & Fall)

Objectives:

1. Students will understand the importance and roles of macroinvertebrates in the aquatic ecosystem by:
 - a. Collecting macroinvertebrates from different instream microhabitats.
 - b. Counting and recording invertebrates from each habitat using StreamWeb data form.
 - c. Analyzing the data to determine the health of the stream.

Materials:

- 6 Sampling nets
- 6 white containers for sorting
- 7 ice cube trays
- magnifiers
- Forceps, basters, pipettes
- Macroinvertebrate identification keys/field guides
- Clipboard, data sheets, pencils
- Rubber boots

Pre-Activities:

World Salmon Council curriculum <https://worldsalmoncouncil.org/wp-content/uploads/2015/08/Field-Study-Macroinvertebrate-Identification-Full-Resource-Guide.pdf>

Procedure:

Indoor Experience would be an abbreviated class concentrating on the identification, classification, and determination of the health of the stream utilizing caught macro invertebrates.

Outdoor Field Session: Review safety rules: respect the teacher by staying safe, respect the habitat by staying near the shore, and respect your peers by being aware of your surroundings (especially with the nets).

1. Identify the microhabitats: riffle, run, pool to be sampled
2. Demonstrate how to properly take a sample: approach site from downstream. Hold net downstream from area to be sampled, perpendicular to flow. Upstream, begin rubbing rocks, stocks or other leaf litter to remove any invertebrates. The invertebrates should flow into the net. Repeat process in up to 3 other locations if necessary.
3. Remove net contents into a large shallow tray for sorting into groups in ice cube trays. Tip: It can help to use the analogy of a zoo when discussing the reasoning for sorting. In the zoo all animals are

not in the same cage. You wouldn't see a lion in the same cage as an elephant; therefore, we do our best to put all the mayflies with the mayflies and caddisflies with the caddisflies.

4. Count the different kinds of invertebrates and numbers of each kind for reach of the four functional feeding groups. Use the field guides to help with identification.
5. Macros can also be sorted by habitat type or where they were found in the stream. Record these numbers on the [Streamwebs](#) data sheet provided with the equipment. Gently return macroinvertebrates to the stream.

Post-Activities & Resources:

1. Build a bug pages 319-322
https://www.dfw.state.or.us/fish/STEP/docs/SS9_AquaticOrganisms.pdf
2. Contact ODFW to borrow a River "Read the River"