

## Macro-Invertebrates

**Objective:** Students will review the importance of water quality and what factors affect it. They will also learn how the number and health of macro-invertebrates is an indicator of water quality. Students will collect organisms and inspect them visually, and use that knowledge to determine whether the affected body of water is polluted or healthy.

**Age:** 8+

**Time:** 10-15 minutes for collecting organisms, 30-40 minutes for inspection and return

**Materials:** macro-invertebrate identification charts, worksheets, calculator, flat bottom nets, tubs or buckets for transporting large samples, ice cube trays or assorted dishes for sorting organisms, hand lenses, bug boxes, microscopes, blank slides

### **Directions:**

1. Start with a discussion about water quality and why it is important. Explain the different aspects of water quality (pH, dissolved oxygen, pollutants, etc.).
2. Explain that one way to determine water quality is by the things you find living in the water. Some organisms, like leeches, can live in healthy or polluted water. Other organisms, such as stoneflies, can only live in healthy water.
3. Distribute identification charts and give students a minute to look at them. Explain that many of the organisms are insects that only live in the lake for part of their life cycle. Review an example of an insect life cycle if you feel it would be helpful.
4. Explain that many of the organisms in the lake will be found living on the surface of the lake bottom. Demonstrate how to use nets to capture the organisms.
5. Head out to the lake and collect some samples. Carry the samples back to the classroom in buckets or tubs with enough water to sustain the critters.
6. Have the students sort the organisms in ice cube trays or other dishes.
7. Look at the organisms with hand lenses/bug boxes/microscopes.
8. Help the group identify the organisms and fill out the worksheet. Once all organisms have been identified and counted calculate the water quality of the lake.
9. Return the organisms back to the large buckets/tubs and return them to the lake.

### **Discussion Questions:**

1. Were you surprised by some of the things we found in the lake? Why?
2. Do you think the number we came up with for water quality is accurate?
3. Does having a pollutant tolerant organism, such as a leech, indicate that there is poor water quality? Why or why not.
4. What are some factors other than water quality that might affect our results?
5. What are some other methods for testing water quality?