



# MACROINVERTEBRATES FIELD DAY

## Purpose & Goals

Sampling water bugs helps students see and understand the intricacies of the aquatic habitat, and how to interpret water quality based on ecological observation. This place-based activity builds a connection to the Vadnais Lake Area watershed by encouraging positive learning experiences at the Sucker Lake Park in Vadnais Heights. This activity is planned and facilitated with the help of VLAWMO staff and resources from MinnAqua. VLAWMO provides all materials needed, and provides an in-class introduction to watershed health and macroinvertebrates (recommended).

**Goal:** To catch and identify a minimum of 3 types of macroinvertebrates from Sucker Channel and draw scientific conclusions about the health of the lake. Discern between scientific methodology, sources of error, and bias.

## Standards

**Time: 1.5-2 hrs Grades: 3-12**

STEM Science: 3.1.1.1.1, 3.1.1.2.1-4, 3.1.3.2.1-2, 3.13.2.2., 3.1.3.4.1., 3.4.1.1.-2., 3.4.3.2.1.-2., 4.1.2.1.1., 5.1.1.1.1.-4., 5.1.1.2.1.-3., 5.1.3.2.1., 5.1.3.4.1., 5.3.4.1.3., 5.4.1.1.1., 5.4.2.1.1., 5.4.2.1.2., 5.4.4.1.1., 7.1.1.1.1.-2., 7.1.1.2.1.-4., 7.1.3.4.1.-2., 7.4.2.1.1.-3., 7.4.2.2.2.-3, 7.4.3.2.4., 8.1.1.2.1., 8.3.4.1.2., 9.1.1.1.1.-6., 9.1.1.2.1.-2., 9.1.2.2.1.-2., 9.1.3.2.1.-2., 9.1.3.3.1.-3., 9.1.3.4.3., 9.1.3.4.4., 9.4.3.3.5., 9.4.4.1.2., 9.4.4.2.4., 9C.1.3.3.1., 9C.1.3.4.1.

## Preparation & Materials

What lives in the water is there because of the conditions that allow for it to be there. Using maps from the VLAWMO website, we start with an awareness of how water moves across the landscape and into water bodies to form the watershed. The aerial images allow us to draw connections between the school and the lake. What's happening on the landscape will in turn impact the water and what lives in the water, for better or worse.

- Maps of the watershed: found on the VLAWMO website
- Water bug sampling supplies (provided by VLAWMO): Nets, petri dishes, calculators, tupperware, eye-droppers, egg cartons
- Macroinvertebrate Key
- Field worksheets and pencils •Outdoor attire

## Procedure

An optional class visit can be arranged prior to the field day to view aerial imagery and discuss watershed concepts in the classroom.

1. Arrangement for a bus to bring students to the Vadnais-Sucker Lake park, at the Sucker Lake north channel segment (at the corner of Hwy 96 and Rice Street). Timing is arranged custom to class needs and ability.
2. Students gather on the park lawn in a circle for an introduction to the activity and instruction in how to use the nets and tools for collecting and analyzing macroinvertebrates.
3. Students spend 10-12 minutes sampling macroinvertebrates. While this is often the most appealing part for students, only a few samples with the net is required to collect sufficient data.
4. Students transfer their samples to a tupperware bin, using the laminated guides and petri dishes to identify and document the species they find. A species math calculation is provided to assess water quality.
5. The large group re-gathers in a circle to share highlights and an initial conclusion on water quality based on findings.

## Reflection

1. What water bugs did you find, which were your favorites and why?
2. Looking at the data, what can we assume about the water? How does your data compare to your hypothesis?
3. What about our sampling could be adjusted for improving the accuracy of our experiment?
4. What is another water body in your community that may have macroinvertebrates, and what about the watershed in that area may help or harm them?
5. If someone doesn't know about water bugs, what would you tell them?

## Assessment

Upon completing the activity, students will be able to identify and describe at least three macroinvertebrates, will have completed proper sampling and analysis procedures, and will have drawn a scientific conclusion on water quality from their data.