



Benthic Macroinvertebrates

Background:

Benthic macroinvertebrates, or “stream bugs”, are aquatic animals living at the bottom of the water that are big enough to see with the naked eye and do not have a backbone. These stream bugs are vitally important to the local ecosystem, from being the primary consumers of plankton and detritus to providing a food source for young salmon.

In this activity, students will have the chance to **observe real stream bugs from local waterways**. By observing these creatures, students will be able to **identify different invertebrates** and be able to **determine the overall biotic health of the waterway**.

Next Generation Science Standards:

- [HS-LS2-6](#): Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.**

Learning Outcomes:

- Identifying stream bugs accurately and using a biotic index calculator can help determine and understand the long-term biological health of the bugs' native waterway.
- Students will be able to argue the significance of stream bug biodiversity and its relation to long-term trends, environmental surroundings, and other local natural phenomena.
- The stability of freshwater environments relies on complex and consistent ecosystem interactions. Large-scale changing environmental conditions can be measured using stream bugs and are typically due to anthropogenic impacts.

Grade Level: 9th-12th

Lesson Leader: SSG educator (Sept/Oct or Apr/May) or teacher w/ SSG training

Materials:

- Live stream bug sample (collected by SSG or teacher w/ collection permit), OR Resin bug kit
- Viewing equipment: containers, spoons, droppers, magnifiers/microscopes, etc.
- Dichotomous key
- Biotic Index calculator

Career Connections

- Aquatic biologist
- Entomologist
- Research Technician

**NGSS Components:

Blue (Science and Engineering Practices) = Engaging in argument from evidence

Orange (Disciplinary Core Ideas) = Ecosystem dynamics, functioning, and resilience

Green (Crosscutting Concepts) = Stability and change