

Macroinvertebrate Simon Says

Revised October 2011

PURPOSE: To introduce students to the feeding adaptations found in aquatic macroinvertebrates.

SUMMARY: After a short introduction to macroinvertebrate feeding habits, students will play a Simon Says game.

BACKGROUND: The macroinvertebrates we will cover can be classified into four groups, called functional feeding groups, depending on their feeding habits. They are shredders, collectors, scrapers (or grazers), and predators.

Shredders are those organisms that chew on intact or large pieces of material. Leaves, needles, flowers, and twigs that fall from trees and shrubs on the shore into the water are the most common food for shredders.

Collectors acquire and ingest very small particles of organic matter. They eat the organic matter suspended in the water by catching it with net-like features or other adaptations. Often they eat fine organic matter that has fallen out of suspension onto the streambed (substrate).

Scrapers (also called grazers) remove and eat the algae growing on rocks in shallow water.

Predators are organisms that prey on other organisms. They have special mouthparts called mandibles which they use to pierce prey and hold it while they eat.

MATERIALS: None needed; however, pictures of the macroinvertebrates can be helpful (see pages 3-5, or <http://www.extension.usu.edu/waterquality>).

PROCEDURE:

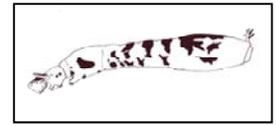
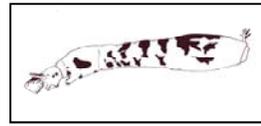
1. Divide the students into six groups: Dragonflies, Crane flies, Blackflies, Mayflies, Stoneflies, and Caddisflies.
2. Explain the different feeding habits of each group, and assign them an action.
 - a. DRAGONFLIES are predators. They have long mouthparts that extend and unfold to catch prey. For their action, have the students put their hands to their mouths with their elbows tucked down in front of them. To mimic eating, have the students straighten their elbows and make an upward scooping action. Students can also hold hands out with one up high and one down low and clap them together in a large “chomping” motion.

Suggested grade level: K-6

Duration: 30 minutes

Setting: Classroom
Outdoors





- b. CRANEFLIES are collectors. They wiggle around until they find a place to feed. The action should be a wiggly walk.
 - c. BLACKFLIES are also collectors, but they collect with a large net-like feature on their head, which they use to gather food. They can lower it down to their mouths to eat. The action should be placing your hands above your head, and lowering them down to your mouth.
 - d. STONEFLIES are shredders. They wait for leaves or other debris to fall into the water and then they tear off small pieces to eat. The action should be similar to tearing up a piece of paper.
 - e. CADDISFLIES AND MAYFLIES are scrapers. They scrape algae off rocks and sticks. This action should be similar to scratching someone's back.
3. After groups have learned their actions, have them act out their part at the same time for one minute.
 4. Then test the students on all of the feeding habits by playing "Simon Says" with the actions. (Example: Simon says act like a blackfly. Everyone should have their hands above their head.)

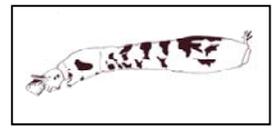
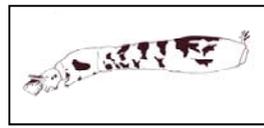
CONTINUED LEARNING:

Now that students have been introduced to aquatic macroinvertebrates, follow this lesson with Macroinvertebrate Mix and Match to introduce their body parts and life cycles.



Utah State University is an affirmative action/equal opportunity institution.

NR/WQ/2005-03



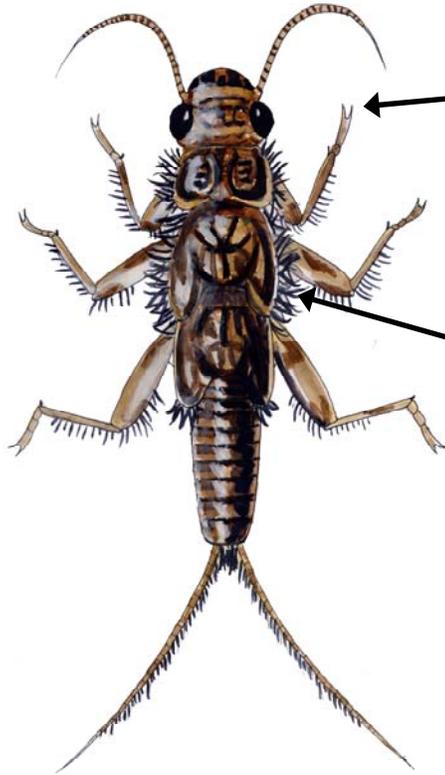
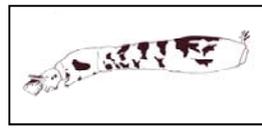
Examples of aquatic macroinvertebrate adaptations



The **Blackfly larva** has a net on its head for collecting food.



The **Crane fly larva** has tiny hairs and suction cups along its body so it can hold on to rocks and hard substrates in fast flowing water.

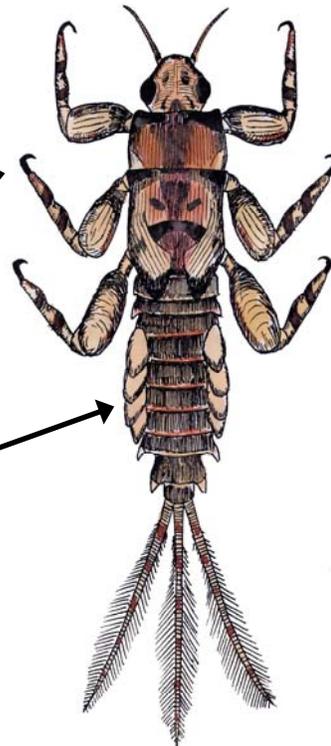


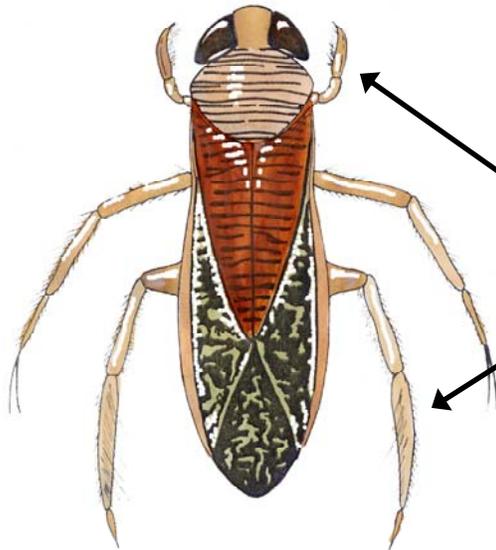
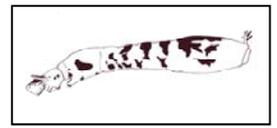
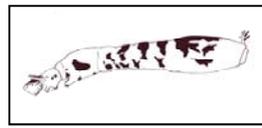
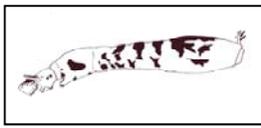
The **Stonefly** nymph has claws for capturing prey and holding on tight to rocky substrates.

The **Stonefly** nymph has gills in its “armpits” for breathing dissolved oxygen in fast flowing streams.

The **Mayfly** nymph has hooks for holding on tight to rocky substrates.

The **Mayfly** nymph has gills on its abdomen for breathing dissolved oxygen in fast flowing streams.





The **Water boatman** has paddle-like legs for swimming in slow moving water.

The **Dragonfly nymph** has claws on its legs for capturing prey and for climbing emergent vegetation.

