

Kindergarten

30-40 minutes

POND BUGS (Caddisflies and Giant Water Bugs)

Oregon Science Content Standards:

K.1 Structure and Function: The natural world includes living and non-living things.

K.2 Interaction and Change: Living and non-living things move.

K.3 Scientific Inquiry: Science explores the natural world through observation.

Goals:

- to review lifecycles, metamorphosis, camouflage and adaptations
- to learn what different pond bugs do to survive

Concepts:

- A major change in form from one life stage to the next is called metamorphosis.
- Wormlike caddisfly larvae metamorphose into caddisflies.
- An organism's life cycle includes the series of changes over its life (e.g. egg, larva, adult).
- Both caddisflies and giant water bugs use their spit to survive—in two very different ways.

Materials:

- Live caddisfly larvae (twig-like creatures which you can easily pick up from shallow ponds that have bottoms covered in leaf litter or sand)
- Clear cups of pond water to contain caddisfly larvae
- Caddisfly images
- Caddisfly tube making worksheet for each student
- Twigs, small pebbles, sand and leaves to camouflage the larval tubes
- Glue
- Giant water bug image
- Smoothies and straws (optional)

Lesson Plan:

Caddisflies

1. Place cups containing live caddisfly larvae at each table. Give students a minute or two to make silent observations. They may notice that some of the twig-like bundles will begin to move, as the tubes contain small wormlike creatures.

OIMB GK12 CURRICULUM

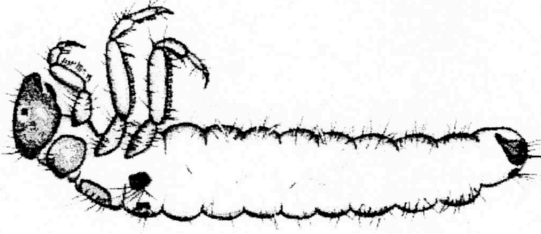
2. Have the students share their observations, and inform them that they are looking at larvae—worm-like babies that will eventually metamorphose (grow up and change) into insects called caddisflies.
3. Show an enlarged image of a larva outside of its tube, and of an adult caddisfly. Review the concepts of metamorphosis and life cycles.
4. Return to the live caddisflies. What are the tubes made out of? Students will notice that they are composed of various items including pebbles, twigs, and plants that may even still look alive. Inform them that the caddisfly uses glue-like spit to stick these items onto its own body so that it can hide inside the tubes. What could they be hiding from? (predators) Talk about camouflage.
5. Pass out the caddisfly tube making worksheets which depict a naked caddisfly larva. It is up to the students to glue on items to make tubes to protect the larvae. Have the students think about which items would best camouflage the tube in a pond.

Giant Water Bugs (see http://www.eduwebs.org/bugs/giant_water_bug.htm for additional background information)

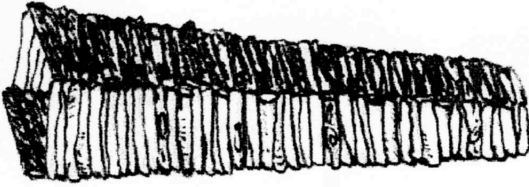
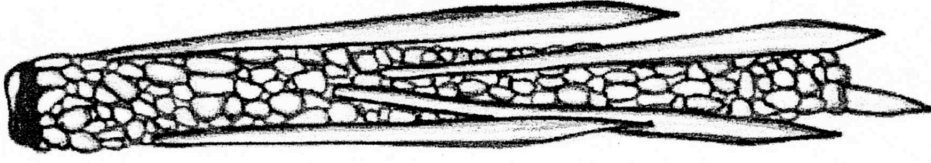
6. Show the class an image of a predator in the caddisfly's pond habitat, the giant water bug. Tell the students about an amazing adaptation of giant water bugs. They have snorkels coming out of their posteriors! They can poke their snorkels out of the water to breathe while keeping their heads underwater to look for food.
7. A second cool adaptation is how they feed. Provide a vivid description of how giant water bugs grasp their prey using their sharp claws, and pierce their prey with sharp mouthparts. Explain that while the caddisfly has spit like glue, the giant water bug has spit like acid, which it pumps into its prey. This acid melts the insides of its prey into a thick smoothie which the giant water bug then drinks with sucking mouthparts—which is a good thing since its doesn't have teeth to chew its food!
8. The students now have a chance to eat like a giant water bug. Hand out samples of a smoothie in small paper cups and have students suck up the smoothies with a straw.

Assessment: tube worksheet and discussions

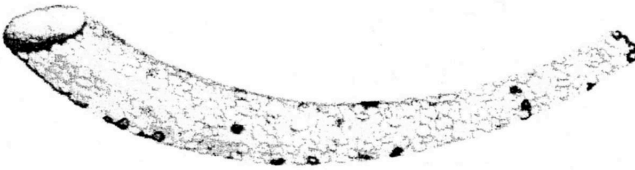
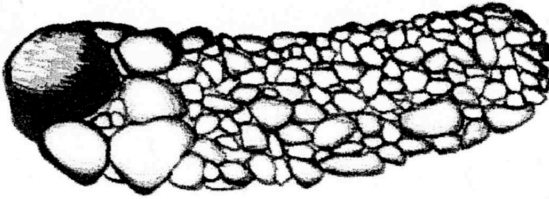
GK12 Fellows: Christina Geierman and Greg Gavelis



larva



tubes



Caddisfly



adult





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