CADDISFLY ACTIVITY

Grade Level: 3rd-4th
Duration: 20-30 minutes

Objective: Students will learn about the caddisfly in Georgia's ecosystems, the interrelation of different life-forms that makes caddisflies useful as a bioindicator and important to food webs, and the way that human intervention in environments (in this case via water quality) can affect these relationships.

Materials:
- Caddisfly picture quarter-sheets for each student
- Trout picture half-sheets – one per 3-4 students
- Leaves, sticks, pebbles, paper scraps, yarn – things that the students can glue onto their caddisflies to represent the cases they construct
- Glitter, pepper, beads, or other small objects that can be sprinkled over our ecosystem to represent pollution
- Glue

Background:
Caddisflies are a kind of insect that live in and around aquatic habitats like lakes and rivers. In Georgia, they live across the entire state, especially in places like wetlands or creeks where there is slow-moving water. There are many kinds of caddisfly – at least 14,500 species are known – but they are all relatively similar.

Like most insect, caddisflies go through several stages in their life. When they're fully grown, they fly around, but when they are larvae they live on the bottoms of streams or lakes. The caddis larvae usually eat small pieces of food that float in the water or collect on the bottom. Some of the things they eat are bits of wood, leaves, water plants, bacteria, or even smaller animals.

Other animals, especially fish, eat caddisflies and larvae. Here in Georgia, trout are one of the most common predators of caddis larvae. An important adaptation that the caddis larvae use to protect themselves from predators is building shells or shelters for themselves out of things they find in their environment.

Exercise:
**Glue the materials you collected to your caddisfly pictures to make a case for your caddisfly and cut out the trout. Prepare more caddis larvae than trout.*

Even with the protective cases and shelters, a lot of caddisflies still get eaten by predators like trout. Along with other types of aquatic insect, caddisflies an important part of the food web and a food source for many species of fish, birds, amphibians, and other insects.

**Set up the caddisflies in small groups around the trout. This will represent your simplified ecosystem. If there are too few insects for these animals to eat, they can starve, with effects that will spread throughout the ecosystem.*

Something that can affect the ecosystem that caddisflies live in, causing there to be too few for predators to eat, is pollution and bad water quality. Some species are hurt easily by pollution and some are better adapted to it; that means that if there's bad water quality, some species will die off and some may not.

**Sprinkle pollution material over the simplified ecosystem. Talk about the different types of pollution this can represent (motor oil, fertilizer, dog poop, sewer overflows, litter, etc.).*

Our simplified ecosystem is now being affected by pollution and stormwater runoff caused by humans interacting with their environment. Some of the caddis will die and some will survive, so let's take away half of them. Some of the fish will also start to die because they don't have enough to eat. Now remove a fish.

**Continue this exercise until there are no more fish.*

The bigger picture:
We can imagine that all the other animals we have not shown here that rely on those fish or those insects as a food source will also start to die off. While the bacteria, fungi, and algae that caddis larvae eat will start to increase because fewer predators are consuming them.

These are the types of problems that bad water quality can cause in an aquatic ecosystem. Caddisfly larvae can tell us a lot about the health of our streams and lakes. Because some caddis species are hurt badly by pollution and some are not, by counting the number of species which are thriving in an ecosystem we can discover water quality problems and fix them before they start to affect the entire food web.

What can you do:
To keep our streams and lakes healthy, it is important for all of us to protect our shared water resources from pollution and change our behaviors that may be negatively affecting water quality.
That means that everyone has an important role to play. Some of the simplest ways we can help are to pick up litter, pick up after our pets, and to never let chemicals like soaps and cleaners, motor oil, paints or medicines get into the storm drains or any body of water.

Visit CleanWaterCampaign.org for more information on how to prevent water pollution