Youth Activity

STREAM CREATURE CONSTRUCTION

Riffle Beetle Larva

A "macroinvertebrate" is an animal with no backbone that you can see without using a microscope. Stream-bottom macroinvertebrates — including aquatic insects (such as dragonfly and damselfly larvae) and crustaceans (such as crayfish, snails, and clams) — are good indicators of water quality because they live in the same area of a stream most of their lives and differ in their sensitivity to pollution. Which macroinvertebrates you find — or don't find — in a stream indicates the pollution level of the water.

How do these creatures survive and stay in one place when swift-flowing water is moving all around them? That's what the children will find out.

Learning Objectives

To learn how stream-bottom macroinvertebrates are adapted to their swift-water habitat.

Materials

Craft materials and tools for making stream creatures. For example: Construction paper, tape, yarn, scissors, pipe cleaners, balloons, straws, crayons, egg cartons, cardboard tubes.

Activity Description

Organize the youth into teams of three or more and ask a member of each team to volunteer to be a stream creature. (Alternatively, each team can decide together who should be the "creature.") Ask the rest of the team members to make the volunteer into a critter that can do the following in moving water:

- Catch food.
- Move around on the stream bottom.
- Camouflage or protect itself.
- Lay eggs.
- Keep from getting washed away.

Now the fun begins! Teams should use the materials at hand to create and attach body parts and construct their critters. Provide a time limit for the construction phase, depending on the age group (approximately 10 to 15 minutes). Once all the teams are done, ask each team to name their creature and explain its adaptations — changes that allow it to survive and thrive in fast-flowing streams. Depending on your groups, you could consider having a critter "fashion show," with the children walking down a pretend runway to show off their designs.

ILLUSTRATIONS BY PETER GROSSHAUSE

Net-winged Midge Larvae

Whirligig Beetle Larva

Net-spinning Caddisfly Larva

Black Fly Larva

Water Penny

You can then show the youth a few examples of interesting stream adaptations from sources such as IWLA's *The Guide to Aquatic Insects and Crustaceans* or *Pond Life, A Golden Guide*. Examples might include

- Caddisfly larvae, which live in little houses made of sand, pebbles, and tiny twigs to hide from fish and other predators.
- Net-spinning caddisfly larvae, which construct underwater webs to catch their food.
- Black fly larvae, which attach to rocks and sticks using little suckers on their abdomens and move by drifting downstream on silken threads that come out from tips of their abdomens.
- Water penny beetles, which have flat bodies that allow them to move around on rocks without washing away.

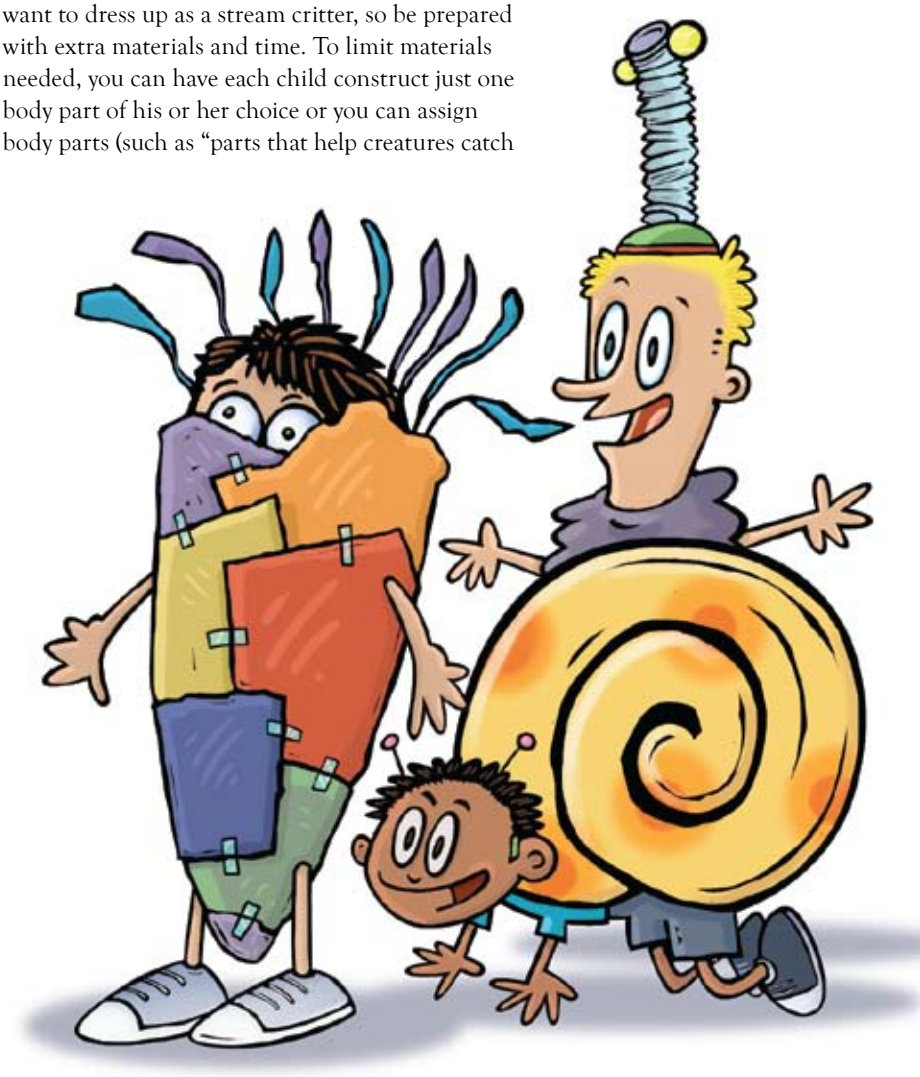
RELATED SOURCES

A Volunteer Monitor's Field Guide to Aquatic Macroinvertebrates Field Charts, by the Izaak Walton League of America, 2002.

Pond Life (A Golden Guide), by George Reid, St. Martins Press, 2001.

The Guide to Aquatic Insects and Crustaceans, by the Izaak Walton League of America, Stackpole Books, 2006.

Options: Depending on their ages, every child may want to dress up as a stream critter, so be prepared with extra materials and time. To limit materials needed, you can have each child construct just one body part of his or her choice or you can assign body parts (such as "parts that help creatures catch



food under water"). You can also have the children construct mini-macroinvertebrates — small critters that they can show and share.

Discussion Questions

If you have a guide and the children were able to look through it, ask: Did the creature that you invented look like any aquatic creature that you saw in a book? If so, which one(s)?

Answer(s): *Will vary depending on what aquatic creatures are invented. Discuss not just the appearance of creatures in the book but what survival techniques they use that are similar to ideas the youth had (such as different ways to cling to rocks in the water).*

Point to the pictures of some aquatic creatures and ask: How is this creature adapted to its aquatic lifestyle?

Answer(s): *Will vary and might include:*

- *Long legs covered with hairs that trap air bubbles and enable water striders to float on top of the water.*
- *Bifocal eyes for whirligig beetles, so they can look above and below the water's surface.*
- *Long legs for swimming used by water boatmen and backswimmer insects.*
- *Camouflaged houses made by caddisfly larvae.*
- *Extendable mouthparts that dragonfly larvae use to snag their insect prey.*

Estimated Time

30 minutes.

Ages

Recommended for ages 5 to 8. Equally applicable for ages 9 to 11. In addition, with this age group you can spend more time looking at illustrations of stream-bottom macroinvertebrates and start talking about which ones can only live in clean water and which thrive in polluted waters.

Credits

Adapted from *Hands-On Nature*, edited by Jenepher Lingelbach, Vermont Institute of Natural Science, 1986.

Want more great youth activities like this one? Check out the IWLA *Engaging Youth in the Outdoors* manual!