Student Guide Activity 2 Cascade Brook - Living in Water

Aquatic Animals in Cascade Brook

Your first study site is Cascade Brook in Black Rock Forest, a protected 4000-acre reserve about 50 miles north of New York City. The Forest contains a variety of aquatic environments (ponds, streams, reservoir) - you'll focus on the Brook for this study.

Watch the slideshow **Introducing Cascade Brook**, looking for clues about the Brook as a home for aquatic animals. What kinds of aquatic animals might you find if you went collecting in Cascade Brook?

The chart below lists animals often found in streams or ponds. Some of them may be in the Brook. In future activities, you'll look at data from Cascade Brook to find out whether these animals could survive there. First we need to find out more about each organism.

You'll notice that the list includes both vertebrates (in this case fish and salamanders) and also a group called **macroinvertebrates. (macro** means you can see them easily with your naked eye, and **invertebrate** means they don't have bones.)

Macroinvertebrates include insects, worms and leeches, and sometimes snails and clams. Most of the macroinvertebrates on the list are the larval stage of flying insects. These larvae spend their early life stages underwater. When it's time to become adults they crawl out of the water and fly away. The larvae of dragonflies and mosquitoes are examples of macroinvertebrates.

List of Aquatic Organisms

Vertebrates
- Brook Trout
- Black Nose Dace
- Creek Chub
- Northern Two-lined Salamander

Macroinvertebrates
- Stonefly larva
- Mayfly larva
- Caddisfly larva
- Hellgrammite
- Dragonfly larva
- Scud (amphipod)
- Whirligig beetle
- Water boatman
- Mosquito larva
- Leech
- Aquatic Worm

Illustrations of some macroinvertebrates:
http://www.cacaponinstitute.org/Benthics/Cast_of_Characters.html

For illustrations of these animals in their habitat, go to this site and scroll down:
http://ecologyadventure2water.edublogs.org/macroinvertebra-information/
Also look at the diagrams further down this site showing life cycles of some of the insects. This page was posted by high school students.

Macroinvertebrates are important as food for other animals, but they are also important in another way. Some of these organisms can live in warm streams whereas others require cold, oxygen-rich water. Some can survive in acidic conditions while others would die. Some insects are sensitive to pollution while others can tolerate moderate amounts. We can survey a stream to see which insects are present and use this information to decide on the stream's water quality.

Aquatic Animals Research Project

Choose an animal from the above list to research and consider how you'd like to eventually share your research with other students. You might choose to write a paper, make a PowerPoint presentation, create a large illustrated poster or any combination of these. Talk it over with your teacher if you're not sure what to do. You'll find references in the Resources for Research Project but you can also conduct your own web searches.

However you present your results, be sure to include the information below:

- Common and scientific names of the animal.
- What are its physical characteristics? Find at least one adaptation this animal has for the life it lives.
- What does it eat and how does it get it?
- Is it a larva or an adult? If it's a larva, what does it turn into?
- If the animal you are researching is a macroinvertebrate, how sensitive is it to pollution or to poor water conditions?
- Include a photograph or drawing.

To get started, watch a slide show with photographs and information about many of the animals on the list: http://www.mbgnet.net/fresh/rivers/animals/index.htm To reach this slide show, you'll need to select River Creatures on the sidebar, then click on Aquatic Critters Slide Show in the new window which comes up.