

Start with a Book: River Rangers

Water Detectives



Introduction

Are your kids ready to dive deeper into streams and rivers without getting all wet? Help them make a dipping net and an underwater viewer to get a closer look at what's living in the water.

Supplies (for each child)

- Old pair of tights or panty hose
- Wire coat hanger
- Duct tape
- Small diameter bamboo stake or pole
- Needle and thread
- Scissors and possibly pliers
- Large, sturdy cylindrical plastic container from the recycling bin (such as a 1 lb yogurt container)
- Piece of clear plastic (for example, part of a shower curtain or a large resealable storage bag) or thick plastic wrap
- Thick rubber band
- Clean empty tub(s) or bucket(s)
- Large plastic spoons



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Get kids thinking ...

What animals, birds, plants, and insects might you expect to see at a river or stream? **ASK THE KIDS:** How do they live there? How do they rely on each other to survive? How do they get food? How is a river habitat different from other habitats? What do they think life in the water is like? What does the wildlife say about the health of the river?

Help them further explore those questions with the help of a homemade dipping net and underwater viewer and a trip to a river or stream.

Let's get started!

TO MAKE A DIPPING NET, take an old pair of tights or panty hose and cut off the legs mid-thigh. Have kids tightly tie the open ends of the legs together to form a net. Take a wire coat hanger and stretch the wire triangle into a square. Kids will need help to stretch the elastic waist of the tights over the square frame, fold the waistband over the wire, and sew the waistband closed around the wire with needle and thread. To form a handle for the net, completely straighten the hook of the hanger — adult hands and pliers may be helpful — and insert it into the bamboo pole. Secure it with duct tape and kids are ready to dip!





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TO MAKE AN UNDERWATER VIEWER, cut off the bottom of a cylindrical container. Have kids stretch a piece of clear plastic over the bottom of the cylinder. Fasten it with a rubber band and seal with duct tape.

Have kids gather their new tools for exploring, along with a tub or bucket and some large plastic spoons and head to the water! You might also want to bring a magnifying glass, towels, and some hand sanitizer.

MAKE SURE KIDS STAY AT WATER'S EDGE UNTIL EVERYONE UNDERSTANDS AND AGREES TO WATER SAFETY RULES. Talk with them about what they think they might find in the water and share ideas about what to look for — bugs, insect and frog larvae, worms, tadpoles, small fish.

Start by filling the tub or bucket with water from the river or stream. Let kids test their under-water viewer. Have them lower the viewer into the tub of water and look through the open end of the viewer. What do they see?

TO GET DIPPING NETS GOING, let kids stand at water's edge and sweep the nets slowly through the water, avoiding stirring up the bottom too much. You can use plastic spoons to help them transfer whatever ends up in the net into the tub filled with river water so they can get an up close look and try to identify their finds using their underwater viewers.

Move upstream and downstream to sample from different sections of the stream or river. Talk with kids about how the physical characteristics of the stream or river create different habitats for different plants and animals. For example, shallow depths and a rocky bottom make a habitat with plenty of light and oxygen for plants and creatures that eat plants. Small, irregular waves or riffles on the water's surface can help you find this type of river habitat.

Indicator species

Indicator species are especially sensitive to their environment — even small ecosystem changes can affect their health and survival. Indicator species are one of the best ways to determine the health of a river or wetland. Here are some common indicator species to look for as you explore your river:

MAYFLIES, CADDISFLIES OR STONEFLIES are very sensitive to the amount of oxygen in the water. If you see lots of these insects, it means that the river is pretty healthy!





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FRESHWATER MUSSELS don't move around and they feed by filtering nutrient-rich water, which makes them sensitive to changes in water temperature, oxygen, and acidity.

FROGS, TOADS, AND SALAMANDERS have skin that is moist and permeable, making it easy for pollutants to get into their bodies. Do you see lots of tadpoles? That's a sign that the water is relatively clean.

STRIPED BASS AND BROOK TROUT: ask kids why fish are a good river indicator species.

OSPREYS are at the top of the food chain, which means they will be affected by environmental changes. They eat fish and they hunt very close to their nest. If something's affecting the fish population, the ospreys will show telltale signs indicating a problem. They are also very visible, making them easy to monitor!

RIVER OTTERS "eat local" (fish, crustaceans, frogs, and insects) so if the river ecosystem is polluted, those contaminants can affect the otters' health.

You might want to try the Creek Critters app from the Audubon Naturalist Society. It allows kids to find and identify small organisms that live in freshwater streams, and to report what they find. anshome.org/creek-critters/

ENCOURAGE KIDS TO TAKE PLENTY OF NOTES ABOUT THEIR OBSERVATIONS. ASK THE KIDS: Is there a plant, animal, or insect you'd like to learn more about? Head back to hit the books and find out more!

More activities

MAKE-AND-TAKE FIELD EQUIPMENT (OREGON DEPARTMENT OF FISH & WILDLIFE)
dfw.state.or.us/fish/STEP/docs/SS10_FieldEquipment.pdf

MAKE YOUR OWN MONITORING EQUIPMENT (MARYLAND DEPARTMENT OF NATURAL RESOURCES)
dnr.maryland.gov/education/Documents/MakeYourOwnMonitoringEquipment.pdf

