



National Park Service Rock Creek Park Environmental Education

WATER QUALITY

Everyday clean water dramatically improves our quality of life. Unfortunately, many times we take this resource for granted by polluting it. Using a combination of observations, hands-on activities and monitoring tests, students will learn the impact that water has on their lives, as well as the impact that they have on the future of clean water.

TOPICS: Water Cycle, Water quality, Adaptations

BACKGROUND INFORMATION:

Water is a non-renewable resource. It cycles through our system in the forms of clouds, precipitation, ground water, streams and rivers, oceans, plants and animals. A single drop of water in a water bottle today may have been a drop drunk by dinosaurs, it might have been part of the glaciers at one time, and it could have been in the ocean when Columbus crossed it. Because water is cyclic and non-renewable, we must make every effort to preserve and conserve clean water. Many agencies and private organizations, including the National Park Service, monitor water quality.

Sometimes it is easy to tell if water is polluted. Strange odors, taste, or color are immediate warning signs. It is also easy to see how large amounts of trash and erosion of soil can effect the wildlife that depends on the water. However, most water pollution is undetectable through senses alone. The two best ways to test the quality of water are through chemical testing and bio-assessing. Chemical tests of pH, Dissolved Oxygen, Nitrates, and Turbidity, reveal much about the health of the water. Bio-assessing a body of water involves finding out what types of organisms live there.

Conserving and protecting our water from pollution is vital to us as well as to the environment. Once in the water cycle, pollution can often travel, affecting the entire system. For example, pollution can be picked up by rain and carried to a hillside. The pollution will then seep into the ground and soil water or runoff into a stream or lake. Plants soak up the water from the soil, and animals drink it from the streams. In fact, most pollution is non-point source pollution, a type of pollution whose source is not readily identifiable.

Where: Rock Creek Park Nature Center or Peirce Mill

Length: 2 hours

Who: 7th - 12th grade classes

Students per group: maximum of 30

Chaperones per group: 3- 5

OBJECTIVES: By the end of the program, students will be able to;

1. Explain how either pH, nitrates, or dissolved oxygen affects wildlife in the creek.
2. Give one reason good water quality is important.
3. Identify three animals that live at least part of their lives in water.

SAFETY AND RESOURCE PROTECTION MESSAGES:

1. Wet rocks may be slippery, walk carefully.
2. Watch out for poison ivy.
3. Please do not remove anything from the park, except litter.



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PRE AND POST- TRIP ACTIVITIES

Prior to your visit to Rock Creek Park, please take a moment to read this pre- site. The pre- trip activities will help introduce students to the water as a limited resource in need of conservation. The post- trip activity is designed to reinforce the program by enabling students to look at their individual water consumption and possible ways they can help conserve more.

Pre- Trip Activities-

1. WATER SUPPLY ACTIVITY

1. Fill an aquarium with 5 gallons of water, or bring in five- gallon jugs of water. This represents the total amount of water in our ecosystem, the Earth.
2. Remove 2.25 cups of water. This is the total supply of freshwater on Earth. Pour into container #1. Ask group what kind of water is left in the aquarium. (salt water)
3. Take 1.75 cups of water from container #1 and places it in container #2. This represents the water locked up in polar ice caps, glaciers, topsoil, and suspended in the atmosphere.
4. There is 0.5 cups of water left in container #1. Remove half (.025 cups). This water represents the water that is either inaccessible or polluted. The remaining five drops or so represent the fresh water supply that is available and useable to people.
5. What does this tell you about how we should use our water resources? Ask the group how they can use water more wisely. How can they conserve water?

2. I NEED WATER

1. Ask the students to estimate how much water they use in a day.
2. At the start of class, put a bucket beneath a faucet and allow it to drip slightly. At the end of class check it to see how much water a leaking faucet can waste.

Post- Trip Activity-

HOW DO YOU MEASURE UP?

1. Ask each student to complete the attached questionnaire “How Do You Measure Up?”
2. Each student will compare their Total Score to the back to find out how he or she measured up.
3. Use the students’ scores to find the high, low, average and median score of the class.
4. Discuss some of the ways students can help lower their total water use.