

Balancing Recreation & Natural Resources

NAAEE Guidelines for Learning:

4th Grade

Strands 1 A, C, E, G; Strand 2.2 C; Strands 2.3 A, B, E; Strands 2.4 A, B, C, E; Strands 3.1 A, B, C, D; Strand 3.2 A; Strands 4 A, B, C

5th - 8th Grade

Strands 1 A, E; Strand 2.3 A, E; Strands 2.4 A, C, E; Strands 3.1 A, B, C, D; Strands 3.1 A, B; Strands 4 A, B, C

Lesson Outcomes:

Students will understand...

- the Potomac River watershed's wide variety of recreational opportunities
- that there is sometimes conflict between special interest groups regarding the best ways to manage **natural resources**
- various forms of water **pollution** that have a negative impact on recreation
- that **recreational activities** can affect the environment, both positively and negatively

Students will be able to...

- use problem solving skills to determine how industries can reduce their negative impacts on the watershed
- compare and contrast the environmental impact of various recreational activities
- represent the perspective of another person while engaging in a formal debate
- design a public information brochure

Duration of Activity:

Two to three hours

Vocabulary Words:

Aquatic, flood control dam, natural resource, rebuttal, testimony, tributary

Setting:

Indoors

Materials:

Student Pages:

1. "Recreation Activities Worksheet:" One printed copy per student
 2. "Public Meeting Scenario:" One printed copy per group of two to three students
 3. "Public Hearing Guidelines:" One printed copy
 4. "Don't Dis the Dam!:" One printed copy per student
 5. "Balancing Recreation & Natural Resources Worksheet:" One printed copy per student
- Access to the Internet and computer printers
 - Access to the library (for books and recreation magazines)
 - Paper
 - Drawing materials (e.g., markers, colored pencils)
 - Scissors
 - Role playing costumes and/or props (optional)

Summary

Through an interactive mock public meeting, students will use research and debate skills to identify recreational opportunities available in the Potomac River **watershed**. They will investigate the connection of recreational activities to the Potomac River and its **tributaries**.

Background Information

The Potomac River watershed offers a wealth of recreational opportunities. Canoeing, kayaking, tubing, hiking, bicycling, fishing, swimming, bird watching, wildlife photography, picnicking, rock-climbing, and camping are just some of the region's recreational options. Olympic kayakers train on the Potomac near Great Falls where, every July during the annual Potomac Whitewater Festival, some of the world's best kayakers boat over the falls.

The Potomac River watershed is laden with protected recreation areas, among which the most well-known include Virginia's Shenandoah National Park and Maryland's Chesapeake & Ohio (C&O) Canal National Historical Park. Table 1 identifies several other key recreational areas in the watershed.

Within the C&O Canal National Historical Park, the Canal **towpath** offers 184.5 miles along which visitors can hike or bike. The towpath follows the Potomac River from Cumberland, Maryland, to Washington, D.C., winding through 12,000 acres of national parkland and past historical Canal structures and native **flora** and **fauna**. Every year, approximately three million people visit this national park.

Because of the large numbers of recreational users, tourism and recreation can have detrimental impacts on the Potomac River watershed's natural resources. Huge quantities of bottles, cans, and other litter scar the landscape and harm wildlife. Cigarette butts and bits of plastic often wash into rivers and streams, where they can kill fish and other aquatic animals that swallow them. Power boats and jet skis **contaminate** waterways with oil and gasoline, and cause noise pollution that frightens wildlife and detracts from the enjoyment of more passive recreational users, such as hikers and picnickers. Canoes and kayaks, if not properly cleaned after each use, can facilitate the spread of aquatic **invasive species**, such as Eurasian water milfoil. Invasive



State Recreational Areas

Maryland

- Antietam National Battlefield Park
- Catoctin Mountain National Park
- Gambrill State Park
- Green Ridge State Forest
- Potomac State Forest

Pennsylvania

- Caledonia State Park
- Gettysburg National Military Park
- Michaux State Forest
- Potomac Heritage National Scenic Trail
- Shawnee State Park

Virginia

- Elizabeth Hartwell Mason Neck National Wildlife Refuge
- George Washington Jefferson National Forest
- Great Falls Park
- Prince William Forest National Park
- Shenandoah National Park

Washington, D.C.

- Anacostia Park
- Chesapeake & Ohio Canal National Historical Park
- Kenilworth Aquatic Gardens
- Rock Creek Park
- U.S. National Arboretum

West Virginia

- Berkeley Springs State Park
- Cacapon Resort State Park
- Harpers Ferry National Historical Park
- Lost River State Park
- Monongahela National Forest

Table 1. Key recreational areas in the Potomac River watershed

species are those which do not naturally occur in the Potomac River watershed, and which endanger native species. Similarly, hiking boots and bicycle tires can spread **terrestrial** invasive plants, such as garlic mustard. Hikers and cyclists can also increase **erosion** and destroy vegetation if they travel off of paved trails.

When our own recreational activities degrade the very natural resources upon which they depend, everyone's recreational experience is affected. Other human activities that cause pollution can have a similar effect on lessening outdoor opportunities. At times, parts of the coastal Potomac River that are open to swimming have been closed to all water-contact sports because of high bacteria levels resulting from untreated wastewater. Our use of natural resources for recreation is one of our most direct relationships with the Potomac River watershed. It is essential that we delicately balance enjoying and respecting these resources. This requires that recreational users be educated on how they can minimize their impact so that they do not unintentionally harm the watershed.

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Essential Questions

- What recreational activities are practiced in the Potomac River watershed?
- How do recreational activities depend on the Potomac River and its tributaries?
- How might recreational activities negatively impact the watershed and its resources?

Pre-assessment

Review and discuss the Essential Questions. Distribute the "Recreation Activities Worksheet" to each student and ask students to complete it to the best of their ability. As a class, discuss the answers, focusing on the differences between the impacts of the various activities.

Lesson Procedures

1 Explain to students that they will act out a mock public meeting in response to a proposal to build a new flood control dam on the Potomac River. To begin, divide the class into groups of two or three students and distribute one copy of the "Public Meeting Scenario" to each group. Appoint a student volunteer to read the passage aloud to the class.

2 Explain to the students that they will assume the viewpoint of a special interest group in assessing whether the dam described in the "Public Meeting Scenario" should be built, and that they will represent their interest group in the mock public hearing. Assign each group a different interest group; you may want to use the following: bird watchers, nature photographers, kayakers, cyclists, fishermen, tourists from other states, motor boat owners, property owners living just above the site of the dam, biologists, and nearby hotel owners.

3 Ask the students to re-read the "Public Meeting Scenario" within their groups, and to complete answers to the "Guiding Questions" included on the second page. Explain that this exercise will help them prepare their special interest group's argument for the mock public hearing.

4 Tell each group to develop three statements explaining why its special interest group supports or opposes the dam proposal. If they oppose it, explain that they should suggest alternatives. Give each group time to research the topic and their interest group (using the Internet, books, magazines, etc.) so that they can prepare well-informed statements.

5 Once the groups have prepared their statements, appoint a student volunteer to read the "Public Hearing Guidelines" to the class. Encourage the students to get into character (they



may choose to use costumes and props appropriate to their special interest group). You will play the role of the City Council Chairperson, providing each group five minutes to present its case. During the mock meeting, each group should explain why it supports or opposes the dam being built. After each group presents its viewpoint, each other group may ask one question or make one short statement in response.

6 After all groups have presented their position, ask the groups to vote on whether or not the dam should be built. All of the students may not agree on one solution. Explain that decisions are not always made after just one public meeting, and that many projects like this go on for years and involve multiple public meetings, reports, and compromises before a final decision is made. At the end of the session, encourage students to reflect upon how the mock public forum afforded an opportunity to develop an appreciation for how their special interest group interacts with the watershed, an understanding of the roles of other interest groups, and insight into how various groups affect one another.

7 In response to the City Council meeting, ask each student to design a public education brochure, from the perspective of the special interest group that they were assigned to represent. The purpose of the brochure should be to inform individuals in their city about the proposed dam and how it would affect recreational opportunities, the area's natural environment, and/or the local economy. The brochure should outline why someone should support or oppose the dam, and how they can get involved in supporting the group's position. To facilitate their ideas, provide each student with a copy of the "Don't Dis the Dam!" sample brochure. You may choose to allow students to use a computer program to design the brochure, or they could cut out photos from magazines and use art supplies to make their brochure on a piece of paper.

Post-assessment

Distribute one copy of the "Balancing Recreation & Natural Resources Worksheet" to each student and assign it for homework. Collect and review the students' worksheets, using the resources within this Lesson to assess students' understanding of the Lesson matter.

Extensions

- Lead the class in creating a group collage. Through the center of a very large piece of paper, draw a wavy blue line to symbolize the Potomac River. Spread this paper out on the classroom floor, and provide a selection of outdoor and travel magazines and catalogs out of which students can cut photos of recreational activities. Ask students to place images on the banner using glue, and if desired, to add their own drawings of plants, animals, or buildings. Once the collage is complete, ask the students to describe the activities they represented on the banner. Challenge the students to consider if they would still want to take part in the activities they depicted if the river was full of trash or otherwise polluted. As a class, discuss what individuals can do to help keep the river clean.
- Ask students to write a journal entry or short story about what it would be like if the river was so polluted that they could no longer go into the water or use it for any recreational activities. Ask them to include details about how this would make them feel, what they would most miss, and how they would get involved to clean up the river so that they could use it once again. After the students have written their entries, discuss how they can play a role in ensuring that the watershed remains clean. As a class, discuss why it is important to protect the watershed from pollution, invasive species, and other man-made threats.

Take Action:

Encourage students to:

- Hike and bike only on designated trails.
- Keep pets on leashes at all times.
- Spend time exploring their local, state, and national parks.
- Follow Leave No Trace™ principles whenever recreating. Visit www.Int.org for more information.

Additional Resources:

- Audubon Naturalist Society of the Central Atlantic States. <http://www.audubonnaturalist.org/>.
- Canoe Cruisers Association. <http://www.ccadc.org>.
- Department of Forestry, College of Natural Resources. "Virginia Master Naturalist." Virginia Tech. <http://www.virginiamasternaturalist.org>.
- District of Columbia Department of Parks and Recreation. <http://dpr.dc.gov/dpr/site/default.asp>.
- Ducks Unlimited. <http://www.ducks.org>.

- Leave No Trace. <http://www.Int.org>.
- The Maryland-National Capital Park and Planning Commission. <http://www.mncppc.org/>.
- National Park Service. "nps.gov." U.S. Department of the Interior. <http://www.nps.gov>.
- National Park Service. "Potomac Heritage." U.S. Department of the Interior. <http://www.nps.gov/pohe>.
- Penna. Fish & Boat Commission. <http://www.fish.state.pa.us>.
- Potomac Conservancy. <http://www.potomac.org>.
- Potomac Heritage Trail Assoc. <http://www.potomactrail.org>.
- U.S. Fish & Wildlife Service. "Office Directory." U.S. Department of the Interior. <http://www.fws.gov/offices>.
- Virginia Department of Conservation & Recreation. <http://www.dcr.state.va.us/index.htm>.
- Virginia Department of Game and Inland Fisheries. <http://www.dgif.state.va.us/>.
- West Virginia Rivers Coalition. <http://www.wvrivers.org/>.