



CHILDREN'S CLEAN WATER FESTIVAL

Where Youth Are Making Waves!

Wetlands

Background:

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil, all year or for varying periods of time during the year, including during the growing season. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils. Wetlands generally include swamps, marshes, bogs and similar areas.

Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Indeed, wetlands are found from the tundra to the tropics and on every continent except Antarctica. Two general categories of wetlands are recognized: coastal or tidal wetlands and inland or non-tidal wetlands.

Wetlands such as the Florida Everglades and Okefenokee Swamp provide essential habitat to some of the most interesting and charismatic wildlife on earth. But, even small wetlands provide important habitat for salamanders, reptiles, fish, and mammals.

It is now widely accepted by both civil engineers and ecologists that wetlands associated with rivers and streams provide an important flood protection function to downstream towns and cities.

Because wetlands receive floodwater from rivers and streams they can remove suspended sediments and pollutants from the water before it flows back into the rivers. Less turbid and polluted water can benefit aquatic organisms and improve the aesthetics of downstream ecosystems.

Wetlands

CIM CORRELATION: Science

- Common Curriculum Goal: Understand and apply major concepts and processes common to all sciences. Apply foundation concepts to change, cycle, cause, and effect, energy and matter, evolution, perception, and fundamental entities.
- Common Curriculum Goal: Use integrated scientific process skills to predict, design experiments, control variables, interpret data, define operations, and formulate models.

CIM CORRELATION: Earth and Space Science

- Common Curriculum Goal: Understand the properties and limited availability of materials which make up the Earth.

Wonderful, Water full, Wetlands

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- **Subject Areas:** Science, Language Arts
- **Duration:** 60 Minutes

Materials:

- Glass or metal lasagna pan
- Modeling clay
- Strip of indoor-outdoor carpet (3" wide by width of pan)
- Measuring cups
- Clear water
- Muddy water
- Pictures of different kinds of wetlands
- Construction paper (1 sheet per student)

Objectives:

1. List the characteristics of wetlands.
2. Describe the functions of a wetland.
3. Observe a demonstration using a wetland model.

Advance Preparation

- A. Spread a sloping layer of modeling clay in half of the lasagna pan to represent land. Leave the other half of the pan empty to represent a lake or other body of water. Shape the clay so that it gradually slopes to the body of water. Smooth the clay along the sides of the pan to seal the edges.
- B. Cut a piece of indoor-outdoor carpeting that will completely fill the width of the pan along the edge of the clay. This will represent the wetland. Do not place the carpet in to the model yet.
- C. Check your school or public library for books from which to get wetlands pictures. Travel or outdoor sports magazines are also good sources.

Procedure

I. Setting the Stage

- A. Without giving the students a definition of wetlands, ask them to tell you what they think wetlands are. List their answers on the chalkboard and derive a definition from their answers.
- B. Explain what a wetland is, comparing your definition with the students' answers. Stress that all wetlands have water-soaked soil, are covered with water at least part of the year, and support specialized plants that are adapted to life in wet conditions.

II. Activity

- A. Tell the students that until recently, most people did not consider wetlands to be important to our environment. Over the years, scientists have discovered that wetlands perform several vital functions for our environment.
- B. Show the students the wetland model and explain that it and the clay represent. Explain to them that wetlands are complex systems and that no one yet knows exactly how they work. We do know, however, that there are three important functions wetlands perform; you will use your simplified model of a wetland to demonstrate these functions.
- C. Begin the demonstration by pouring clear water slowly on the clay (this can represent rainfall, melting snow, drainage, etc.) Ask the student to describe what happens.
- D. Drain the water back into the original container. Show the students the carpeting and, as you place it in the model, explain that it represents a wetland. Ask the students to predict what will happen when you pour the water onto the clay again.

- E. Pour the same amount of water on the model again. Be sure to perform this exactly as you did before. Let the students describe what happens. (The water will drain more slowly into the body of water because it is now hindered by the wetland.) Explain that most wetlands are shallow basins that collect water and slow its rate of flow. Using the model, explain how this helps reduce flooding and prevent the deposition of eroded soil (sediment) in bodies of water. List these functions on the board.
- F. Pour out the clear water. Leaving the carpet in place, pour some muddy water onto the clay. Ask the students to compare the water that flows through the wetland and into the body of water with the water left in the jar. Ask what happened. (Students should conclude that part of the soil in the muddy water was trapped by the wetland and that wetlands can act as a filter for sediment and some pollutants.) Add this function to the list on the board.
- G. Remove the carpeting and repeat step F. Ask the students why all the soil particles end up in the body of water. The students should infer that without the wetland to act as a filter, most of the soil (and perhaps pollutants) flow directly into the body of water.

III. Follow-up

- A. Refer the students back to the list of wetlands characteristics written on the board. Review the definition and the functions demonstrated. Ask questions such as “Why are wetlands important?” and “How can they help us?” Tell the students that wetlands are also important because they improve water quality, reduce erosion, provide habitats for a wide variety of wildlife and plants, help to store floodwaters, help to replenish groundwater during dry times, and provide recreation for many people to fish and hunt. They are also an important source of products such as seafood, rice, and timber.
- B. Give each student a piece of construction paper. Have the students fold the paper in half, lengthwise. On one side of the fold, have them draw a picture of one of the demonstrations, and on the other side have them write a complete sentence telling what wetland function they have illustrated.

Resources

Books

- “Wading Into Wetlands,” NatureScope, Vol. 2, No.5, National Wildlife Federation, Washington, DC, 1986.
- “Wild About Wetlands,” Nature Naturally (newsletter), Vol. 134, No.3, Ida Cason Calloway Foundation, Pine Mountain, Georgia, 1990.

Websites:

- US Environmental Protection Agency Wetlands: www.epa.gov/owow/wetlands
- USGS National Wetlands Research Center: http://www.nwrc.gov/fringe/about_ff.html
- Wetlands Informational/Research Sites: <http://edtech.kennesaw.edu/web/wetlands.html>

Local Contacts or Possible Field Trips:

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(503) 681-6424
www.jacksonbottom.org