

# WONDERFUL, WATERFUL WETLANDS

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## OBJECTIVES

The student will do the following:

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

## BACKGROUND INFORMATION

Wetlands are areas of land that are wet at least part of the year. They are often transition zones between dry land and open water. Some wetlands are consistently covered with water, while others are flooded only at certain times. All wetlands do have water-soaked soil at some time, which affects the kinds of plants and animals that live there. Wetlands can be found in all parts of the world and are classified into many types. There are freshwater and saltwater wetlands. Some examples of freshwater wetlands are swamps, marshes, bogs, pasture ponds, and prairie potholes. Saltwater wetlands include mangrove swamps and saltwater marshes. Estuaries are the bodies of water found where rivers empty into the sea; they include saltwater wetlands. The water in estuaries is a mixture of fresh and salt (sea) water, and its salinity usually varies with its distance from the open ocean.

### Terms

**bog:** a plant community that develops and grows in permanently water logged areas having a thick layer of peat (partly decayed organic material).

**estuary:** (EHS • choo • ehr • ee) the bay area of a river, where it widens to meet the ocean, that receives and mixes with tidal salt water.

**mangrove swamps:** saltwater wetlands located in tropical and sub-tropical areas and dominated by woody shrubs called mangroves.

**marshes:** wet areas sometimes found at the edges of ponds, lakes, and rivers, usually treeless and having plants with soft stems, grasses, rushes, and sedges.

**pocosin:** (peh • KOH • sehn) an inland swamp of the southeastern United States coastal plain.

**prairie potholes:** wetlands occurring in the North Central United States and South Central Canada that provide nesting grounds for waterfowl.

**salinity:** saltiness, or the amount of salt, in water or other liquids.

### **SUBJECTS:**

Science, Language Arts

### **TIME:**

60 minutes

### **MATERIALS:**

glass lasagna pan (or clear plastic sweater box)

modeling clay

strip of indoor-outdoor carpet (3" [7.5 cm] wide by width of pan)

measuring cups

clear water

muddy water

pictures of different kinds of wetlands

construction paper (1 sheet per student)

student sheet (included)

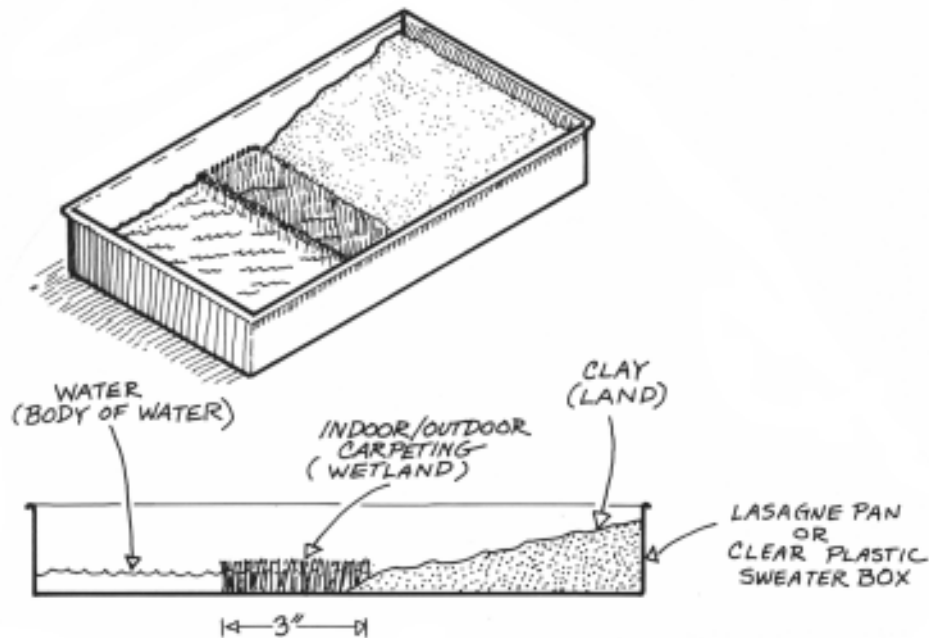
teacher sheet (included)

**saltwater marshes:** wetlands found in coastal areas; the transition zones between land and sea (the tide rises and falls in these marshes twice each day).

**swamps:** land (with saturated soils for some of the year) supporting a natural vegetation of mostly trees and shrubs.

## ADVANCE PREPARATION

- A. Spread a sloping layer of plasticene modeling clay in half of the lasagna pan or sweater box 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 down to the body of water (see the diagram below). 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 (see diagram). This will represent the wetland. Do not place the carpet into the model yet.
- C. Use the enlargement capability of your school's photocopier to make copies of the small drawings on the teacher sheet "Wetland Pictures." Also, check your school or public library for books from which to get pictures. Travel or outdoor sports magazines are also good sources..
- D. If you choose to do the word search puzzle in part IV. D, make a copy of the student sheet "Wonderful, Waterful Wetlands" for each student.

## 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.
- C. Show the students pictures of different kinds of wetlands and explain what they are. (NOTE: Use enlargements of those provided on the teacher sheet. If possible, get additional pictures from books or magazines.) Allow the students to compare the pictures (and definitions) to find the characteristics listed above.

### 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 what 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. (NOTE: For older students, you may adapt this procedure for cooperative groups. You may have them conduct it as an experiment.)
- C. Begin the demonstration by pouring clear water slowly on the clay (this can represent rainfall, melting snow, drainage, etc.). Ask the students 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 of a wetland 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. For older students, you might want to reinforce paragraph writing by having them write a topic sentence about the important functions of wetlands and supporting sentences telling the functions that were demonstrated in Activity II.

#### IV. Extensions

- A. If possible, take a field trip to a wetland near you. Include activities such as listing several types of plants or animals the students encountered, sounds they heard, and other observations. Back at school, extend these activities by having the students classify the types of animals, write a story or report about one of the animals, or illustrate one of the animals.
- B. Divide the students into teams and provide each team with materials to create its own wetlands model. Have each team use measuring cups (NOTE: Canning jars with measurement marks work well for this) to measure an amount of water and add it to the model with carpet; then measure the amount of water that collects in the body of water. Have them repeat the experiment without the carpet, again measuring the water that runs off. They should repeat each step five times. Have them chart the measurements and compare them.
- C. Acquire map(s) of wetlands in your area from the U.S. Geological Survey Earth/Science Information Center at 1-800-USA-MAPS (or the Canadian equivalent). Have the students research the type or types of wetlands most common in your area and report on the types of plants and animals found there.
- D. To reinforce wetlands vocabulary, give each student a copy of the student sheet “Wonderful, Waterful Wetlands.” Have the students find and circle the listed terms in the word search puzzle. A key is provided on the accompanying teacher sheet.

## RESOURCES

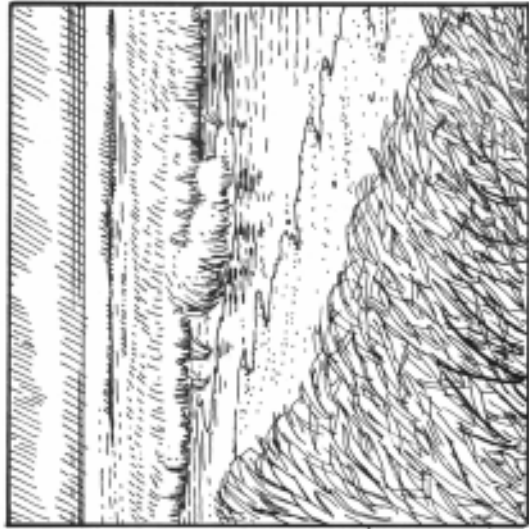
"Wading Into Wetlands," NatureScope, Vol. 2, No. 5, National Wildlife Federation, Washington, DC, 1986.

"Wild About Wetlands," Nature Naturally (newsletter), Vol. 13, No. 3, Ida Cason Calloway Foundation, Pine Mountain, Georgia, 1990.

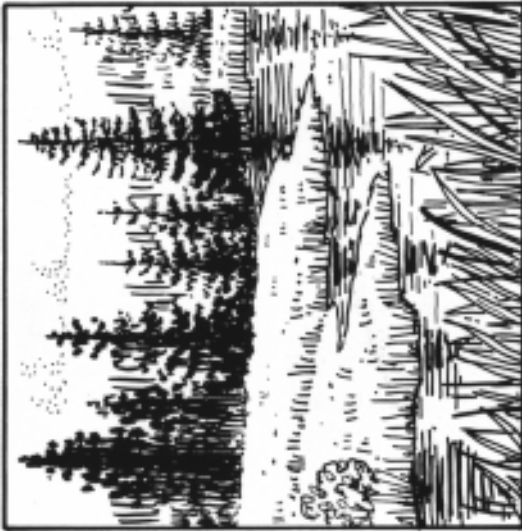
WETLAND PICTURES



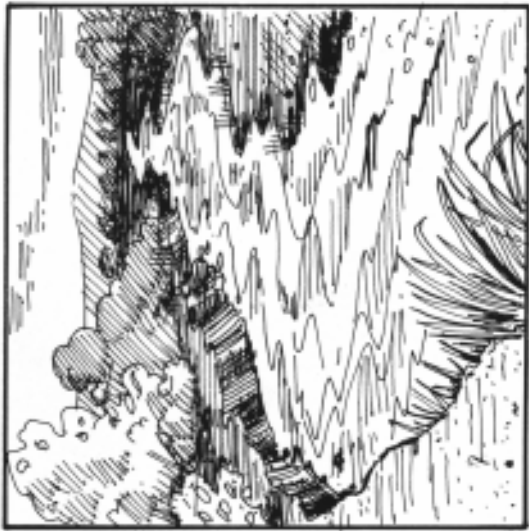
LAKE OR POND



COASTAL WETLAND



BOG



RIVER OR STREAM



MARSH



SWAMP

## WONDERFUL, WATERFUL WETLANDS

Find these words in the word search puzzle below. As you find each word, circle it, and mark it off the list. The words may go across, up and down, diagonally, or backwards.

animals  
body of water  
bogs  
clean water  
dry land  
filters  
flooding  
freshwater marshes

habitats  
important  
mangrove swamps  
plants  
pocosins  
pollution  
prairie potholes  
saltwater marshes

soil erosion  
swamps  
transition zone  
water soaked soil  
wetlands  
wildlife

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E Z B A W C K S R F L O O D I N G R E T I S S A L
N T O M I F R M J A S O N M D B J B A L T J U Y M
O X N H L H A M J L W E E A T O C O S W A M P S E
Z O E C D H A B I T A T S W F G P D U L A D R A H
N D S B L I R E I H T E S T S S Q Y A W V P R P W
O R A G I E S O I L E R O S I O N O F C G O B X E
I E L U F C E U C O R G D A H P L F D L T C A F T
T S T A E G N R A C S R A T R E V W A E Y O T V L
I A W P A V D I D H O Y T A X B L A S A L S Y G A
S R A N I M A L S T A M A R B Q M T L N M I X S N
N R T R P E E D O U K S T N A L Y E A W B N I Q D
A Y E Y P S T B F R E S H W A T E R M A R S H E S
R U R C O E N M R R D C V A I K S R E T L I F A I
T G M I L M A A E D S N S C O R S M A E M Q F G K
U H A U L R T B A S O A A N Q B R W D R Y L A N D
L N R T U B R P R A I R I E P O T H O L E S B N O
E L S T T I O S E O L A R N Q X P N V F Q N J G R
Y U H M I E P N L R D Y A H C F W K W K R X W M G
S E E E O O M A N G R O V E S W A M P S N I P K H
B R S R N Y I E R Y U R O K C P L A N T S B R X W

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## WONDERFUL, WATERFUL WETLANDS ANSWER KEY

Find these words in the word search puzzle below. As you find each word, circle it, and mark it off the list. The words may go across, up and down, diagonally, or backwards.

animals  
body of water  
bogs  
clean water  
dry land  
filters  
flooding  
freshwater marshes

habitats  
important  
mangrove swamps  
plants  
pocosins  
pollution  
prairie potholes  
saltwater marshes

soil erosion  
swamps  
transition zone  
water soaked soil  
wetlands  
wildlife

