Wetland Models

PURPOSE
Discover how a wetland works by making a clay model of one.

GRADE LEVEL
Grades 4-8

MATERIALS
Chalkboard or easel paper
Modeling clay
Oasis (florist foam)
Roasting pans
Small piece of indoor-outdoor carpeting
Sponges
Pine needles, twigs, grass, weeds, soil and other natural materials
Cotton swabs (optional)
Toothpicks (optional)
Cardboard
Glue
Scissors
Paper and pencils
Crayons or markers
Poster paints
Jar of muddy water
Water
Pictures of wetlands
Reference books

SUBJECT
Science

It's hard to tell just by looking at wetlands that they help filter silt and pollutants from water, help prevent soil erosion and often reduce flood damage. But by building a simplified wetland model, you can demonstrate some of these important wetland functions.

Before you begin the activity with the students, make a demonstration model. Here's how to do it:

1. Spread a layer of modeling clay in half of a roasting pan to represent land. Leave the other half of the pan empty to represent a lake or other body of water, such as a river or ocean.

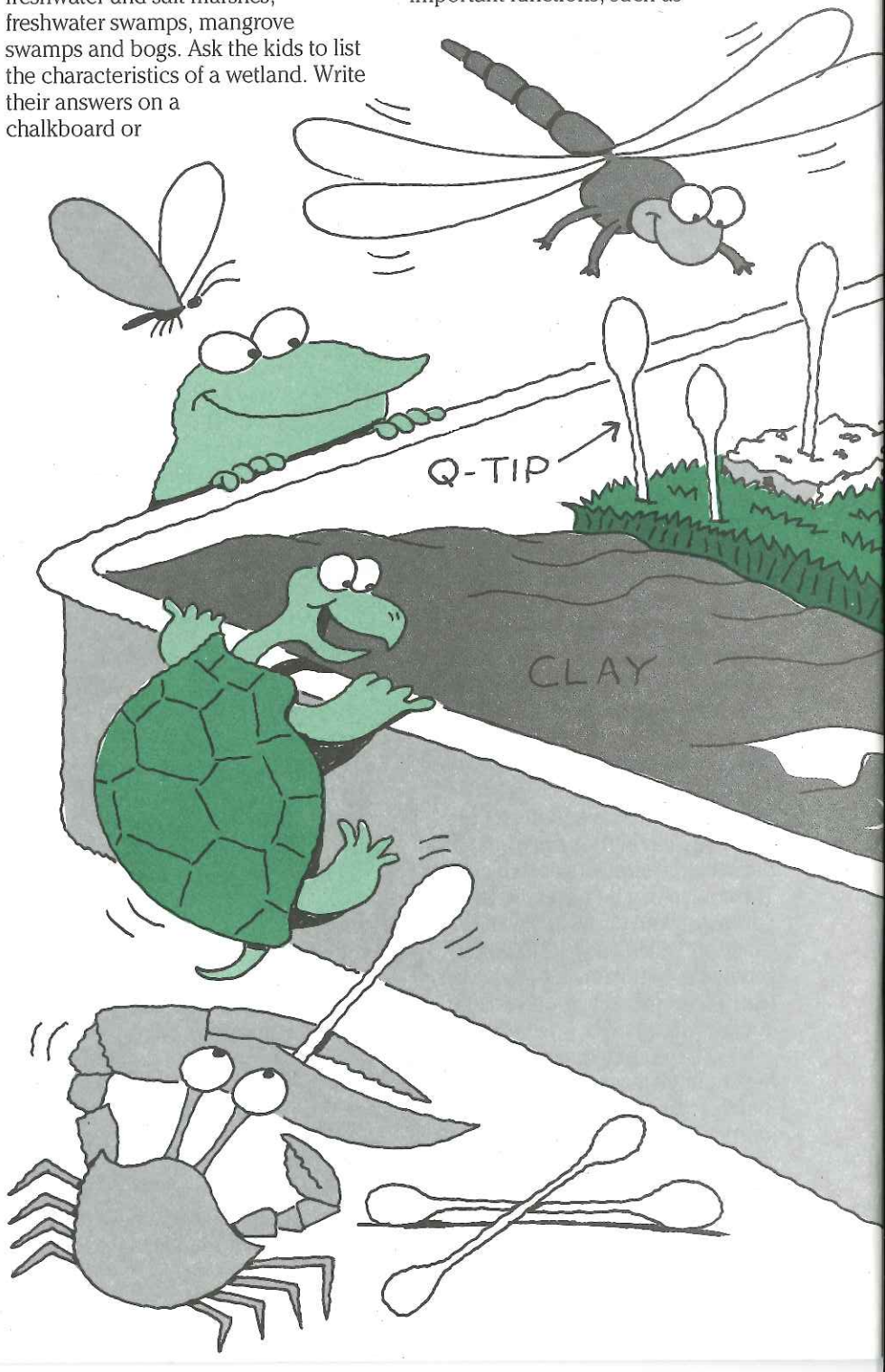
2. Shape the clay so that it gradually slopes down to the body of water (see diagram).

3. Smooth the clay along the sides of the pan to seal the edges. You can also form meandering streams in the clay that lead into the body of water.

4. Cut a piece of indoor-outdoor carpeting to completely fill the space across the pan along the edge of the clay (see diagram). The carpeting represents the wetland buffer between dry land and the open water.

Begin the activity by showing the group some pictures of different types of wetlands, including freshwater and salt marshes, freshwater swamps, mangrove swamps and bogs. Ask the kids to list the characteristics of a wetland. Write their answers on a chalkboard or large sheet of easel paper. Take a survey to decide which of the characteristics might apply to all wetlands. Then discuss the plants and animals that might live in each kind of wetland. See the introduction for background information.

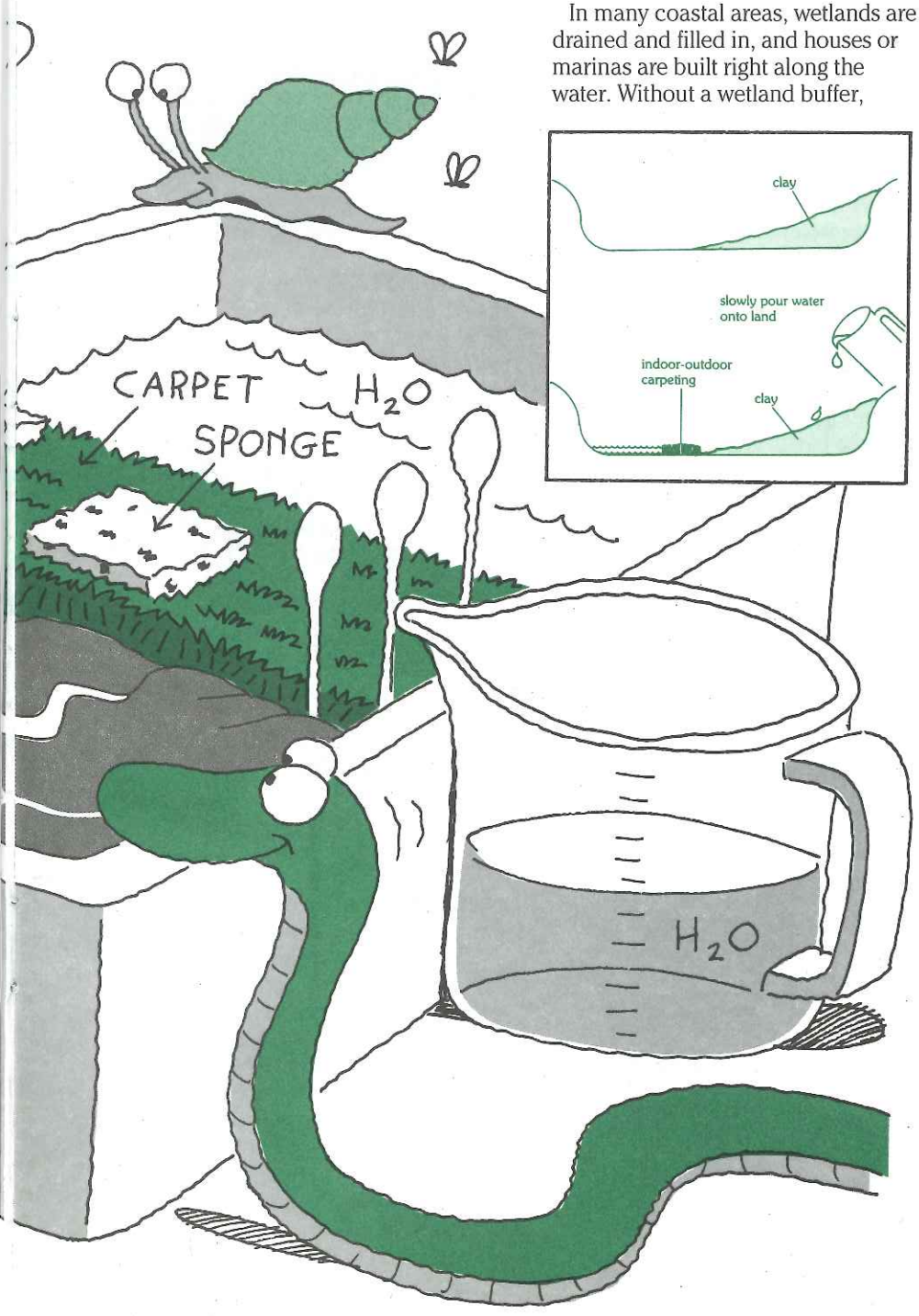
Now demonstrate some of the functions of a wetland using the model. Explain that wetlands, like all habitats, are very complicated natural systems. And scientists are still learning more about how they work. Scientists already know that wetlands perform some very important functions, such as



filtering pollutants, reducing flood damage and preventing soil erosion. Scientists also think that some wetlands, at times, might help to recharge underground water supplies. Explain that your model will demonstrate some of these functions in a very simplified way. Here are a couple of the functions you can demonstrate with the model:

FLOOD CONTROL

Fit the piece of carpeting into the wetland area. Pour some water slowly on the land, as shown. Have the kids describe what happens.



Some of the water is slowed down by the wetland (carpeting). The excess slowly flows into the body of water.

Now remove the carpeting and water. This time pour in the same amount of water on the model at the same spot and rate as before. Have the students note any differences. The water should fill the body of water much more quickly than before. That's because it's no longer buffered by the wetland. Explain that most wetlands are shallow basins that collect water and slow its rate of flow. This slowing process helps reduce flooding and also helps prevent soil erosion.

In many coastal areas, wetlands are drained and filled in, and houses or marinas are built right along the water. Without a wetland buffer, these developed areas are often subject to severe flooding and erosion, especially during storms.

WATER PURIFICATION

Pour the water out of the model and replace the piece of carpeting in the wetland. Pour some muddy water from the jar onto the land. Ask the kids to compare the water that ends up in the body of water with the water in the jar. Explain that the soil particles are trapped by the carpeting, making the water in the body of water much cleaner.

Remove the carpeting, pour out the water, and try the experiment again. What happens without the wetland in place? Ask the kids why all the dirt particles end up in the body of water now. The thick mat of plant roots in a wetland helps trap silt and some types of pollutants. Without a wetland, excessive amounts of silt and pollutants can end up in lakes, rivers and other bodies of water.

After demonstrating some wetland functions, discuss how wetlands are important wildlife habitats, as well as important recreation sites for people.

To complete the activity, divide the class into smaller groups of about five children. Each group will make its own wetland model out of clay, using your model as an example. Instead of using indoor-outdoor carpeting to represent a wetland, have them use Oasis (florist foam) molded into a shallow basin. In this way the kids can attach plants and animals to the model with toothpicks. They can make a freshwater marsh, a salt marsh, a freshwater swamp, a mangrove swamp or a bog. Provide reference books and the pictures you used at the beginning of the activity so the students can see the different types of wetlands they can make.

Then have them decorate the models according to the types of wetlands they are making. Here are some ideas:

- For cattails, use cotton swabs painted brown, pieces of grass or toothpicks painted green with bits of brown clay stuck on the tops.
- Use long pine needles for reeds.
- Shape wetland creatures from clay or cut them from paper and glue onto toothpicks.
- Make trees by gluing pieces of green sponge onto twigs.