

Wetland in a Pan

This wetland model demonstrates some of the critical functions of wetlands and illustrates how wetlands effectively buffer the impact of flooding and filter runoff from land.

Background

It's hard to tell just by looking at wetlands that they help filter silt and pollutants from runoff (water coming from land) and often reduce flood damage. By building a simplified wetland model, some of these important wetland functions can be demonstrated.

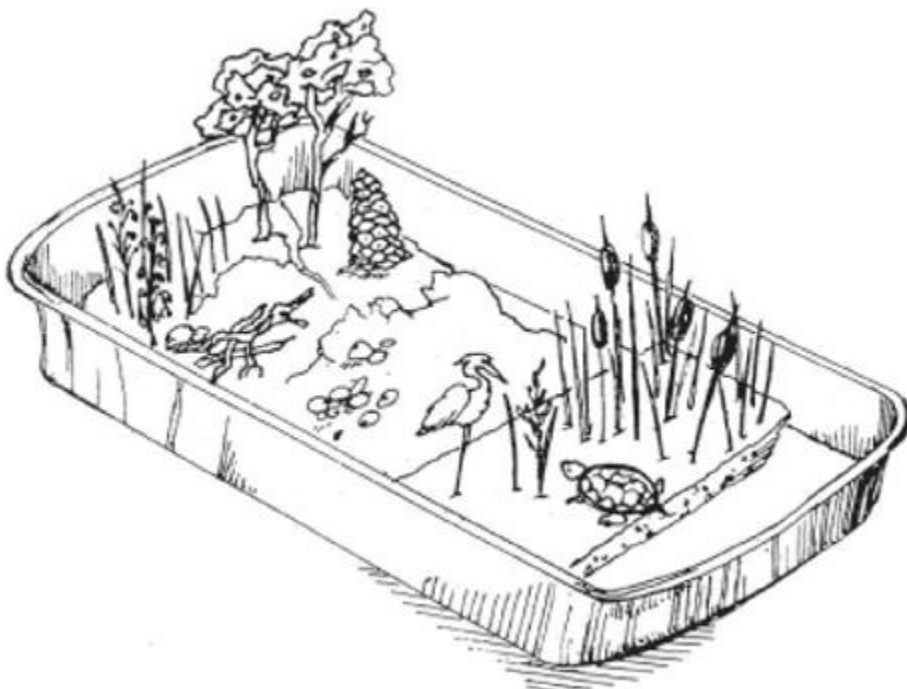
For more background information on wetland values, see "Marsh March" or "Wetland Walk" activities in the Your Backyard Classrooms guide.

Procedure

Make the Model:

Use a paint roller pan, which has a built-in slope, or make the following model.

1. Along the bottom of one side of an aluminum roasting pan, spread a layer of modeling clay to represent land. Leave the other half of the pan empty to represent a stream, pond or lake.
2. Form the clay into a gradual slope toward the center of the pan.
3. Smooth the clay along the sides of the pan to seal the edges. If desired, form meandering streams in the clay.
4. Cut a carpet scrap or sponge two to three inches wide and long enough to stretch across the bottom of the pan along the entire edge of the clay (see diagram). The carpet or sponge will represent the wetland buffer between dry land and open water.



Grade Levels: K-9

Objectives

Students *investigate* the interrelationship among precipitation, runoff and wetlands by:

- *modeling* and *observing* flood buffering and filtering effects of wetlands in class.

Materials

Paint roller pan with built in slope

- modeling clay
- aluminum roasting pan
- carpet scraps
- four jars of clean water
- two jars of soil

For in-class extension:

- small aluminum pans
- modeling clay
- florist foam
- an assortment of paints, papers, toothpicks, twist ties, cotton swabs
- an assortment of natural materials such as twigs, pine needles, soil, pebbles, feathers, etc.

Credits

Adapted with permission from Ranger Rick's NatureScope, "Wading into Wetlands," 1986©. Artwork by Tina Isom. National Wildlife Federation, 8925 Leesburg Pike, Vienna, VA 22184-0001. 703-790-1400.

Where

In the classroom.

When

Anytime. Try to tie in with field trip to a wetland area.

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Prepare the Class:

1. Lead a class discussion by asking the students what they consider to be the characteristics of wetlands. List these characteristics on the board.
2. Show the class pictures of different types of wetlands, including swamps, fresh and saltwater marshes, and discuss the different types of plants and animals found in these wetlands.
3. Explain that the wetland model will be used to demonstrate, in a simplified way, two important functions of wetlands.

First Demonstration:

1. Pour water onto the top of the slope in your pan. Ask the students to observe and describe what happens. (The water runs straight to the bottom of the pan.)
2. Place sponges across the middle of your pan, crosswise. Again pour water onto the top of the slope in your pan. Ask the students to observe and describe what happens. (The sponges collect most of the water coming down the slope.)
3. Explain that wetlands function like the sponge, by slowing and retaining rainwater running off the land, and thus help prevent flooding.
4. Ask students why they think wetlands are important.
5. Discuss:
 - *If a wetland is destroyed and houses are built there, what might happen to the houses during a severe rain storm? Why?* (They might be flooded because the wetlands will not be there to absorb and slow the rush of water off of the higher ground.)
 - *If many wetlands are destroyed along a river and many houses are built near the river, which houses will probably experience the worst flooding—the ones upstream or downstream? Why?* (The ones downstream because the water will be accumulating

in the river from a larger area. The more wetlands that are destroyed in a watershed, the greater the flooding problems.)

Second Demonstration:

1. Explain that the second demonstration will be just like the first, except that soil will cover the clay. The rain should pick up and carry some of the sediment as it travels over the land.
2. Ask the students if they think the water accumulating in the open part of the pan will be cleaner with the wetland in place or with it removed, or if they expect no difference. Take a tally of hands.
3. Pour the water from the previous demonstration out of the pan and replace the carpet or sponge. Spread soil over the clay, or slope of the pan, and slowly pour water on the upland as before. The students observe and describe the water that accumulates in the pan. (The water in the pan should be fairly clear since the carpet or sponge should trap most of the sediment.)
4. Repeat the demonstration with the carpet or sponge removed. The students describe the results.
5. Ask the students why there was a difference with the sponges removed. (Explain that the thick mat of roots and plant stems in a real wetland help trap sediments that wash off of the land, much as the carpet or sponge did, and thus help keep waterways free of silt and some other pollutants.)
6. Conclude with a discussion:
 - *What might a river look like after a heavy rain if much of its wetlands have been destroyed?* (Muddy.)
 - *How might muddy water affect fish in a river?* (It makes it hard for them to see and clogs their gills.)

Time Required

Allow ½ hour to 1 hour for demonstration and discussion.

Extensions

1. Students, individually or as small groups, make their own, more detailed, wetland models, using small aluminum pans and, instead of carpet, use florist foam. Provide reference books with pictures of different types of wetlands. Students can use their imaginations to make plants and animals from an assortment of materials and stick them in the foam and clay. Some ideas:
 - for cattails, use cotton swabs painted brown or toothpicks painted green with bits of brown clay stuck to the tops;
 - use pine needles for reeds;
 - shape wetland creatures from clay or cut them from paper and glue them onto toothpicks;
 - make trees by glueing pieces of green sponge onto twigs.
2. Follow up by doing “Wetland Walk,” a wetlands field observation activity in this guide.
 - *How might muddy water affect oysters in an estuary?* (The mud settles out and smothers the oysters.)
 - *How might muddy water affect boats and ships?* (The mud settles out and fills channels important for navigation.)

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Clay



**Slowly pour water
onto land**

**Sponge or
indoor-outdoor
carpeting**

