

Wetland Model, Option 2

Adapted from San Francisco Bay Watershed Curriculum, 2005

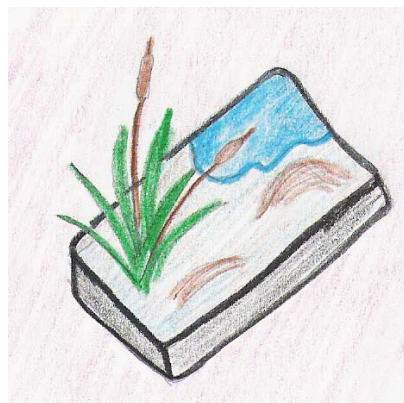
This activity will teach students about the ecological functions and importance of wetlands through a hands-on, model building experience.

Objectives-

- ✓ Investigate and understand the ecological functions of a wetland.

Estimated Time-

- ✓ 2 hours



Materials-

- ✓ Modeling clay
- ✓ Long, shallow pan: a sturdy metal or glass pan with a smooth, flat bottom works well, or a plastic or metal paint rolling pan
- ✓ Sponges (enough to span the width of each pan)
- ✓ Cup of soil
- ✓ Spray bottle full of water
- ✓ Q-tips
- ✓ Colored drink mix
- ✓ Items to represent wetland plants or animals like pine needles, clay for animals, toothpicks and marshmallow for cattails (optional)

Background-

Wetlands are transitional environments between land and water systems where the water is usually at or near the land surface. Wetlands, by definition, must include evidence of surface water or water in the root zone, hydric or undrained soils, or vegetation that has adapted to thrive in wet conditions.

In the past, wetlands were traditionally seen as mosquito-infested, damp wastelands. Because of this traditional and cultural view, many wetlands have been destroyed. The plants and animals that need wetlands to survive are suffering because of the roads, buildings, and landfills that are built on top of them.

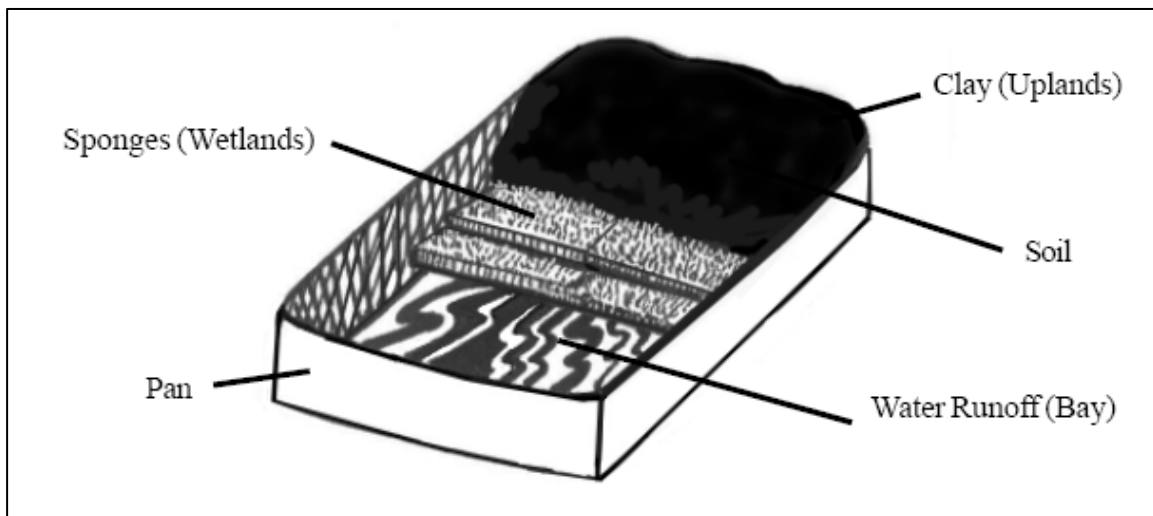
Wetlands serve vital ecological functions as well as provided biodiversity. They serve as filters to trap pollution and sediment from urban runoff. Wetland plants slow the water enough for the heavier particles to settle out. Smaller particles are trapped in the mesh of the leaves, stems, and roots of dense vegetation. Therefore, runoff exiting the wetland is cleaner than it was upon entering.

Background, continued-

Wetlands also provide valuable flood control. When a heavy rainstorm increases runoff, the added water may flood waterways and adjacent fields, towns, or woodlands. Wetlands offer a stop for flood water to 'rest' and soak into the soil, therefore reducing the potential flood risk.

Procedure-

- 1) Before beginning this experiment, review with students what they have already learned about watersheds and wetlands. Ask the students:
 - i. What is a watershed?
 - ii. Where are the wetlands in our watershed?
 - iii. How do you think wetlands act like sponges?
 - iv. Wetlands also as a filter, what does this mean?
- 2) Divide the students into groups; groups of two work well. Have students make predictions about what they think will happen. Also, be sure to check each groups model before they run the experiment.
- 3) Building the model-



- i. Spread the modeling clay over half of the pan. The empty half will represent Saratoga Lake.
- ii. Shape the clay so that it slopes downward toward the lake. Be sure to seal the clay along the edge of the pan!

- iii. You can create meandering streams or rivers in the clay. Be creative!
 - iv. Create wetlands along the edge of the land surface (modeling clay).
Cut the sponges into pieces to completely cover the boundary between land and water. The model will not work properly if there are spaces in the middle or at the edge of the wetland.
 - v. Spray the sponges lightly so that they are damp, but not soaking wet.
- 4) Each group should create rain (with the spray bottle) on the upland and observe what happens to the water when it encounters the wetland.
 - 5) Then remove the wetland and observe what happens during a rainstorm.
 - 6) Sprinkle the upland areas with colored drink mix to represent pollution. What happens to the pollution during a rainstorm with the wetland in place? What happens if the wetland is not there?

Suggested Concluding Discussion Questions-

- i. When sediment runs directly into the lake, what negative things can happen?
- ii. How does a wetland protect the lake from pollution?
- iii. What would happen to Saratoga Lake if there were no wetlands in the watershed?
- iv. Knowing that wetlands are effective filters, do you think they can become polluted easily?
- v. What can you do to preserve wetlands?