



Family Activity - Marsh in a Pan

Summary <i>Create and test a model of a marsh that demonstrates how wetlands work.</i>	Time 45 mins
Materials <ul style="list-style-type: none">● modeling clay● roasting pan or other shallow, rectangular container● sponges● spray bottle or watering can● 2 tsp. powdered drink mix (e.g. Tang or Kool-Aid)	

Activity Directions

1. Build the marsh model.

- In the pan, build the upland first. The upland represents the area around a salt marsh; this area is just high enough that the salty tidal waters do not reach it. Spread a layer of clay over half of the pan and leave the other half empty to represent the bay.
- Work the clay in the pan so that the land slopes down towards the bay. Smooth the clay on the side of the pan to seal the edges. You can also form a meandering creek or river through the upland area.
- Use sponges to represent the marsh area. Place the sponges along the edges of the clay. Make sure the marsh area (sponges) fit well; there should be no space under or on the side of the marsh. The space remaining after the marsh area represents the San Francisco Bay.

2. Predict what will happen when it rains on the upland area of the model. *Which way will the water flow and where will it end up?*

3. Make it rain on the model. Create rain on the upland area using a spray bottle. Observe what happens to the water.

4. Predict what will happen if the wetland/marsh is removed. (The water should run directly to the Bay.)

5. Make it rain on the model without the sponge/marsh area. Observe what happens.

6. Pour the water out of the pan. Replace the sponges.

7. Add pollutants to the model. The powdered drink mix represents pollutants or chemicals from streets and neighborhoods (e.g. pesticides or motor oil that is washed into rivers or creeks when it rains). Sprinkle a pinch of powdered drink mix over the upland area.

8. Make it rain on the model. Create rain on the upland using a spray bottle. Observe what happens to the pollutants.



9. Predict what will happen to the pollutants if the wetland/marsh is removed. Add more pollutant if necessary.

10. Make it rain on the model without the sponges. Observe what happens the pollutants.

11. Discuss.

- *What happened to the pollutants without the marsh?*
- *What is one function of the marsh that you observed?*
- *Why are wetlands important?*

Background Wetlands, such as the salt water tidal marshes around San Francisco Bay, play an important role in watersheds. Water flowing to the Bay (through rivers and creeks) passes through wetlands before entering the Bay and, ultimately, the ocean. Marshes act as sponges, absorbing and slowing the flow of water. They reduce the impact of floods by capturing, storing, and slowly releasing water into the environment. Marshes also act as highly effective storm buffers.

Without a marsh at the base of the watershed, the water entering the bay would be full of sediment and pollutants. Sediment can reduce sunlight and visibility in the water, making it difficult for phytoplankton to photosynthesize. Sediment can also clog the gills of fish and shellfish.

Over 90% of the wetlands around the San Francisco Bay have been destroyed by development such as houses, highways, salt ponds, and landfills. This means there are fewer marshes to act as sponges and filters, which leads to more sediment and pollutants that pass directly into the Bay.

Adapted from WOW! The Wonders of Wetlands for Kids in Marshes