

SALT MARSH

Wetlands are areas of tremendous biological importance. They can modify the impact of flood waters during storms thus protecting coastal habitats. They filter water providing a recharge for groundwater systems. They are an important habitat to a variety of flora and fauna including plants able to survive a salty environment, migratory birds, and many other organisms including endangered species. They also become a nutrient trap resulting in tremendous biological productivity. Wetlands are directly connected to the fishing industry as they provide a nursery for many types of baby fish and are home to many shellfish. Over 60% of the fish eaten from commercial catches are directly tied to wetlands. By preserving wetlands we are preserving biodiversity and the chain of life upon which the human species is ultimately dependent.

In North America over 50% of the wetland areas have been lost. In California over 91 % have been developed, drained, filled, dredged or otherwise destroyed. At the beginning of European colonization in the U. S., there were over 215 million acres of wetlands. Humans are the primary cause of wetland loss due to commercial and agricultural development. Many of the remaining wetlands in the U.S. are privately owned and are in danger of being lost.

Water pollution is another major source of destruction to wetlands. Much of this pollution flows off city streets through storm drains directly to the ocean. While wetlands allow for the slow movement of water and some filtration, the amount of pollution from gutters and storm drains far exceeds the ability of the remaining wetlands. In addition, we are part of the Pacific Flyway, a resting stop for migratory birds. Without a place for these birds to forage and rest, the ultimate result is a decrease in these animals.

One lesson we have learned from the destruction of these vital habitats is how crucial they are to us. Wetland restoration is much less effective than preventing the loss in the first place. Most scientists find that mitigation projects restoring wetlands are less than 60% productive in terms of biological wealth than a natural wetland. Trying to recreate nature is a difficult, complex, and uncertain process.

We will be visiting Salinas de San Pedro, a 3.2 acre salt marsh that is affected by the tidal changes each day. There are a variety of resident and migratory birds who visit the marsh, many resident invertebrates (including worms, shrimp, and clams), and many fish in addition to a large number of wetland plants that are able to survive this salty environment.



Salt Marsh Vocabulary

delta	the area, where river sediment is dropped at the mouth of a river flowing into an ocean or large lake; frequently triangular in shape made up of marshy areas, lagoons and lakes
dredging	the process of digging up and removing materials from wetlands or the bottoms of waterways to clear them or make them deeper or wider
ecosystem	an interacting community of animals and plants that depend upon each other for survival
equilibrium	the state of balance within a community: allowing species indigent to the community to survive and reproduce
estuary	the zone where the fresh water of rivers or streams meets and mixes with the salt water of the sea, rich in biological activity
greenhouse effect	the increase in atmospheric concentrations of carbon dioxide and other gases released by human activities causing the earth's temperature to rise by a few degrees
habitat	the place normally occupied by a particular type of organism
intertidal zone	the area along the shoreline that is exposed at low tide and covered by water at high tide
ozone layer	a layer of gases surrounding the earth which filters out some ultraviolet light from the earth's atmosphere, thereby reducing the intensity of sunlight upon plants, animals and the oceans
salt marsh	an area of low lying, wet land with heavy vegetation that is washed by tidal action from the sea
sediment	particles of sand, soil and minerals that are washed from the land and settle on the bottoms of wetlands and aquatic habitats
tidal flats	saltwater wetlands that are characterized by mud and/or sand. Tidal flats often occur at the seaward edges of salt marshes. They are covered with sea water during high tide and become exposed during low tide
wetlands	a vegetated aquatic ecosystem that, at least periodically, has waterlogged soils or is covered with a relatively shallow layer of water. Bogs, marshes, swamps and prairie potholes are examples of wetlands

Salt Marsh Curricular Extensions

- Measure a sample of salt water. Have students predict what will happen when this sample is placed in the sun. Have students observe and record observations. Use a microscope to observe and draw the salt crystals.
- Create a water cycle model. The sponge at the base will demonstrate the valuable trait of wetlands in absorbing water.
- Have students map wetlands in California through history up to the present to show wetland areas that are still currently available.
- Have students build a filter using a variety of natural substances, gravel, sand, mud, leaves, etc. Determine which are the most and least effective and why.
- Study the tide tables and the causes of tides, and identify what the tide will be when you visit the Aquarium.
- Have a mud day. Explore the different sensations as students examine mud, including smell, touch, etc.
- Make a food web mobile of the salt marsh area.
- Read *If You Were a Wild Duck. Where Would You Go?* and map the Pacific Flyway.
- Explore or research the life cycle of an animal that spends a portion of its life in the wetlands. Include what human impacts might affect this animal.
- Identify adaptations that plants and animals have that allow them to survive and thrive in the salt marsh.
- Create a mural of the wetlands including environment, plants, and animals.

