



FROM MARSH TO METROPOLIS

Overview: In this activity, students put drawings showing the development of San Francisco Bay marshes into the correct chronological order.

Content Standards Correlations: Science, p.290; History/Social Studies, p. 296

Grades: K-6

Key Concepts: Salt marshes once surrounded San Francisco Bay. As people settled and built around the Bay, salt marsh was lost to development. Today, less than 20% of the original salt marshes remain.

Objectives: Students will be able to:

- recognize that nearly 80% of salt marshes around San Francisco Bay have been lost due to development and population growth
- describe the historic settlement of the San Francisco Bay Area by Native Americans, Europeans, and American settlers and their affects on the salt marshes

Materials:

- 20 small blocks, coins, or other objects
- copies of "From Marsh to Metropolis" picture cards on p. 116, cut into sections (*one set of cards per group of 3 to 5 students*)

Time: 30 minutes

Adapted from "From Marsh to Marina", p. 49, Nature Scope: Wading into Wetlands, National Wildlife Federation, 1992.

SUPPORTING INFORMATION FOR THIS ACTIVITY

See San Francisco Bay Urban/Wildlife Shuffle, p. 14

TEACHING METHOD

Read

You are going to look at and sort drawings to show how salt marsh habitat disappears from being turned into airports, houses, landfills, marinas and salt ponds.

Ask

? Why do you think salt marshes around the San Francisco Bay are important? (Salt marshes provide habitat for endangered species and many other plants and animals; they are a nursery for birds and fish; they help prevent flood control and they filter pollutants and sediment; they provide recreational, scientific, and educational opportunities for many people.)

Ask

? What plants and animals live in the salt marshes of San Francisco Bay? (endangered: salt marsh harvest mouse and CA clapper rail, pickleweed, fish, ducks, shorebirds, plankton, snails, worms, seals, batrays, etc.)

Read

"The tide brings water into the pickleweed marsh through narrow winding waterways called sloughs and the mudflats under the slough water are exposed when the tide goes out. These habitats are also part of the Bay."

Ask

? What animals eat the mudflat creatures such as worms, snails, crabs? (shorebirds, ducks, geese, etc)

Read

"When some marshes, sloughs and mudflats disappear they are replaced with Metropolises."

Ask

? **What is a metropolis?** (A large city with many buildings, paved roads and many people with cars and trucks.)

(Grades 3-6)

Do

Stack together the 20 blocks or similar objects.

Read

"These represent the amount of salt marshes around the San Francisco Bay over 200 year ago."

Ask

? **How much salt marsh still exists today?**

(Take guesses about the number of salt marshes that remain by having students vote on how many blocks to remove from the stack.)

(Grades K-6)

Read

"Less than 80% of salt marshes have been lost to development over the last 200 years, which would mean that only four 'blocks' remain (hold up four blocks). Only four out of every 20 acres of salt marsh still exists today. Salt marshes have been lost due to human development. We have built salt ponds, buildings, houses, roads, airports, parking lots, and landfills on top of salt marshes. Some areas have become metropolises."

Do (Grades 3-6)

Divide the students into small groups of 3 to 5. Give each group a set of "From Marsh to Metropolis" picture cards.

Do (grades K-2)

Enlarge the drawings and do the ordering with the whole class.

Read

"These pictures represent some of the ways people have used salt marshes through time. Arrange the pictures in order from the least amount of human impact (marsh) to the greatest (metropolis). Each picture is lettered in the upper right hand corner for reference only; the letters have nothing to do with the order of the pictures."

Do

When the groups have finished ordering their pictures, ask one group to read off the letter order of their set from least human impact to greatest. The correct order is D, B, F, A, C and E. Use the following information to discuss each picture.

Read

Picture D: Native Americans were the first people to use the resources of salt marshes. The Miwok and Ohlone Indians depended on the salt marshes along the Pacific Coast. They found plenty of game in salt marshes, especially in the fall when huge flocks of ducks and geese passed through the bay area during their migrations. Indians gathered oysters, clams and other shellfish from the sloughs. They built basket traps out of willow to catch fish. (1600s).

Pictures B & F: Beginning in the late 1700s, Spanish settlers were the first Europeans to settle near salt marshes. The Spaniards built adobe houses and farmed and raised livestock, often having huge herds of cattle. There was plenty of food for people and the vast fields of salt grass supported grazing animals. (1700 to early 1800s)

Picture A: The California Gold Rush, which began in 1849, brought thousands of new settlers to California from the eastern United States. The growing population began to have a larger impact on the salt marshes. There were no hunting regulations and some species were hunted almost to extinction. Sandpipers and other salt marsh birds were hunted for their meat. Egrets and herons were killed for their feathers which had a commercial value. Many salt marshes were used as dumpsites for garbage and sewage. There were no regulations regarding garbage and sewage dumping, causing serious land and water pollution problems. Salt ponds were also built on top of salt marshes beginning in the late 1800s. (1849 to early 1900s)

Pictures C & E: By the 1950s, people had drastically changed many of the original salt marshes. Few people recognized the importance of leaving marshes in their natural state. To turn marshes into "useful" places, they often built airports, houses, landfills, and salt ponds on top of them. Today, many marshes

have been completely built over and destroyed, with no sign of the original marsh or wildlife. (1950 to present).

Read

"Today, laws protecting salt marshes exist. Some areas of salt marsh have been designated as wildlife refuges. Some people no longer regard salt marshes as useless wastelands, and they work to protect the last remaining bits of salt marsh."

Ask

? What are some ways that you can to protect salt marshes? (Learn about salt marshes and let other people know, write letters to legislators, reduce, reuse, and recycle, participate in Coast Clean-ups, never litter, never dump things down storm drains, label storm drains with warnings - Do Not Dump, Flows to Bay.)

Ideas for Writing and Speaking Topics of Language Arts Content Standards, p. 297.

Students can explore:

- from Picture D, how California Indians used the salt marsh and if their uses were renewable or not.
- the effect the Gold Rush had on San Francisco Bay Wetlands.
- a specific bird that was hunted almost to extinction before there were hunting regulations.



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