



WHAT'S IN A HABITAT?

Overview: Students will look at the different habitats from the observation tower, and compare them, using binoculars. Pictures of animals and plants, that can be seen from the tower will be placed on a habitat mural.

Content Standards Correlations: Science, p. 307, History/Social Science, p. 310.

Grades: K-6

Key Concepts: A habitat is a community for an animal or plant. It provides the plant or animal with suitable food, water, shelter and space. Each animal or plant has adapted to the habitat it is living in. From the tower you can see five different habitats: the upland, salt marsh, salt pond, tidal slough and non-tidal slough. The importance of these habitats will be discussed.

Objectives:

Students will be able to:

- identify and compare the five habitats that can be seen from the observation tower (upland, salt marsh, salt pond, non-tidal slough, tidal slough)
- correctly place one animal and plant in each habitat
- identify a food chain in each habitat

Materials:

- 5 habitat clue cards
- 12 binoculars
- 1 poster showing how to use binoculars
- 2 bird identification chart
- 1 habitat mural
- 20 animal and plant placards

TIME FRAME FOR CONDUCTING THIS ACTIVITY

Recommended Time: 30 minutes

- When students first arrive, allow *about a minute* for students to look outside

Introduction (6 minutes)

- look at the habitat mural and discuss the five different habitats
- read habitat clue cards and have students find out which one is described

Observation of habitats (10 minutes)

- hand out binoculars and discuss their use
- have students look out the window and have them observe and compare habitats, plants and animals
- collect binoculars

Habitat Mural (11 minutes)

- have students look at mural
- place animal and plant pictures in the correct habitats
- talk about how animals and plants have adapted to their habitats

Discussion (3 minutes)

- discuss the importance of each habitat

HOW THIS ACTIVITY RELATES TO THE REFUGE'S RESOURCES

What are the Refuge's resources?

- significant wildlife habitat
- endangered species
- migratory birds

What makes it necessary to manage the resources?

• The introduction of nonnative plants and animals that compete with _____ or prey upon native plants and animals and destruction of salt _____ marshes.

What can students do to help?

Refuge staff controls introduced plants and animals but we need your help.

- teach others about the importance of a variety of habitats suitable for plants and animals
- plant native plants
- reuse, reduce, recycle
- not pour anything down the storm drain

SUPPORTING INFORMATION FOR THIS ACTIVITY

Habitats

- A habitat is a community (or neighborhood) for plants and animals
It provides food, water shelter and space suitable to the plant or animal living there.
- Each habitat has its own unique characteristics. The different habitats on the refuge support different species of animals and plants. Each habitat seen from the tower is described below.

Upland

- The upland is a portion of land which is in higher elevation than the salt marsh
The soil is drier and non-salty like the salt marsh.
- The plants growing here grow taller than in the salt marsh and many of them have bigger leaves.
- There are variety of native and nonnative plants in the upland.
Native plants include coyote brush, California sage, milkweed, and bunch grass.
Nonnative plants include mustard, tobacco tree and horehound.
- The animals you might see in the upland include rabbits, ground squirrels, red-wing blackbird, hummingbirds, owls and other birds of prey, gopher and garter snakes.
- An example of a simple food chain is: milkweed, monarch, red-wing blackbird, owl.

Salt Marsh

- The salt marsh is a managed wetland.
The soil is salty.
- Plants growing in the salt marsh have to adapt to salty conditions, which requires them to be able to get rid of the salt.
- They also have small leaves which prevent the water from evaporating fast. Plants in the salt marsh grow low to the ground.
- There are variety of native and nonnative plants. Pickleweed, salt grass and alkali-heath are native salt marsh plants. Nonnative plants include Australian saltbush, ice plant and brass buttons.
- An example of a simple food chain is: pickleweed, salt marsh harvest mouse, owl.

Non-tidal Slough

- A tidal slough is like a finger of the Bay: It is connected to the Bay. The sloughs in New

Chicago Marsh, however, are cut off from the Bay by levees. An installed tide gate lets salt water into the slough several times a year. That is why the slough is nontidal but has brackish (a mixture of fresh and salt water) water. The slough is bordered by salt marsh.

- In slough water, you can find algae, and creatures such as water boatmen, backswimmers, mosquito fish, copepods and different worms.
- An example of a simple food chain is: algae, water boatmen, fish, egrets.

Tidal Slough

- A tidal slough, east of the salt pond is still connected to the Bay. The tides rise and fall twice a day. When it is low tide, the mudflats are exposed and a lot of birds come here to feed on tiny creatures such as worms, amphipods, and isopods.
- Because the San Jose-Santa Clara Water Pollution Control Plant releases up to **120 million** gallons of fresh water into the slough each day, it has converted into a fresh water habitat.
- There is fresh water tule (California bullrush) growing along the slough. Besides birds, you might also see muskrats, a fresh water mammal.
- An example of a simple food chain is: algae, amphipods, shorebirds, northern harrier.

Salt Pond

- The salt pond is a human-made habitat that was used for the production of salt. In the 1930s, levees (dirt walls) were built around salt marsh (the natural habitat) and the land was flooded with water from the bay to make solar salt evaporation ponds that were used to make salt.
- Today, these ponds are part of the Salt Pond Restoration Project. This project will restore and enhance 15,000 acres to salt marshes, mudflats, and other wetland habitats.
- The water in this pond used to be saltier than ocean water; it is now brackish (mix of fresh and salt) water from the Bay.
- Some animals that live in the water are zooplankton, shrimp, water boatman, and a variety of fish.
- Pelicans, grebes, cormorants, gulls and a variety of ducks can be seen resting and feeding in the salt pond.
- An example of a simple food chain is: algae, shrimp, water boatmen, pelicans.

HOW TO LEAD THIS ACTIVITY BY FOLLOWING THE "DO, READ, ASK" TEACHING FORMAT

Do

Students are very excited when they get up to the observation tower. Allow *about a minute* for students to look outside.

Do

Gather students in the tower, have them take a seat facing the mural.

Introduction (6 minutes)

Read

"Today we're going to locate some of the animals and plants that live in the refuge habitats."

Ask

- ? **Who can tell me what a habitat is?** (A community for a plant or animal. It provides everything a plant or animal needs to survive.)
- ? **What does an animal have to find in a habitat in order to survive?** (food, water shelter, space)
- ? **Are all habitats the same?** (No)
- ? **Do we need different habitats?** (Yes)

Read

"Most animals and plants can only live in a specific habitat. They have adapted to the place they live in."

Ask

- ? **What does adaptation mean?** (Over the years the plant or animal has changed allowing it to live in under certain conditions)

Read

"From the tower, we can see five different habitats. They are all shown on this mural. (Point out the mural.) Who can read the names of these habitats?"

Do

Have students read the names.

Read

"I'm going to read you clue cards about these five habitats. Try to figure out which habitat is being described."

Do

Read the different clue cards and have students guess the described habitat.

(Upland)

- "I am the highest piece of land on the refuge.
- "I'm drier than the areas around me.
- "Big trees can grow on me.
- "Once I was a landfill.
- "My soil is not salty."

(Salt Marsh)

- "My soil is salty.
- "I am the home of the pickleweed.
- "Plants living in me don't grow tall.
- "A lot of me got destroyed by development."

(Salt Pond)

- "Birds like to rest and feed on me.
- "I was originally created by humans to make salt, but I no longer make salt.
- "My water comes from the bay through the tide gates.
- "I am in the process of being restored to salt marshes, mudflats, and other wetland habitats.
- "Zooplankton and fish swim in my waters."

(Nontidal slough)

- "My water is a mixture of fresh and salt water
- "I resemble a river, but I have nowhere to flow to.
- "Salt pond levees cut me off from the Bay.
- "I am bordered by the salt marsh."

(Tidal slough)

- "My water comes from the Bay and the Water Pollution Control Plant
- "The tides force my water to go in and out.
- "I am a freshwater habitat.
- "Tule grows along me."

Observation of habitats (8 minutes)

Do

Hold up the animal and plant placards. Go over the names of each as you read the following.

Read

"These are all animals and plants that you may be able to see from up here. This is a

"When you look outside, try to find these plants and

animals. Later on we will place them in their correct habitat on the mural.”

Do

Set placards aside so that students can refer to them while looking out the windows.

Grades K-1

Look out the tower windows without binoculars.

Grades 2-6

Look out the tower windows with binoculars.

Read

"In order to observe the habitats and their animal and plant life with our binoculars, I will show you how to use them. When I give you a binocular, I want you to put the strap around your neck."

Do

Hand out binoculars.

Show the poster of the use of binoculars, point out the different steps on the poster while reading instructions.

Read

- "Hold the binoculars up to your eyes and grasp them firmly. Move the sides closer together or farther apart until they fit your eyes comfortably and you see only one round image.
- "Set the right eyepiece to zero. Look through the left eyepiece and use the focusing lever in the middle of the binoculars to focus on a distant object.
- "Open only your right eye now and look at the same object. Adjust the right eyepiece until you see the object sharp.
- "Your binoculars are set. Now, you only need to use the focusing lever in order to get a sharp picture.
- "Always find the object you want to look at first, *with your eyes only*. Then bring the binoculars up to your eyes and focus on the object."

Grades K-6

Read

"Take some time to look outside at the different habitats. Observe which animals and plants can be found in each of the habitats."

Habitat mural (11 minutes)

Do

Have students sit down so they can see different habitats on the mural. Collect binoculars. Have animal and plant pictures laid out on the floor so students can see them.

Ask

? Did anybody see any of these animals and plants?

- (Have students one by one report which animal or plant they have seen in which habitat.
- On the back of each picture is the name of the animal and the habitats it can be found. Have the students place the animals and plants on the correct habitat.

Example:

"I have seen a great egret standing in the nontidal slough. Then place the great egret in the nontidal slough."

Do

- After all placards are placed on the mural make a food chain in the upland and salt marsh habitats. Refer to food chain posters.
- Remove the placard with pickleweed from the mural.

Ask

? What would happen if there was no more pickleweed in the salt marsh? (The salt marsh food chain would be destroyed.)

Discussion (3 minutes)

Ask

? Why is the salt marsh important? (It is a unique habitat and the home of many plants and animals. Some of them such as the salt marsh harvest mouse and the California clapper rail, can only live in the salt marsh.)

?What can we do to protect salt marshes?

(Accept all reasonable answers. Include: reuse reduce, recycle, do not litter, tell others about the importance of salt marshes.)