

Junior Refuge Ranger

*Don Edwards San Francisco Bay
National Wildlife Refuge*

Fremont



This Activity Book belongs to:

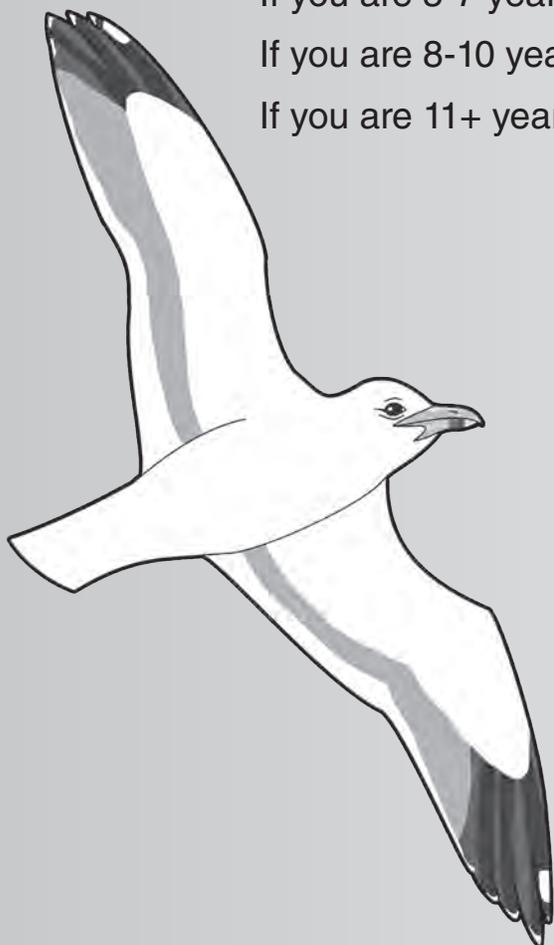
How Do I Become a Junior Refuge Ranger?

You've already completed the first step – picking up a Junior Refuge Ranger Activity Book! The next step is reading through your book and completing the activities inside. The number of activities you will need to complete to earn the Junior Refuge Ranger badge depends on how old you are:

If you are 5-7 years old, complete 3 activity pages.

If you are 8-10 years old, complete 5 activity pages.

If you are 11+ years old, complete 8 activity pages.



✓ Checklist

- Activity #1: Visitor Center Discovery
- Activity #2: Take a Hike
- Activity #3: Salt Marsh Scavenger Hunt
- Activity #4: Bird Identification
- Activity #5: Habitat Detective
- Activity #6: Wildlife Observation
- Activity #7: Salt Marsh Restoration
- Activity #8: Stewardship Project

A Junior Refuge Ranger is a person who...

- *Cares about the conservation of native wildlife and its habitat*
- *Is knowledgeable about the wildlife and plants that the refuge is protecting*
- *Recognizes the importance of refuges for both wildlife and the community*
- *Is environmentally conscious—does “green” things*
- *Always follows the Leave No Trace guidelines*
- *Is ready to share this information with others to make a difference*

What Is a National Wildlife Refuge?

The Don Edwards San Francisco Bay National Wildlife Refuge is a part of the National Wildlife Refuge System that includes more than 560 refuges all over the United States of America. This network of lands and waters is the largest in the world that is set aside for fish, wildlife, and plants.

The National Wildlife Refuge System is a part of the United States Fish and Wildlife Service, which is a federal agency. The Fish and Wildlife Service has an important mission:

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

What does a refuge ranger do? To help both people and wildlife, staff at a refuge do many different jobs. Would you like to work at a National Wildlife Refuge? There are many jobs to do, such as a biologist, an environmental educator, law enforcement, or a refuge manager. The first step is to learn about wildlife, their habitat, and how we can protect them. Start by becoming a Junior Refuge Ranger!

Leave No Trace!

The Don Edwards National Wildlife Refuge is my home! Please help protect me and my home by always following the Leave No Trace guidelines. Thank you for keeping the refuge healthy and beautiful!

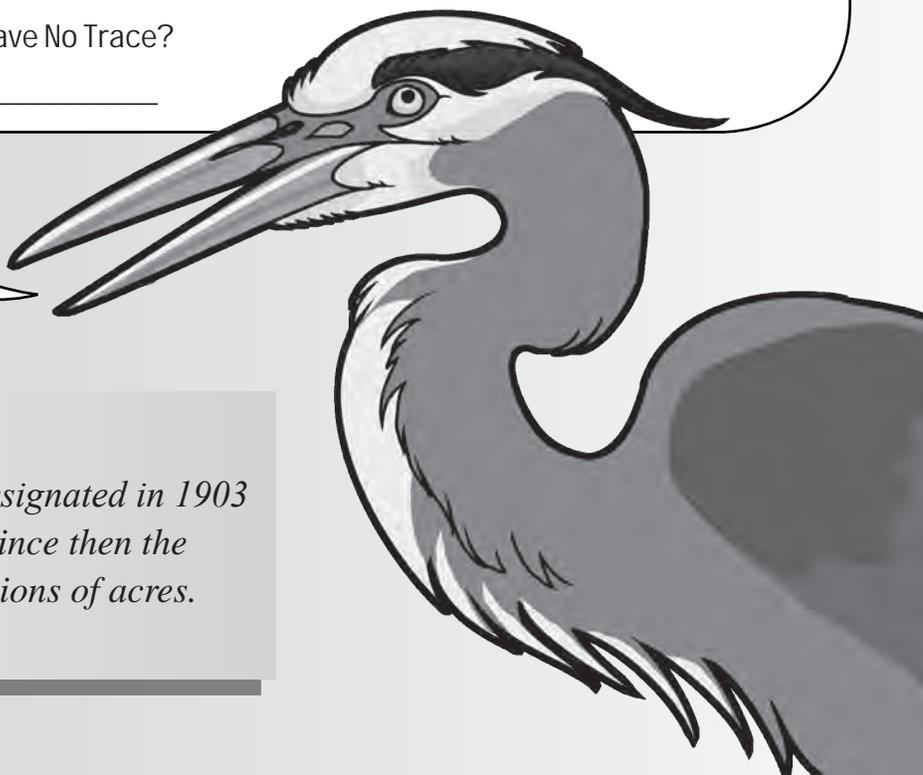
- ◆ Plan ahead, know the rules, and check for trail closures before you head out
- ◆ Take dogs only on approved trails and always keep dogs on a leash
- ◆ Leave what you find: take only pictures and leave only footprints
- ◆ Throw trash away in a trash can or pack it out with you
- ◆ Respect wildlife and do not feed or touch them
- ◆ Always stay on the trails

What else can you do to make sure you Leave No Trace?

- ◆ _____

Did You Know?

The first national wildlife refuge was designated in 1903 by President Theodore Roosevelt, and since then the refuge system has grown to include millions of acres. That's a lot of land!



Activity #1: Visitor Center Discovery

What Can You Learn At The Visitor Center?

The Don Edwards San Francisco Bay National Wildlife Refuge has so many things to see and do that one person can't see everything. That's why we have a Visitor Center! At the Visitor Center we have exhibits and videos where you can learn more about the refuge. See what you can discover at our Visitor Center by watching a video and exploring the wildlife kiosk!

Watch a Video!

I watched the video called:

I learned that:



Explore the Wildlife Kiosk!

One animal that I read about was:

I learned that:



Activity #2: Take a Hike!

The best way to learn more about the refuge is to head out on the trails! Find a map in the Visitor Center and pick a route. Need a suggestion? The LaRiviere Marsh trail is a great place to see birds and other wildlife. You can also borrow binoculars from the Visitor Center.

Check out the LaRiviere Marsh Trail!

Remember to
Leave No Trace!

Find a map here

IMAGE CREDIT USFWS

Which trail did you take?

- Plan ahead! Are there other activities you ••
- can complete while you're out on the trail? ••
-

Draw or write about something you saw on the trail:

Habitat Glossary

New to the refuge? Here's a quick introduction to some of the habitat types, plants, and other features you can find in the area.



IMAGE CREDIT: AMBARISH GOSWAMI

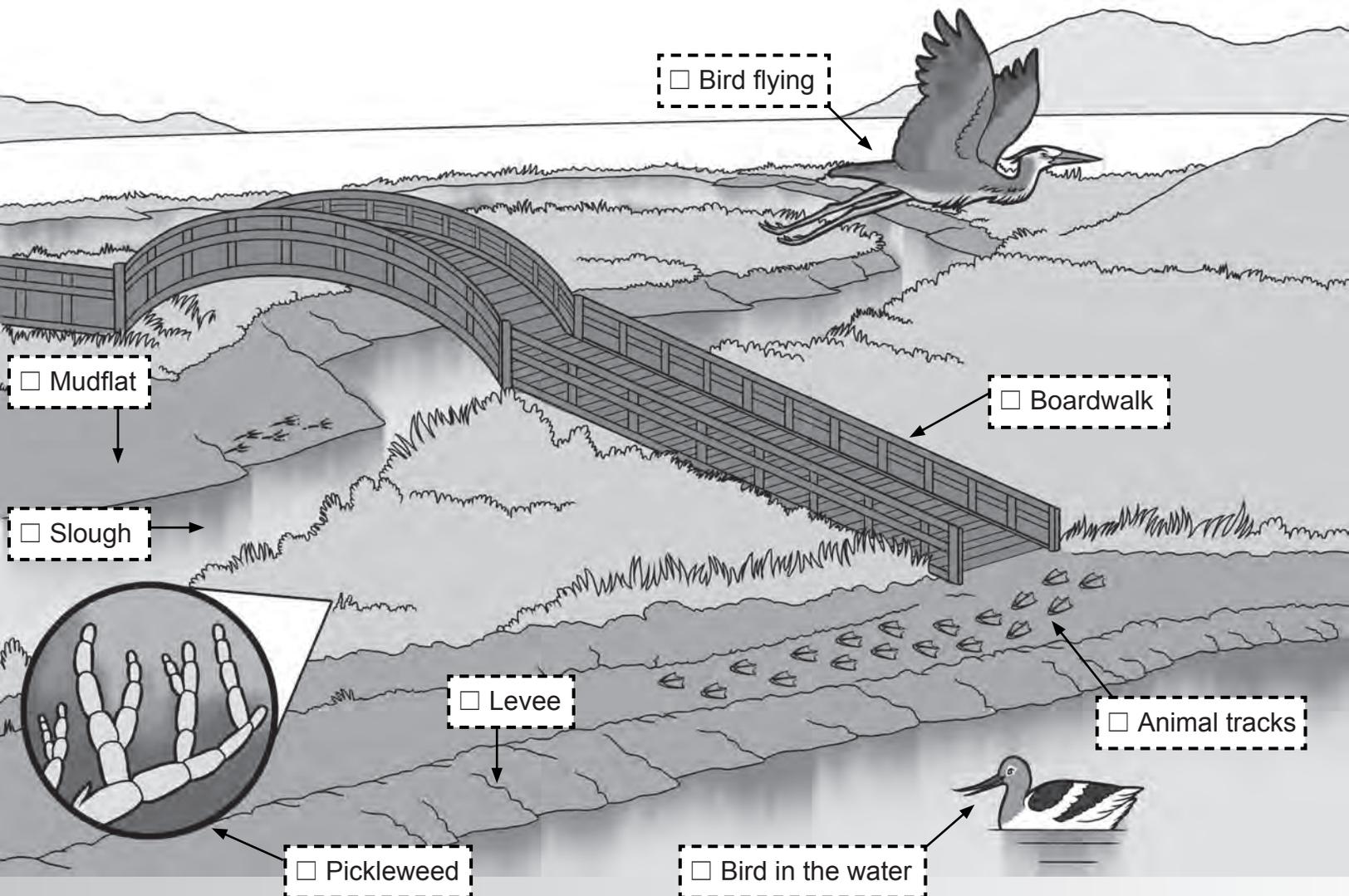
HABITAT TYPES

- 1. Upland** — The uplands are areas that are higher and drier than the rest of the habitats. Here you can see California ground squirrels, black-tailed jackrabbits, butterflies, lizards, and foxes.
- 2. Salt Marsh** — This habitat is one of the most productive on Earth. It forms where land meets the sea and salt-adapted plants can thrive. Lots of animals live in the salt marsh, and some animals, like the salt marsh harvest mouse and Ridgway's rail, cannot live anywhere else. **Pickleweed** and **cordgrass** are plants that are adapted to live in salt marshes.
- 3. Slough** — A slough is a water channel that is connected to a bay or ocean. Sloughs look like creeks, but their water flows in and out with the tides. You can see egrets, herons, and ducks feeding in the slough.
- 4. Mudflats** — Mudflats are full of microscopic animals! Birds and fish eat the zooplankton, diatoms, and bacteria that live in the mud. You can see mudflats at low tides on the side of a slough.
- 5. Salt Pond** — Salt ponds are made by people for the production of salt. The sun evaporates water from the ponds, making the water saltier and saltier. Eventually all the water dries up and the salt is collected. The water is too salty for fish to live in, but brine shrimp love it! Shorebirds, like black-necked stilts and American avocets, eat the shrimp. **Levees** are the long dirt structures that were created to form the walls of the salt ponds. Some of our trails are on levees.

Activity #3: Salt Marsh Scavenger Hunt

What can you find in a salt marsh? Grab a trail map from the Visitor Center and head out on one of the trails here at the refuge to find out. Search for the items in the picture and check the box for each item that you find! Some of them are natural and some are man-made. Can you tell which is which?

Remember to Leave
No Trace when you
are out on the trail!

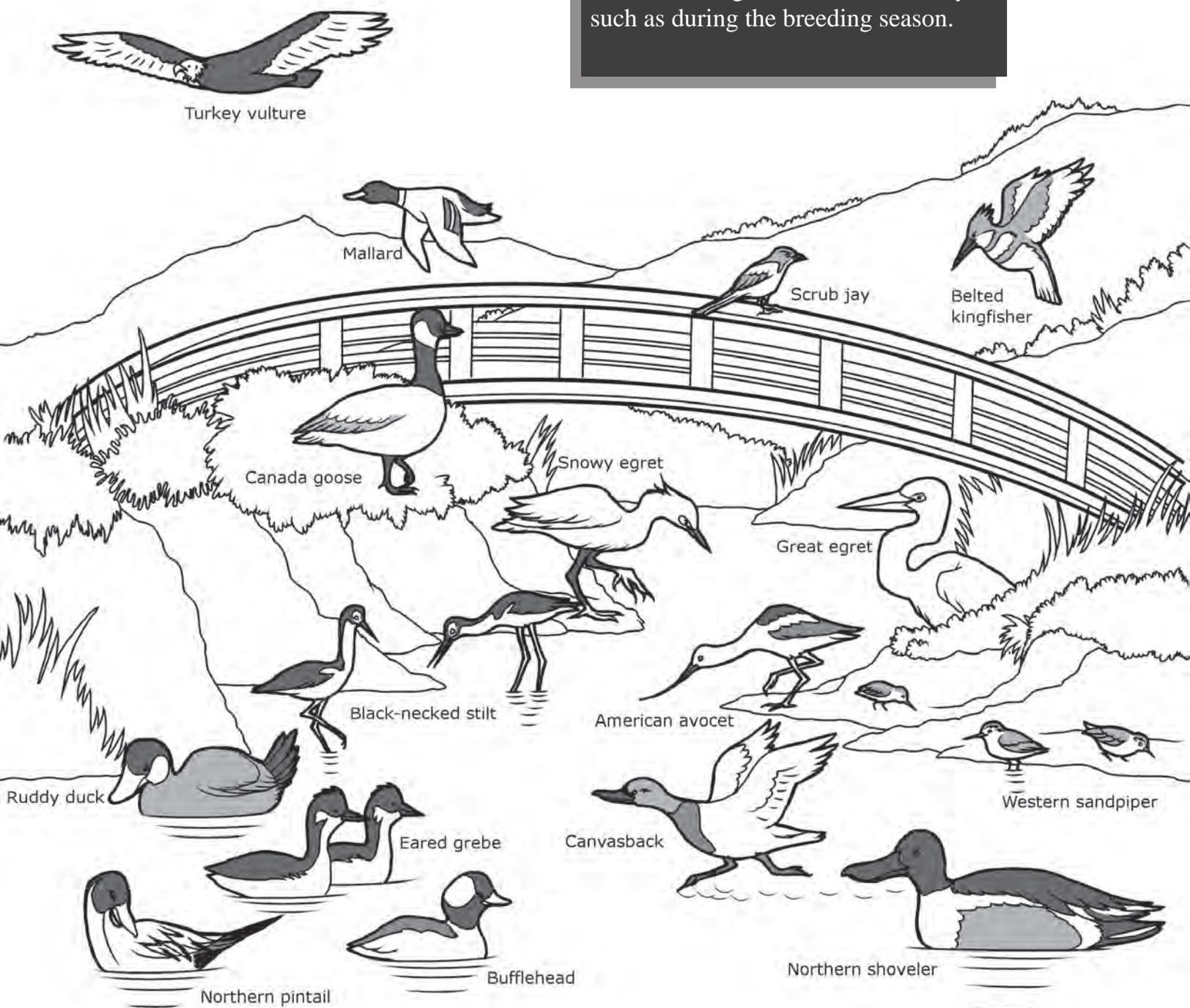


Activity #4: Bird Identification

The refuge is home to many endangered and interesting migratory birds. There are so many different species of birds here that it can be hard to tell some of them apart! Test your skills at bird identification and circle the birds you have seen out on the trails. You can find binoculars and bird guides in the Visitor Center.

Did You Know?

Some birds change the colors of their feathers during certain times of the year such as during the breeding season.



Activity #5: Habitat Detective

Refuge rangers maintain and protect the habitat that plants and animals use. What is a habitat? A habitat contains all the resources that an animal or plant needs to survive: food, water, shelter, and space. Habitats come in different types depending on where they are. Habitat types on the refuge include mudflats, salt marshes, salt ponds, sloughs, and uplands. Choose a habitat type to investigate and write down what you learn.

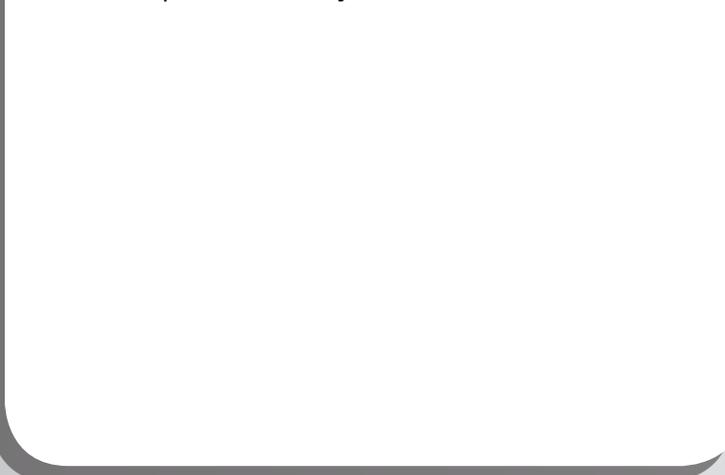
Remember to Leave No Trace!

Hint: You can view many different habitats along the Tidelines Trail!

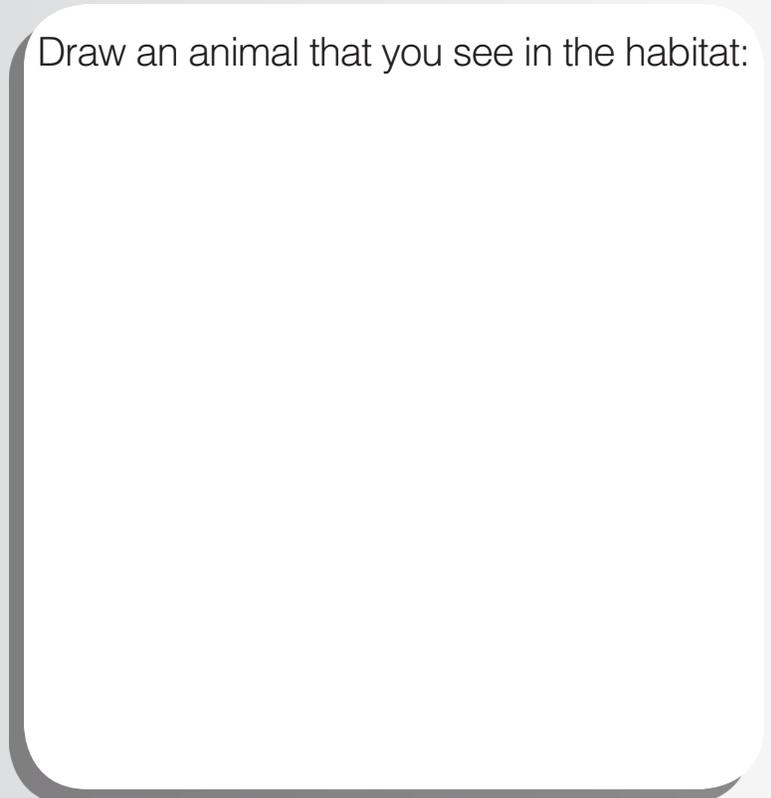
IMAGE CREDIT USFWS

What does the habitat look like?

Draw a plant that you see in the habitat:



Draw an animal that you see in the habitat:



What do you think animals eat in the habitat?

Do you think all the plants and animals in the habitat have enough space? If not, how do you think we could help them get more space?

Activity #6: Wildlife Observation

One great way to learn more about wildlife is to observe them in their natural habitat! Biologists working on wildlife refuges watch animals to learn where they live, what they eat, when they migrate, and how they raise their young. All this information can help a refuge ranger make decisions about how to run the refuge. Head out on the trails and pick an animal to see what you can learn!

Rules for Wildlife Observation:

- ◆ Remember, you are a visitor in the animal's home. Be respectful of their habitat!
- ◆ Don't make loud noises or yell when you see an animal
- ◆ Don't get too close to animals—always stay on the trails and boardwalks
- ◆ Remember to Leave No Trace!



Location: _____ Date: _____ Time: _____

Length of observation (5 minutes? 10?): _____

Type of animal: _____

Was the animal moving? If so, how did it move, and where was it going?

Was the animal with other animals? If so, were they the same kind of animal (such as a flock of birds) or different kinds of animals?

Was the animal eating? Could you tell what it was eating?

Salt Marsh to Salt Pond...

Before European settlers moved in, the shores of San Francisco Bay were lined with salt marshes, sloughs, and mudflats. They were parts of a highly productive wetland ecosystem where lots of plants and animals thrived. When the new settlers needed land for grazing cows or building houses, they drained the marshes and built on top of them. In addition to farming, one of the earliest industries in the bay was the production of salt. The five-year process, which still takes place today, involves building levees to create salt ponds where the water slowly evaporates and salt is concentrated. While these ponds are great for making salt, they're not a great place to live for animals used to a salt marsh with plants like pickleweed and cordgrass. These salt ponds and drained marshes are artificial habitats.



...and Back

Wetland restoration is the name of the game at Don Edwards National Wildlife Refuge! Since wildlife comes first on refuges, efforts focus on making the land (and water) better for plants and animals to live in. One of the first steps is restoring the flow of water from the bay into areas where it has been blocked off for many years. Once the tides bring the water back in, native salt marsh plants and animals follow. Some of those animals, like the Ridgway's rail and the salt marsh harvest mouse, are endangered and can only live in a salt marsh. That's why it's important to continue active restoration so that these animals can survive and thrive.



Activity #7: Salt Marsh Restoration

What does the process of salt marsh habitat restoration look like? You can see examples of different stages of the restoration process out on the trails around the Visitor Center. Salt ponds are visible along the Tidelands Trail. Healthy, restored marshes like the LaRiviere Marsh have lots of plants (like cordgrass and pickleweed) and sloughs. Sloughs look like creeks, but because they are connected to the bay their water level goes up and down with the tides. At low tides, you can also see mudflats where shorebirds forage for food.

What do you think a salt marsh looked like before it was restored? In the "Before" box, draw a picture of an artificial habitat. In the "After" box, draw a picture of what the artificial habitat will look like if it was restored to salt marsh. Hint: See previous page for an example of a manmade habitat.

Before:

After:

Activity #8: Stewardship Project

Now that you have learned all about the Don Edwards San Francisco Bay National Wildlife Refuge and what it means to the plants and animals that live here, you have one more project to complete! Being a steward of something means that you take care of it and protect it. We want you to do something to make the refuge a better place for the plants, animals, and future visitors who come here.

Project ideas:

- ◆ Pick up and throw away 5 pieces of trash
- ◆ Give a short ranger program for your family or friends
- ◆ Remind someone (kindly!) about the Leave No Trace! rules if they have forgotten
- ◆ Or get creative and think of your own project!

Write down what you did below. What was your project, and how did it help plants, animals, and people at the wildlife refuge?

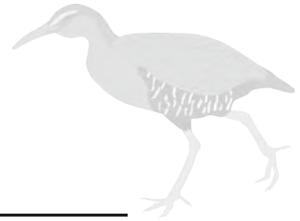




Junior Refuge Ranger Pledge

As a Junior Refuge Ranger, I, _____,
promise to learn as much as I can about nature and the
National Wildlife Refuge System. I promise to protect and
preserve the wildlife and plants and to help keep the water,
land, and air clean. I will share what I have learned with my
friends and family so they can help protect the refuge and our
natural resources too.

This hereby certifies that



has successfully completed the

Junior Refuge Ranger Program

at

Don Edwards San Francisco Bay

National Wildlife Refuge

Fremont, CA

Signed

Date



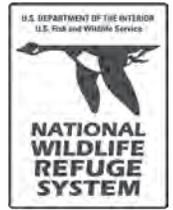
Don Edwards San Francisco Bay National Wildlife Refuge

Visitor Center • 2 Marshlands Road, Fremont, CA 94555

Open Wednesday – Sunday, 10:00 am – 5:00 pm

For questions about the Junior Refuge Ranger program,

Call: 510/792 0222 ext 363



Bring your completed Activity Book to the Fremont Visitor Center to receive your Junior Refuge Ranger badge!

Or, mail a copy of your completed activity pages to:

Don Edwards San Francisco Bay
National Wildlife Refuge
Junior Refuge Ranger Program
1 Marshlands Road
Fremont, CA 94555

Be sure to give us a return address so we can mail your badge and certificate to you!