



2025 Marsh-In Summer Camp Activity Packet

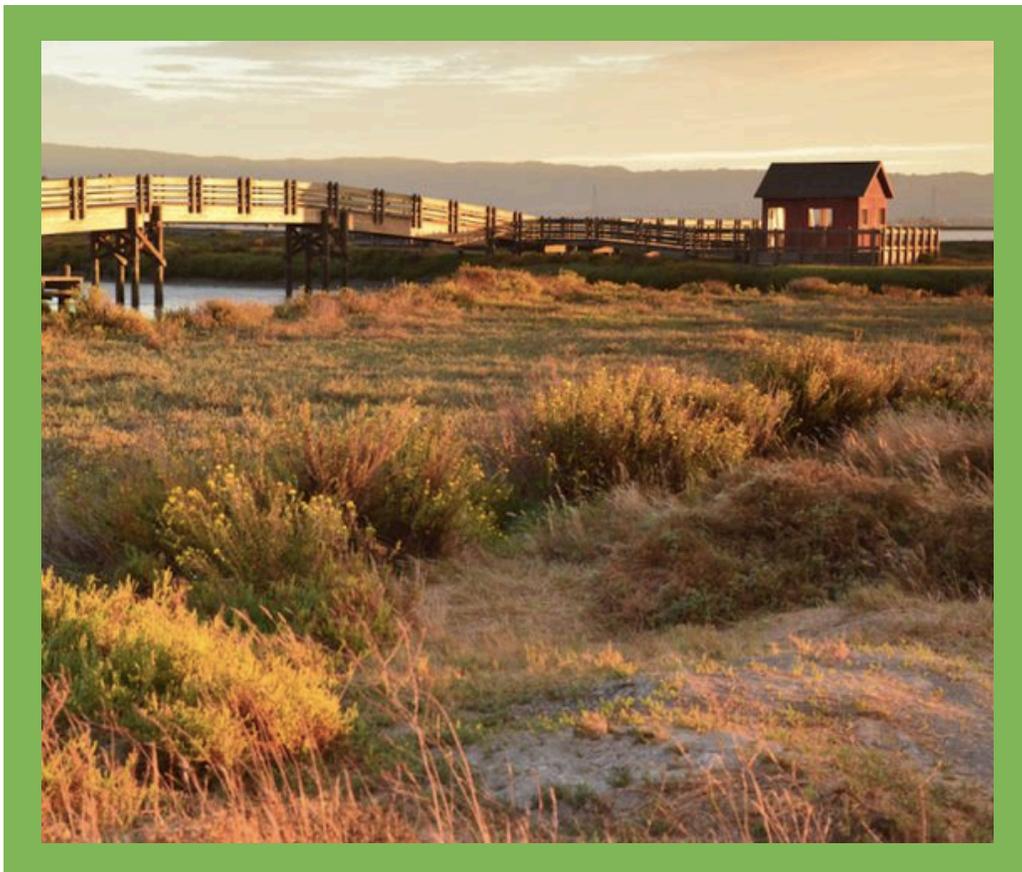


Marsh-In Summer Camp is a yearly tradition at the Don Edwards San Francisco Bay National Wildlife Refuge that began in 1980; this is our 46th year! This year's camp theme is Junior Ranger!

We have put together this activity packet that anyone can participate in, even if you can't join us in person! You can use these exciting science experiments, crafts, and activities to explore and learn about nature that surrounds you and become a Junior Ranger.

We would love to see your completed projects! You are welcome to email any photos, stories, or comments about the activities to summercamp@sfbayws.org. You can also tag the San Francisco Bay Wildlife Society on [Facebook](#) and [Instagram](#), @sfbayws. We would love to share your creations!

Sincerely,
The Summer Camp Team





All About the Refuge

Junior Rangers understand the history and mission of the Refuge!



SFBayWS

History

The Don Edwards San Francisco Bay National Wildlife Refuge was formed in 1972 and is one of the first urban wildlife refuges! Congressman Don Edwards worked with concern citizens to purchase the land to protect it. Today, the Refuge manages over 30,000 acres of land and 38 miles of trails! It is the largest urban wildlife refuge!

Mission

The mission of the Don Edwards San Francisco Bay National Wildlife Refuge is to work with diverse urban communities to inspire stewardship through educational and inclusive visitor engagement, while protecting and restoring a resilient bayland ecosystem that benefits both wildlife and people.

Habitats

There are many different habitat types at the Refuge! Each supports different plants and animals. Here's four you will likely see.

Mudflats



Mudflats may look empty, but the tides bring in nutrients that feed many insects and zooplankton! Shorebirds love to look for food here! This habitat is closest to the Bay.

Salt Marshes



These are coastal wetlands that are filled with seawater or drained depending on the tides. The endangered Ridgway's Rail and Salt Marsh Harvest Mouse live here.

Salt Ponds



Salt ponds are used to make salt that is used by humans. There are lots of brine shrimp in these pools, which are fed on by birds.

Uplands



This habitat is further away from the marsh, and is drier. Lots of mammals like rabbits, coyotes, and rodents live here.

Map

Follow this link to see a map of Don Edwards and all of its available trails!

<https://www.fws.gov/refuge/don-edwards-san-francisco-bay/map>



What is a Watershed?



Junior Rangers learn about and protect their watershed.

A watershed is an area that drains water into a creek, river, lake, wetland, bay, or groundwater aquifer. All the water from rain and irrigation that flows over land (called runoff) goes into storm drains, creeks and rivers that flow into San Francisco Bay. All the runoff from your home, yard, and neighborhood flows to a local creek and into the Bay, potentially passing through the Refuge on its way! You can make a model of a watershed and study how water flows!

Materials

- Parchment paper or wax paper
- Tape
- Washable markers
- Spray bottle or cup of water
- Paper and pencil for observations



Steps

1. Gently crumple a piece of parchment paper or wax paper, then slightly unfold it so you can see wrinkles in it. This represents the land, covered in hills, mountains, valleys, and cities.
2. Tape the four corners of the paper to a flat surface. Warning! This might get messy, so tape it outside or on a tray if you can!
3. Using a blue washable marker, trace all of the high points, which is where water flow will begin. This represent our hills and mountains being rained on.
4. Use a spray bottle or flick water from your hand onto your paper. Watch carefully! The ink will start to travel like it's raining! Write some observations. Did the water end up where you expected? The big puddles now on your sheet represent lakes, ponds, bays, or the ocean!
5. Repeat steps 1-4 on a new piece of paper, but add in a source of pollution by drawing splotches in a different color. This might represent oil or trash that ends up in our waterways. How much was your watershed polluted? Where did the pollution end up? How can we protect our watersheds?

Let's find out the name of the watershed YOU live in!

With a parent/guardian's permission, visit mywaterway.epa.gov and enter your zip code. The name of your watershed will be on the right! You will use the name of your watershed on page 11 for your eco-pledge!





Nature Scavenger Hunt



Junior Rangers pay attention to the small details found in nature.

Nature is all around us., whether you're at school, in your backyard, at the park or the Refuge! Either print this page out, take a picture using a guardian's phone, or copy down what to find on a piece of paper, then head outside to find the items below!

Something fuzzy



Two types of animal noises



An insect with wings



Three colors of flowers or plants



A piece of litter to throw away



Something beginning to grow



A leaf or stick that's been chewed on



Something smooth



Something you think is pretty



Three different kinds of leaves





iNaturalist Exploration



Junior Rangers study the species living around them!

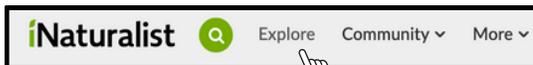
iNaturalist is a free app where you can learn about and record which species live near you. The app allows you to participate in citizen science. **Citizen Science** is when people study the world around them and that data is sent to scientists to help with their research! Let's learn about the species around us using iNaturalist. Ask a parent/guardian to help you.

Option 1: Explore the iNaturalist website

You will need access to a computer for this activity. Your local library has computers you can use!

1 Visit <https://www.inaturalist.org>. You do not need to make an account for this activity.

2 Click on "Explore" at the top of the page.



3 Next, enter your zip code, city, or county where it says "Location" on the right.



4 Now, click on the "Species" tab. Here, you can see all of the different plants and animals that have been found around you. To learn more about a species that interests you, click on it to view more photos, a map of where it's found, and information about its life history.



Which species did you learn about? How many times has it been observed in your area? Did you learn any fun facts about it?

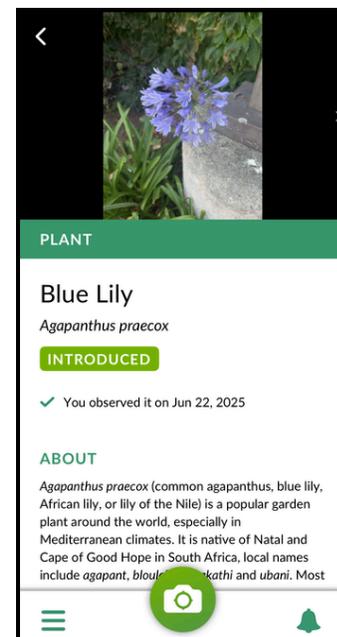
Option 2: Make your own observations using Seek by iNaturalist!

You will need access to a smartphone for this activity.

1 Ask a parent/guardian to download the free Seek app. You don't need to register for an account to use Seek.

2 Go outside with your smartphone. Find a plant or animal you want to observe. Open the Seek app and click on the camera button on the bottom.

3 The Seek app will scan whatever you have the camera pointed at and give you suggestions to what species it is. Once it tells you the species, you can take a photo using the camera button to save your observation. You can click "View Species" to learn more about what you observed, including whether it is native or non-native! Try scanning different plants and animals near your home or school. What is the most interesting thing you observed?



If you'd prefer a video tutorial on how to use Seek, check out this video below made by McDowell Sonoran Conservancy Youth Education!

https://youtu.be/j3l7yNd_TDw

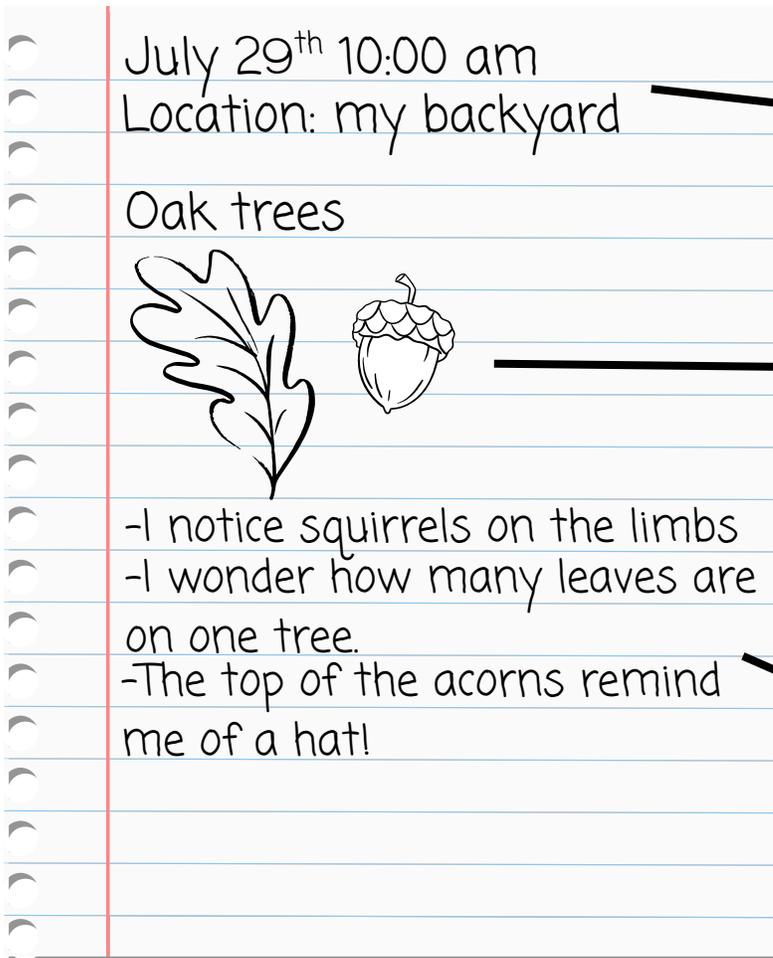


Nature Journaling

Junior Rangers write down observations about nature!



Nature journaling is the practice of recording your observations, questions, connections, and explanations about nature in a notebook. Here's a template for a nature journal page below! Use one of the prompts to try for yourself! You'll need paper and a pencil.



Metadata is information about your data. The date, time, location, and even the weather are all examples of metadata.

You can use pictures, words, drawings, or materials from nature. You don't have to be an artist to be a great nature journalist!

If you don't know where to start, try using "I notice, I wonder, this reminds me of." I notice is your observations. I wonder is where you ask questions. This reminds me of is where you make connections!

Prompt 1:

Create a nature alphabet
—A is for ant, B is for bee... how far can you get?

Prompt 2:

Go on a color walk. How many colors can you find in nature. Can you find every color of the rainbow?

Prompt 3:

Observe a bird. Describe its size, colors, and movements. What do you think it might be looking for?



Make a Pollinator Bath!



Junior Rangers support pollinators in their own homes!

Pollinators like bees and butterflies need to drink water just like humans! In the summer, it can be hard for them to find a source. We can help them by creating a pollinator bath full of water where they can rest up and drink! **Why is pollination important?** Our pollinators help plants reproduce by helping to transport pollen from flower to flower!



Materials

- Shallow dish
- Water
- Rocks/Gems/Marbles

Be sure to change out the water often! Standing water can breed mosquitoes!



Steps

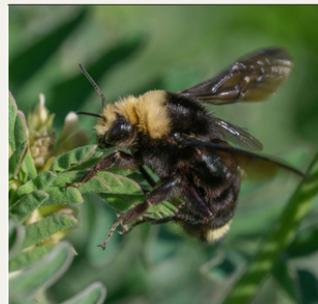
1. Choose a dish for your bees to drink from. It's best to pick a glass or ceramic dish, but anything shallow will work, like a recycled lid from a food jar.
2. Go outside and collect rocks and pebbles of various sizes. Arrange them in your dish so the bees have somewhere to land without getting their wings wet.
3. Pour fresh water into the dish until it's about halfway full. Remember to change out the water about 2 to 3 times a week!
4. Observe your pollinator bath and see what comes to visit!

Common Pollinators in the Bay Area:



**Western
Honeybee**

Honeybees live on every continent except for Antarctica!



**Yellow-faced
Bumble Bee**

Instead of hives, these bees live in nests underground!



**Monarch
Butterfly**

The bright colors of the monarch warns predators of its toxins.



Nature Bookmarks



Junior Rangers see the beauty in the nature around them!

Love to read? Make a nature bookmark for yourself or a loved one!

Materials

- One or two heavy books
- Paper towels or tissue paper
- A paper bag, paper, or thin cardboard
- Scissors
- Glue and/or tape
- Leaves & flowers



Steps

1. Go on a nature walk and collect some leaves and flowers you like.
2. Now it's time to press your items. Open up your large, heavy book and lay down a layer of paper towels to absorb moisture. Place your flowers or leaves on top, then add another layer of towels to sandwich your items. Close up your book. Adding more heavy books will speed up the drying.
3. You need to wait two to five days for your flowers to dry out. Start checking after two days. We want them completely dry so they don't get moldy.
4. Now you'll make your bookmark! Cut a piece of paper (try to recycle a paper shopping bag or something similar) into your desired shape.
5. Arrange your nature items into the pattern you like, and attach them to your bookmark. You can either glue them down, or cover the surface of your bookmark with clear packing tape.
6. Enjoy using your bookmark! You can find lots of great nature-related books at your local library!

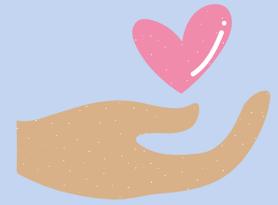
Please try only to use items that are no longer attached to a plant! If you do find something that you really like, please only use a little bit and leave the rest for nature. We want to let things be as much as we can, so they can continue to grow and thrive!





Mindfulness

Junior Rangers practice feeling calm when in nature!



Mindfulness is being aware of your surrounding and how you are feeling at any given time. One way to practice mindfulness is by focusing on your senses. Try out any of the exercises below to help you slow down and enjoy your day.



Sight

Practice watching nature like an owl. Owls stay very still and notice even the tiniest movements from plants and animals while they hunt. Spend five minutes in your favorite nature area sitting still and quiet. Pay attention to all of the movement around you, from a songbird flying around to and ant crawling by your feet.



Touch

Focus on nature's effects on your skin. Either take a walk or rest in your favorite nature area. Focus on all the ways nature creates different skin sensations. Some examples are: the warmth of sun or a cool breeze on your skin, an insect on your arm, or the ground supporting your body.



Hearing

Create a sound map. Find a comfy spot outside. Mark where you are with an "X" in the center of a piece of paper. Listen closely to what you hear around you. Draw or write what you are hearing and where you are hearing it. For example, you could draw  for wind, or  for birds!



Smell

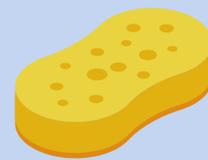
Create a nature perfume. In your favorite nature area, find items that are already on the ground, like a leaf, twig, or dirt, or flower petal. Smell each item and try to describe it. What does the smell remind you of? Now, smell the items you like best all at once! What does the combination smell like now? What would you name your nature perfume?

Remember, nature can be found all around you, not just in Parks and Refuges! Your backyard or school likely has nature around it too!





Tidal Marsh Filters



Junior Rangers understand how tidal marshes protect the Bay!

Working like a sponge, tidal marshes protect humans and nature by absorbing harmful stormwater pollution before it enters the Bay. The marshes also prevent flooding and provide habitat animals.

You can make a model tidal marsh using the steps below!

Materials

- Plastic bottle
- Scissors
- Nature items (leaves, soil, grass, rocks)
- A cup of dirty water
- Coffee filters, sponge, or cotton balls



Steps

1. Cut your plastic bottle so the top $\frac{1}{3}$ is removed. You may need an adult to help. This will act as a funnel. A soda or sports drink bottle are good options for this! Now, place your funnel (with cap removed) in the lower part of the cut bottle.
2. Go outside to collect your nature items. Think about what would make a good filter for water. Try not to disturb any living plants or animals. You'll also need to fill a different cup with some dirt and water to represent polluted water.
3. Make your tidal marsh! Add your coffee filter or sponge in first to block the hole. Layer your nature items atop the sponge or coffee filter.
4. Slowly pour some dirty water into your funnel. How clean or dirty is the water compared to what you started with?

Common Tidal Marsh Plants:



Tule

Tule filters water, stabilizes the banks of the marsh, slows water down, and is habitat for many species!



Pickleweed

Pickleweed is habitat and food for the endangered Salt Marsh Harvest Mouse and supports many birds.



3-D Habitat Triorama

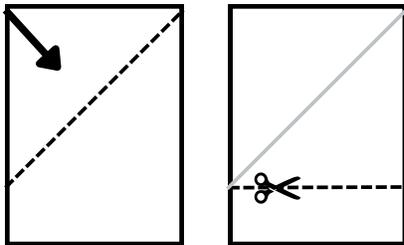


Junior Rangers share what they know about the Refuge!

Make a mini triorama to show what you know about tidal marshes! Follow the steps below. You'll need a piece of printer paper, scissors, glue, and drawing materials! You can follow this link to a tutorial:

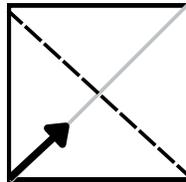
<https://youtu.be/bu80853TNw8>

1



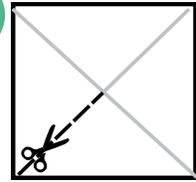
Fold the paper from the top corner till it meets the edge of the paper. Cut off the excess piece, then unfold, forming a square paper.

2



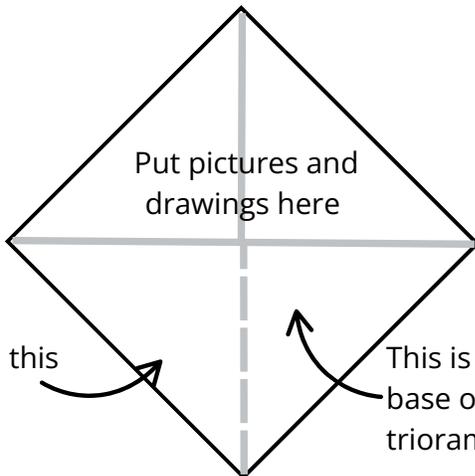
Fold your square paper from the bottom left to bottom right corner, then unfold. Your paper should look like it has an "X" from the folds.

3



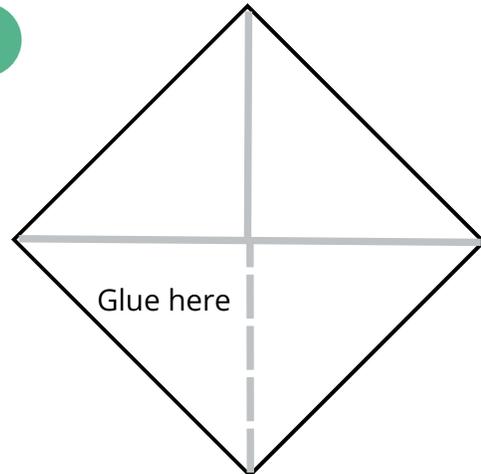
Cut from one corner to the center of the "X." Don't cut all the way to the other corner!

4



Decorate your marsh triorama! Use the cutouts on the last page or draw your own plants and animals!

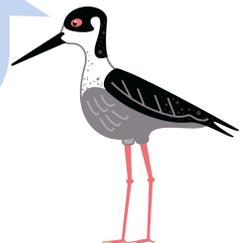
5



Put glue on your blank side, then fold the triorama so the blank piece is glued underneath the base.



Challenge: Try making a triorama for a different habitat found at the Refuge! You might need to do some research online or in books on the plants and animals living there!





Take an Eco-Pledge!



Junior Rangers work hard to protect the environment every day!

Environmental Stewardship is the responsibility we all share to protecting and preserving our planet. Even small actions we do everyday can have a BIG impact! Being an environmental steward looks different for everyone. In this activity, you will create an eco-pledge to hang in your home. Hang this somewhere to inspire you and those you live with to do your part as environmental stewards in taking care of the earth.

Materials

- Printer paper
- Scissors
- Coloring materials



Steps

1. With your fingers spread wide, trace your hand onto the printer paper.
2. On your thumb, write the name of the city you live in.
3. On your pointer finger, write the name of your favorite space in nature (Park, Refuge, Preserve, etc.).
4. On your middle finger, write the name of your favorite plant.
5. On your ring finger, write the name of your favorite animal.
6. On your pinky, write the name of the watershed you live in! You can find the information on how to find your watershed on page 2 of this packet.
7. On the palm of your hand, write down your eco-pledge. This is the action you will take to protect the items you wrote about on each finger! You can choose from the ideas below, or come up with your own eco-project.
8. Decorate your pledge, then cut it out. You can hang your eco-pledge in your room, the fridge, or your wall to remind you of your commitment to be an environmental steward!

Join an event at the Refuge!

We have lots of events each year, from volunteer events, guided walks, and more! Help protect this special place!



Research an environmental topic.

Learning about our Earth and sharing our knowledge is important because we can't protect what we don't understand! The library is a great resource!



Make recycled art!

Reusing or recycling items means less waste ends up in the landfill or waterways. Use your creativity!



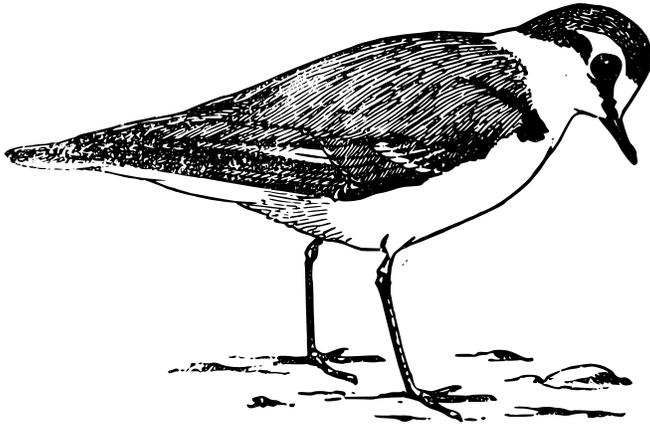
Plant some native seeds

Native plants help pollinators, soil, and our air. Don't have a place to grow outdoors? You can turn an old bottle into a planter and try growing plants inside your home!



Wetland Endangered Animals to Cut Out

Tip: to make your triorama 3-D like the example photo, leave a small tab of paper at the bottom of the species you cut out! You can glue or tape that tab down and the cut-out will stay standing!



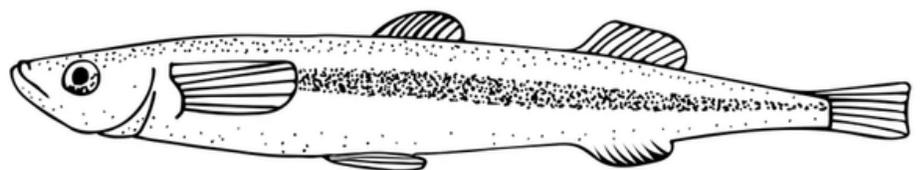
Western Snowy Plover
(threatened)



Salt Marsh Harvest Mouse
(endangered)



California Ridgway's Rail
(endangered)



Delta Smelt
(endangered)

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Wetland Plants and Animals



Pickleweed



Salt Grass

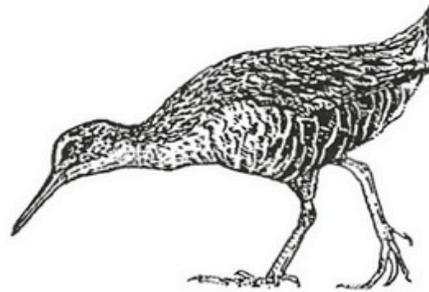


Peregrine Falcon
(delisted 8/26/1999)

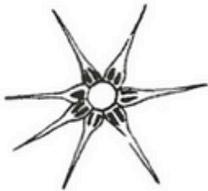
Sky Walker
Red-tailed Hawk



Red-tailed Hawk



Cordgrass



Phytoplankton
(tiny, drifting plants)



Great Egret



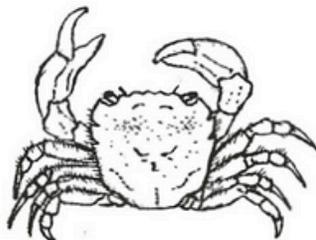
Snail



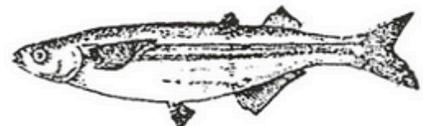
Snail



Northern Harrier



Crab



Fish