

SPOTTING SUPER SHOREBIRDS (3-6)

Overview: In this activity, students will conduct a shorebird observation in a section of the salt pond using a spotting scope, binoculars, and data sheets. Back in the classroom, they can contribute data from their observations to a shorebird web page.
Content Standards Correlations: Science, p. 295 (2016)

Grades: 3-6

Key Concepts: The San Francisco Bay is an important stopover location for migratory shorebirds. A variety of shorebirds depend on the wetlands around the bay as a feeding and resting stop.

Objectives:

Students will be able to:

- use binoculars and spotting scope to view shorebirds
- describe and identify one shorebird
- describe the importance of San Francisco Bay wetlands to migratory shorebirds

Materials:

Provided by the Refuge:

- 4 bird identification charts
- 1 spotting scope and tripod
- 1 Shorebird Plumage poster
- 1 Shorebird Migration Stopover Location Poster
- 12 binoculars
- 12 clipboards

Provided by the Educator:

- shorebird observation data sheets and pencils (one per student)

Design your field trip around a shorebird theme. Since shorebirds only visit the Refuge in large numbers at certain times of the year, this field trip activity is seasonal and should only be conducted on field trips in October-November and mid March-mid May.

TIME FRAME FOR CONDUCTING THIS ACTIVITY

Recommended Time: 30 minutes

Determine a Location (5 minutes)

- find a location at the shorebird observation area by the salt pond where there are shorebirds (you can change locations between rotations if this allows you a better view of the shorebirds).

Introduction (7 minutes)

- discuss migratory shorebirds
- demonstrate the use of the binoculars
- review the data sheet
- hand out data sheets, clipboards, pencils, and binoculars

Shorebird Observations (15 minutes)

- students work on their data sheets and use the spotting scope and binoculars to view shorebirds

Closing Discussion (3 minutes)

- discuss the importance of wetlands to migratory birds

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?

- Loss of habitat makes it more difficult for migrating shorebirds to find food, water, shelter, and space on their long migration.
- Managing and protecting habitats for shorebirds is vital to their survival during migration.

What can students do to help?

Refuge staff help by managing the salt marshes and mudflats for migrating shorebirds, but we need your help.

- Never dump anything down storm drains- pollution can destroy migratory shorebird habitats
- Only take your dog to places that permit dogs and keep it on a leash
- Keep your cat inside your house; they catch migratory birds

SUPPORTING INFORMATION FOR THIS ACTIVITY

Pacific Flyway

- San Francisco Bay is a major stopover point for migratory shorebirds on the Pacific Flyway.
- The Pacific Flyway is the major migration route for birds on the west coast of the Americas. It is like a highway in the sky. In the spring, birds migrate to breeding grounds in the north. In the fall, birds migrate to wintering grounds in the south, seeking better weather conditions.
- During the fall and winter months, thousands of shorebirds use the San Francisco Bay. The number of shorebirds increases to nearly one million during the peak of spring migration.
- At least 34 species of shorebirds occur regularly in the San Francisco Bay, including yellowlegs, willets, dowitchers, marbled godwits, whimbrels, western and least sandpipers, dunlins, ruddy turnstones, sanderlings, avocets, black-necked stilts, black-bellied plovers, snowy plovers, semipalmated plovers, and killdeer.
- Most of these birds pass through the San Francisco Bay during their migrations, using the Bay as a feeding and resting stop. However, a few types of shorebirds do nest around the Bay, including snowy plovers, killdeer, black-necked stilts, and avocets.

Shorebird Habitats

- Shorebirds use tidal mudflats, tidal salt marshes, and salt ponds for resting, feeding, and breeding.
- Shorebirds feed in the tidal mudflats when they are exposed twice a day at low tide.
- Shorebirds probe the mud with their beaks to feed on many different types of invertebrates including, amphipods, clams, snails, isopods, copepods, ostracods, oligochaetes, and polychaetes.
- Salt ponds are a human made habitat. The levees, which are walls around the salt pond, separate the salt pond from the bay.
- The salt ponds around the Bay are of varying salinities, those with low to moderate salinity provide brine shrimp, brine flies, water boatman, and small fish for migratory shorebirds.

- The levees around the salt ponds and islands in the ponds provide roosting and nesting areas for many shorebirds.
- Tidal salt marshes once surrounded the Bay; today less than 20% of the original tidal salt marsh exists. Most of the salt marshes have been destroyed to create salt ponds, landfills, airports, housing developments, roads, etc.
- Migratory shorebirds use the marsh for feeding and resting, but are more likely to use the tidal mudflats and salt ponds.
- Tidal salt marshes play an important role in the food chains in the mudflats, slough and open bay waters; Decomposing plant material (detritus) from salt marshes feed the small mud creatures that the shorebirds depend on for food.

Threats to Shorebirds

Habitat Loss

- The major impact to shorebirds has been the loss of wetland habitat, resulting in less feeding and resting area for many migratory shorebirds.
- Migrating shorebirds fly hundreds to thousands of miles during their migration. These tiny shorebirds need to stop to rest and feed to gain back the strength they need to continue their journey.
- Since habitat loss has impacted the number of places that shorebirds can stop on their migration, the already long migrations tend to become longer and more if there are fewer places for migratory shorebirds to rest and feed.

Pollutants

- Shorebirds that migrate through the Bay may also be negatively affected by pollutants. Some pollutants enter the Bay from industries and agriculture, but some pollutants are added by individuals who live in the Bay area.
- Storm drains run directly to creeks and rivers which flow to the Bay. Pesticides, fertilizer, and motor oil, that runs down the storm drain eventually makes its way to the Bay where it can harm wildlife and people.
- Many people, including students, have begun labeling storm drains with warnings: "Do Not Dump, Flows to Bay."

Introduced Predators

- Introduced predators, including rats, red foxes, and feral cats, prey upon ground-nesting birds and/ or their eggs or chicks.

- Shorebirds that nest around the Bay, such as threatened Western snowy plovers, avocets, and black-necked stilts can lose their nests to these introduced species.
- The Don Edwards San Francisco Bay National Wildlife Refuge has a predator management program to protect threatened and endangered ground-nesting birds.

Introduced Plants

- Another introduction, exotic cordgrass, could harm shorebirds. The exotic cordgrass can grow lower in the marsh than the native cordgrass and may grow over important mudflat feeding habitat.
- This could mean less mudflats available for migratory shorebirds to feed on.
- Agencies around the Bay, including the Don Edwards San Francisco Bay National Wildlife Refuge, are working to control the growth of this plant.

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

Determine a Location (5 minutes)

Do

Walk with the students to the shorebird observation area by the salt pond and find a location where there are shorebirds.

Shorebirds can be found in unvegetated areas with shallow water or on mudflats.

Note: Do not approach too closely or you may scare off the shorebirds. Emphasize the importance of being quiet and moving slowly. (You can change locations between rotations for better viewing of the shorebirds.)

Introduction (7 minutes)

Read

"The salt pond is a great place to bird watch. Today, we are going to be looking for migratory shorebirds."

Ask

? **What are shorebirds?** (Shorebirds are small birds that live near the shore. They typically feed, rest, and raise their young near salt marshes, mudflats, salt ponds, and beaches near the coast?)

? **What kind of beaks and feet do shorebirds need to feed in the mudflat habitat?** (They usually have long legs and a long beak, for walking in shallow water or on mud and feeding on small water creatures or mud creatures.)

? **What color are shorebirds feathers?** (They usually are speckled brown, white, or grey and they blend in well in the sandy or muddy habitats where they feed.)

Read

- "Shorebirds have different looking plumage (feathers) according to the season.
- In the fall and winter months shorebirds are mainly speckled brown, white and grey.
- In the spring and summer, the color of their plumage changes to help them attract a mate."

Do

Show the Shorebird Plumage Poster. Point out the different features of shorebirds (beak, legs, plumage).

Ask

? **What is migration?** (Seasonal movement of animals from one area to another. A migratory shorebird is a bird that migrates from the North to the South and the South to the North depending on the season.)

Do

Show the students the Shorebird Migration Stopover Location Poster

Read

- "The Pacific Flyway is the major migration route for birds on the west coast of the Americas. It is like a highway in the sky.
- In the spring, birds migrate to breeding grounds in the north. In the fall, birds migrate to wintering grounds in the south, seeking better weather conditions.
- Since these two places are thousands of miles apart, migratory birds need wetland habitats to provide them with food and rest in between, just like when people take long vacations and need to stop in at fast food restaurants to feed and rest!"

Read

"We are going to be looking for some shorebirds in this wetland habitat. While we are doing that we will collect data on the shorebirds."

Ask

? **What are data?** (Data are "facts" that are measured, observed, or somehow determined and recorded by biologists.)

? **Why do biologists collect data?** (Biologists gather data to understand the behavior of a plant or animal or to find out how things in habitat are changing over time.)

Read

- "Biologists have found that the best way to monitor the population of shorebirds is to conduct aerial surveys and to use binoculars and spotting scopes set up at ground stations.
- During an aerial survey biologists fly in a small plane above specific wetland areas and count the number of birds that they can see.
- As the biologists fly above they must be able to identify different species of birds and estimate the size of the flock. This can prove to be a difficult task from the air."

Do

Hand out one data sheet and pencil (these must be provided by the educator) and a clipboard to each student. Have the students fill out the first section with their name, date, location, school, time, and weather.

Read

"First, we will just use our eyes to look for shorebirds, but then we will use binoculars and the spotting scope."

Ask

? **Do you see any shorebirds out in the mudflats?** (Can be yes or no.)

? **If yes, how many do you think there are?** (Take many different answers)

Do

Have the students write the answer to these questions in the first section of the data sheet. After

they write their answers, hand out a pair of binoculars to each student.

Shorebird Observations (15 minutes)

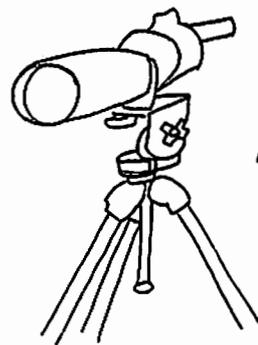
Read

"We are now going to use our binoculars to take a closer look at the shorebirds. To use binoculars, we need to follow these instructions.

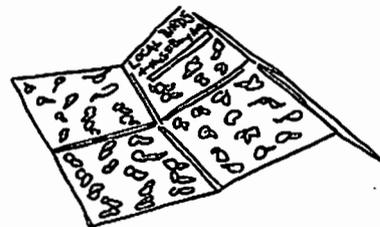
- If you are wearing glasses, roll down the rubber eyecups on the binoculars.
- Make sure the eyepiece on the right side of the binoculars is set to zero.
- Adjust the binoculars to fit you. Hold the binoculars up to your eyes and grasp each side firmly. Move the sides closer together or further apart until they fit your eyes comfortably and you see only one round image.
- Use the focus lever to focus on different distances.
- Always keep the binoculars around your neck to avoid losing or dropping the binoculars. Avoid getting the binoculars wet or dirty.
- Look at the birds without the binoculars and then bring the binoculars up to your eyes. Do not put the binoculars up to your eyes first and then look for birds."

Do

Help the students with their binoculars. Allow a few minutes for the students to look for shorebirds with their binoculars.



Spotting Scope



Bird Identification Chart

Read

"Each of us is going to select one shorebird to study. Once you have chosen your shorebird you need to answer the questions on your Shorebird Data Sheet."

Do

- "As the students are filling out their data sheets, circulate among the group, answering questions, helping with the binoculars, and showing the students the bird identification charts.
- Set up the spotting scope on different shorebirds and allow the students to take an even closer look at individual birds.
- Collect the data sheets at the end of the observations and *return all of the data sheets to the educator at the end of the field trip.*"

Closing Discussion (3 minutes)

Ask

- ? **Why are wetlands around San Francisco Bay important to migratory shorebirds?** (They provide a feeding and resting place as shorebirds are migrating north or south.)
- ? **Today less than 20% of the tidal salt marshes that once surrounded San Francisco Bay still exist. What has happened to the salt marsh?** (People have drained and filled in salt marsh for farmland, road construction, housing and business development, landfills, etc.)
- ? **Has the decrease in tidal salt marsh habitat harmed shorebirds?** (Yes. Their population has decreased since there are fewer places to rest and feed during their difficult migration.)
- ? **What are other ways that humans have harmed shorebirds?** (Pollutants dumped into the bay or into creeks that lead to the bay, plastic tossed into the bay, and disturbance of nesting or resting shorebirds.)
- ? **What can people do to help protect habitat for shorebirds?** (Be responsible for your own trash, participate in Coast Clean-Up, never pour pollutants down storm drains, educate others about habitat and shorebirds, and reduce, reuse, recycle, protect wetland areas.)

Extensions for the Educator

Shorebird Field Trip

Plan an entire shorebird field trip! In addition to Spotting Super Shorebirds select these recommended field trip activities from the Salt Marsh Manual:

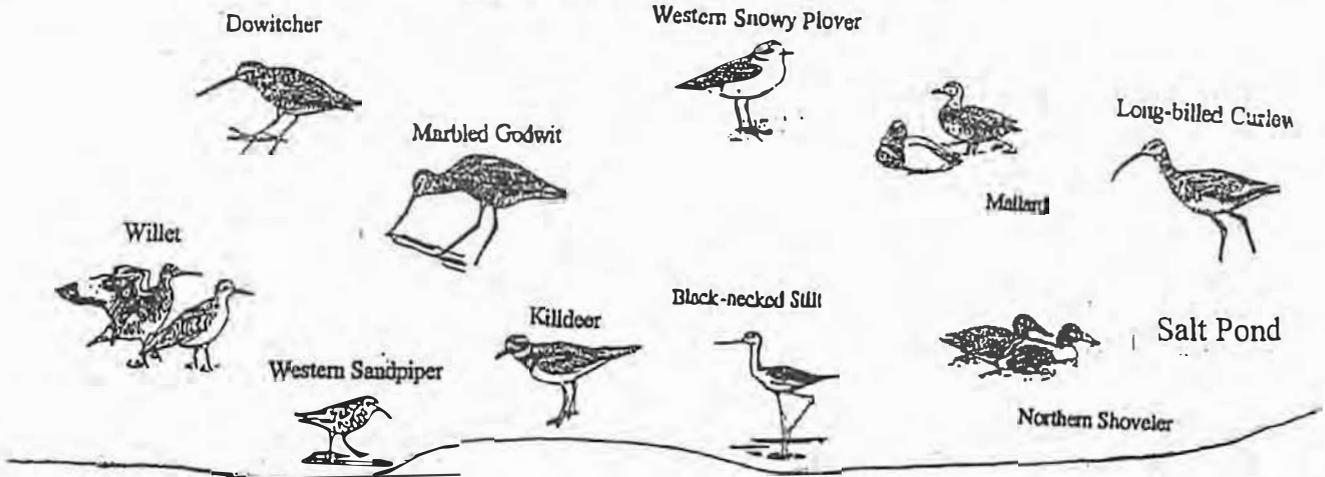
Mud Creature Study
Plankton Lab
Feet, Beaks, and Eats
Salt Pond Migration

Sandy the Sandpiper: A Shorebird Closing

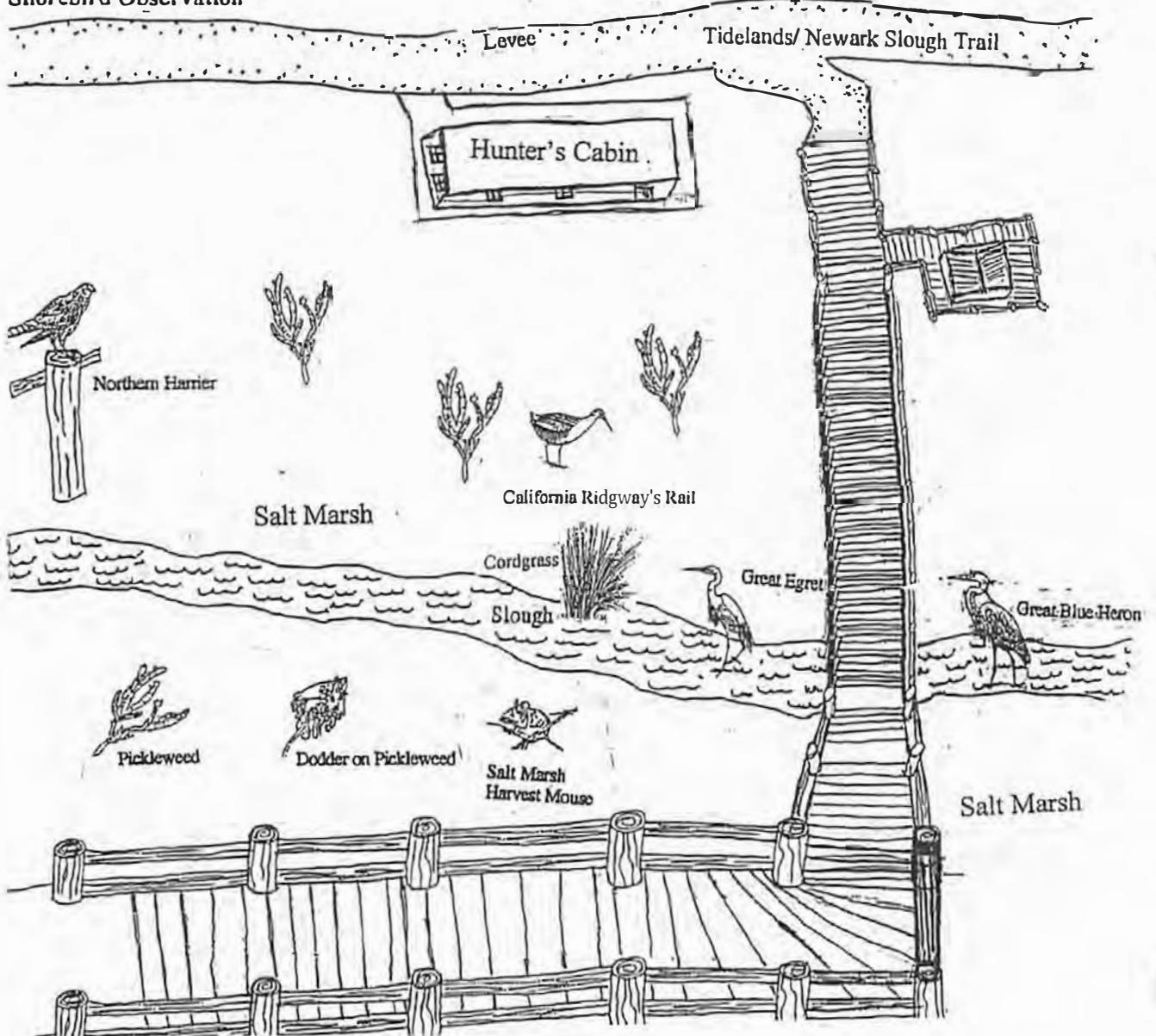
You can select this field trip closing to further investigate a shorebirds migration.



SPOTTING SUPER SHOREBIRDS MAP (3-6)



Shorebird Observation



SPOTTING SUPER SHOREBIRDS DATA SHEET

Name: _____

School: _____

Date: _____

Time: _____

Location: _____

Weather: _____

Take a quick look around the wetland without using the binoculars.

Do you see any shorebirds? _____

How many do you think there are? _____

Pick one shorebird and raise your binoculars to your eyes to look at it.

Describe what your shorebird is doing.

Draw your shorebird in the space below.

Look at the bird chart and figure out the name of your shorebird. _____

Is your shorebird alone or in a group? _____

How many birds are in the group? _____

List below any other types of shorebirds that you see in the wetlands: