Shorebirds of the Gulf of the Farallones

The Gulf of the Farallones National Marine Sanctuary holds crucial habitat for vast species of shorebirds. The term shorebird or "waders", encompasses any bird that relies on beaches or wetlands for habitat to feed and nest. Approximately 80 of the more than 400 species of shorebirds are found within the Sanctuary's boundaries. Easily recognizable members include the Great Blue Heron, the sandpipers, and the egrets. Within the Sanctuary, shorebirds can be seen at Bolinas Lagoon, Tomales Bay, Bodega Bay, Estero Americano, and Estero de San Antonio.

Classification

Shorebirds belong to the second largest class of vertebrates, the Aves, with nearly 10,000 living species of birds. The order Charadriiformes contains the "true" shorebirds (sandpipers, plovers, stilts, avocets, oystercatchers, skimmers, turnstones, and phalaropes). Generally having long legs and beaks and no webbing between the toes, shorebirds are specifically adapted to their environment. There are many other shorebirds living within the Sanctuary that are not considered in the family of "true" shorebirds, including the egrets and duck-like birds with similar feeding strategies.

"True" shorebirds are known for their extraordinary feats of migration, as some travel over 15,000 miles, fly three to four days nonstop, or fly at speeds exceeding 40 miles per hour. During the spring and fall seasons, millions of migratory birds pass through the Bay Area on the "Pacific Flyway." This is one of four main routes on which birds travel through North America on annual trips to and from their wintering grounds to the south.

Photo from GFNMS library

Marbled Godwit (*Limosa fedoa*)

Willet *Western Sanderling* *Marbled Godwit*

True Shorebirds

The Charadriiformes can be divided on a basis of feeding strategy by species that "probe," those that "glean," and those with species-specific feeding behaviors.

Probers

Using long beaks reaching up to several inches, "probers" unearth small crustaceans hidden within the sand or mud. Each species has a unique beak length, limiting the depth at which food can be obtained. This vertical division in feeding strategy allows for the highest number of shorebird species to feed in the same area.

There are nearly 40 members of the Sandpiper family that have been seen within the Sanctuary, such as the elegant American Avocet, two species of dowitcher, eight species of sandpipers, and the Black-necked Stilt. These species probe about the shores feeding on buried clams, worms, crustaceans, and small fish. A notable "prober", the Long-billed Curlew, has the longest beak of any shorebird, reaching up to nine inches.

Gleaners

In contrast to the "probers," the "gleaners" scurry along the beach feeding on invertebrates on the sand surface. The "gleaners" display a horizontal division of foraging, based on their leg length. The longer-legged species are able to travel farther into the surf and are able to feed on items inaccessible to other shorebirds. Sanderlings gather in large numbers to glean the beach. Once an abundant species along the Pacific coast, the Western Snowy Plover has declined to such a low population size that it is listed as threatened on the federal endangered species list. Another plover, the Killdeer, is best known for its screeching calls and enacting an injury to lure predators away from its nest.

Species-unique strategies

There are many other feeding strategies of shorebirds, such as that of the Black Oystercatcher, which uses a long, thick triangular beak to sever open shells of mussels and clams. The Black Skimmer has a beak with a greatly enlarged lower half used to catch fish while flying just above the water's surface. The appropriately named turnstones wander beaches turning over beach debris in search of invertebrate species to feed upon.

Photo by Jamie Hall

Snowy Egert (*Egretta thula*)

Other Shorebirds

Loons, grebes, herons, ducks, and rails are similar to "true" shorebirds, yet are classified in five other orders.

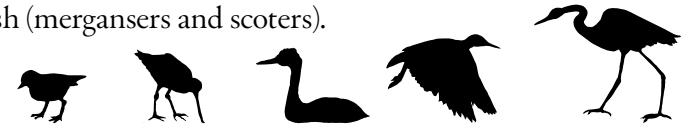
The Black Rail, listed as threatened on California's endangered species list, can be found in Tomales Bay. Faced with rapidly diminishing habitat, rails are now rarely found in the salt marshes of bay and coastal communities.

Seven species of herons, egrets, and bitterns live in the Sanctuary. These long-necked wading birds are found in wetlands and along the shoreline. The Great Egret is identified by its white body, yellow beak, and long black legs; the Snowy Egret is very similar in appearance, with a smaller body size, black beak, and yellow feet. Using dagger-like bills, these predatory birds quickly snatch up frogs, fish, crayfish, and other small animals.

Six species of grebes make their winter home in the Sanctuary, including the Eared, Horned, and Western Grebes. These birds are excellent swimmers and divers. They have been known to use their wings to "fly" underwater as they hunt for small fish.

Four species of loons spend time within the estuaries along California during their migration. Known for their eerie wails and strange laughter, these birds are expert hunters of fish and crustaceans.

More than twenty species of duck-like birds inhabit the Gulf of the Farallones and surrounding waters, with many of them present year-round. The Canada Goose is a seasonal visitor to the area along with the elegant Northern Pintail. Diversity is quite strong in these duck-like birds, with species displaying great variation in color, size, shape, and feeding behavior. Some common feeding methods include dabbling for small invertebrates (mallards), feeding on vegetation (geese), and diving for fish (mergansers and scoters).



Conservation

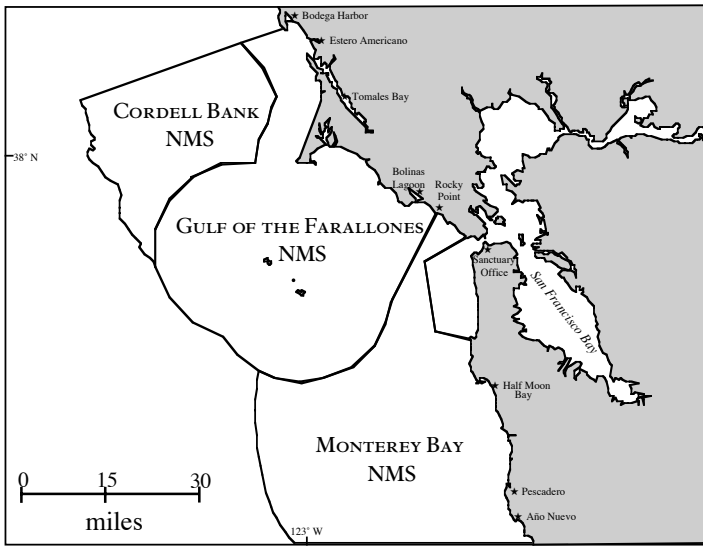
At the end of the 19th century, millions of herons and egrets were slaughtered annually for their elegant feathers used in the fashion industry. Their magnificent breeding plumage was worth more than their weight in gold. This harmful activity provoked the first public environmental action by banning the sale of plumes, followed by the foundation of the Audubon Society and passing the Federal Migratory Bird Treaty Act (1918).

As the increase in human coastal development continues, native bird species are on the decline; 33 bird species are listed as endangered or threatened in the state of California as of October 2001, with almost 250 birds listed worldwide. Traveling miles along the coast each day, shorebirds are specifically vulnerable to ecological disturbances such as oil spills, the presence of toxic chemicals, and the resulting declines within the food web.

Sanctuary volunteers monitor the coastline for live and dead marine life, and they are often the first to detect oiled birds from an oil spill. Through the Sanctuary's Beach Watch program, the general public can not only expand their knowledge of the environment marine life live within, but can also help to preserve and protect it for future generations.

For more information on the Gulf of the Farallones National Marine Sanctuary, shorebirds, or how to get involved contact:

Gulf of the Farallones National Marine Sanctuary
farallones.noaa.gov
Farallones Marine Sanctuary Association
www.farallones.org or (415) 561 - 6625
Point Reyes Bird Observatory
www.prbo.org



Seabird and Shorebird Activities

Bird Watching

Objective

Your students will become in touch with nature by simply practicing the skills of observation, while learning about species identification and behavior in one habitat. The beauty of bird watching is that it can be done anywhere, for any amount of time.

Materials and Supplies

Binoculars
Field guides and/or species identification cards
Bird Watching Field Notes worksheet
Clipboards/ Pencils

Background

Birds are in the second largest class of vertebrates, *Aves*, with more than 10,000 species. Birds are an important group in the food web of many ecosystems. The Gulf of the Farallones National Marine Sanctuary is home to more than 300,000 breeding seabirds and provides crucial habitat for more than 80 species of shorebirds. Millions of migratory birds pass through the San Francisco Bay Area on the "Pacific Flyway." This is one of four main routes on which birds travel through North America on annual trips to and from their wintering and breeding grounds.

Most people know more about bird identification then they realize. For example, you could probably identify different groups such as shorebirds and hawks. Bird identification is a skill that can be continuously improved over time. The key to correctly identifying a bird is to look at a combination of field marks (physical characteristics): size, shape, bill, tail, wings, and coloration. A bird's behavior and habitat are sometimes just as important in identification.

Size: How large is the bird? Is it the size of a hummingbird or of an eagle?

Shape: Most birds have a shape characteristic of its family. Which group does it most closely resemble? Look not only at the shape of the body, but also look at the shape of the head.

Bill: The shape of a bird's bill is specialized for feeding. Is it hooked like a bird of prey? Dagger-shaped like a tern? Long and narrow for digging into the beach like a shorebird?

Tail: What is the shape of its tail? Is it forked, square-tipped, notched, rounded, or pointed? Are there any patterns on the tail?

Wings: The shape of a bird's wings, especially if it is flying overhead, can be useful in identification. Also, look for any distinct color patterns.

Coloration: The colors and pattern of a bird's plumage (feathers) are also important to note. Keep in mind that males and females can look different. Many species change color during the breeding season and there are regional variations in color.

Behavior: Watching a bird's actions can provide many clues to its identity. Look at social behaviors (flocking, courtship dances), as well as personality clues (is it shy and elusive or unconcerned with human

presence?). Have your students listen to song patterns, which are often species unique.

Flying: How does it fly? Does it dip up and down, or fly directly? Does it glide and soar? How does it beat its wings?

Feeding: Is the bird foraging for food on the ground? Diving into the water for its meal?

Habitat/Range: Each bird is specially adapted for a particular ecosystem. Where did you find the bird? In the treetops? In scrub brush on the ground? Gliding over the ocean? Wading in a lake? In addition, each species has a geographic range that it lives in or migrates through.

Pre-activity

Students will get more out of this activity if they observe birds more than once. Assign each student to watch birds around their house and take notes for 20 minutes as homework. This will give students a chance to simply start watching birds. Then have each student share their experiences with the class.

Activity

In the classroom, go over the basics of bird identification, and the different characteristics that the students should be looking for. Describe and show pictures of 10 species that you are likely to encounter in the field. Remember to talk about good wildlife viewing habits to avoid disturbing birds. Go over the "Walker's Etiquette" with your students before going into the field.

You can take your students to one habitat or you can visit two different habitats to make comparisons. Pick a good time to go in the field, for example, during spring or fall migration, or if you are going to watch shorebirds, at a low tide. Then, go bird watching!

In the field, have your students record general information and sketch the birds on the *Bird Watching Field Notes* worksheet . Each student should choose 3-5 birds to watch and take detailed descriptions about their physical and behavioral characteristics. Use field guides or identification cards to identify the species.

Back in the classroom, have your students answer questions and draw conclusions from their field notes. Some topics of discussion could be: What can you tell about a bird's food source and habitat from their physical characteristics? What are the key members of the food web of the ecosystem we visited? How would the seasonal distribution of birds be affected by climate change? What human activities could affect birds' habitat?

Recommended Field Guides

1. Field Guide to the Birds of North America, National Geographic, Geographic Society, 1999.
2. A Field Guide to Western Birds by Roger Tory Peterson, Houghton Mifflin Company, 1990.
3. National Audubon Society Field Guide to North American Birds (Western Region), by Miklos D. F. Udvardy, Alfred A. Knopf, Inc. 1994.
4. The Sibley Guide to Birds, by David Sibley. Alfred A. Knopf, Inc. 1994.

Recommended Bird Watching Areas in the San Francisco Bay Area

Although you can watch birds outside your school, a field trip to a good bird viewing area might be more rewarding. Check out a beach or park near the school, or visit an area listed below.

The wetlands and coastal areas of the Gulf of the Farallones National Marine Sanctuary offer great seabird and shorebird viewing areas. These areas are listed from north to south along the coast. Please visit the "Explore" section on www.farallones.org for directions and more details about each site.

Bodega Bay
Estero Americano
Estero de San Antonio
Bolinas Lagoon Nature Preserve
Audubon Canyon Ranch
Gazos Beach, Montara
Pescadero Marsh

Point Reyes National Seashore is a premier bird viewing destination. Some good spots are McClures Beach, Abbott's Lagoon, Limantour Estero Reserve, and Drake's Bay. Visit www.nps.gov/pore/ to find out more details. The Point Reyes Bird Observatory offers bird walks and other educational activities. For more information and for bird watching areas in Point Reyes, visit www.prbo.org.

The Marin Headlands in the Golden Gate National Recreation Area has numerous trails through rolling hills and open space. Be sure to spend time at Rodeo Lagoon.

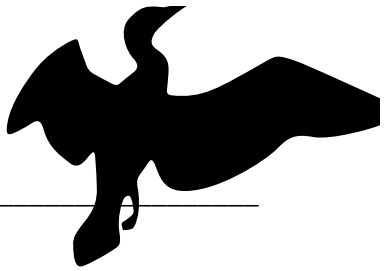
In the city of San Francisco, you can visit Golden Gate Park. Wooded areas are home to land birds, and waterfowl and gulls can be found in the park's lakes. In the Presidio, Crissy Field Lagoon and Beach provide shorebird viewing. Along the west coast of the city, pelicans, cormorants, and gulls can be seen at the Cliff House and Ocean Beach.

South of San Francisco, you can see swallows and songbirds at the cliffs at Ft. Funston. Pillar Point and Pillar Harbor in the Half Moon Bay area are great spots to view coastal seabirds and shorebirds.

Inland, in the south Bay area, visit Don Edwards San Francisco Bay National Wildlife Refuge which has bay, marsh, pond, and mudflat habitats with over 280 bird species. For more information see http://desfbay.fws.gov/.

Extensions
For more activities see:
The Birdwatchers Activity Book by Donald Heintzelman, Stackpole Books, 1983.
The Sibley Guide to Bird Life and Behavior by David Sibley, Knopf, 2001.

Bird Watching Field Notes



Observations taken at bird sighting location

Name of observer: _____

Date:_____ Time: _____

Location: _____

Habitat type: _____

General description of area: _____

_____

Number of birds in area: _____

Are the birds in a group or singly?: _____

What are the birds doing? (wading, swimming, climbing, etc): _____

_____

Species Description

Size: _____

Shape: _____

Bill: _____

Tail: _____

Wings: _____

Coloration: _____

Behavior: _____

Name of Species: _____

Sketch your bird

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Size: _____

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Bill: _____

Tail: _____

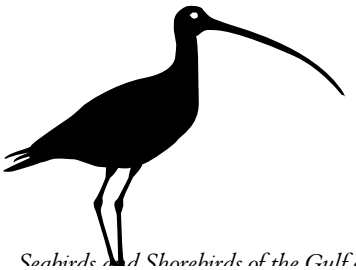
Wings: _____

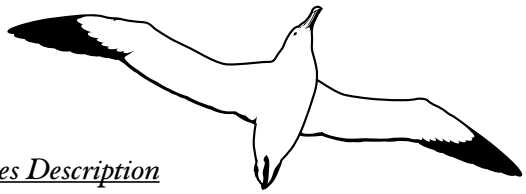
Coloration: _____

Behavior: _____

Name of Species: _____

Sketch your bird





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Sketch your bird

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Sketch your bird