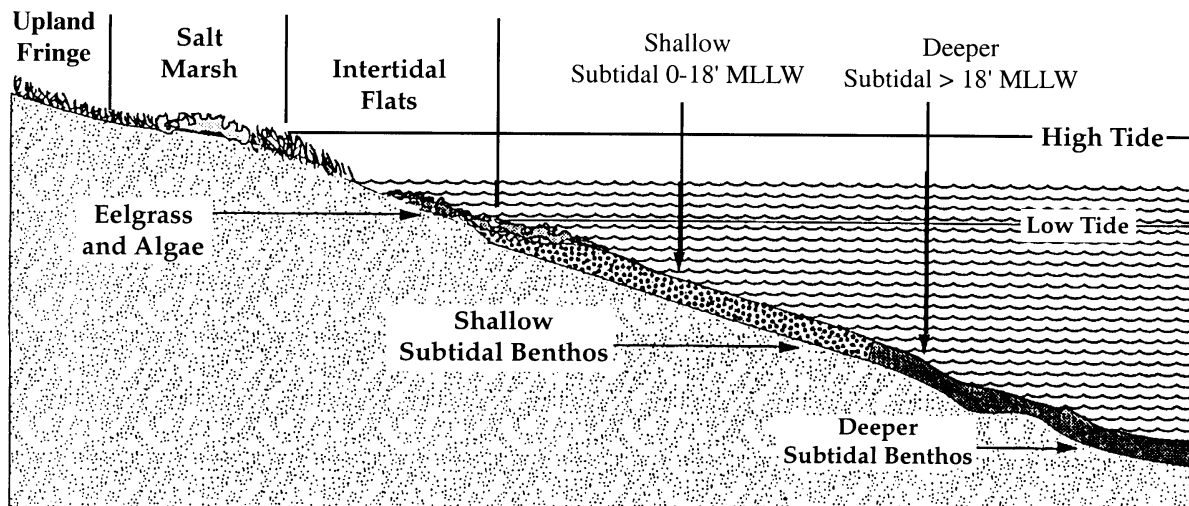


TEACHER'S GUIDE TO COMMON ANIMALS OF SAN DIEGO BAY

San Diego Bay is home to many animals. Recent surveys have identified:

- 127 species of birds
- 90 species of fish
- 292 species of invertebrates including sponges, sea anemones, polychaete worms, crustaceans, and mollusks

Distinct marine habitats are found on the land around the Bay, at the interface between the land and water, in the open waters of the Bay, and in the sediments at the bottom of the Bay. The following illustration from the 1990 South Bay Enhancement Plan illustrates the major habitats.



Additional habitats have been created by man. The saltworks in the South Bay were begun in the early 1900's; the dikes and ponds created new habitats. The dikes are used as a refuge by many birds since much of their traditional upland roosting areas have been destroyed. The SDG&E power plant, built in the 1960's, increased the surrounding water temperature, allowing new species to inhabit the area (seahorses and sea turtles). Piers and riprap create new habitats especially for invertebrates.

Not all of the species listed above spend their entire life in the Bay. South San Diego Bay is a major stop on the Pacific Flyway for migratory birds; many fish are hatched in the shallow waters of south San Diego Bay, returning to the ocean as adults.

The black line master contains pictures of 30 species of animals that are found in San Diego Bay. This picture can be used as the basis of a library research project or as preparation for a field trip to the Bay. Assign one species to each student. They should find out:

- 1) What the animal eats.
- 2) What part of its lifespan would be spent in the Bay.
- 3) Which habitat(s) in the Bay the animal uses.
- 4) Size and habits.

From this information, each student should predict how pollution of San Diego Bay would adversely affect their assigned animal and what would happen to other species in the Bay should their assigned animal become extinct. Field guides are easy to use sources of information. Brief information on some of the 30 species shown in the black line master is provided below.

Surf Scoters - Abundant in San Diego Bay, especially in winter. There were more surf scoters recorded than any other bird species in a 1988-89 survey. It can dive to a depth of 30 feet for mollusks. Nests in Alaska and northern Canada.

Western Grebe - migratory, comes to San Diego Bay in the spring. An open water bird which feeds on fish, some insects and even feathers. They run along the surface of the water before taking to flight.

FISH

Spotted Turbot, Honeyhead Turbot - These flatfish live on the bottom of the Bay in shallow water, often covered with sand. When flatfish are born, they have eyes on both sides of their head. After a short time, one eye migrates so that both eyes on one side (the side that is upward). Flatfish can alter their coloring to match their surroundings.

Striped Mullet - The only species commercially fished in San Diego Bay. They feed on small bits of organic matter found in sediments.

The following fish live their adult lives in the open sea, often near the kelp beds off the San Diego coast. They may breed in the shallow waters of the South Bay, or spend part of their time in the deeper waters in the northern part of the Bay.

Bigmouth Sole

Banded Guitarfish

Pacific Sardine and Jack Mackerel are frequently encountered in mixed schools. Sardines were plentiful until about 1945. For the next 20 years their numbers declined dramatically. They are now making a comeback. Young mackerel are called "Tinkers." Surfperch - there are 19 species of surfperch in California. All bear young alive.

Green Jack

Sargo - found in shallow water over rocky or sandy substrates; feeds on invertebrates

Pacific Butterfish

Pacific Bonito - found in large schools; a female may release 500,000 eggs at one time Barracuda - has well developed teeth for eating small fish.

OTHER ANIMALS

Crabs - Fiddler Crabs and Mudflat Crabs are found in the mudflats of San Diego Bay. The male fiddler crab has an enlarged claw that it frequently moves back and forth in a "fiddling" motion. Both crabs burrow into the mud and plug the holes with mud during high tides. The open burrows can be distinguished by the mud balls surrounding the fiddler crabs' dens. Provide food for birds and, in the larval stage, for fish.

Sea turtles - while sea turtles are not native to San Diego Bay, there appears to be two populations living in the Bay. The Eastern Pacific green turtle is a seasonal visitor in the winter, but does not breed here. Sea turtles were brought up from Mexico in 1857, and many escaped while being penned in the Bay. In mid 1960's SDG&E build a water-cooled power plant, and sea turtles (believed to be the smaller Mexican Black Sea Turtle) started living around this artificially created shallow, warm water habitat. They may be nesting there since small juveniles have been spotted. Sea turtles appear to be omnivorous.

Seahorse - brought north by El Nino in the 1980s from Baja California - appears that a colony is established in South Bay where the water is warmed by SDG&E plant.

Brown Pelican - Found throughout San Diego Bay. With its 7-foot wingspan, it often glides just inches above the surface of the water. It dives from heights up to 30' to catch small fish, and swallows its food immediately. Breeds on offshore islands, such as Los Coronados (lays from 3-5 eggs). Is classified as by the State and Federal Governments as endangered because of DDT poisoning of the foodchain. Brown Pelicans are currently making a comeback as levels of DDT in the environment are lowered.

Snowy Egret and Great Blue Heron - both have long legs and beaks and feed in the salt marshes upland from the mudflats. They can also be seen in freshwater habitats. Feed on snakes, rodents, insects, frogs, fish and small birds. The Great Blue Heron hunts during the day and the night. Both tend to nest in colonies at the top of trees. Nearest nesting colony for the Great Blue Heron is on the south end of Pt. Loma. Both are year round residents.

Willet, Marbled Godwit and American Avocet - all are shore birds with long thin beaks which probe mud flats and salt marshes for invertebrates. These are migratory birds which breed in the Arctic or Great Plains (usually lays 4 eggs). Willets and Godwits feed mainly on small invertebrates; avocets feed on insects and insect larvae as well as small invertebrates. All are found in San Diego mainly during migration and winter, but some non-breeding birds stay for the summer.

Black-Bellied Plover - common during migration and winter, when it's belly is gray, not black; non-breeding birds are common in summer. Breeds in the Arctic tundra.

Snowy Plover - feeds along the edge of water eating small crustaceans and invertebrates which the tides expose. Found in the Sweetwater Marsh. Found during all seasons; some nesting in area. Now listed as endangered due to disturbance of preferred nesting habitat.

Black-necked Stilt - present year round - prefers fresh or brackish water - common at the Saltworks.

Least Tern - In 1990 there were only 1,000 pairs of least terns in the state of California, with 400 pairs nesting in San Diego. One nesting area is the mouth of the Sweetwater River. They originally nested on barrier dunes and sandy strips at the mouths of rivers - now use Lindberg field and the salt works — will abandon a nesting site if it becomes overgrown. It is on the State and Federal endangered lists. Feeds exclusively on small fish. Does not winter in San Diego - winter grounds are unknown but it has been sighted in Chiapas, Mex.

Black Skimmer - a recent arrival to San Diego Bay from Mexico, it is now a common resident on San Diego Bay and breeds in the Saltworks. It is the only bird with the lower mandible longer than the upper. It flies close to the water, with the lower mandible skimming the water. When it strikes a small crustacean or fish, the upper mandible snaps shut.

Pintail Duck - Pintails are found throughout North America, in coastal and fresh waters. In San Diego Bay it is most abundant in the winter. It "dabbles" and "tips" for its food —aquatic plants found beneath the surface.

Black Brant - A sea goose with salt glands that enable it to drink salt water. Brants were formerly abundant in San Diego Bay — 50,000 to 100,000 were seen at one time in 1880 in an area that has since been filled in. Feeds on sea lettuce found in the Bay and eel grass. It is most common during migration, although it is sometimes seen in winter. It breeds in the Arctic.