



U.S. Fish and Wildlife Service

San Diego Bay National Wildlife Refuge

*Sweetwater Marsh and
South San Diego Bay Units*

*Comprehensive Conservation
Plan and Environmental Impact
Statement*

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The vegetated areas of the shallow subtidal habitat are dominated by eelgrass, a flowering plant that has adapted to growing submerged in shallow, saline environments, such as bays and estuaries within the earth's temperate regions (*Goals Project 2000*). Where eelgrass occurs, the substrate at the bottom of the bay is stabilized by the roots and rhizomes produced by the eelgrass. In addition, the eelgrass leaves slow the current and reduce the effects of wind and wave motion, allowing sediment and organic material to drop out and accumulate on the bottom (*U.S. Navy 2000*).

Eelgrass beds provide highly productive microhabitats for a wide variety of invertebrates and small fish. The eelgrass blades provide shelter for small fish, while small plants (epiphytes) and small animals (epizoites) use the leaves as a substrate for attachment. Other burrowing animals live in the sediment bed that has been stabilized by the eelgrass (*U.S. Navy 2000*).

Eelgrass provides food both directly and indirectly to a wide array of organisms. It can enter the food web as detritus, be eaten by fish that are sometimes eaten by fish-eating birds, or be consumed directly by birds, such as black brant, gadwall (*Anas strepera*), and northern pintail (*Anas acuta*). The bay's small population of Pacific green sea turtles also relies on eelgrass as an important food source. The density and biomass of the South Bay's eelgrass beds can vary widely from one season to another and are affected by water depth, sediment grain size, nutrients, light levels, temperature, salinity, and water quality. The extent of eelgrass beds within the South Bay has been studied several times between 1993 and 2003. The most recent survey, conducted by Merkel & Associates in May 2003, indicated that eelgrass has continued to expand throughout the South Bay since 1993. This expansion, which is illustrated in Figure 3-9, is likely the result of continuing improvements in water quality within the South Bay (*Tenera Environmental and Merkel & Associates 2004*). The data from the 2003 survey indicated that eelgrass was widespread within the western half of the southern end of the bed, generally from the southern end of the Coronado Cays on the north and the Otay River channel on the east. With the exception of one bed located near the mouth of the Otay River Channel, which covered 76 to 100 percent of the bottom cover, the majority of the eelgrass beds to the west of the Otay River Channel covered approximately 26 to 50 percent of the bay floor. From the Otay River east, the shallow subtidal habitat only supported sparse, isolated patches of eelgrass covering less than 25 percent of the bottom. These isolated patches were not expected to persist through the summer months when water temperatures are much higher than they are in the spring, when the survey was conducted (*Tenera Environmental and Merkel & Associates 2004*).

The South Bay's shallow subtidal habitat is important to a variety of fish species. Between 1994 and 1999 Dr. Larry Allen of the Nearshore Marine Fish Research Program, California State University, Northridge conducted a five-year research project that provided a definitive assessment of the fish populations inhabiting San Diego Bay (*Allen 1999*). The results indicated that the most abundant species in the southern end of the bay included slough anchovy (*Anchoa delicatissima*), topsmelt (*Atherinops affinis*), arrow goby (*Clevelandia ios*), round stingray, northern anchovy (*Engraulis mordax*), and shiner surfperch (*Cymatogaster aggregata*). With respect to biomass, round stingrays, spotted sand bass, barred sand bass, and bat rays (*Myliobatis californicus*) were the dominant species in this area. Of these species, the slough anchovy, topsmelt, northern anchovy, and shiner surfperch represent important forage species for diving birds.