

## **APPENDIX H: ENVIRONMENTAL STUDY GROUP REPORT**

The purpose of the Environmental Study Group is to create an inventory of the natural resources of the Los Angeles/Long Beach port areas and approaches. The purpose of the inventory is to provide factual information for consideration by members of the Harbor Safety Committee ("HSC") regarding natural habitat and biota which might be impacted by recommendations of the Harbor Safety Plan.

Recognizing that much scientific research has been conducted in the area, the Study Group decided to create the inventory by reference to documents which already provide adequate detail and to which HSC members can refer as needed. In the process, the Group also identified several experts who are willing to consult with the HSC on environmental concerns as needed.

The Group further decided that it would be useful to include in this report an Executive Summary of the information contained in those documents and a general reference map.

### LA/LB Harbors Natural Resources Inventory

#### Executive Summary

The Ports of Los Angeles and Long Beach (referred to below collectively as "the harbor") and their associated approach areas support a high diversity of biological communities in both artificial and natural habitats. These habitats may be defined as benthic, water column, salt marsh, kelp bed, special designation habitats, and bird/marine mammal habitat.

#### **Benthic Habitats**

The benthic habitats include hard substrate, soft bottom and intertidal. Hard substrate habitat is abundant, owing to the prominence of riprap (boulders and concrete rubble), walls, cobbles, wood and cement pilings. In general, the hard substrate habitat of the Outer Harbor resembles that found on natural rocky shores of the adjacent coast, while the Inner Harbor resembles natural bays and estuaries of the Southern California Bight.

This type of habitat provides foraging and resting areas for shorebirds along with food and shelter for numerous fishes. Primary inhabitants include acorn barnacles, mussels, limpets, shore crabs, filter-feeding gastropods, articulated coralline algae, purple sea urchin, octopus, leopard shark, rockfish, kelp bass, corbina and bat ray.

Algal beds, including giant kelp (discussed below in more detail), feather boa kelp and sargassum, are well developed in various hard substrate parts of the harbor and adjacent coastline and provide a critical nursery habitat for numerous species of fish and invertebrates, the most abundant of which are kelp bass, blacksmith, señorita, surfperch and barred sand bass. The 87 species of marine algae found in the harbor are primary producers, providing a food source for many species.

Soft bottom habitat makes up most of San Pedro Bay, taking up over 10,000 acres of the Outer Harbor, and supports organisms that burrow within the sediments ("infauna"), for example worms, and those which live on the surface of the sediments ("epifauna"), for example starfish, urchins and bottom-dwelling fish such as halibut. In general, the Outer Harbor areas have higher diversity and lower density of faunal populations than the Inner Harbor.

Sandy intertidal habitats in the harbor are present along Cabrillo Beach, the 190 acre landfill in Los Angeles Harbor, and along the shore east of the Los Angeles River mouth in Long Beach. Burrowing invertebrates, such as polychaete worms and sand crabs live in this environment, while shore birds (during low tide) and fish (during high tide) forage on these invertebrates.

### **Water Column**

Phytoplankton, zooplankton and 130 species of fish, many which are commercially and recreationally important, are abundant throughout the harbor in the water column. Dominant fish species include northern anchovy, white croaker, sardine, smelt, grunion, blennies, gobies and queenfish, all important food sources for resident and migratory bird populations. Significant populations of rays, white sea bass, halibut, sanddab, shad, cusk eel, barracuda and mackerel are also present. Fish population density is higher inside the harbor than outside, although its overall productivity is 20 - 50% lower than similar, nearby, completely natural habitats.

However, the shelter provided by the harbor, combined with the fact that over 90% of natural wetlands Bight-wide have been developed, make it an important nursery for virtually all of the fish species that reside there as adults. Egg and larval abundance tend to be highest in late winter and early spring.

### **Salt Marsh**

The Cabrillo salt marsh lagoon and the shallow water habitat near the seaplane anchorage provide significant spawning and nursery habitat as well as foraging habitat for birds and larger fish. Because of the recent creation of these shallow habitats, they have not yet assumed their full productivity, but trends indicate that their importance is growing.

## **Kelp Beds**

Kelp is an important source of primary production in coastal waters and provides food and habitat for nearshore fish and invertebrates. An extensive stand of giant kelp, capable of nearly two feet of growth daily, exists along both sides of the San Pedro Breakwater. Ribbon kelp is also present.

The harbor kelp beds are significant for two reasons. First, the kelp coverage in adjacent areas is no more than 20% of historic levels, so every acre is critical. Second, the frond density, and therefore productivity, of kelp beds in the harbor is two to three times that of most California coastal beds, due mainly to the shelter provided by the breakwater. Seasonally, up to 50% of kelp is consumed by fish and invertebrates within the kelp forest, while significant portions of the remainder is shed and drifts to adjacent habitats where it is eaten by benthic invertebrates.

The bottom of the harbor kelp forest is dominated by corals, purple urchins, lobsters and black abalone. The fronds support a variety of mobile invertebrates such as flatworms, amphipods, shrimp, crab, mollusks and polychaete worms. Twenty eight species of fish also reside in the kelp community.

## **Special Designation Habitats**

- Within the harbor approach areas are two sensitive ecological preserves, the Point Fermin Marine Life Refuge and the Seal Beach National Wildlife Refuge.
- Terminal Island is an important nesting habitat for the endangered California Least Tern (state and federally listed), hosting approximately 13% of the state's total population, while the shallow water habitats within the harbor are considered significant foraging area for these birds as well as an important nursery area for halibut.

## **Bird/Marine Mammal Habitat**

- Birds: The harbor supports an abundance and diversity of birds, primarily water-associated species, up to 16,500 individuals being present during winter migrations when the harbor becomes an important foraging and roosting habitat along the Pacific Flyway. By late spring/early summer, that number drops to around 3,000. In all, 153 species have been observed in the harbor area in the past decade.

The Inner harbor is a major site for roosting while the Outer Harbor is dominated by feeding activity. Flight activity is high near the breakwater and areas of human activity. Some birds require five times their normal intake of food to maintain body weight when flushed from their habitat repeatedly by human interference.

Shallow water habitat is used for foraging by loons, grebes, cormorants, pelicans, diving ducks, gulls and terns. Deeper waters are used by brown pelicans, a state and federally listed endangered bird. Pelicans nest mainly in the Channel Islands, but large numbers (several thousand between July and November) return annually to the harbor to forage, mainly feeding on northern anchovy. The breakwaters provide an important roosting area to these species as well.

Local nesting species which rely on the harbor habitat include the western gull, American kestrel, killdeer, belted kingfisher, mallard, black oystercatcher, barn swallow, Anna's hummingbird, mockingbird, Caspian tern, elegant tern and royal tern.

As noted above, the harbor also provides important nesting habitat for the least tern, which feeds primarily on the abundance of northern anchovy found here. Least terns are very vulnerable to disruption of nesting activity from noise, predators, interference with foraging territory close to nesting sites, and pollution stresses.

The peregrine falcon, a state listed endangered species, also nests within the harbor area, hunting shorebirds in and adjacent to Cabrillo Salt Marsh Lagoon.

- Marine Mammals: Common dolphin, Pacific white-sided dolphin, and bottlenose dolphin are present in the harbor area throughout the year, with resident populations reaching record numbers in 1995.

Pacific Gray whales migrate through the area, including three to four entering into the harbor itself each year, between November and February (southward migration) and between March and May (northward). In early 1995, a Navy vessel struck and killed a large adult gray whale just outside the breakwall, highlighting the need for caution during migration times. Blue whales, orca whales and five other whale species have also been observed.

California sea lions and harbor seals haul out on the breakwaters and other rocky areas of the harbor. Although not a significant birthing area, the harbor is an important foraging and resting area for sea lions.

Federally endangered green sea turtles have been observed sporadically in the harbor area as well as three other species of marine turtle.

### **Reference Bibliography**

- 1) 1) "Ports of Long Beach and Los Angeles Year 2000 Biological Baseline Study of San Pedro Bay" submitted to POLB by MEC analytical Systems Inc.

Provides an update of quantitative information on physical/chemical and biological conditions within the different marine habitats of the harbors.

Contact: Garry Brown, Orange County Coastkeeper 714-850-1965

2) U.S. Army Corps of Engineers (September 1992), "Deep Draft Navigational Improvements -- LA/Long Beach Harbors, San Pedro Bay, Final EIS/EIR"

State Clearinghouse #202087101408

Contains good description of harbor biological resources (pages 4D1 - 4D24) and air quality (pages 4G1 - 4G20). Also contains good bibliography of reference materials and studies on specific environmental issues and natural resources within the harbor.

Contact: Long Beach Main Library, (562) 570-7500

101 Pacific Avenue, Long Beach

3) L.A. Harbor Department, et al. (June 1985), "Pacific Texas Pipeline Project Draft EIR/EIS", State Clearinghouse #85013001

Contact: Long Beach Main Library, (562) 570-7500

101 Pacific Avenue, Long Beach

### **Advisors/Resources**

Staff Biologist, Department of Fish & Game, (562) 342-7214

Tom Ford, Marine Biologist, Santa Monica Baykeeper (310) 305-9645

Robert Kanter, Ph.D., POLB, Managing Director of Environmental Affairs and Planning, (562) 590-4154

Ralph Appy, POLA, Environmental Affairs, (310) 732-3675