California MLPA Master Plan Science Advisory Team
Draft Key and Unique Habitats in the MLPA South Coast Study Region
September 11, 2008

The draft *California Marine Life Protection Act Master Plan for Marine Protected Areas* calls for guidance from the MLPA Master Plan Science Advisory Team (SAT) regarding the key and unique habitats that should be represented within marine protected areas (MPAs) for each study region. Key habitat types provide particular benefits by harboring a different set of species or life stages, having special physical characteristics, or being used in ways that differ from the use of other habitats. Additionally, unique marine life habitats, or those that are rare in California, should be targeted for consideration. Potentially rare and unique natural habitats in the MLPA South Coast Study Region for discussion by the SAT include soft bottom kelp forest habitat, surfgrass, eelgrass, submarine canyons, and oil seeps and shallow hydrothermal vents.

Soft bottom kelp forest habitat

While most giant kelp (*Macrocystis pyrifera*) is established on hard or rocky substrate, which allows newly formed haptera (root-like structure) to attach, there have been documented cases of kelp utilizing polychaete worm tubes as substrate in the soft sediment along the coast of Santa Barbara (Neushul 1971, Kelco 1992). The Santa Barbara coastline runs east and west, which protects it from northern storms and the coastline is protected from most southerly storms by the Channel Islands. Consequently, conditions are frequently calm allowing kelp to recruit and develop on soft sediment. Large giant kelp beds of this nature have grown in the nearshore water off Santa Barbara County, and existed there until the early 1980s. After the large storm events from the 1982/1983 El Niño, most of the giant kelp was ripped out of this area and this unique soft sediment kelp community was nearly wiped out (McPeak and Barilotti, 1993). Patches of giant kelp near Santa Barbara can still be found growing on worm tubes, but these patches are sparse in size and abundance. The canopy from this habitat has never recovered to historic proportions.

Surfgrass

The most common type of seagrass along the open coast is surfgrass (*Phyllospadix spp*.), which forms beds that fringe rocky coastline areas at the zero tide level down to several meters below the zero tide level. The distribution of surfgrass along the south coast study region has been mapped by the U.S. Minerals Management Service (1982) as linear segments that total 57.9 miles or 5.6% of the shoreline, located off the Channel Islands as well as off Point Conception, and along the San Diego County coast. Surfgrass serves as an important habitat for a variety of fish and invertebrates, including the California spiny lobster (Engle 1979), as well as algae (Stewart and Myers 1980).

Eelgrass

The most common type of seagrass in estuaries and sheltered coastal bays in California is eelgrass (*Zostera marina)* (Abbott and Hollenberg 1976). Eelgrass beds provide a variety of important functions. The long leaves and dense, matted root system of eelgrass beds helps prevent erosion and maintain stability in nearshore areas by slowing down water flow that consequently enhances sediment accumulation and faunal recruitment. Eelgrass beds also

provide refuge, foraging, breeding, or nursery areas for invertebrates, fish, and birds (Hoffman, 1986). A second variety of eelgrass occurs along the open coast in southern California, *Zostera pacifica*, which has wider blades than *Z. marina*. Eelgrass beds are not well mapped, but they are known to be located in estuaries (e.g. Mugu Lagoon, San Diego Bay) and along the coast (e.g. on the Santa Barbara coast, off Santa Cruz islands) throughout the study region. Mapped eelgrass beds total 18.1 square miles, or 0.8% of the study region area.

Submarine canyons

Several submarine canyons are located within the south coast study region. Some of the most significant canyons are located in state waters near Point Hueneme, Point Mugu, Point Dume, Santa Monica Bay, Palos Verdes Point, Newport Beach, La Jolla, and the Channel Islands. The mouth of the Santa Cruz Canyon (located between and offshore from southeastern Santa Rosa Island and southwestern Santa Cruz Island) approaches bathypelagic depths (from approximately 3,300 to 11,500 feet). Submarine canyons provide areas of high bathymetric complexity, support deep water communities, and affect local and regional circulation patterns. Offshore canyons provide habitat for adult stages of rockfish and flatfish that settle out of the water column as larvae in nearshore waters and move offshore in their adult stage. In addition, offshore canyons and other bathymetric features are important foraging areas for seabirds and marine mammals (Yen, et al 2004).

Oil seeps and shallow hydrothermal vents

Natural oil seeps, which are found in the intertidal and offshore areas in the Southern California Bight from Point Conception to Huntington Beach are unique to California (Pete Raimondi pers com). The largest concentration of seeps is in the Santa Barbara Channel area (Wilkinson 1971). Major oil seeps occur at Point Conception, Coal Oil Point, Santa Barbara Point, Rincon Point, and Santa Monica Bay. Benthic communities around oil seeps and hydrothermal vents differ from surrounding areas with some supported by hydrogen sulfide-oxidizing bacterial mats with localized different water chemistry and temperature (Dailey 1993). Further, old tar mounds surveyed by remote operated vehicles off Point Conception were found to be heavily colonized by invertebrates and resembled reef communities found on submarine rock outcrops (Lorenson et al. 2007). In the area of Coal Oil Point, seepage has been estimated to occur at a rate of 50 to 70 barrels of oil per day (Wilkinson 1971). These seeps are a source of natural marine pollution, as the oil they release can accumulate in large slicks and/or tar balls on beaches, which can negatively affect marine life, birds, and human activities.

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