

SOUTHERN CALIFORNIA BIGHT

Kenneth Schiff, Karen McLaughlin, Shelly Moore, Yiping Cao

Southern California Coastal Water Research Project Authority, Costa Mesa, CA, United States

INTRODUCTION

The Southern California Bight (SCB) coastal environment is a unique ecological resource (Fig. 19.1). Extending >600 km from Point Conception (United States) to Punta Colonet (Mexico), the SCB is a dynamic subtemperate region where the cold, southward-flowing California Current mixes with the warm, northward-flowing California Countercurrent (Hickey, 1993). Large variations of interannual average ocean temperature occur during El Niño and La Niña, ranging >10°C in surface waters of the SCB.

The SCB borderland has relatively complicated geography (Dailey, Anderson, Reish, & Gorseline, 1993). Located at the margin of the North American and Pacific plates, this active tectonic region has a narrow continental shelf averaging 5 km width. At the continental shelf break in roughly 200 m depth, continental slopes plunge to 1000 m depth forming deepwater basins, only to rise again in a chain of nine offshore islands (Fig. 19.2).

The SCB's heterogeneous physical settings and dynamic ocean currents provide habitat for a large diversity of flora and fauna (Dailey et al., 1993). Cumulative across all habitats, >350 fish and 5000 invertebrate species are endemic to the SCB, including over one dozen threatened or endangered marine mammals and seabirds. Biomes are generally spread across latitude which varies with ocean temperature—warmer species to the south and colder species to the north—and depth.

Population recruitment and senescence are often coincident with El Niño when warm water species dominate and La Niña when cold water species dominate. Approximately 85% of the species in the SCB are at the extreme northern or southern end of their range.

The SCB has several ecologically critical habitats. One characteristic ecosystem in the SCB is subtidal rocky reefs dominated by the giant kelp *Macrocystis* (Fig. 19.3). These “kelp forests” are estimated to be among the most productive on earth, rivaling coral reefs (Claisse et al., 2014; Pondella II et al., 2015).

The SCB has 331 coastal wetlands (Fig. 19.4), but only 23 are >100 HA and most are very small and fractured (<1 HA). The majority (57%) of the SCB coastal wetland area has been lost to coastal development since the turn of the 19th century (Stein et al., 2014). The remaining coastal wetlands are critical habitat providing fish nurseries and overwintering stops for birds along the Pacific Flyway (Dailey et al., 1993).

Full Text

Due to distribution restrictions, the full-text version of this article is available by request only.

Please contact pubrequest@sccwrp.org to request a copy.