

Density of Giant Kelp

Overview: These data are part of a larger collection of ongoing data sets that describe the temporal and spatial dynamics of kelp forest communities in the Santa Barbara Channel. Data on the abundance (density or percent cover) and size of ~250 species of reef associated macroalgae, invertebrates and fishes, substrate type and bottom topography are collected annually by divers in the summer within fixed plots (i.e. 40 m x 2 m transects) at 11 sites (n = 2 to 8 transects per site) that have historically supported giant kelp (*Macrocystis pyrifera*). Species-specific relationships between size (or percent cover) and mass developed for the region are used to covert abundance data to common metrics of mass (e.g., wet, dry, de-calcified dry) to facilitate analyses of community dynamics involving all species. Data collection began in 2000 and is ongoing.

Study Sites: Nine of the 11 study sites occur along the mainland coast of the Channel (Arroyo Burro 34° 24.007' N 119° 44.663' W; Arroyo Hondo 34° 28.312' N, 120° 08.663' W; Arroyo Quemado 34° 28.127' N, 120° 07.285' W; Bulito 34° 27.533' N, 120° 20.006' W; Carpinteria 34° 23.545' N, 119° 32.628' W; Goleta Bay 34° 24.827' N, 119° 49.344' W; Isla Vista 34° 24.170' N 119° 51.472' W; Naples 34° 25.340' N 119° 57.176' W; Mohawk 34° 23.660' N, 119° 43.800' W) and two occur on the northern coast of Santa Cruz Island (Diablo 34° 03.518' N, 119° 45.458' W; Twin Harbors West 34° 02.664' N, 119° 42.908' W).

The time period of data collection varied among the 11 kelp forest sites. Sampling at Bulito, Carpinteria, and Naples began in summer 2000, sampling at the other six mainland sites (Arroyo Burro, Arroyo Hondo, Arroyo Quemado, Goleta Bay, Isla Vista, Mohawk) began in summer 2001 (transects 3, 5, 6, 7, 8 at Isla Vista were added in fall 2011). Data collection at the two Santa Cruz Island sites began in summer 2004.

Methods: The number of giant kelp > 1 m tall was recorded in four contiguous 20 m x 1 m swaths that run parallel and adjacent to each 40 m transect (Figure 1). Each individual with at least half of its holdfast located within the sampling area was counted and the number of fronds > 1 m tall on each plant was recorded. The greatest diameter of the holdfast for each adult plant (holdfast > 20 cm) was also recorded.

Figure 1. Schematic diagram showing the position of the four 20 m x 1 m swaths relative to the 40 m transect.

