

Determining the Ecological Value of Shell Mound Reef Habitats Following Decommissioning of Offshore Platform Sites

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In 1996, Chevron removed four offshore oil and gas platforms in the Santa Barbara Channel off the coast of Santa Barbara, California. The four platforms, Heidi, Hope, Hazel, and Hilda, (or collectively the 4H platforms) were installed between 1958 and 1965 and provided oil and gas production until their decommissioning. As part of decommissioning the above water structures (topsides) and legs (jackets) were removed at the sea floor. At each of the 4H sites, the underlying drill cutting mounds were left behind. These mounds are covered with several meters of “shell hash” from bivalve shells dislodged from the platform jacket and natural sedimentation that has accumulated in the 30+ years following cessation of drilling activities. These resulting “shell mounds” remain on the natural soft bottom and provide a rare complex hard bottom habitat within the Santa Barbara Channel area. To date few studies have focused on the shell mound habitats relative to the surrounding soft bottom habitats. This study was designed to evaluate the shell mound habitat and soft bottom areas and included a nearby deep natural rocky reef reference location.

A multi-season fish trapping study using standard commercial fish traps was conducted to address the ecological value of the shell mounds sites. Data were collected from the 4H shell mound sites, two soft bottom reference sites, and a deep natural reef location over a two year period. The general study design was a paired sampling of sites within a depth gradient (i.e., deep and shallow) on roughly a quarterly basis. The assemblage of fish and invertebrates observed in the fish traps from the mounds include several species of rockfishes (genus *Sebastes*), ling cod, rock crabs, whelks and bat stars that are typical of hard bottom communities in the Santa Barbara Channel. Results indicate that the shell mounds have more fish and invertebrates and a more diverse benthic community than the soft-bottom reference areas. These data supports the conclusion that the fish habitat value of the shell mounds is greater than that of the surrounding soft bottom habitat.

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