

ABSTRACT

EFFECTS OF EROSION ON THE DISTRIBUTION OF SUBTIDAL COMMUNITIES IN ELKHORN SLOUGH, MONTEREY COUNTY, CALIFORNIA

Anthropogenic erosion is influencing natural communities in Elkhorn Slough, California. Increased tidal flows have transformed the slough from a depositional environment to a system dominated by erosion with salinities similar to the marine waters of Monterey Bay. These physical changes have affected the distribution and composition of benthic subtidal communities in the slough.

Comparison of bathymetric data from 2001 to 2005 showed changes in amount of erosion and deposition across the study area. Four erosion classes (deposition, no change, low erosion, high erosion) were identified. Benthic images collected were used to approximate percent occurrence and cover of habitat forming for each erosion class. Sediments were collected from each erosion class to describe sediment characteristics. Sediment samples were also collected from consolidated features previously referred to as clay, in order to describe them geologically.

Where hydrodynamic conditions allow erosion of the slough to continue, an increase in exposed substrate and shell debris is expected while seagrass and red algae will decline. The clay-like features are predominantly moderately indurated siltstone with a grain size diameter of 5.04 to 17.42 μm . Green algae is associated with all erosion classes while red algae and seagrass show preference for classes that experience minimal erosion typical of low energy regimes.

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