

Benthic Habitat Mapping of Kachemak Bay, for Application to the Tanner Crab Population Problem

Blackburn, Amanda¹; Reynolds, Jennifer¹

1. University of Alaska Fairbanks

We are constructing a map of benthic (seafloor) habitat in Kachemak Bay, which will be available for potential applications in ecological, fisheries, and marine geological studies. Benthic habitat maps define and describe distinct regions of the seafloor; including seafloor and bottom water characteristics, where available. The map may be used to study species that are associated with the seafloor, such as Tanner crab. The map may be combined with habitat associations to show potential habitat distribution of those species. Our application will be a new approach to the problem of persistently low Tanner crab populations. We are investigating the hypothesis that predation by Pacific cod may be suppressing recovery of the crab populations. This question will be broached using a habitat approach; analyzing the benthic habitat associations of the two species, their observed geospatial distribution, and the geographic overlap of potential habitats.

Bathymetry and geological substrate are the major components of benthic habitat mapping, including seabed relief at multiple scales, sediment grain sizes, and identification of current-driven bedforms. Habitats will be defined and described at several scales ranging from seascapes to visual-scale seabed features. The benthic environment also includes bottom water characteristics such as temperature, salinity, and turbidity. The Hydropalooza seafloor mapping program by NOAA in 2008-2009 provided new coverage of Kachemak Bay and an opportunity to examine deeper water habitats. Our analysis of the substrate is based on geological and oceanographic interpretation of the bathymetry, backscatter, sidescan, and whatever geologic maps, seafloor images, samples, and other groundtruth information may be available. These data are entered in a GIS database and may be queried for characteristics of interest, enabling users to extract data that meet their needs.