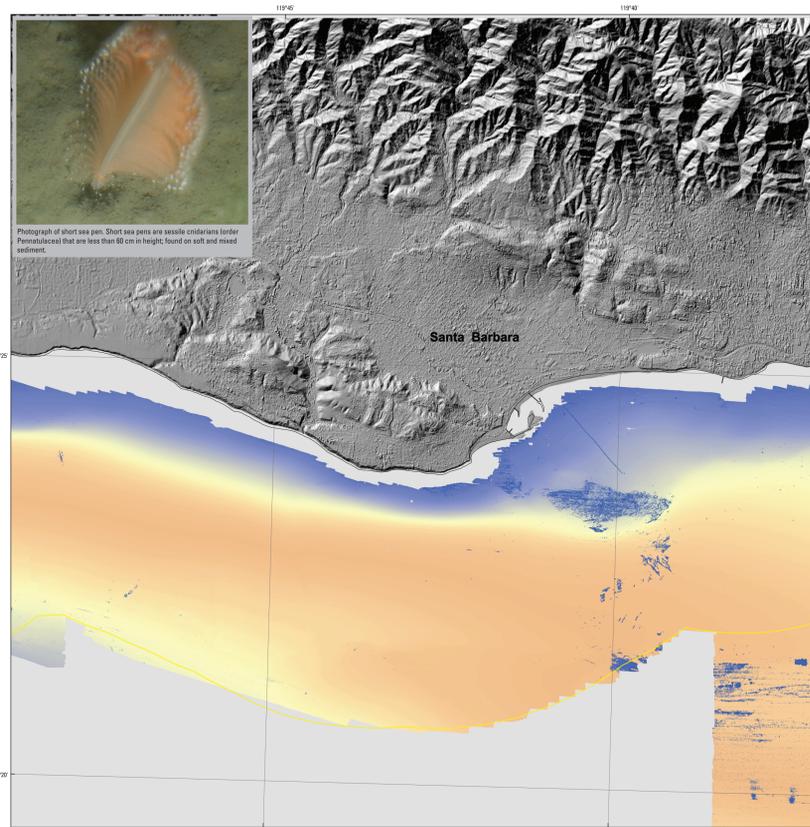
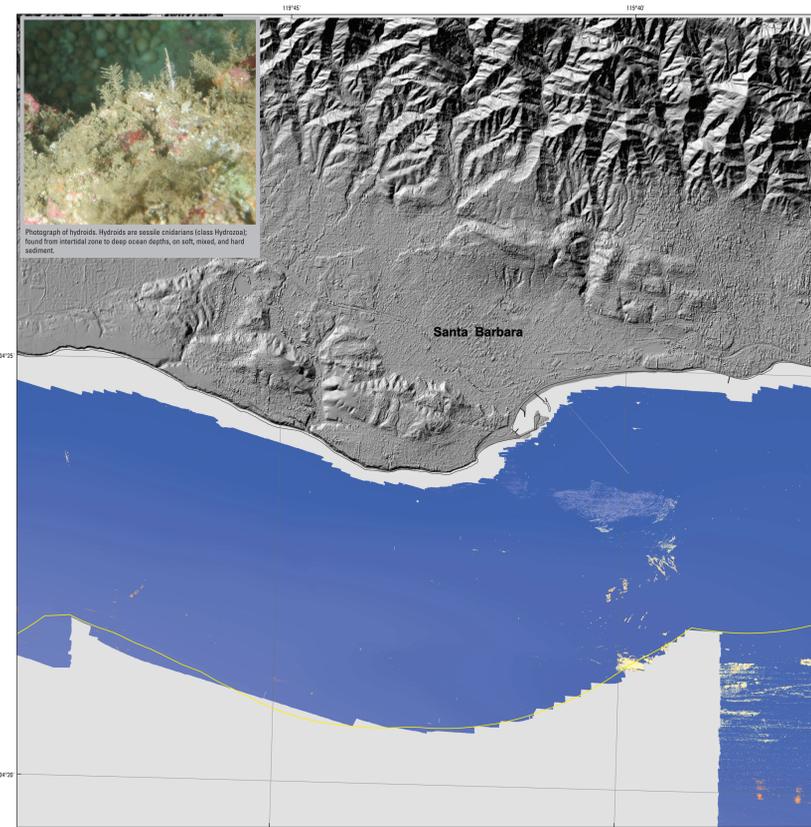


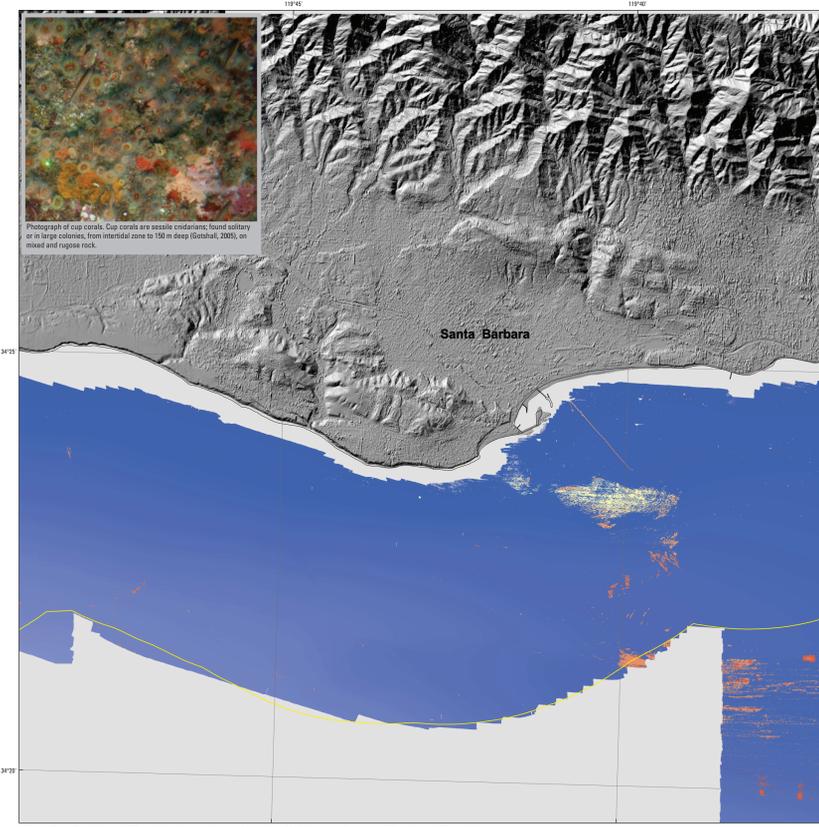
Map A – Predicted Distribution of Tall Sea Pens, Offshore of Santa Barbara Map Area



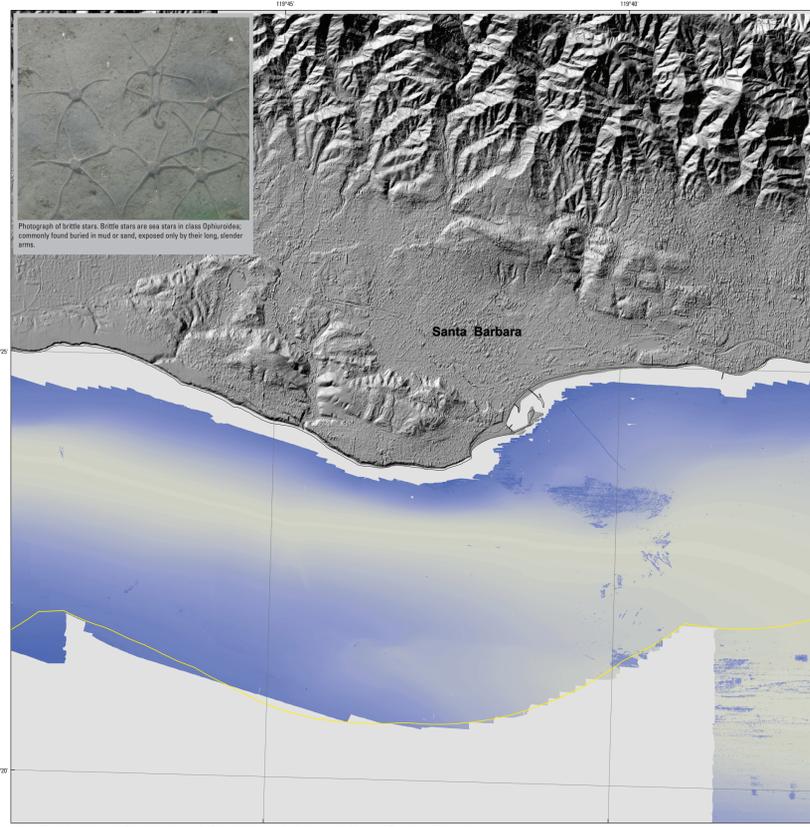
Map B – Predicted Distribution of Short Sea Pens, Offshore of Santa Barbara Map Area



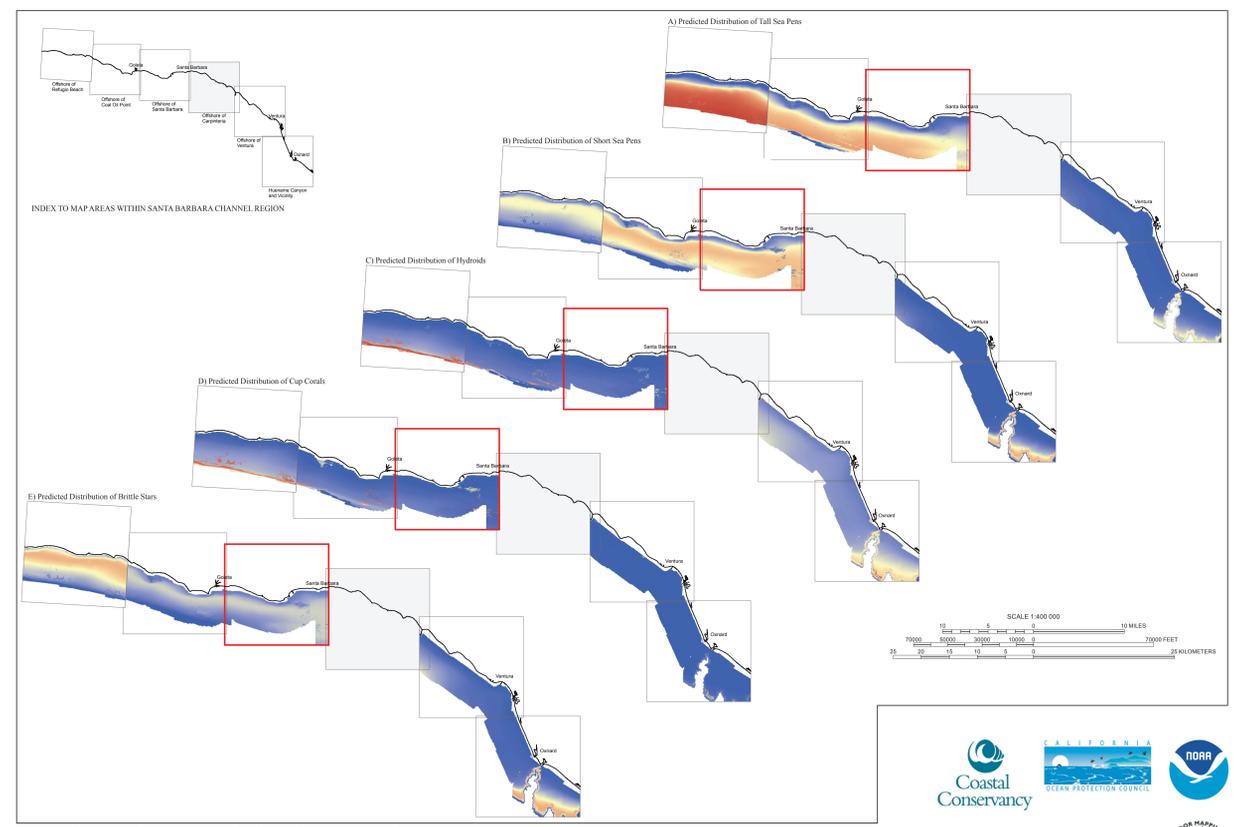
Map C – Predicted Distribution of Hydroids, Offshore of Santa Barbara Map Area



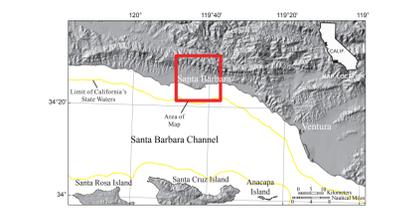
Map D – Predicted Distribution of Cup Corals, Offshore of Santa Barbara Map Area



Map E – Predicted Distribution of Brittle Stars, Offshore of Santa Barbara Map Area



Map F – Predicted-Distribution Maps for Santa Barbara Channel Region



DISCUSSION

Information presented on this sheet is based on ground-truth surveys (see sheet 6) conducted by the U.S. Geological Survey and National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service for the California Seafloor Mapping Program. Benthic community structure was determined from 15 video towed-camera transects within California's State Waters limit in the Santa Barbara Channel. These transects produced a total of 923 15-second observations from Reliance Beach (34° 5' N, 120° 1' W) to Hurricane Canyon (34° 1' N, 119° 2' W). Presence-absence data were collected for 29 benthic, structure-sensitive, nonmobile taxa. Generalized linear models were developed to predict the probability of occurrence and to create predictive-distribution maps for the most frequently observed macro-invertebrates (tall sea pens, short sea pens, cup corals, hydroids, and brittle stars), which are all structure-forming components of valuable habitat for groundfish species (Krigsman and others, 2012). This sheet shows five predictive-distribution maps (Maps A–E) for the Offshore of Santa Barbara map area, which is depicted by a red outline in the Santa Barbara Channel regional maps (Map F).

Covariates in the generalized linear models were geographic location, bathymetry, and seafloor character. Geographic location was derived from analysis of five of the six map areas along the mainland coast of the Santa Barbara Channel, excluding the Offshore of Carpinteria map area where data were insufficient. From the five map areas, three statistically different locations were identified on the basis of a community-structure analysis of the invertebrate taxa and associated covariates (sometimes resulting in distinctly different predicted distributions across map boundaries): (1) the Hurricane Canyon and Vicinity and Offshore of Ventura map areas, (2) the Offshore of Santa Barbara and Offshore of Coal Oil Point map areas, and (3) the Offshore of Reliance Beach map area. Data for the two other covariates were provided in sheet 2 (shaded-relief bathymetry and sheet 5 (seafloor character map)).

Although probability of occurrence for each invertebrate taxon was predicted for the entire Santa Barbara Channel region (Map F), this sheet highlights predictions for the Offshore of Santa Barbara map area (Maps A–E). Almost the entire Offshore of Santa Barbara map area is made up of soft sediment, with a large area of mixed sediment and rugose rock just beyond the Santa Barbara Harbor. Both soft sediment and mixed sediment are considered to be suitable habitat for tall and short sea pens. At water depths of about 45 m, tall sea pens (Map A) have a moderate probability of occurrence, which increases as depth increases. Short sea pens (Map B) have a moderate probability of occurrence that begins at depths of about 30 m, peaking in probability of occurrence at about 60 m. The probability of observing short sea pens out to the 3-nautical-mile limit of California's State Waters is moderately high. Cup corals and hydroids (Maps D and C, respectively), in deeper depths, have a high probability of occurrence in areas of mixed sediment and rugose rock. In shallower depths of the same habitat, cup corals have a higher probability of occurrence than that of hydroids. Brittle stars (Map E) in the sediment, observed by aims protruding from the substrate, have a moderate probability of occurrence at moderate depths, but the probability of occurrence decreases as depth either increases or decreases.

REFERENCES CITED

Gotshall, D.W., 2005, Guide to marine invertebrates—Alaska to Baja (2d ed.): Monterey, Calif., Sea Challengers, 117 p.

Krigsman, L.M., Yoklavich, M.M., Dick, E.J., and Cochrane, G.R., 2012, Models and maps—Predicting the distribution of corals and other benthic macro-invertebrates in shelf habitats. *Ecophot*, v. 3(1), article 3, 16 p., doi:10.1002/ES.14029.1.

EXPLANATION

Probability of occurrence
High (99.9%)
Low (0.0%)

Area of "no data"—Areas near shoreline not mapped owing to insufficient high-resolution seafloor mapping data; areas beyond 3-nautical-mile limit of California's State Waters were not mapped as part of California Seafloor Mapping Program

3-nautical-mile limit of California's State Waters

Shaded-relief bathymetry data from NOAA Coastal Services Center (data collected by EarthData International in 2002–2003) and from U.S. Army Corps of Engineers (data collected by Hugh Ferguson in 2008). Offshore seafloor bathymetry from map on sheet 2, this report. California State Waters limit from NOAA Office of Coast Survey. Offshore of Santa Barbara map area (sheet 11) NOT INTENDED FOR NAVIGATIONAL USE

Predicted distributions mapped in 2011
GIS database and digital cartography by Nadine E. Golden and Taryn A. Lindquist
Edited by Taryn A. Lindquist
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Predicted Distribution of Benthic Macro-Invertebrates, Offshore of Santa Barbara Map Area and Santa Barbara Channel Region, California

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