Channel Islands National Park

Seabed Classification Map Series

Sheet 4 of 6:

Potential Marine Benthic Habitats

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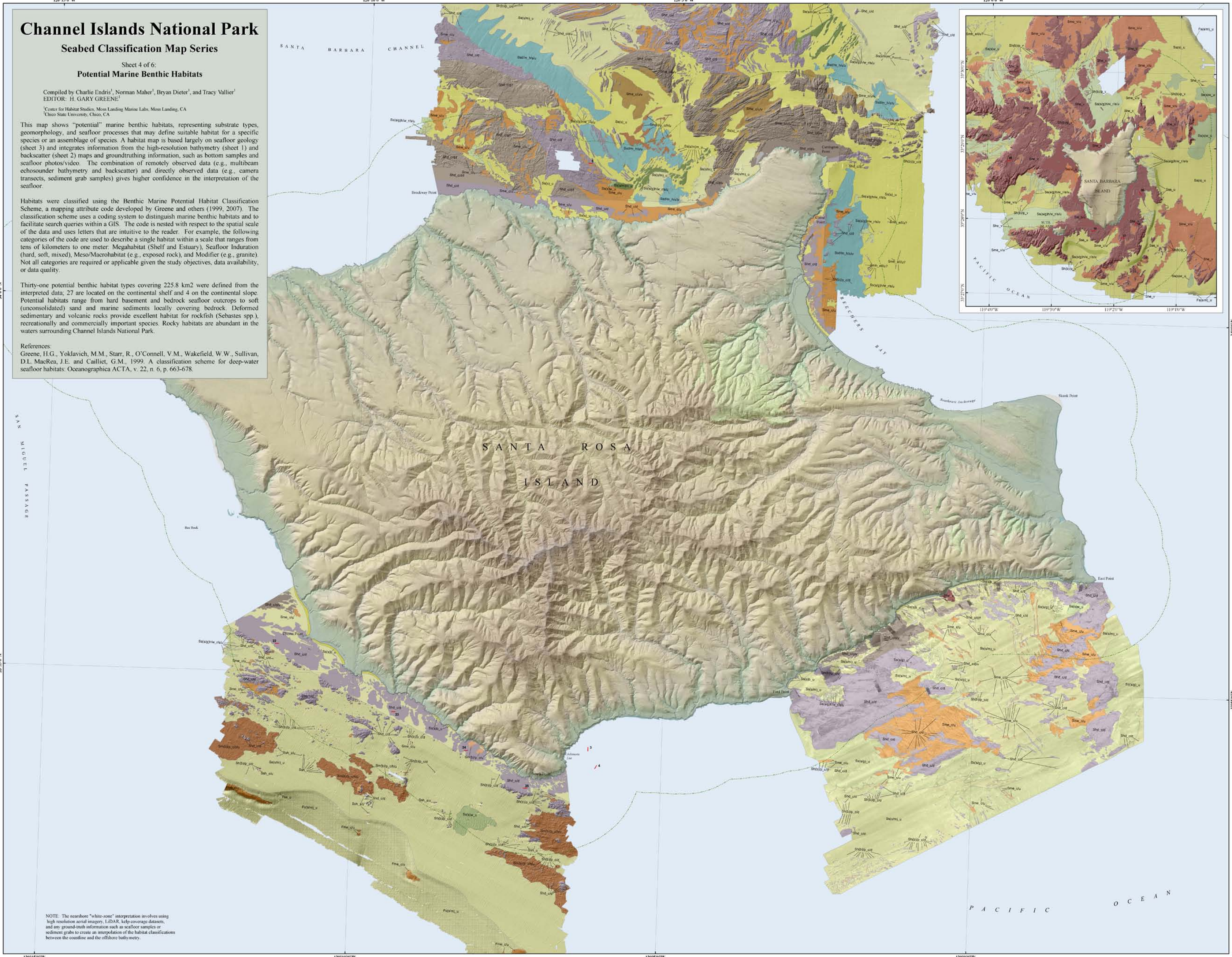
This map shows "potential" marine benthic habitats, representing substrate types, geomorphology, and seafloor processes that may define suitable habitat for a specific species or an assemblage of species. A habitat map is based largely on seafloor geology (sheet 3) and integrates information from the high-resolution bathymetry (sheet 1) and backscatter (sheet 2) maps and groundtruthing information, such as bottom samples and seafloor photos/video. The combination of remotely observed data (e.g., multibeam echosounder bathymetry and backscatter) and directly observed data (e.g., camera transects, sediment grab samples) gives higher confidence in the interpretation of the seafloor.

Habitats were classified using the Benthic Marine Potential Habitat Classification Scheme, a mapping attribute code developed by Greene and others (1999, 2007). The classification scheme uses a coding system to distinguish marine benthic habitats and to facilitate search queries within a GIS. The code is nested with respect to the spatial scale of the data and uses letters that are intuitive to the reader. For example, the following categories of the code are used to describe a single habitat within a scale that ranges from tens of kilometers to one meter: Megahabitat (Shelf and Estuary), Seafloor Induration (hard, soft, mixed), Meso/Macrohabitat (e.g., exposed rock), and Modifier (e.g., granite). Not all categories are required or applicable given the study objectives, data availability, or data quality.

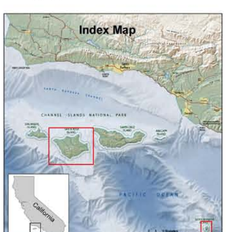
Thirty-one potential benthic habitat types covering 225.8 km2 were defined from the interpreted data; 27 are located on the continental shelf and 4 on the continental slope. Potential habitats range from hard basement and bedrock seafloor outcrops to soft (unconsolidated) sand and marine sediments locally covering bedrock. Deformed sedimentary and volcanic rocks provide excellent habitat for rockfish (Sebastes spp.), recreationally and commercially important species. Rocky habitats are abundant in the waters surrounding Channel Islands National Park.

References:

Greene, H.G., Yoklavich, M.M., Starr, R., O'Connell, V.M., Wakefield, W.W., Sullivan, D.L. MacRea, J.E. and Cailliet, G.M., 1999. A classification scheme for deep-water seafloor habitats: Oceanographica ACTA, v. 22, n. 6, p. 663-678.



NOTE: The nearshore "white-zone" interpretation involves using high resolution aerial imagery, LiDAR, kelp coverage datasets, and any ground-truth information such as seafloor samples or sediment grabs to create an interpolation of the habitat classifications between the coastline and the offshore bathymetry.



Map Information

Datum - WGS 1984
Projection - UTM Zone 11

N
W E
S

Map Scale - 1:30,000

0 1 2 3 Kilometers
0 1 Nautical Miles

Key to Habitat Types

Unconsolidated Sediments

Code	Description
Ss(s/m)_u	Soft unconsolidated sediment (sand and mud) on the island shelf
Ss(s/m)m_u	Soft unconsolidated sediment (sand and mud) on island shelf
Ss(s)_u	Soft unconsolidated sediment (primarily sand) on continental shelf
Ss(s)b_u	Soft unconsolidated sediment adjacent to beach
Ss(s)w_u	Sediment waves in soft unconsolidated sediment (sand) on the island shelf
Ss(s/g)_u	Soft unconsolidated sediment (sand and gravel) on the island shelf
Ss(s/g)h/w_r/s/u	Mobile sediment window (depression) of scoured lag deposits (sand & gravel), predominantly rippled
Ssh_u	Depression in soft unconsolidated sediment on the island shelf
Ssh_s/u	Current-scoured depression in soft unconsolidated sediment on the island shelf
Sss_u	Scarp of unconsolidated sediment on the island shelf
Ssl_b/u	Bimodal unconsolidated sediments originating from onshore landslide
Ssd/m_h/s/u	Hummocky areas of current-scoured mounds and depressions in soft unconsolidated sediment
Fss_u	Scarp of unconsolidated sediment on continental slope
Fs(s/m)_u	Soft unconsolidated sediment (sand/mud) on continental slope

Mixed Hard Soft Substrate

Code	Description
Smt_u	Mixed terrace deposits
Sme_c/u/v	Mixed habitat of unconsolidated sediment overlying volcanic sedimentary bedrock on the island shelf
Sme_c/u	Mixed habitat of unconsolidated sediment overlying sedimentary bedrock on the island shelf
Sme_c/u?	Mixed habitat of unconsolidated sediment overlying sedimentary bedrock on continental shelf (inferred)
Smh_e/l/u?	Mixed habitat of sediment and hard carbonate(?) deposits within pockmarks
Sme_v/u	Mixed habitat of unconsolidated sediment overlying volcanic bedrock, including volcanic breccia
Sm(b)/p_c/u	Mixed habitat of boulders and/or pinnacles and unconsolidated sediment on island shelf
Sm(b)/p_c/h/u	Mixed habitat of boulders and/or pinnacles with hummocky, unconsolidated sediment overlying sedimentary bedrock
Sm(b)/p_v/u	Mixed habitat of volcanic boulders and/or pinnacles and unconsolidated sediment on island shelf
Fme_c/u	Mixed habitat of soft, unconsolidated sediment locally covering hard, consolidated sedimentary bedrock

Hard Substrate

Code	Description
Shd_c/d	Deformed and differentially eroded sedimentary bedrock outcrop on the island shelf
Shd_c/d/f	Faulted, fractured, differentially eroded, and deformed sedimentary bedrock on island shelf
Shd_c/d/v	Deformed and differentially eroded sedimentary and volcanic conglomerate outcrop on the island shelf
Sh(b)/p_v	Hard volcanic boulder or pinnacle, including volcanic breccia, on the continental shelf
She_v	Hard volcanic bedrock outcrop, including volcanic breccia, on the continental shelf
Sh(b)/p_c/d	Differentially eroded sedimentary boulder or pinnacle on the island shelf
Fh(b)/p_c/d	Differentially eroded sedimentary boulder or pinnacle on the continental slope

Key to Map Features

Channel Islands National Park Boundary

25 Kelp Forest Monitoring Transect

The terrestrial areas are portrayed using a combination of sun illuminated elevation data and USGS 1:24k topographic maps.

Coastlines are derived from LiDAR data collected in 2007.

Map produced at the Center for Habitat Studies, Moss Landing Marine Laboratories, in conjunction with the National Park Service and California State University, Chico

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