

DESCRIPTION OF MAP UNITS

DEPTH ZONE 2—INTERTIDAL TO 30 METERS WATER DEPTH

SLOPE CLASS 1—0 TO 5 DEGREES

- Fine- to medium-grained smooth sediment—Low backscatter, low rugosity; typically mud to medium-grained sand, often rippled and (or) burrowed
- Medium- to coarse-grained sediment—Very high backscatter, low rugosity; typically medium- to coarse-grained sediment, with varying amounts of shell hash; in scour depressions
- Mixed smooth sediment and rock—Moderate to very high backscatter, low rugosity; typically coarse-grained sand, gravel, cobbles, and bedrock
- Rock and boulder, rugose—High backscatter, high rugosity; typically boulders and rugose bedrock

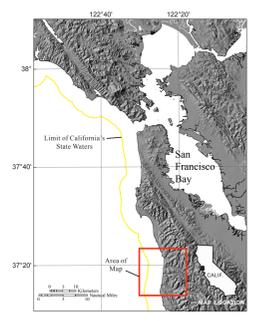
DEPTH ZONE 3—30 METERS TO 100 METERS WATER DEPTH

SLOPE CLASS 1—0 TO 5 DEGREES

- Fine- to medium-grained smooth sediment—Low backscatter, low rugosity; typically mud to medium-grained sand, often rippled and (or) burrowed
- Medium- to coarse-grained sediment—Very high backscatter, low rugosity; typically medium- to coarse-grained sediment, with varying amounts of shell hash; in scour depressions
- Mixed smooth sediment and rock—Moderate to very high backscatter, low rugosity; typically coarse-grained sand, gravel, cobbles, and bedrock
- Rock and boulder, rugose—High backscatter, high rugosity; typically boulders and rugose bedrock

EXPLANATION OF MAP SYMBOLS

- 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



DISCUSSION

This seafloor-character map of the Offshore of San Gregorio map area in northern California was produced using video-supervised, maximum-likelihood classification of the bathymetry and backscatter (intensity of return) signals from sonar systems (a summary of the video data collected for the purpose of supervising the classification is shown on sheet 6). Rugosity (a GIS-derived characterization of roughness) and backscatter intensity were used as variants in the classification. The interpreted classifications were then draped over shaded-relief bathymetry (see sheet 2).

The substrate classes mapped in this area have been divided into the following California Marine Life Protection Act depth zones: Depth Zone 2 (intertidal to 30 m), and Depth Zone 3 (30 to 100 m). In addition, the following slope class is represented on this map (Coastal and Marine Ecological Classification Standard slope zone is shown in parentheses): Slope Class 1, 0° to 5° (flat). Depth Zones 4 and 5 (greater than 100 m) and Slope Classes 2 to 5, greater than 5° (sloping to overhanging) are not present in this map area.

Fine- to medium-grained smooth sediment (sand and mud) makes up 83.7 percent (89.9 km²) of the map area; 52.1 km² is in Depth Zone 2, and 37.7 km² is in Depth Zone 3. Mixed smooth sediment (sand and gravel) and rock (sediment typically forming a veneer over bedrock, or rock outcrops having little to no relief) make up 5.8 percent of the map area (6.3 km²); 3.3 km² is in Depth Zone 2, and 2.9 km² is in Depth Zone 3. Rock and boulder, rugose (rock outcrops and boulder fields having high surficial complexity) makes up 10.4 percent (11.2 km²) of the map area; 6.9 km² is in Depth Zone 2, and 4.3 km² is in Depth Zone 3. Medium- to coarse-grained sediment makes up 0.1 percent (0.1 km²) of the map area; less than 0.1 km² is in both Depth Zone 2 and Depth Zone 3 (table 1).

Table 1. Coverage of classified seafloor, in square kilometers (sq km) and percent of total area, broken into California Marine Life Protection Act Depth Zones 2 and 3.

	Total percent	Total sq km	Depth Zone 2 (water depth 0–30 m) percent of total	Depth Zone 2 (water depth 0–30 m) sq km	Depth Zone 3 (water depth 30–100 m) percent of total	Depth Zone 3 (water depth 30–100 m) sq km
Fine- to medium-grained smooth sediment	83.7	89.8	48.5	52.1	35.2	37.7
Mixed smooth sediment and rock	5.8	6.2	3.1	3.3	2.7	2.9
Rock and boulder, rugose	10.4	11.2	6.5	6.9	4.0	4.3
Medium- to coarse-grained sediment	0.1	0.1	<0.1	<0.1	<0.1	<0.1

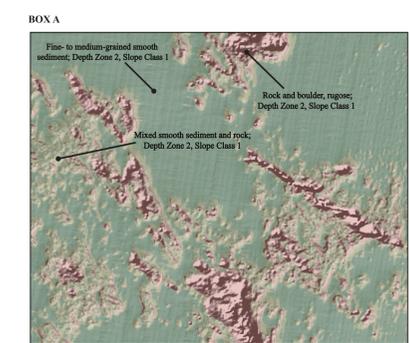


Figure 1. Detailed view of substrate classes mapped in area offshore of Pescadero State Beach (see Box A, on map, for location). Depth Zone 2 (intertidal to 30 m), and Slope Class 1 (0°–5°). Fine- to medium-grained smooth sediment is shown in shades of green; mixed smooth sediment and rock is shown in shades of tan; and rock is shown in shades of pink.

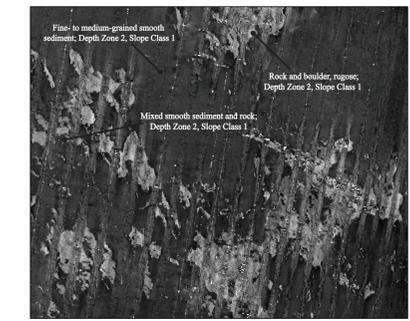


Figure 2. Acoustic-backscatter image (see sheet 3) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box A on map). Brighter areas indicate coarse-grained, rough, or hard seafloor; darker areas indicate unconsolidated (loosely packed) sediment; north-south trending lines are data-collection artifacts. Interpreted substrate classes from figure 1 are included for comparison.

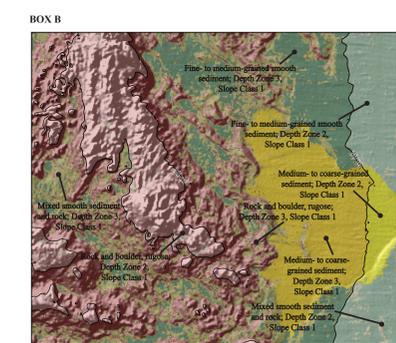


Figure 3. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box A on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of high slope are indicated by high-rugosity values (red); areas of low slope, by medium- to low-rugosity values (green to purple). Interpreted substrate classes from figure 1 are included for comparison.

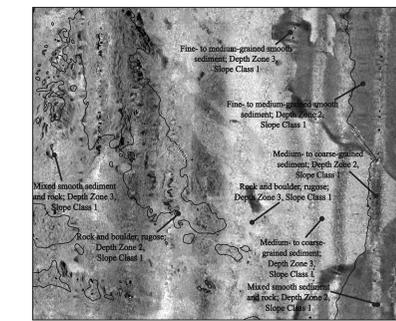


Figure 4. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box B on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of high slope are indicated by high-rugosity values (red); areas of low slope, by medium- to low-rugosity values (green to purple). Interpreted substrate classes from figure 1 are included for comparison.

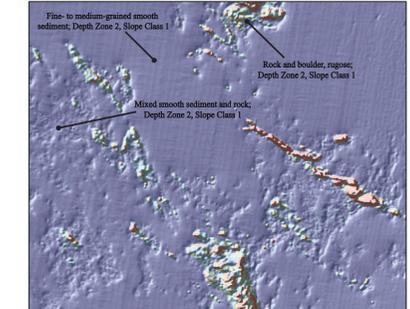


Figure 5. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box B on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of high slope are indicated by high-rugosity values (red); areas of low slope, by medium- to low-rugosity values (green to purple). Interpreted substrate classes from figure 1 are included for comparison.

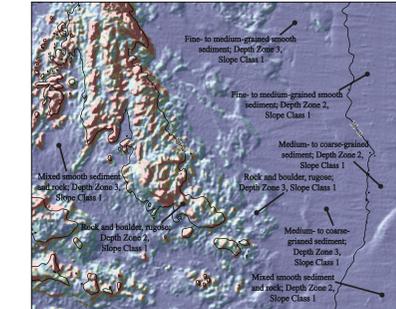


Figure 6. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box B on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of high slope are indicated by high-rugosity values (red); areas of low slope, by medium- to low-rugosity values (green to purple). Interpreted substrate classes from figure 1 are included for comparison.

Data were collected by Photovision in 2005 for U.S. Geological Survey and County of San Mateo. Offshore shaded-relief bathymetry from map on sheet 2, this report. California's State Waters limit from NOAA Office of Coast Survey.



Seafloor character mapped by Elyne L. Phillips and Guy R. Cochrane, 2011
GIS datasets and digital cartography by Elyne L. Phillips and Mercedes D. Erley
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Seafloor Character, Offshore of San Gregorio Map Area, California
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