



Northern Coastline Geomorphic Sub-Province



Essentially, the coastline itself qualifies as a distinct geomorphic province evenly divided between north and south. Because the coastline is 1,100 miles long, the climate and water temperatures in the south are more mild than in the north. The flora and fauna vary accordingly. The California coastline is a dynamic boundary zone, of varying width, where geologic forces collide. Coastal landforms include beaches, dunes, tide pools, estuaries, lagoons, steep cliffs, marine terraces, and sea stacks.

The coastline can be subdivided into two sections. The northern section runs the length of the Coast Ranges province; the southern runs along the western edge of the provinces of the Transverse Ranges and the Peninsular Ranges. Along the northern section, the coastal geomorphology is superimposed on the landforms of the Coast Ranges province. The northern section runs north-by-northwest from Point Conception north to Oregon. Due to the orientation, the winter storms and waves tend to attack the northern shores head-on without the buffering effect of a broad continental shelf. Beaches are often cobbly or gravelly with scattered sandy beaches.

The position of the shoreline is directly related to sea level and land elevation, both of which are variable through time. Sea level was as much as 400 feet lower during the last Ice Age because so much water was trapped as ice on the glaciers that covered northern and southern latitudes. During this time the shoreline position was as much as several miles west (near the Farallon Islands) of its current location. During the Ice Ages, major rivers cut deep canyons into the continental shelf creating submarine canyons such as the Monterey submarine canyon (which is twice as deep as the Grand Canyon). During the last interglacial period, sea level was approximately 15 to 20 feet higher and coastal wetlands and estuaries were correspondingly much more extensive than today.

Tectonic Setting

Portions of the coast have been uplifted due to tectonic forces, while others have subsided. The interplay of uplift and sea level fluctuations produced numerous marine terraces exhibited all along the coast. The highest terraces can extend several miles inland to what was once the shoreline, as in Mendocino County. Subsidence, along with sea level rise since the end of the last Ice Age, has drowned river mouths and flooded into the San Francisco Bay to create the largest estuary on the west coast. This moved the shoreline over 10 miles inland. Such a dynamic setting has produced a long list of landscapes and features including: accreted terranes, marine terraces, sea stacks, dunes, a fen, a pygmy forest, tafoni, concretions, and black sands.

GeoGems

Eleven GeoGems represent the northern coast: **Patrick's Point State Park, Sinkyone Wilderness State Park, MacKerricher State Park, Jug Handle State Natural Reserve, Schooner Gulch State Beach, Salt Point, Fort Ross State Historic Park, Wilder Ranch State Park, Point Lobos State Natural Resource, Morro Bay State Park, Montaña del Oro State Park, and Point Sal State Beach.**

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Photo: Jennifer Lotery*

Simplified Geologic Map | Northern Coastline Geomorphic Sub-Province



