

**Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.**

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Stair Steps Along The Coastline**



View of four uplifted marine terraces on Wilder Ranch.  
Photo: California Coastal Records Project

California has a population of nearly 39 million today, over twice as many as when I arrived here in 1968. For a whole bunch of reasons, two-thirds of those people live in coastal counties. But one of the reasons is that much of the state's coastal land is pretty flat and easy to farm and develop, which was recognized well over a century ago when the first settlers arrived.

About half of California's coastline consists of bluffs backed by relatively flat marine terraces, sometimes a series of them, marching up from the shoreline like a giant staircase. Most of the west and east sides of Santa Cruz, once we get out of the downtown flood plain, is built on the first marine terrace, or the lowest of these nearly flat benches.

These terraces are old pieces of seafloor that are now covered over with houses, streets, stores, and schools. Leaving the city and driving north along Highway One, you are following inner edge of the first or lowest terrace, which is now covered with sprouts, artichokes and even pumpkins in the fall. Heading south on Highway

One, you also follow the terrace through Live Oak, Capitola, and into Aptos and Rio del Mar. In fact, most places you drive in coastal Santa Cruz, you are traveling over an ancient seafloor.

If you were to start biking up Bay Street from West Cliff Drive, right at the Dream Inn, you could ride nearly a mile and a half (well, you could walk or drive) and still be on the first terrace. While it seems quite flat when driving, it becomes abundantly clear on a bike that you're peddling slowly uphill the entire way. The terrace is sloping gently up as you proceed inland.

But at Escalona Drive, peddling immediately becomes more of a workout, and your jacket or sweatshirt usually comes off. At Escalona you have now begun to climb up through the old seacliff that is at the inner or back edge of the terrace. The small stream you follow has eroded a canyon through the terrace. Peddling gets easier at Nobel Drive at the top of the hill, and at that point you have made it to the second terrace. The housing development on the left is known as University Terrace.

If you happen to prefer Western Drive instead of Bay Street, whether you are biking or driving, the road that cuts through the seacliff is even steeper and peddling is a whole lot harder. Many get off their bikes and walk up that hill. At the top of the hill the land gets level again, and you are now on the second terrace.

In mid-county, 41st Avenue crosses the entire width of the first terrace. It's almost exactly two miles wide, and extends from East Cliff, past the Capitola Mall, over Highway One, and all the way to Soquel Drive.

While these benches may be the most distinguishing element of our local coastal landscape, and what made the development and growth of Santa Cruz and Brussels sprouts farming possible, we are by no means unique. Working our way north, most of northern Santa Cruz County and coastal San Mateo County sit on a flat bench, as do most of the coastal towns, Half Moon Bay, Mendocino, Fort Bragg, Eureka, and Crescent City, to name a few.

It's the same story heading south, at least once we get through Big Sur, which isn't particularly recognized for its terraces, although there are a few flat benches scattered here and there. But at the far south end, the San Simeon coast is all terraced, as is much of the northern Santa Barbara County coastline from Pt. Conception to Ventura.

The University of California Santa Barbara and the student community of Isla Vista occupy the first marine terrace. And this landscape continues to the south through much of Orange and northern San Diego counties.

Among the most obvious questions the presence of these giant stair steps raise is how and when did these coastal terraces or benches form and why is there only one in some places, and up to 25 in others?