



PHOTOS BY DAVID SCHRADER

This summer morning the tide below Shoreline Park is exceptionally low, and I spot a stranded octopus yards from the safety of the water. I wonder if it will escape the attention of the ravenous birds. When I approach the silver-gray octopus, its coloring miraculously transmutes to match the caramel-colored sand.

Climbing atop a rock, the mysterious creature again changes hue, approximating the blackness of the shale. It reaches the safety of a tide pool crevice, where my disbelieving eyes watch it melt into the pink sponge-encrusted wall.

The two-spot octopus and its kin have millions of pigment cells and muscles that expand and shrink to change color and skin texture. If blending in doesn't fool would-be predators, an octopus can emit a cloud of dark ink into the water to conceal its getaway.

I've yet to witness such a display while tide pooling along the beaches of Santa Barbara County, but I was "inked" by a sea hare at Coal Oil Point on a day of a full moon, the

*Opposite: Extreme minus tide reveals astonishing fecundity among undulating rock formations at Point Sal. Above: ochre stars in the rocks below the Mesa.*

by Claudia Armann

## LIFE IN THE TIDAL ZONE

*Santa Barbara tide pools reveal a remarkable diversity.*

time of month—along with the new moon—when lunar forces exert the strongest gravitational pull on the ocean. Waves were breaking rhythmically far from the cliff, exposing an oft-hidden landscape of cobbles and boulders stacked high with jet black mussels. On the sand a mango-size slug crept slowly toward a pool. When I naively picked it up to help it along, a shower of ink shot out, coloring my hands a deep purple.

Sea hares—soft-bodied marine snails that can lay up to a hundred million eggs per month—are the prolific rabbits in the seashore drama's cast of characters. Some of their "cousins," the diminutive but brightly colored nudibranchs, can eat toxic marine animals and appropriate their victims' stinging cells for their own defense. Each creature has its own survival strategy, from a crab's sharp pincers to a sea cucumber's warty skin. And twice a day, since time immemorial, the tides recede and a new story unfolds in the intertidal zone.

A visit to any of our rocky beaches when the tide is out reveals a remarkable universe, offering the landlubber a glimpse into the realm of the scuba diver. Diversity is high in tide pools here because of the convergence of warm and cold currents in the Santa Barbara Channel. This is where

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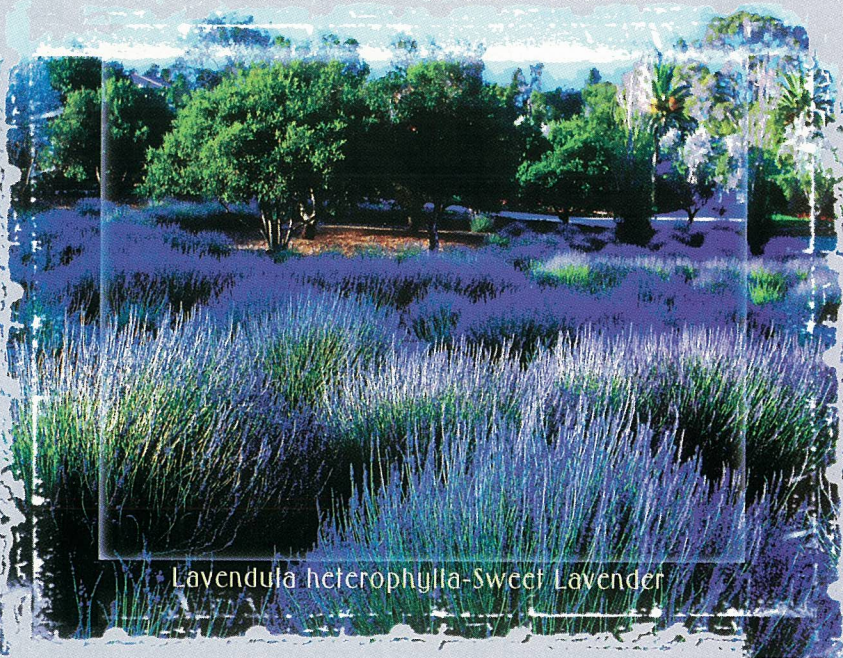
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## NATURAL WONDERS

the brilliant orange Norris's topsnail, wavy turban, and southern kelp crab find their northern limit; the Pacific pink scallop and Dungeness crab live no farther south.

A casual observer may discover vibrant green anemones and small hermit crabs masquerading in dwarf olive shells. A closer look yields sculpin fish dodging for cover in the nature-built "aquariums," rock crabs wedged in crevices, or scaly fossil-like chitons imbedded into rock.

In addition to ochre and giant sea stars, there are beautiful shells with occupants intact, like Kellet's whelks, turbans, and the shiny-smooth chestnut cowries. A sea cucumber or an abalone sometimes makes a cameo appearance.

*"Everything ate everything else with a furious exuberance," John Steinbeck once wrote of tide pool life.*

My only abalone encounter was on the pristine shores of Hollister Ranch, thirty miles up the coast from town, where limited access and fierce protection of the ranch's miles of shoreline has preserved a slice of prehistoric marine richness. Starfish grow to the size of pizzas, and lavender-hued urchins abound.

A word of caution: these animals are vulnerable when the waves retreat and



*Ochre stars climbing the rocks at Purisima Point on Vandenberg Air Force Base.*



*Wave erosion on the Carpinteria shore.*

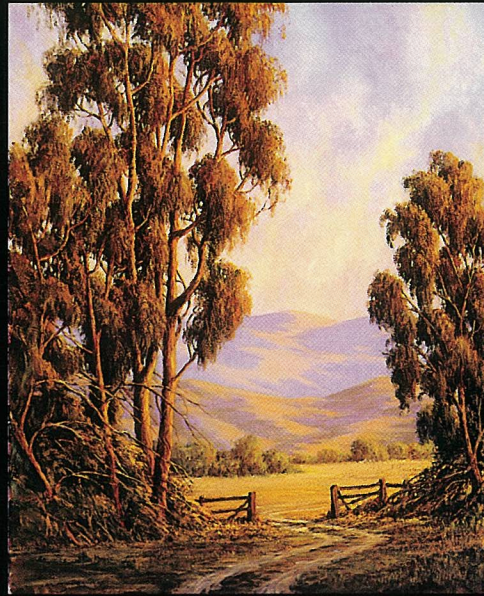
careless feet and curious hands encroach. Care should be taken with each footstep, for apparently lifeless rocks are often encrusted with creatures in camouflage. And live animals should never be removed from their maritime homes.

Birds, though, don't hesitate to make a meal of vulnerable marine life. Shorebirds converge in the intertidal zone to feast on the all-you-can-eat buffet. Egrets hunt for juvenile opal-eye fish in shallow pools, while turnstones and oystercatchers nudge limpets off the rocks. (Barnacles secure themselves in place with an adhesive that can withstand forces equivalent to four-hundred-mile-per-hour winds.)

From a rocky point at Vandenberg Air Force Base, I watch a Western gull that had found an upturned ochre sea star on the sand struggle to swallow it whole. The bird craned its neck and twisted its jaw with gusto, but the rigid sea star remained lodged in its throat. A half-hour passed before the gull succeeded in swallowing it, where the equally daunting challenge of digestion awaited its stomach.

"Everything ate everything else with a furious exuberance," John Steinbeck once wrote of tide pool life. Indeed, survival is the dominant theme for creatures caught between the tides, and what a marvelous celebration of life's struggle it is to witness each scene from a front-row seat. ≈

*Claudia Armann is research editor of AQUA magazine.*



*"Golden Evening" Original Oil by Ralph Waterhouse*

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