



Introduction



California is a veritable treasure chest of nationally acclaimed natural landmarks and much adored scenery. This geologic legacy on display in the landscape can be observed throughout California’s State Park system. The mission of California State Parks is “to provide for the health, inspiration and education of the people of California by helping to preserve the state’s extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.”

**This abundant biodiversity ...
everything from the alpine
to the saline.**

We selected exemplary units of the State Park system to highlight California’s geologic legacy. The selected parks are dubbed “GeoGems.” Of these, a third have been bestowed various national accolades and recognitions. This GeoGem Note 1 is the first in a series of more than 50 notes that describe individual GeoGems, the geomorphic provinces in which they exist, and the processes that created them, leading off with a general explanation of plate tectonics in relation to the geomorphic provinces.



California's topography is one of the most diverse in the conterminous United States, including a splendid coastline; the largest estuary on the west coast; the famously fertile Great Valley; formidable mountain ranges studded with jewel-like lakes; parched, desolate deserts; snow-capped volcanoes; and extensive plateaus of lava. Elevations are extreme, ranging from 282 feet below sea level at Badwater in Death Valley to 14,495 feet above sea level at the top of Mount Whitney; both the lowest valley and the highest peak in the conterminous United States are less than 90 miles apart.

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Along with complex landscape comes rich habitat diversity. California inherited the most diverse flora in the country; including majestic, ancient redwood and sequoia forests; kelp forests teeming with life; and grasslands and wetlands that support the famous Pacific Flyway—the main lifeline for migratory birds in

western North America. This abundant biodiversity results from habitat heterogeneity (diversity), everything from the alpine to the saline. California's annual precipitation ranges from less than two inches in Death Valley in the south to over 100 inches at Honeydew in Humboldt County in the north. The abundant rainfall in the north feeds the many coastal streams that are the lifelines for the migratory Pacific salmon. Throughout an inland network of thousands of miles of streams, the life cycles of these anadromous fish both begin and end.

GeoGem Parks with Special Recognition

National Natural Landmarks

Anza-Borrego Desert State Park (1974)
 Emerald Bay State Park (1968)
 McArthur-Burney Falls Memorial State Park (1984)
 Mount Diablo State Park (1982)
 Mitchell Caverns in Providence State Recreational Area (1975)
 Point Lobos State Natural Reserve (1967)
 Torrey Pines State Natural Reserve (1977)
 San Felipe Wash in Ocotillo Wells SVRA (1974)
 Pygmy Forest in Jug Handle State Natural Reserve (1969)
 Point Sal State Beach (1974)

World Heritage Site

Redwood National and State Parks
 includes Del Norte Coast Redwoods State Park

International Biosphere Reserve

Redwood National and State Parks
 includes Del Norte Coast Redwoods State Park

National Estuary

Morro Bay State Park

State Estuary

Morro Bay State Park

State Wild and Scenic River

South Yuba River State Park

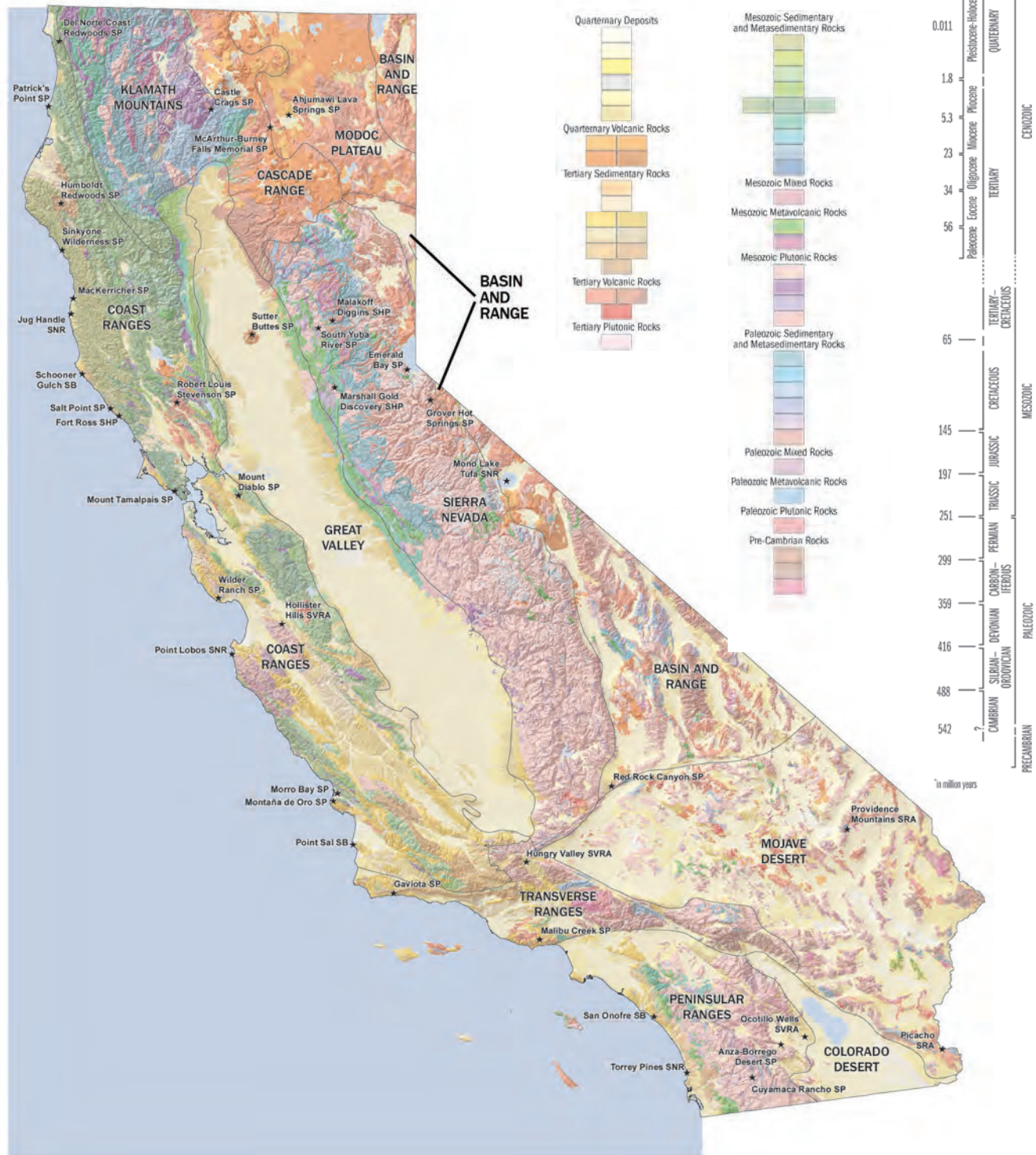
The great heterogeneity of habitat types supports California's rich biodiversity. Biodiversity is a sign of a healthy ecosystem—one with a diverse portfolio. Biodiversity means adaptability to environmental changes such as climate change. Some of California's habitat types are very fragmented, patchy, or of very limited distribution. These fragmented or small areas are more sensitive to change and may require special protection. For example, development has reduced the acreage of wetlands that comprise the Pacific Flyway by 91%, and many streams have been dammed or otherwise impacted by land-use practices. It is estimated that 90% of California's original stream network is now cut off from salmon due to barriers or impaired habitat conditions.

With this set of GeoGem Notes, readers will better understand the richness of our geologic heritage that is the canvas upon which our scenic landscapes are painted. The interrelatedness of geology, biology, ecology and human life—past and present—clearly shows that we share a common future.

This document has been prepared as a series of flyers that can be printed individually and distributed freely at visitor centers and other venues. In addition to these notes, we have prepared a poster (Plate 1), a statewide map that introduces the GeoGems and delineates and explains both biological regions and geomorphic provinces. Due to its large size, hardcopies of the poster must be printed separately; however, it is viewable in the digital version of this note. From Plate 1, one can appreciate the intricate connections between geology and biology, and see where each GeoGem fits into California's complex landscapes.

*Written by Mike Fuller, California Geological Survey
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Simplified Geologic Map of California with Geomorphic Provinces and GeoGems



The geologic canvas. The rock types ranging from modern to billions of years old provide the substance of the soil that has formed from them.

Prepared by California Geological Survey, Department of Conservation | www.conservation.ca.gov/cgs
for California State Parks | www.parks.ca.gov

Geological Gems of California State Parks, Special Report 230 – Fuller, M., Brown, S., Wills, C. and Short, W., editors, 2015 Geological Gems of California, California Geological Survey under Interagency Agreement C01718011 with California State Parks.