U.S. Department of the Interior U.S. Geological Survey

Point Arena

**Coast Range** 

1 1i Northern Franciscan Redwood Forest

11 Fort Bragg/Fort Ross Terraces 1m Point Reves/Farallon Islands

1n Santa Cruz Mountains 10 San Mateo Coastal Hills

Cascades

5a Sierran Alpine

4d Cascade Subalpine/Alpine

4h Southern Cascades Foothills

Sierra Nevada

**5b** Northern Sierra Subalpine Forests

**5**c Northern Sierra Upper Montane Forests 5d Northern Sierra Mid-Montane Forests 5e Northern Sierra Lower Montane Forests

King Range/Mattole Basin 1k Coastal Franciscan Redwood Forest

4e High Southern Cascades Montane Forest

4f Low Southern Cascades Mixed Conifer Forest 4g California Cascades Eastside Conifer Forest

1a Coastal Lowlands

1i

4

Bodega Hea

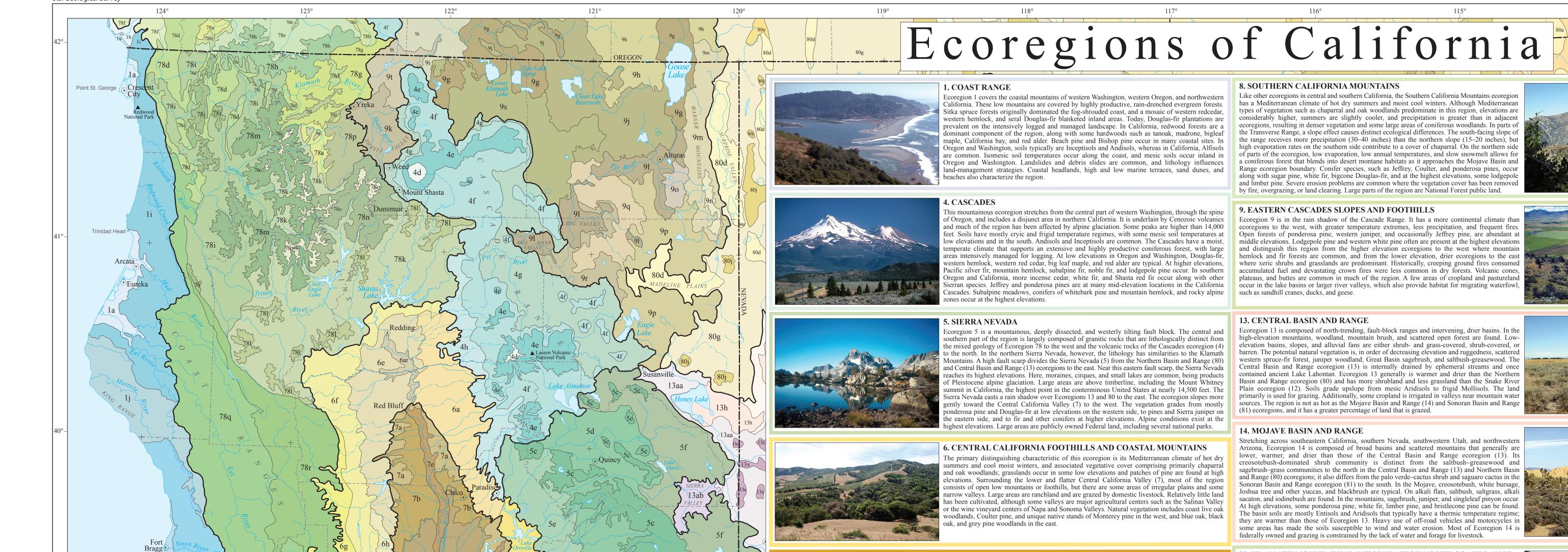
Farallon Islands

Francisco

Santa Cruz

Point Lobo

MONTEREY



78. KLAMATH MOUNTAINS/CALIFORNIA HIGH NORTH COAST RANGE



wass Valley

# 7. CENTRAL CALIFORNIA VALLEY

Flat, intensively farmed plains with long, hot, dry summers and mild winters distinguish the Central California Valley ecoregion from its neighboring ecoregions that are either hilly or mountainous covered with forest or shrub, and generally non-agricultural. Ecoregion 7 includes the flat valley basins of deep sediments adjacent to the Sacramento and San Joaquin Rivers, as well as the fans and terraces around the edge of the valley. The two major rivers flow from opposite ends of the Central California Valley, entering into the Sacramento-San Joaquin River Delta and San Pablo Bay. The region once contained extensive prairies, oak savannas, desert grasslands in the south, riparian woodlands, freshwater marshes, and vernal pools. More than one-half of the region is now in cropland, about three-fourths of which is irrigated. Environmental concerns in the region include salinity due to evaporation of irrigation water, groundwater contamination from heavy use of agricultural chemicals, loss of wildlife and flora habitats, and urban sprawl.

Ecoregion 78 encompasses the highly dissected ridges, foothills, and valleys of the Klamath and Siskiyou Mountains. It extends south into California to include the mixed conifer and montane hardwood forests that occur on mostly mesic soils in the North Coast Range mountains. The region's mix of granitic, sedimentary, metamorphic, and extrusive rocks contrasts with the predominantly younger volcanic rocks of the Cascades ecoregion (4) to the east. It includes ultramafic substrates, such as serpentinite and mafic lithologies that directly affect vegetation. Most of the region was unglaciated during the Pleistocene epoch, when it likely served as a refuge for northern plant species. The region's diverse flora, a mosaic of both northern Californian and Pacific Northwestern conifers and hardwoods, is rich in endemic and relic species. The mild, subhumid climate of Ecoregion 78 is characterized by a lengthy summer drought.



The Northern Basin and Range ecoregion (80) consists of dissected lava plains, rocky uplands, valleys, alluvial fans, and scattered mountain ranges. Overall, it is cooler and has more available moisture than the Central Basin and Range ecoregion (13), and also is higher and cooler than the Snake River Plain ecoregion (12) to the northeast in Idaho. Valleys support sagebrush steppe or saltbush vegetation. Cool season grasses, such as Idaho fescue and bluebunch wheatgrass, are more common than in Ecoregion 13 to the south. Mollisols also are more common than in the hotter and drier basins of the Central Basin and Range ecoregion (13) where Aridisols support sagebrush, shadscale, and greasewood. Juniper woodlands occur on rugged, stony uplands. Ranges are covered by mountain brush, grasses (for example, Idaho fescue), aspen groves, and, at high elevations in Nevada, some forests with subalpine fir. Elevational banding of mountain vegetation is not a apparent as it is in Ecoregion 13. Most of Ecoregion 80 is used as rangeland. The western part of the ecoregion is internally drained; its eastern stream network drains to the Snake River system.



## **81. SONORAN BASIN AND RANGE**

Similar in topography to the Mojave Basin and Range ecoregion (14) to the north, this ecoregion contains scattered low mountains and has large tracts of federally owned land, a large portion of which is used for military training. However, the Sonoran Basin and Range ecoregion is slightly hotter than the Mojave and contains large areas of paloverde-cactus shrub and giant saguaro cactus, whereas the potential natural vegetation in the Mojave is largely creosotebush. Other typical Sonoran plants include white bursage, ocotillo, brittlebrush, creosotebush, catclaw acacia, cholla. desert saltbush, pricklypear, and mesquite. Microphyll woodland trees and shrubs, such as ironwood, blue paloverde, smoketree, and desert willow, generally are unique to this desert, occupying desert washes with occasional moisture flow. In the region, winter rainfall decreases from west to east, whereas summer rainfall decreases from east to west. Aridisols and Entisols are dominant with hyperthermic soil temperatures and extremely aridic soil moisture regimes, creating some harsh environments for plant growth.

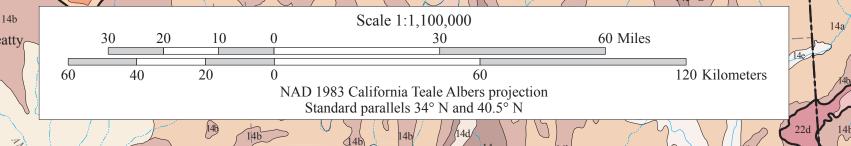


### 85. SOUTHERN CALIFORNIA/NORTHERN BAJA COAST

This ecoregion includes coastal and alluvial plains, marine terraces, and some low hills in the coastal area of Southern California, and it extends over 200 miles south into Baja California. Coastal sage scrub and chaparral vegetation communities with many endemic species once were widespread before overgrazing, clearance for agriculture, and massive urbanization occurred. Coastal sage scrub includes chamise, white sage, black sage, California buckwheat, golden yarrow, and coastal cholla. Small stands of the unique Torrey pine occur near San Diego and on one of the Channel Islands. The chaparral-covered hills include ceanothus, manzanita, scrub oak, and mountain-mahogany. Coast live oak, canyon live oak, poison oak, and California black walnut also occur.



Photo credits (by ecoregion): (1) National Park Service, (4) Lyn Topinka, USGS, (5) Phil Gavenda, (6) Glenn Griffith, USGS, (7) Glenn Griffith, USGS, (8) USDA–Forest Service, (9) USDA–Forest Service, 13) Glenn Griffith, USGS, (14) National Park Service, (78) Glenn Griffith, USGS, (80) Mike Benzon, (81) Michael Charters, (85) Bruce Perry, California State University, Long Beach.

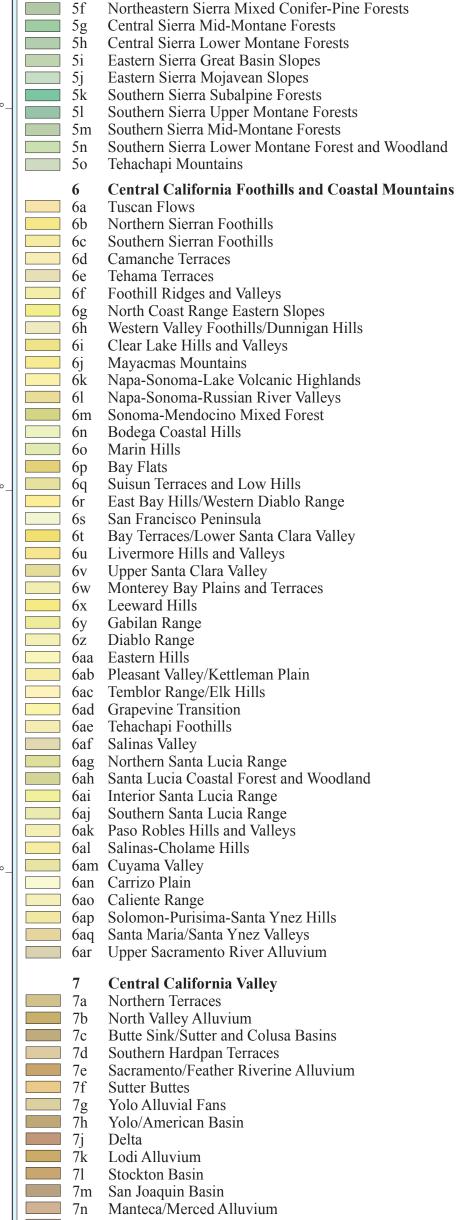


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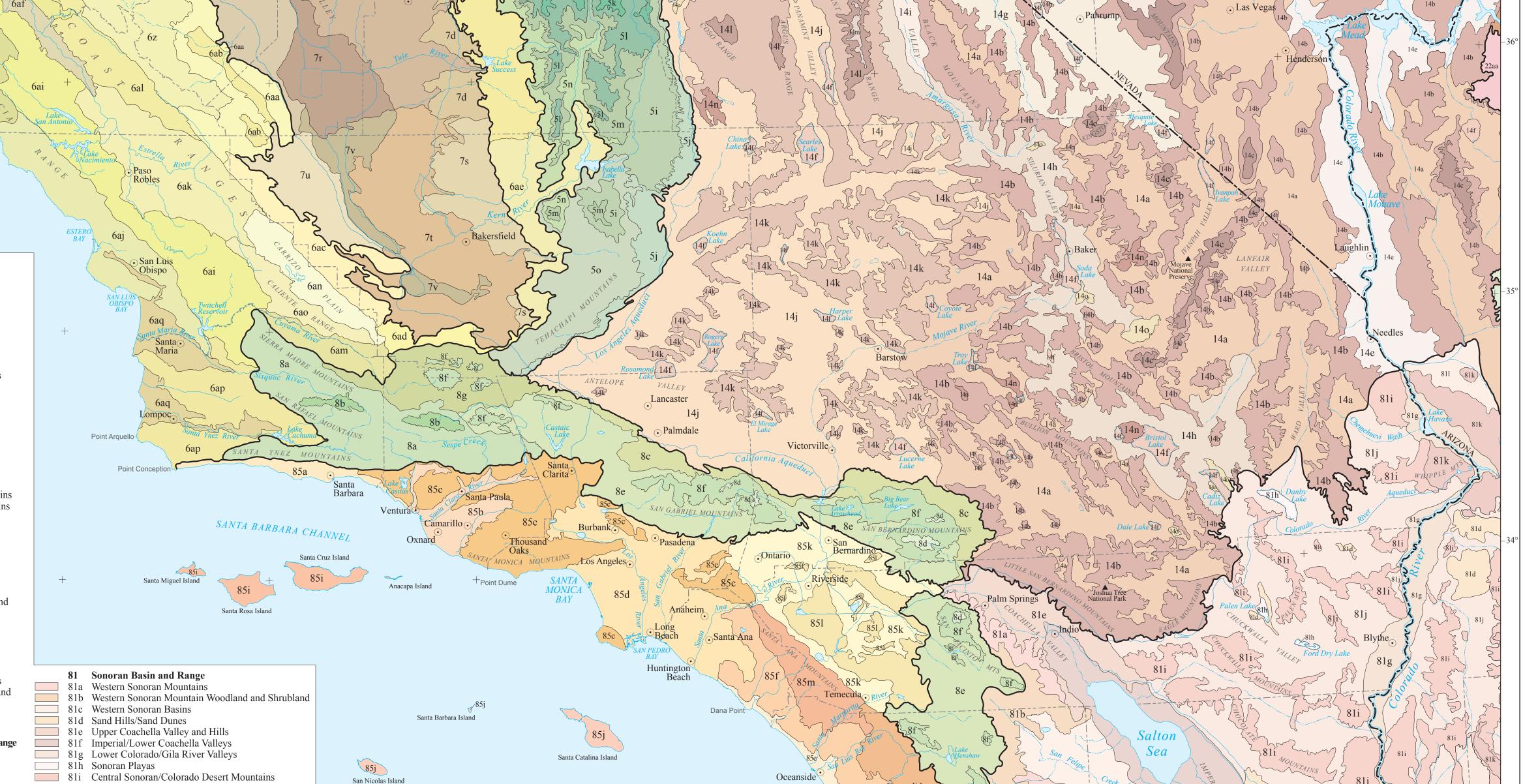
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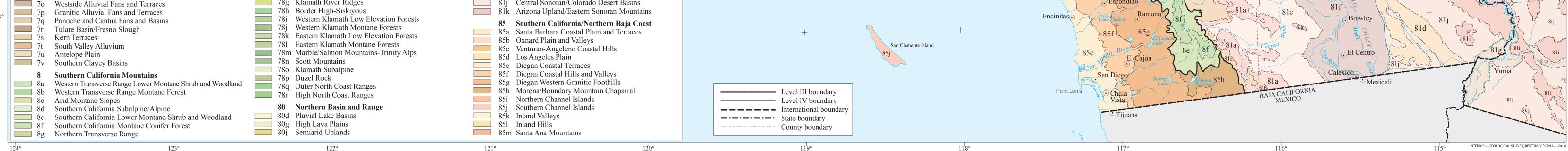












Map Source: USEPA, 2013 29 Central Oklahoma/Texas Plains 58 Northeastern Highlands SCI
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 $\Box$  D)





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same geographical areas (Omernik and others, 2000).
are hierarchical and can be identified through the analysis of the spatial patterns and the
composition of biotic and abiotic phenomena that affect or reflect differences in
ecosystem quality and integrity (Wiken, 1986; Omernik, 1987, 1995). These phenomena
hydrology. The relative importance of each characteristic varies from one ecological
 region to another regardless of the hierarchical level. A Roman numeral hierarchical
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coarsest level, dividing North America into 15 ecological regions. Level II divides the collaborative projects such as this one in California, where some agreement has been Omernik, J.M. and Griffith, G.E., 2014, Ecoregions of the conterminous United States—Evolution of a continent into 50 regions (Commission for Environmental Cooperation Working Group, reached among multiple resource-management agencies, are a step toward attaining 1997, map revised 2006). At level III, the continental United States contains 105 ecoregions and the conterminous United States has 85 ecoregions (U.S. Environmental Literature Cited Protection Agency, 2013). Level IV, depicted here for California, is a further refinement

of level III ecoregions. Explanations of the methods used to define these ecoregions are given in Omernik (1995), Omernik and others (2000), and Omernik and Griffith (2014).

California has great ecological and biological diversity. The State contains offshore islands and coastal lowlands, large alluvial valleys, forested mountain ranges, deserts, and various aquatic habitats. There are 13 level III ecoregions and 177 level IV ecoregions in California and most continue into ecologically similar parts of adjacent States of the United States or Mexico (Bryce and others, 2003; Thorson and others, 2003; Griffith and others, 2014).

The California ecoregion map was compiled at a scale of 1:250,000. It revises and

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and subdivides an earlier national ecoregion map that was originally compiled at a smaller scale quantity of environmental resources. They are designed to serve as a spatial framework (Omernik, 1987; U.S. Environmental Protection Agency, 2013). This poster is the result for the research, assessment, management, and monitoring of ecosystems and ecosystems of a collaborative project primarily between U.S. Environmental Protection Agency Griffith, G.E., Omernik, J.M., Johnson, C.B., and Turner, D.S., 2014, Ecoregions of Arizona (poster): U.S. components. By recognizing the spatial differences in the capacities and potentials of (USEPA) Region IX, USEPA National Health and Environmental Effects Research ecosystems, ecoregions stratify the environment by its probable response to disturbance Laboratory (Corvallis, Oregon), California Department of Fish and Wildlife (DFW), (Bryce and others, 1999). These general purpose regions are critical for structuring and U.S. Department of Agriculture (USDA)–Natural Resources Conservation Service implementing ecosystem management strategies across Federal agencies, State agencies, (NRCS), U.S. Department of the Interior–Geological Survey (USGS), and other State of

## The project is associated with interagency efforts to develop a common framework of

The approach used to compile this map is based on the premise that ecological regions ecological regions (McMahon and others, 2001). Reaching that objective requires recognition of the differences in the conceptual approaches and mapping methodologies applied to develop the most common ecoregion-type frameworks, including those developed by the USDA-Forest Service (Bailey and others, 1994; Miles and Goudy, include geology, physiography, vegetation, climate, soils, land use, wildlife, and 1997; Cleland and others, 2007), the USEPA (Omernik 1987, 1995), and the NRCS (U.S. Department of Agriculture-Soil Conservation Service, 1981; U.S. Department of Agriculture-Natural Resources Conservation Service, 2006). As each of these scheme has been adopted for different levels of ecological regions. Level I is the frameworks is further refined, their differences are becoming less discernible. Regional consensus and consistency in ecoregion frameworks for the entire nation.

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