

123.4 Californian Evergreen Forest and Woodland

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Figure 32. Californian mixed evergreen forest at Falling Springs, San Gabriel Mountains, Los Angeles National Forest, California ca. 1,220 m elevation. A moist canyon habitat dominated by Big-cone Douglas-fir (*Pseudotsuga macrocarpa*) with Canyon Live Oak (*Quercus chrysolepis*), Incense Cedar (*Libocedrus decurrens*) and Coast Live Oak (*Quercus agrifolia*) within Californian chaparral and adjacent to riparian deciduous forest.

The center of these most Californian of biomes is the interior side of the Coast Ranges. Only the southernmost fasciations occur in southern California and northern Baja California Norte. The oak-pine associations of Blue Oak and Digger Pine, so common in the foothills above the Central Valley, do not reach the Southwest. The southernmost Blue Oaks and Digger Pines occur in northern Los Angeles Country. Other species important in adjacent woodlands but not in the defined boundaries for the Southwest include Valley Oak and California Buckeye.¹

The lower elevation (60-1,050 m) woodlands (=encinal)—collectively termed southern oak woodland by Munz and Keck (1949)—are generally restricted to moister and cooler sites within sheltered valleys and foothills. At higher elevations (ca. 1,050-1,550 m), and in canyons, a mixed hardwood community, usually composed of evergreen and deciduous hardwoods with some conifers, may occupy mesic mountain slopes, “flat” and shoulder habitats. These associations are considered by Sawyer et al. (1977) to be the southernmost representatives of mixed evergreen forest (see also e.g. Shreve, 1927).

In addition to mixed hardwood forest, two major woodland communities—an Engelmann Oak (*Quercus engelmannii*) series and a Coast Live Oak (*Quercus agrifolia*) series—are recognized as occurring in the Californian Southwest (Griffin 1977). *Quercus agrifolia* is an important participant in all three communities. As elsewhere, these communities while cismontane, rarely face the sea.

Precipitation means range from ca. 300-380 mm per annum in the lower open woodlands to 635 mm or more in mixed hardwood forest (Table 6). This rainfall occurs in the typical Californian (=Mediterranean) pattern of October through April. In contrast with Madrean evergreen woodland, the summer period in Californian evergreen woodland is virtually rainless. Although from 200 to 350 days a year are frost free (Munz and Keck, 1949) winter temperatures of -6° C and even lower are also not uncommon.

Mixed Hardwood Series

This diverse group of associations is restricted in the Southwest to moist, favored sites in the Cuyamaca, Palomar, San Gabriel, San Bernardino, and other high southern California mountains. It is absent from the high mountains of Baja California. Here at its southernmost extremity there is much integration with Sierran montane conifer forest with which it shares a number of constituents, e.g., the deciduous Black Oak.

Although these associations are depauperate in species when compared to more northern associations, they nonetheless possess—at least locally—several characteristics and distinctive mixed evergreen forest species. These include Incense Cedar (*Libocedrus decurrens*), Pacific Madrone (*Arbutus menziesii*), California Bay (*Umbellularia californica*), and Coulter Pine (*Pinus coulteri*). Big-cone Douglas-fir (*Pseudotsuga macrocarpa*), a southern Californian endemic, is a locally important dominant (Fig. 32). Canyon Oak (*Q. chrysolepis*) and Coast Live Oak are the common participants and occur more or less throughout. There is considerable contact with the higher chaparral associations, and many of

¹Another buckeye (*Aesculus parryi*) occurs—sometimes abundantly, in northwestern Baja California del Norte within coastal scrub.



Figure 33. Californian evergreen woodland of Coast Live Oak (*Quercus agrifolia*) near Dulzura, San Diego County, California ca. 370 m elevation.



Figure 34. Californian evergreen woodland of California Walnut (*Juglans californica*) in the San Jose Hills, west of Pomona, Los Angeles County, California ca. 340 m elevation. The dead branches are thought to be due to the prolonged drought experienced during the winters of 1975-76 and 1976-77. These interesting communities have suffered heavily from urbanization and without protection will soon be lost entirely.



Figure 35. Californian evergreen woodland of Engelmann Oak (*Quercus engelmannii*) at Oak Grove, Cleveland National Forest, San Diego County, California, ca. 840 m elevation. Heavy grazing precludes the establishment of young trees at this level alluvial site.

Table 6. Precipitation within or adjacent to Californian Evergreen Forest and Woodland.

Station	Elevation (in m)	Mean Monthly Precipitation in mm												Total
		J	F	M	A	M	J	J	A	S	O	N	D	
San Gabriel Canyon, CA 34°09' 117°54'	227	116	100	85	53	10	4	.5	2	5	12	68	85	541
Pomona- Claremont, CA 34°04' 117°49'	226	86	74	70	41	6	1	.5	1	5	11	53	69	418
Henshaw Dam, CA 33°14' 116°46'	823	107	85	99	59	13	2	4	12	6	18	65	68	538
Cuyamaca, CA* 32°59' 116°35'	1,414	117	137	156	93	28	4	13	13	15	26	90	133	825
Barrett Dam, CA 32°41' 116°40'	495	73	64	69	45	12	1	2	5	5	12	43	66	397

* Californian mixed evergreen forest.

these species possess facultative and/or sprouting properties and are otherwise adapted at least to occasional fires.

No species of vertebrate appears to be particularly restricted to Californian evergreen woodland. The mammal inhabitants include both forest and tree-requiring species such as the Western Gray Squirrel (*Sciurus griseus*) and Raccoon (*Procyon lotor*) and a number of widespread influents, e.g., California Mule Deer (*Odocoileus hemionus californicus*), California Ground Squirrel (*Citellus beecheyi*) and Western Pocket Gopher (*Thomomys bottae*). Characteristic and representative birds are the Acorn Woodpecker (*Melanerpes formicivorus*), Nuttall's Woodpecker (*Picoides nuttallii*), Plain Titmouse (*Parus inornatus*), and Western Bluebird (*Sialia mexicana*). Several species more representative of the higher mixed evergreen forest include the Mountain Quail (*Oreortyx picta*), Hairy Woodpecker (*Picoides villosus*), White-breasted Nuthatch (*Sitta carolinensis*), and Band-tailed Pigeon (*Columba fasciata*). The Arboreal Salamander (*Aneides lugubris*) is largely found in Californian evergreen woodlands and the Ensatina (*Ensatina eschscholtzi klauberi*) and California Mountain Kingsnake (*Lampropeltis zonata*) are probably indicative of mixed evergreen forest. Some of the more commonly encountered herptiles include the Common Kingsnake (*Lampropeltis getulus*), Gopher Snake (*Pituophis melanoleucus*), Coast Horned Lizard (*Phrynosoma coronatum*), Western Fence Lizard (*Sceloporus occidentalis*), and Western Toad (*Bufo boreas*).

Coast Live Oak Series

While nowhere extensive, this is the woodland type most common in southern California. Here *Quercus agrifolia* dominates north slopes with deep soils, alluvial terraces, and most frequently, the recent alluvium of canyon bottoms (Fig. 33). Southward this species becomes increasingly confined to moister habitats within chaparral until it forms narrow riparian consociations such as those near San Antonio in Baja California Norte. Because the seedlings are intolerant of grazing, there is concern that these trees are gradually being eliminated both north and south of the border because nearly all evergreen woodlands are used to pasture livestock (Coyle and Roberts, 1975).

Coast Live Oak woodlands vary from open savanna-like landscapes with few or no woody associates to relatively

dense woodlands in which Canyon Live Oak (*Quercus chrysolepis*), Engelmann Oak, and other trees participate. Toyon (*Heteromeles arbutifolia*) may be a conspicuous subdominant (Griffin, 1977). Manzanita (*Arctostaphylos* spp.), Squawbush Sumac (*Rhus integrifolia*), Sugar Sumac (*R. ovata*), and other chaparral shrubs may also be common associates, particularly on slopes and rocky soils. Because of overgrazing, some woodlands on slopes now have coastal scrub shrub understories. Understories are more typically herbaceous however, and annual grasses predominate.

An interesting coast live oak association with California Black Walnut (*Juglans californica*) present and locally dominant enters the Southwest from the northwest in Los Angeles County. This regional north slope association has suffered much from urbanization and the best remaining examples are disturbed populations in the Puente and San Jose Hills southeast of Covina (Wieslander, 1934; Griffin, 1977) (Fig. 34).

Engelmann Oak Series

Woodlands dominated by this semi-evergreen "white" oak appear to require relatively deep clay soils. Consequently, many—perhaps most—of these associations, which were always restricted in distribution, have been eliminated by agricultural and urban development. Wieslander (1934d, 1934f) shows remnants of Engelmann Oak woodland as occurring south of the San Gabriel Mountains in the vicinities of Pasadena and Pomona. No intact woodland remains there now (Griffin, 1977). Other associations still occur on the Santa Rosa Plateau, Mesa de Burro, Mesa de Colorado, etc., in the Santa Ana Mountains in Riverside County (Wieslander, 1938), in San Diego County, and in interior valleys south of Tecate in Baja California Norte. The most extensive stands of Engelmann Oak woodland remaining are probably those in the Ramona-Santa Ysabel area in north-central San Diego County (Wieslander, 1934c; Griffin, 1977) (Fig. 35).

This species characteristically forms an open to dense woodland where it usually grows with Coast Live Oak and less commonly other oaks, e.g., *Quercus kelloggii*. Because of the soil type and level habitats, chaparral species are poorly represented, and understories are relatively open and composed mostly of annual grasses and forbs.