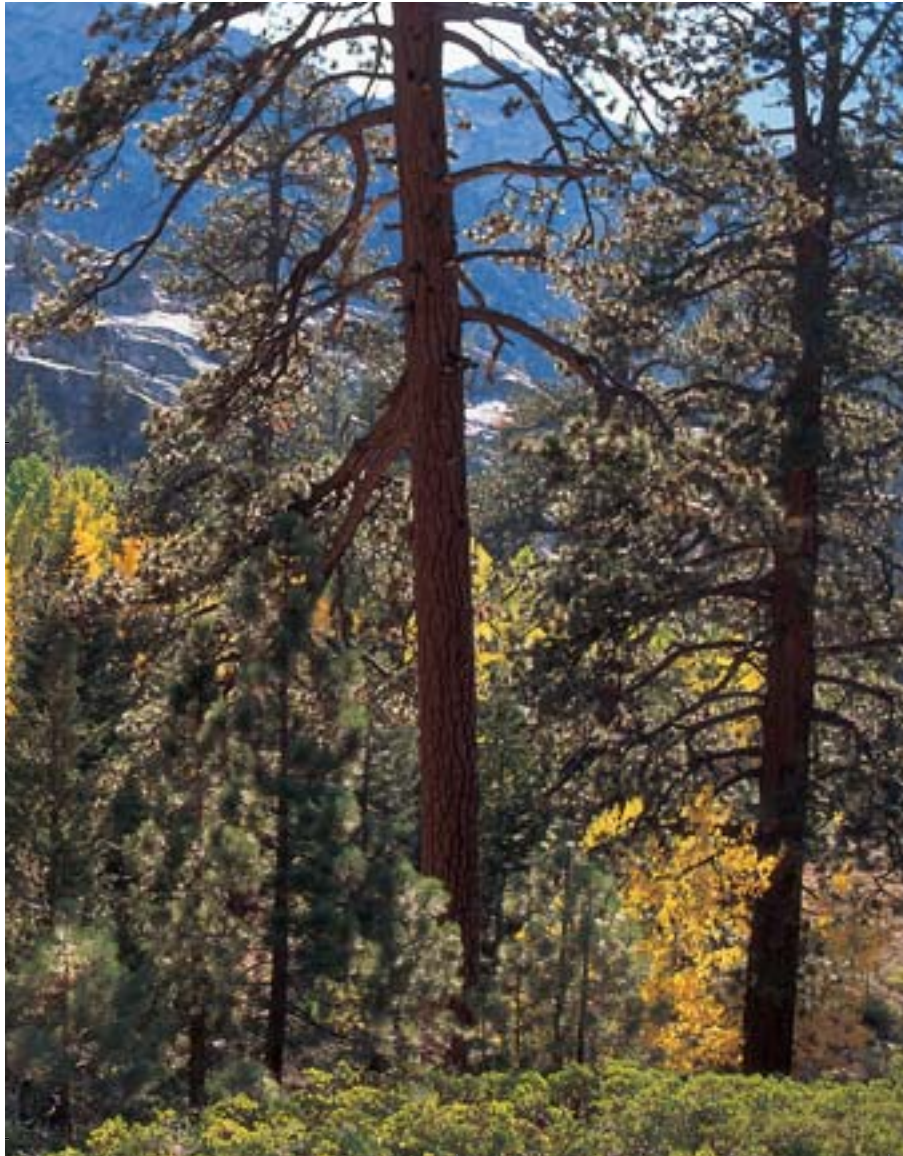


CHAPTER 6  
**VEGETATION TYPES IN  
CISMONTANE CALIFORNIA**



This chapter presents a synopsis of the composition and distribution of the California vegetation types listed in chapter 5 that are encountered along the coastal and valley areas of northern and central California, the cismontane region found west of the Sierra Nevada crest. Also included is some discussion of outstanding characteristics of the communities or of certain of their component species. As mentioned in the previous chapter, these vegetation types remain a simplified but useful overview of the California landscape. Most of the vegetation types in this part of the state tend to be distributed in a pattern that is related to climatic patterns that are strongly influenced by the position of mountain ranges in a north-south series. The following chapter is concerned with vegetation types found in montane areas and areas east of the Sierra Nevada and in the deserts.

## The Cismontane Region (West of the Sierra Nevada Crest)

### Coastal Strand (Map 2)

The first terrestrial vegetation type encountered above the high tide line in much of California is the Coastal Strand community. As plants establish, they hold the sand, which keeps it from drifting and results in dune formation (pl. 84). Common plants in the Coastal Strand community are the silver beachweed (*Ambrosia chamissonis*), in the sunflower family; various species of the saltbush genus (*Atriplex*); various lupines such as the beautiful yellow bush lupine (*Lupinus arboreus*); the colorful sand-verbena (*Abronia* spp.); and beach evening primrose (*Camissonia cheiranthifolia*). Also found growing in the Coastal Strand are the introduced dunegrass (*Ammophila arenaria*) and species of succulent ice plants (*Carpobrotus edulis*, *Mesembryanthemum nodiflorum*, and *M. crystallinum*, all Aizoaceae); and the attractive beach morning glory (*Calystegia soldanella*). All these members are widespread in this com-

munity, and most of them occur only in this distinctive vegetation type. The Coastal Strand vegetation type occurs in loose sand above the high tide line on Pacific coast beaches along the entire length of California and extends both south and north



Plate 84. Dunes are stabilized where dune plants become established.

of the state's borders. Some of the species in this community are very widespread outside California. For example, beach morning glory is found all along the Pacific coast of North America and in South America and the Old World as well (pls. 85–87).

The climate of the area occupied by the Coastal Strand vegetation type in California is variable. Rainfall varies from an average annual total of about 15 inches to a total in excess of 70 inches. Many parts of the coast have extensive fog during summer and winter. The growing season along the immediate coast is very long and even in extreme northern California exceeds 350 days. Because of the tempering effect of the adjacent ocean, diurnal as well as seasonal temperature fluctuations are relatively small. Summers are cool and winters are relatively warm.



Plate 85. The Coastal Strand plant community is found along sandy beaches and dunes scattered along the entire coast. Between open patches of sand, most plants have a creeping prostrate growth form and often grayish foliage. There is low species diversity in this harsh environment.



Plate 86. Sand-verbena (*Abronia latifolia*) grows a very large and deep root that enables it to survive hot, dry, and windy summer days. This plant was first collected by early Russian explorers.

Despite the relatively benign climatic conditions, the environment of the Coastal Strand vegetation type is a harsh one. This may explain why so few plant species occur in this community. During much of the year it is subjected to strong



Plate 87.  
Beach evening primrose (*Camissonia cheiranthifolia*) displays the low, sprawling growth form typical of dune plants. Its bright yellow flowers attract insect pollinators.

winds, which carry salts that are deposited on the plants and the soil. Because of these salt-laden winds and occasional high tides during winter storms, the sand occupied by the plants has a high concentration of sea salts. Besides being salty, the sand is often very unstable and blown about by the winds. The level of plant nutrients is generally very low; from a nutritional standpoint these sands are infertile. Furthermore, during summer months the surface of the sand may become extremely hot, to the extent that it is very uncomfortable to the human touch.

Although the plant species that occur in the Coastal Strand are taxonomically unrelated, many of them share similar adaptive characteristics. For example, many of the plants in this community are prostrate and have creeping stems that hug the sand. In some species, these stems may produce roots at the nodes and eventually form a large colony derived from a single individual. Sexual reproduction of some of the perennial species may be relatively rare, perhaps because of the great difficulties that seedlings have in becoming established in the continually shifting and generally inhospitable sands. Also, many Coastal Strand plants have grayish foliage; this is probably an adaptation to the frequent extreme daytime heat to which these plants are subjected and undoubtedly serves to

reflect heat from the plant and thus reduce the temperature of internal tissues. Plants in this community are frequently succulent and may have sufficiently high salt concentrations in their tissues that the salt is detectable to human taste. Possibly, this succulence is an adaptation to the occasional dry periods to which strand plants are subjected, and it may also enable these plants to take in water whose salt content would dehydrate most nonsucculent plants of other communities. Needless to say, Coastal Strand plants are notably resistant to salt and to wind.

#### Coastal Prairie (Map 2)

Immediately inland from the Coastal Strand vegetation type are the grasslands known as Coastal Prairie. This vegetation type occurs sporadically along the northern California coast from the Oregon border to the San Francisco Bay area. At one time, some of the hills behind Oakland and Berkeley were occupied by Coastal Prairie, as well as by patches of Valley Grassland. Some of the “balds” on the northern California coastal hills—which may be several miles from the ocean—represent



Plate 88. Coastal Prairie occurs on the rich, stable soils immediately inland and is species rich compared to Coastal Strand. Vegetation is usually dense, rather low, and dominated by herbaceous species.



Plate 89.  
A white  
wallflower  
(*Erysimum  
concinnum*)  
and the yellow  
coastal form of  
the California-  
poppy (*Esch-  
scholzia cali-  
formica*) add  
spring color  
in the Coastal  
Prairie.

the Coastal Prairie vegetation type. Extensive areas along the coast of northern California have been cleared to encourage the growth of grasses for grazing animals; such areas would seem to belong to the Coastal Prairie vegetation type. Because of their unnatural origin, however, and their component of introduced plant species, these artificial grasslands should be excluded from a definition of the Coastal Prairie vegetation type. Coastal Prairie was originally covered with a number of native perennial bunch grasses mixed with several other herbaceous plants. Shrubs and trees are missing. The soils of Coastal Prairie areas are typical prairie soils similar to those found in the grasslands of the American Midwest, indicating that these coastal areas have been occupied by prairie for hundreds of years or more and are not of recent origin. For this reason, Coastal Prairie can be considered to be a climax vegetation type in California.

Typical plants of the Coastal Prairie are perennial grasses that belong to the genera fescue (*Festuca*), oat grass (*Danthonia*), reed grass (*Calamagrostis*, hair grass *Deschampsia*), and others. Bracken fern (*Pteridium aquilinum*) also is a common inhabitant of this area. Monocots such as blue dicks (*Dichelostemma capitatum*), Douglas iris (*Iris douglasiana*) in blue and white forms, blue-eyed-grass (*Sisyrinchium bellum*), and yellow butterfly tulip (*Calochortus luteus*), all of the family



Plate 90. Blue-eyed-grass (*Sisyrinchium bellum*), in the iris family, is another common plant in the Coastal Prairie.

Plate 91. In early spring, coastal bluffs are brightened by the light green and yellow of footsteps-of-spring (*Sanicula arctopoides*).



Brodiaea, add a colorful display of flowers in late spring months. Also present are California buttercup (*Ranunculus californicus*), two lupines (*Lupinus variicolor* and *L. formosa*), the peculiar prostrate yellow mats called footsteps-of-spring (*Sanicula arctopoides*), golden aster (*Heterotheca villosa* var. *shevockii*), and a few other members of the sunflower family (Asteraceae) (pls. 88–91).

Because Coastal Prairie areas are naturally treeless and because they occur in temperate and relatively well watered areas of California, the majority of the area occupied by the Coastal Prairie vegetation type has been subjected to grazing by sheep and cattle since the settlement of California by agriculturalists. Many of the areas along the coast that are being developed for summer housing tracts also occur in areas occupied by the Coastal Prairie vegetation type. On bluffs overlooking the Pacific, plants such as thrift or sea-pink (*Armeria maritima* subsp. *californica*) have adapted to the harsh conditions of wind and salt spray and are succulent and tough (pl. 92).



Plate 92. Thrift or sea-pink (*Armeria maritima* subsp. *californica*) is common on ocean bluffs and coastal strands in northern California and less common in the south.

### Coastal Salt Marsh (Map 2)

Coastal salt marsh is a vegetation type that exists under some of the same climatic conditions as the Coastal Strand community, although there are some striking differences in the ecology of the two communities. As the name implies, the Coastal Salt Marsh community occurs along the Pacific coast of California, although it is a much less frequently encountered community than is the Coastal Strand. The Coastal Salt