

**California Wildlife Habitat Relationships System**  
**California Department of Fish and Game**  
**California Interagency Wildlife Task Group**

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## Coastal Scrub

Sally de Becker

### Vegetation

**Structure--** Structure of the plant associations that comprise Coastal Scrub is typified by low to moderate-sized shrubs with mesophytic leaves, flexible branches, semi-woody stems growing from a woody base, and a shallow root system (Harrison et al. 1971, Bakker 1972). Structure differs among stands, mostly along a gradient that parallels the Pacific coastline. Northern Coastal Scrub, from Humboldt County to the San Francisco Bay Area, ranges from a patchy oceanside cover of nearly prostrate subshrubs surrounded by grassland to a dense and continuous cover of two layers: an overstory of shrubs up to 2 m (7 ft) tall and a perennial herb/subshrub understory up to 0.3 m (1 ft) tall. The southern sage scrub form, typical of inland central (around Mt. Diablo) and most southern stands, is made up of a shrub layer up to 2.0 m (7 ft) tall. Canopy cover usually approaches 100 percent in these stands (Mooney 1977), although bare areas are sometimes present. Sufficient light penetrates through the canopy to support an herbaceous understory. Bare zones about 1 m (3 ft) wide may extend from stands dominated by sage species into surrounding annual grasslands (Halligan 1973, Mooney 1977, Westman 1981 a) .

**Composition--** No single species is typical of all Coastal Scrub stands. As with structure, composition changes most markedly with progressively more xeric conditions from north to south along the coast. With the change from mesic to xeric sites, dominance appears to shift from evergreen species in the north to drought-deciduous species in the south. Variation in coastal influence at a given latitude produces less pronounced composition changes. Two types of northern Coastal Scrub are usually recognized. The first type (limited in range) occurs as low-growing patches of bush lupine and many-colored lupine at exposed, oceanside sites. The second and more common type of northern Coastal Scrub usually occurs at less exposed sites. Here coyotebush dominates the overstory. Other common overstory species are blue blossom ceanothus, coffeeberry, salal, bush monkeyflower, blackberry, poison-oak and wooly sunflower. Bracken fern and swordfern are dominant in the understory; common cowparsnip, Indian paintbrush, yerba buena and California oatgrass are typically present (Heady et al. 1977). Around Half Moon Bay, western hazelnut, Pacific bayberry, and sagebrush are also present (Mayfield and Shadle 1983).

Southern sage scrub, occurring intermittently over a larger area than the two northern Coastal Scrub types, is subdivided into three main types. Differences in composition of these three types correspond mostly to available moisture. A fairly common species in all

three types is California sagebrush. The most mesic area, from Mt. Diablo south to Santa Barbara, is dominated by black sage and California buckwheat. In the less mesic region from Santa Barbara south to Orange County, purple sage and California buckwheat join black sage in importance. Golden yarrow, isocoma, rolled leaf monkeyflower, and California encelia are typical. Chaparral yucca is found on the slightly drier sites within the region, especially in Ventura County (Kirkpatrick and Hutchinson 1977, Mooney 1977, Westman 1981b, Gray 1982). The southernmost stands are the most xeric of the form. Composition here is characterized by succulent species and a distinct Baja California influence. In addition to the California sagebrush, California buckwheat, and wooly sunflower typical of the stands farther north, California adolphia, coastal agave, and cunyado are present south of San Diego (Mooney 1977, Westman 1981a).

**Other Classifications--** The following vegetation types and plant communities defined in the literature fall into WHR's Coastal Scrub habitat: Coyote Brush, Lupine, Salal, Sumac, Ragweed, California Sagebrush, Encelia, Buckwheat and Sage described by Parker and Matyas (1981); the *Opuntia* series of succulent shrub subformation and the Coastal Sagebrush, Encelia, Baccharis, Salvia, Lupine, and California Buckwheat series of the soft chaparral subformation described by Paysen et al. (1980); Coastal Strand, Northern Coastal Scrub, Coastal Sage Scrub, and Coastal Sagebrush described by Munz and Keck (1973); Coastal Sagebrush, Northern Seashore Communities (Northern Dune Scrub), Southern Seashore Communities (Central Dune Scrub, Southern Dune Scrub), and Coastal Prairie - Scrub Mosaic described by K uchler (1977); and the Northern Coastal Dune Scrub subdivision of Partially Stabilized and Stabilized Coastal Dunes, Coastal Bluff Scrub, Coastal Scrub, and Maritime Cactus Scrub described by Cheatham and Haller (1975).

## Habitat Stages

**Vegetation Changes--** 1;24:S-D Only tentative conclusions can be drawn from the relatively few studies of vegetation change in Coastal Scrub. Stands in some areas are considered seral stages. But most phases of Coastal Scrub probably change little in composition after the first 10 years following fire or if subjected only to natural, moderate disturbance. In contrast, major or human-caused disturbances often permit Coastal Scrub to invade new areas, or permit invasion by other habitats.

The lupine phase of northern Coastal Scrub appears to be replaced by grasslands under grazing pressure, returning if grazing is halted; when undisturbed, the lupine phase appears to persist in a dynamic equilibrium, patches dying out while new ones become established (Davidson and Barbour 1977). The coyotebush stands in the north have been considered a seral stage in a progression from grassland to forest, though evidence is inconclusive. Elliott and Wehausen (1974) found no significant increase of scrub in a Pt. Reyes coastal prairie grassland/northern Coastal Scrub mosaic when cattle were excluded for six years. Coyotebush was replaced by forest in the Berkeley Hills (by mixed evergreen forest, coast live oak forest and California bay forest) (McBride and Heady 1968, McBride 1974), but this replacement pattern was not observed on the nearby Pt.

Reyes Peninsula (Grams et al. 1977).

Southern Coastal Scrub on some sites is replaced by chaparral types (Mooney 1977, Gray 1983) but the usual trend of vegetation change in undisturbed or naturally disturbed stands is towards shrubs of various ages and size classes. Composition remains constant because recruitment is continual. Seeds germinate and young plants survive and grow under the canopy of mature plants. Southern Coastal Scrub is fire-adapted and most species sprout readily from crowns after burning. Thus, fire temporarily creates an even-aged stand, but reproduction by seed occurs within the second year after fire (Westman 1982).

Disturbances such as road cuts or landslides create areas often invaded by both northern and southern Coastal Scrub. Light, wind-dispersed seed and tolerance of xeric conditions allow Coastal Scrub to establish itself in disturbed areas (Harrison et al. 1971, Malanson and O'Leary 1982). Disturbance caused by oxidants in air pollution may have caused reduced cover by native Coastal Scrub species at certain sites in southern California (Westman 1979).

**Duration of Stages--** As discussed, most Coastal Scrub types can probably exist indefinitely and will not change greatly in the absence of disturbance, or when affected only by natural perturbations. Bradbury (1978) observed southern sage scrub surrounded by chaparral types that endured for over 45 years; Westman (1981a) observed healthy stands that had not burned in over 60 years. McBride (1974) estimates that invasion by chamise, chaparral, forest or woodland types would take 50 years.

## Biological Setting

**Habitat--** At its lowest elevations, Coastal Scrub is associated with Coastal Dunes, Coastal Prairie/Perennial Grassland (PGS), Cropland (CRP) and Pasture (PAS). At its central and highest elevations, it is associated with annual grassland (AGS), Douglas fir-Hardwood (DFR), Coastal Oak Woodland (COW), Montane Hardwood (MHW), Closed-Cone Pine Cypress (CPC), Chamise-Redshank Chaparral (CRC) and Mixed Chaparral (MCH).

**Wildlife Considerations--** Little is known about the importance of Coastal Scrub habitat to wildlife. Though vegetation productivity is lower in Coastal Scrub than in adjacent chaparral habitats associated with it (Gray 1982), Coastal Scrub appears to support numbers of vertebrate species roughly equivalent to those in surrounding habitats (Stebbins 1978). The Federal and State listed endangered peregrine falcon, Morro Bay kangaroo rat and the Santa Cruz long-toed salamander all occur in Coastal Scrub (Jones & Stokes 1981), though not exclusively. A subspecies of the black-tailed gnatcatcher, a California Department of Fish and Game Species of Special Concern (Remsen 1978), is found exclusively in southern sage scrub.

## Physical Setting

Coastal Scrub seems to tolerate drier conditions than its associated habitats. It is typical of areas with steep, south-facing slopes; sandy, mudstone or shale soils; and average annual rainfall of less than 30 cm (12 in). However, it also regularly occurs on stabilized dunes, flat terraces, and moderate slopes of all aspects where average annual rainfall is up to 60 cm (24 in). Stand composition and structure differ markedly in response to these physiographic features (Harrison et al. 1971, Bakker 1972, Mooney 1977, Cole 1980, Kirkpatrick and Hutchinson 1980, Parker and Matyas 1981, Westman 1981b).

## Distribution

Coastal Scrub occurs discontinuously in a narrow strip throughout the length of California. Latitude ranges from about 32° to 42° N and longitude ranges between 117 and 124°. Coastal Scrub usually occurs within about 45 km (20 mi) of the ocean; in Riverside County, it extends at least 110 km (50 mi) inland (see map). Elevation ranges from sea level to about 900 m (3000 ft).

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