

AN NCCP SPECIAL REPORT:

THE COASTAL SAGE SCRUB COMMUNITY
CONSERVATION PLANNING REGION

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Scientific Review Panel

The purpose of this special report from the Scientific Review Panel is to describe briefly the status of the coastal sage scrub vegetation community and to define the regional planning area under this initial natural community conservation planning process.

The status of the coastal sage scrub

Coastal sage scrub is often referred to as "soft chaparral" to differentiate it from "hard chaparral," the more widespread shrub community that generally occupies more mesic sites and higher elevations in cismontane California. Unlike evergreen, sclerophyllous chaparral, coastal sage scrub is characterized by soft-leaved subshrubs with leaves that abscise during summer drought and are replaced by fewer smaller leaves (Westman 1981c, Gray and Schlesinger 1983). Sage scrub also contrasts with chaparral in its lower stature (0.5-1.5 meters vs. 2-3 meters for chaparral), shallower roots systems, comparatively open canopies, and different component species.

The more open nature of coastal sage scrub permits the occurrence of a greater herbaceous component of forbs, grasses, and succulents than is usually associated with dense strands of mature chaparral.

European settlement since Mission times has resulted in a marked reduction in the extent of coastal sage scrub. The occurrence of coastal sage scrub on relatively fertile lowlands made it particularly vulnerable to early agricultural development. With rapid population increases, especially during the past two decades, agricultural areas and remaining sage scrub have become increasingly displaced by spreading urbanization.

Estimates of historic losses of sage scrub coverage range from "no more than 66 percent of coastal sage scrub in San Diego, Orange and Riverside counties" (Michael Brandman Associates 1991) to as great as 90 percent (Westman 1981a).

Numerous approved and proposed development projects on coastal sage scrub habitat are slated for the near future by private developers and various public agencies. Continued displacement of coastal sage scrub has resulted in the increased isolation of habitat fragments. In addition, much of this remnant habitat has been degraded by grazing, weed invasion, frequent fires, recreational activities, military training exercises, and possibly air pollution (O'Leary 1990, O'Leary and Westman 1988).

Recent estimates indicate that the percentage of remaining sage scrub that is degraded is 51 percent in Riverside County (Regional Environmental Consultants 1991), 15-25 percent in Orange County (Fred Roberts, personal communication), and 9-23 percent in San Diego County (Pacific Southwest Biological Services 1988, Ogden Environmental and Energy Services 1992).

Nearly one hundred species of plants and animals that are obligately or facultatively associated with coastal sage scrub are currently classified as rare, sensitive, threatened or endangered by federal and state agencies. Clearly, coastal sage scrub vegetation and the animal species it supports are now seriously imperiled in southern California. In order to conserve functional remnants of coastal sage scrub and to prevent extinction of many of its associated species in southern California, the State of California has in-

initiated a regionally focused conservation planning process for natural communities.

The natural community conservation planning effort

Areas within the designated planning region that support stands of coastal sage scrub, including "natural" and "degraded" sage scrub, will be evaluated for inclusion in individual natural community conservation plans. Coastal sage scrub stands are scattered throughout the planning region and are embedded in a matrix of other natural habitats; therefore, although each conservation plan will focus on coastal sage scrub, other contiguous natural communities, including chaparral, oak woodland, grassland, coniferous forest, vernal pools, and riparian zones, may be considered in the plans. These contiguous non-sage scrub habitats are necessary to facilitate gene flow, migration, and recolonization between large patches of coastal sage scrub habitat within the overall planning area.

The entire planning region includes areas up to 3500 feet in elevation in Orange County and cismontane portions of western San Diego, Riverside, and San Bernadino Counties (see figure). Extensions of this core area reach westward into eastern Los Angeles County along the southern base of the San Gabriel Mountains to the Monrovia-Glendora area and in the Chino Hills-La Habra Heights and San Jose Hills area. Areas within the overall planning region above 3500 feet elevation will also be included due to their importance as habitat and in facilitating dispersal of some species. The planning region also includes two disjunct, outlier areas -- one on the Palos Verdes Peninsula in Los Angeles County and the other in the West Coyote Hills in extreme northwestern Orange County.

The present planning area is necessarily limited to a restricted portion of southern California for two reasons. First, the area is virtually completely isolated by an urban barrier from more northwesternly areas of coastal sage scrub in Los Angeles and Ventura Counties. Second, the area, effectively

embraces the overlapping distributions of three species, the California gnatcatcher, cactus wren, and orange-throated whiptail lizard, selected by the Scientific Review Panel to serve as focal study species for conservation planning purposes (see *The California Coastal Sage Scrub Scientific Review Panel: Its Purpose and Approach*. NCCP Special Report No. 1 February 1992.)

However, it should be acknowledged that other remaining areas of coastal sage scrub in California and Baja California are also endangered. While these areas may presently contain fewer numbers of rare, threatened, or endangered plant and animal species, they are also seriously impacted and will likely warrant future protection.

Coastal sage scrub: technical description for field identification/planning purposes

Characteristic species of coastal sage scrub include California sagebrush (*Artemisia californica*), several species of sage (*Salvia mellifera*, *Salvia leucophylla*, and *Salvia apiana*), California encelia (*Encelia californica*), brittlebush (*Encelia farinosa*), San Diego sunflower (*Viguiera lacinata*), and buckwheats (including *Eriogonum fasciculatum* and *Eriogonum cinereum*). Evergreen sclerophyllous shrubs such as *Malosma laurina*, *Rhus integrifolia*, and *Rhus ovata* are often patchily distributed in stands of coastal sage scrub. During moist winter and spring periods, high transpiration and carbon assimilation rates allow for rapid plant growth, flowering and fruiting (Harrison et al. 1971, Mooney 1988). Most of the dominant species are "drought evaders" by virtue of their facilitatively-deciduous life history strategies, thus they are particularly well adapted to prolonged periods of low rainfall.

As noted above, coastal sage scrub ranges in elevation from sea level to about 3500 feet in inland, southerly portions of its distribution. Sage scrub extends latitudinally from the San Francisco Bay region southward to El Rosario in Baja California, where it occurs on coastal plains and foothills of the Trans-

verse and Peninsular Ranges, in the Sierra San Pedro Martir in Baja California, and offshore on the Channel Islands and islands adjacent to northern Baja California.

Patches of coastal sage scrub may replace "hard" chaparral on xeric sites with shallow soils, on argillaceous soils, on road cuts, or in areas subjected to chronic disturbance by burning or grazing (Bradbury 1978, Kirkpatrick and Hutchinson 1980, Westman 1981b, Zedler et al. 1983, Mooney 1988). While some species of coastal sage scrub may be common the first several years in postburn chaparral, particularly in ecotonal areas, they are eventually displaced as mature chaparral canopies develop (Gray 1983). Coastal sage scrub appears to be intermediate to grassland and chaparral in its resilience following frequent fires (Wells 1962, Kirkpatrick and Hutchinson 1980, Keeley 1981). Keeley and Keeley (1988) suggest that a fire-recurrence interval of five to ten years may result in a "type conversion" of chaparral to coastal sage scrub; more frequent burning will convert sage scrub to grassland dominated by non-native annual species.

Several subassociations of coastal sage scrub have been recognized based on floristic composition (Axelrod 1978, Kirkpatrick and Hutchinson 1977, Westman 1983). From a numerical classification and ordination of 99 samples of xeric shrublands extending from San Francisco to El Rosario, Westman (1983) identified two distinct coastal sage scrub "formations" – coastal sage scrub (*sensu stricto*) and coastal succulent scrub.

The latter formation, earlier described by Mooney and Harrison (1972) as coastal sage succulent scrub, occurs along the southern, more xeric end of the evapotranspiration gradient encountered between San Francisco and El Rosario.

Within the coastal sage succulent scrub two floristic associations, Martiran and Vizcainian, are recognized; both are dominated by completely deciduous shrub species and by various succulents in the Cactaceae and Crassulaceae families. Four floristic associations within coastal sage scrub (*sensu stricto*) are recognized: Diablan, Venturan, Riversidian, and Diegan. These associations occur in reasonably distinct geographical areas along the coastline, with the Riversidian association occupying inland locations characterized by higher summertime evapotranspirative stress. The Venturan association has been further subdivided floristically into two subassociations, with distributions apparently controlled by slope, aspect, and substrate (Westman, 1983, Malanson 1984). More recent studies and field observations suggest additional distinct subassociations with both the Riversidian and Diegan associations (DeSimone 1989, Anderson 1991, S. Boyd and J. O'Leary, personal observation).

Acknowledgments

This report was drafted with assistance from Reed Noss, Todd Keeler-Wolf, Fred Roberts, and Steve Boyd.

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March 1992

