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**FIRE,**  
**NATIVE PEOPLES,**  
*and*  
**THE NATURAL**  
**LANDSCAPE**



*Edited by*  
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# PRE-EUROPEAN FIRE IN CALIFORNIA CHAPARRAL

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The vegetation of California offers richness in both structure and composition, but no type is more intimately tied to fire than chaparral. This relationship lends import to assertions that the burning activities of native peoples influenced the chaparral. However, several lines of evidence suggest that human impacts were marginal: ethnographic records are ambiguous; natural factors of lightning and vegetation flammability seem adequate to account for the known fire record; stratigraphic data suggest no change in fire history through the time period of initial European contact; and the richness of species composition implies spatial differences in fire return times, a pattern more consistent with varying environmental conditions that influence natural burning than regular human controls on ignitions. After a brief introduction, each of these four major points will be discussed in detail.

## Fire and Chaparral

California's chaparral is notable both for its flammability and for the adaptations of its component species to recurring fire. As with other sclerophyllous shrublands found in the Mediterranean-climate regions of the world, both the composition of the vegetation community and the characteristics of the individual species are known to be intimately related to fire (Keeley 1987, 1991; Keeley and Keeley 1988; Moreno and Oechel 1991).

Given the linkages between chaparral and fire, any suggestion that the pre-European fire regime was controlled by people implies by extension that the chaparral was (and is) actually something of a human artifact. Such an argument has been made explicitly by anthropologist Henry Lewis:

The strategy of fall and spring burnings involved a quite different kind of "management" of the chaparral areas by both the intensification and a dramatic shift from the seasonality of natural fires. This idea implies, of course, that the Indians played a fundamental role, not only in the maintenance of the chaparral belt, but that they were probably active in the very evolution of California's chaparral. (1973:59)

Others have responded with skepticism, asserting that the fire adaptations of chaparral are better explained by a natural fire regime:

There is no compelling evidence that the use of fire by Indians or any other primitive man had any effect in developing the adaptations to fire exhibited by the vegetation in California. . . . [F]ires due to natural causes—chiefly lightning—which have occurred since remote geologic time, have been a significant force in determining the characteristics and adaptations of our California chaparral. (Burcham 1974:117–118)

This chapter explores the possibility that native Californians actively altered the chaparral, managing it through their use of fire. Such exploration requires consideration of several interlocking questions: How common was anthropogenic ignition? How did anthropogenic ignition differ from natural ignition (i.e., lightning)? To what degree was the frequency and extent of fire determined by ignition, as opposed to fuel load and weather conditions? How important was fire in determining species composition and characteristics? And for each of these aspects, how much spatial variability was there within the overall area dominated by chaparral?

These questions are complicated somewhat by variance among scholars regarding the delineation of the area involved. California chaparral grows on steep terrain between sea level and 2,000 meters. It is common in the Coast and Transverse Ranges and in the western foothills of the Sierra Nevada. Chaparral's common occurrence in a mosaic with other vegetation types (Keeley and Keeley 1988) complicates the already complex task of delineating vegetation boundaries (Küchler 1973). The distribution shown in Figure 8.1 is conservative; it is based on Küchler



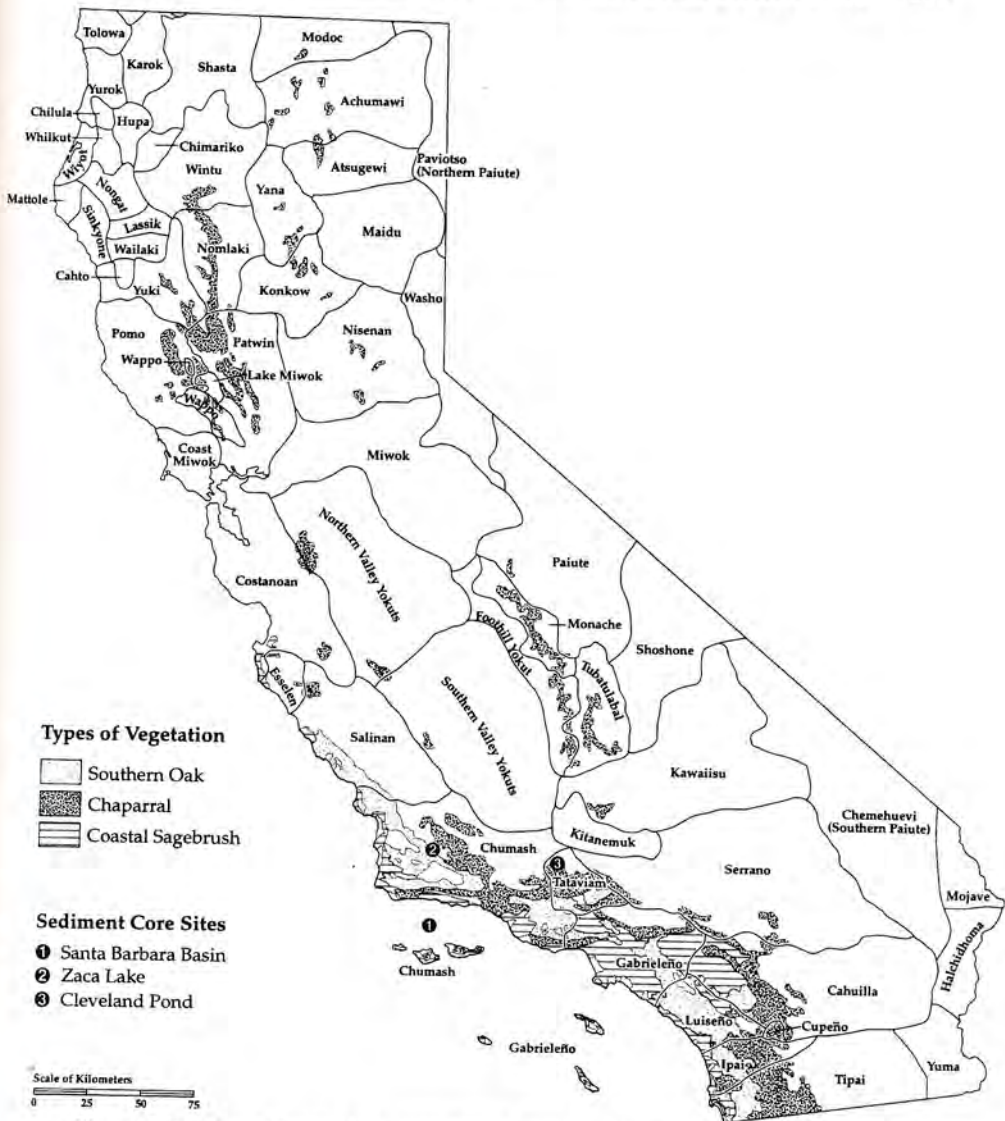


Figure 8.1. Cultural boundaries, vegetation distribution, and core sites (cultural and vegetation boundaries are from Donley et al. 1979:8, 147; sediment core locations are from Mensing 1993:31).

(1977), but covers a lesser area than the map illustrating Hanes's (1977) chapter on chaparral within that same volume. Lewis (1973) showed chaparral covering a still more expansive area, broadening the fringe around the Sacramento Valley and encompassing much of Southern California, including virtually all what Küchler (1977) mapped as coastal sagebrush and southern oak forest. Because these maps simply reflect

varying degrees of cartographic generalization, none is inherently more "correct" than the others; therefore, Figure 8.1 is presented as a general guide rather than an definitive source.

## Burning by Native Californians

The idea that Native Californians altered the chaparral through their use of fire is scarcely a new one. A half century ago, anthropologist Omer Stewart (1951) declared that the cessation of such burning had led to the substantial expansion of chaparral and cited Storer (1932) in support of this claim. Storer had, in fact, written about reduced burning, but in reference to fire suppression, with no mention of native burning. Because much of Stewart's article generalized about North America, it is unclear which purposes he felt were served by fire in the chaparral, although he did make reference to fire used as a tool of warfare in California and to fire as a protection from snakes for "barefoot California Indians" (Stewart 1951:320). Geographer Homer Aschmann (1959) also saw anthropogenic fire as a land-management tool with significant ecological impacts: "Above all, the Indians would burn the landscape to promote the growth of desired grasses and herbs. . . . Did it cause the degradation of a complex chaparral to the less useful chamise or coastal sage association or did it expand the oak-grassland parks?" (1959:48).

### *Henry Lewis and the Case for Anthropogenic Fire in Northern California*

Whereas Stewart and Aschmann had made largely undocumented assertions, Lewis (1973) provided a coherent compilation of ethnohistorical evidence for native Californian burning in the northern and central parts of the state. This evidence was drawn from published records of interviews with native informants in the early twentieth century. The informants were discussing ancestral practices presumed to have been common before European and Euro-American contact. It is worth reviewing Lewis's contribution in some detail, because he provided the first data-based argument for extensive anthropogenic fire, because he inspired much of the interest and research on the topic (Blackburn and Anderson 1993), and because in the ensuing decades his work has been cited as authoritative on the topic (e.g., Aschmann 1977; Baumhoff 1978; Shipek 1989; Pyne et al. 1996).

Lewis (1973) began his description of the evidence for anthropogenic fire in the chaparral with extensive quotes from Harrington's (1932) Karok informant, who said her people used to "burn up the brush at various places, so that some good things will grow up" (Harrington



1932:63). She went on to make contradictory statements (as Lewis noted) about the timing of the fires:

It is summer when they set fire to the brush, at the time when everything is dry, that is the time that is good to set fire, in the fall before it starts to rain. . . . they burn it any time in the summer. (Harrington 1932:64–65)

Was this informant actually discussing chaparral? Although Lewis's (1973) own map shows a substantial area of chaparral within the Karok territory, Küchler mapped no chaparral there (Figure 8.1); Baumhoff (1963), whom Lewis cites elsewhere as a source for similar information, lists less than 1.5 percent (15.1 square miles) of Karok area as chaparral. As Lewis himself noted, the "good things" growing after fire were more characteristic of coniferous forests than chaparral; they were "huckleberry bushes . . . hazel bushes . . . and the bear lilies" (Lewis 1973:51). None of the huckleberry species listed in Hickman (1993) is described as growing in chaparral. Hazel, presumably *Corylus cornuta*, used by the Karok for basket-making (Bright 1978; Anderson 1999) grows in many habitats (Hickman 1993), although in treatments of California vegetation it appears in descriptions of evergreen forest understory (Griffin 1977a; Franklin 1988) and is absent from those of chaparral (Hanes 1977; Keeley and Keeley 1988). Lewis took "bear lily" to be a reference to *Xerophyllum tenax*, another species that he noted was associated with coniferous forests. This same informant also mentioned tanbark oak and manzanita. Lewis described the former (*Lithocarpus densiflorus*) as being "effectively on the border" (1973:53) between chaparral and Douglas fir/redwood forests, but again it is generally described as occurring in various forest types (Barbour 1988; Franklin 1988), and not in chaparral (Keeley and Keeley, 1988). Many manzanita species, on the other hand, are indisputably characteristic of chaparral. Given the limited extent of chaparral in Karok territory and that most of the plants mentioned were actually atypical of chaparral, it is puzzling that Lewis used these quotes to establish chaparral burning.

The next native group discussed by Lewis were the Pomo, for whose customs he referenced Stewart (1943) and Kniffen (1939). According to Lewis, "In discussing both redwood forest and chaparral areas of the northern Pomo, Stewart notes that 'the brush was burned at intervals, making hunting much easier than at present'" (Lewis 1973:53–54). But if one reads Stewart's statement in its entirety, one gets a different impression:

The plants in the redwood forests yielded tan-oak acorns, iris fiber, and berries; the forest was also hunting territory.

For the full chapter, *Fire, Native Peoples, and the Natural Landscape* edited by Thomas R. Vale is available at [Amazon.com](http://Amazon.com).