



Research Brief for Resource Managers

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Humans and Fire in the CA South Coast Bioregion

Keeley, J.E., and A. D. Syphard. 2018. South Coast Bioregion. Pages 310-351 in, van Wagdendonk, J.W., N.G. Sugihara, S.L. Stephens, A.E. Thode, K.E. Shaffer, and J.A. Fites-Kaufman (editors). Fire in California Ecosystems. University of California Press.

The South Coast bioregion is a relatively tiny portion of the entire California landscape (8%), but it is home to a majority of the people (56%). Such concentrated human exposure is the primary threat to this biodiversity hotspot, mostly through housing development and the associated increased ignitions. For this bioregion, the impending human demography patterns that influence development and ignitions are more threatening than climate change, but they are also more easily rectified.

Although the South Coast bioregion shares a similar Mediterranean climate with the rest of the state, it is uniquely alluring to people because it is hemmed in by the rugged Transverse and Peninsular mountain ranges on the north and east, by the Pacific Ocean to the west, and by the U.S./Mexico border to the south (Map 1). These geographic borders make it climatically, topographically, and ecologically distinct from the other California bioregions: mild, diverse, beautiful, and coveted. Containing a complex mosaic of grassland, shrubland, forest and woodland, the South Coast bioregion can be sorted into

Management Implications:

- **Montane Zones** of the South Coast bioregion have endured unnaturally infrequent fire in the past century because of human fire suppression practices.
- **Lower Coast Valley and Foothill Zones** have endured increased fire frequencies during the last century, in spite of fire suppression efforts.
- For this densely populated bioregion, human demography patterns (i.e., development & ignitions) are changing fire regimes and vegetation quicker than climate change.

two major ecological zones: 1) the **Coastal Valley and Foothill Zone**; & 2) the **Montane Zone**, with very different natural fire regimes (i.e., crown fire regimes vs. mixed surface fire regimes, respectively).

The ecosystems within these distinct fire regimes have accumulated very different sets of modern fire management problems that are vegetation, weather, and location specific. Within the chapter, fire regime interactions with grasslands, sage scrub, chaparral, cypress, big cone Douglas-fir, riparian woodlands, oak and walnut woodlands, black oak woodlands, and yellow pine forests are

variously described in terms of season, moisture levels, aspect differences, floristic adaptations, functional types and community composition.



Map 1. South Coast bioregion extends south from the Transverse ranges to Mexico and from the coast east to the Peninsular Ranges.

Overall, humans have been igniting fires in the South Coast bioregion since the Holocene, quickening the fire return interval and initiating vegetation type conversion in the Coastal Valley and Foothill Zone. However, prehistoric fire management practices were conducted at a sustainable level for thousands of years in the absence of invasive European weed species. Drastic vegetation change came roughly 200 years ago with the influx of

Europeans, who curtailed the traditional fire management practices of the native Indians at low elevations Zones, and even suppressed the lightning ignited Montane Zone fires. While fire suppression continued and has certainly become the main fire regime problem within Montane Zones, a progressively increasing density of people, ignitions, and exotics has off-set any suppression efforts for the Coastal Valley and Foothill Zones. Now, unnaturally frequent fire is type converting low elevation woodlands and shrublands to non-native grasslands at an unprecedented rate.

Because the fire regimes of the two Zones behave so differently from each other, South Coast bioregion fire managers need a broad assortment of tools for success today. Reducing surface fuels and thinning the dense in-growth of saplings in fire suppressed Montane Zones is quite necessary, but retrofitting existing homes, optimizing defensible space, optimizing building arrangements for new development, and controlling potential ignitions sources are better fire-safety & conservation strategies for over-burned, Lower Coast Valley and Foothills Zones. The impact of problematic “fuel breaks” and rehabilitation efforts of the past may also need to be assessed going forward.