



Research Brief for Resource Managers

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Non-resprouting Chaparral is Decimated by Repeated Fires

Jacobsen, A.L., S. D. Davis, and S. L. Fabritius. 2004. Fire frequency impacts non-sprouting chaparral shrubs in the Santa Monica mountains of southern California, [no pagination]. In M. Arianoutsou and V.P. Panastasis (eds), *Ecology, Conservation and Management of Mediterranean Climate Ecosystems*. Millpress, Rotterdam, Netherlands.

Resprouting chaparral species can regenerate without seeds after a fire, but non-resprouting (obligate seeding) species regenerate only by seed after fire. This means that populations of the latter life history depend on a sufficient seedbank for survival. If fires happen too often, these plants could theoretically be extirpated from a site.

Using GIS fire history data, 1930-1934 VTM maps and modern vegetation maps, four experimental sites with short fire return intervals (≤ 6 years) were paired to four control sites with similar vegetation, slope, aspect and elevation but with longer fire intervals (>12 years). Field sampling of the current vegetative cover was compared with historical patterns for the different fire intervals. All sites were chosen because they were historically dominated by a non-resprouting species, either *Ceanothus megacarpus*, *C. cuneatus*, or *C. crassifolius*.

They found that repeat fires at short fire return intervals, ≤ 6 years, decreased the density of these non-resprouting species, with shorter fire intervals having the greatest impact (Figure 1). Fires with only 6 year intervals resulted in a 85% decrease, 4 year intervals resulted in a 95% decrease and 100% extirpation of the non-

Management Implications

- Short fire return intervals (≤ 6 years) can reduce populations of non-resprouting, obligate seeding chaparral shrubs and can cause local extirpation in some cases.
- The effects of short fire return intervals on non-resprouting shrub species can persist for decades.

resprouting shrub species occurred at 3 year intervals. This effect of a single short fire interval can persist for decades. For example, at one of the sites the short fire interval had occurred 60 years previously yet replacement of shrubs with grasses was still evident. Shorter fire intervals also increased gaps in the shrub matrix increasing the abundance of coastal sage scrub and herbaceous non-native forbs and grasses.

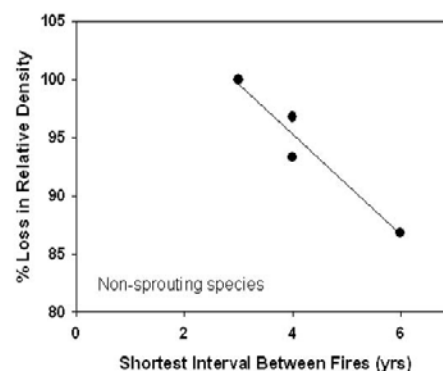


Figure 1. Shortest interval between fires versus the percentage loss in relative density of non-resprouting shrub species in frequent fire sites ($r^2 = 0.94$, $P = 0.033$).