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Research Brief for Resource Managers

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History of Prescription Burning by Sierra Nevada NPS and USFS

Keeley, Jon E., Anne Pfaff, and Anthony C. Caprio. 2021. Contrasting prescription burning and wildfires in California Sierra Nevada national parks and adjacent national forests. International Journal of Wildland Fire 30:255-268. https://doi.org/10.1071/WF20112

Serious prescription (Rx) burning in the Sierra Nevada was initiated by the National Park Service (NPS) in Sequoia National Park in 1968, followed soon after by Yosemite National Park. Since then these parks have conducted annual Rx burning. Adjacent US Forest Service (USFS) national forests didn't begin annual Rx burning until 2004. However, they have rapidly increased area treated to levels comparable to the parks. The history of these changes and factors involved have been documented in this paper by USGS and NPS scientists.

This paper provides statistical comparisons of wildfires and Rx burning in the three Sierra Nevada NPS parks and six adjacent USFS forests (Fig.1) for the period from 1968 through 2017. Over this time, they contrasted Rx burning with managed wildfires for resource benefit (historically referred to as 'prescribed natural fires'), with wildfires managed for suppression. Over the last 50 years annual Rx burning in the three national parks has greatly exceeded that in the adjacent forests (Fig. 5a). However, in the last 10 years NPS and USFS Rx burning has been roughly comparable (Fig. 5b).

Management Implications

- Fire management in national parks and national forests includes annual prescription burning and managing lightning-ignited fires for resource purposes.
- Different biophysical characteristics and management goals have played an important role in how fires have been managed in parks and forests.
- Presently none of the parks or forests have prescription burn programs sufficient to return landscapes to the pre-Euro-American fire regime.
- Identifying acceptable burn windows throughout the year is one of several avenues being explored for increasing Rx burning.

In addition, the paper reports that the aggressive management of wildfires for resource benefit has over the last 50 years burned comparable amounts of area as Rx burning. During this period Sequoia National Park had more area burned by the combination of Rx and managed wildfires for resource benefit than area burned by wildfires managed for suppression. This ratio for the national parks ranged from 0.8–2.2 and for national forests 7.7–16.2.

The authors reviewed the biophysical and political characteristics contributing to these patterns and point out the total area burned by both agencies remains "far short of what is required to return these ecosystems to anything close to their natural fire regime."

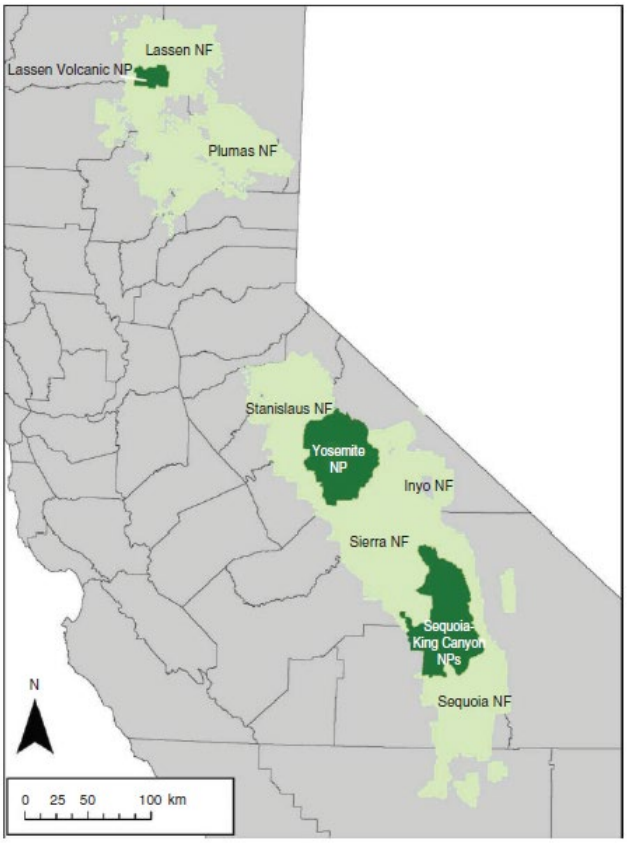

Figure 1: Map of central and northern California highlighting Sierra Nevada nation parks (dark green) and adjacent national forests (light green).

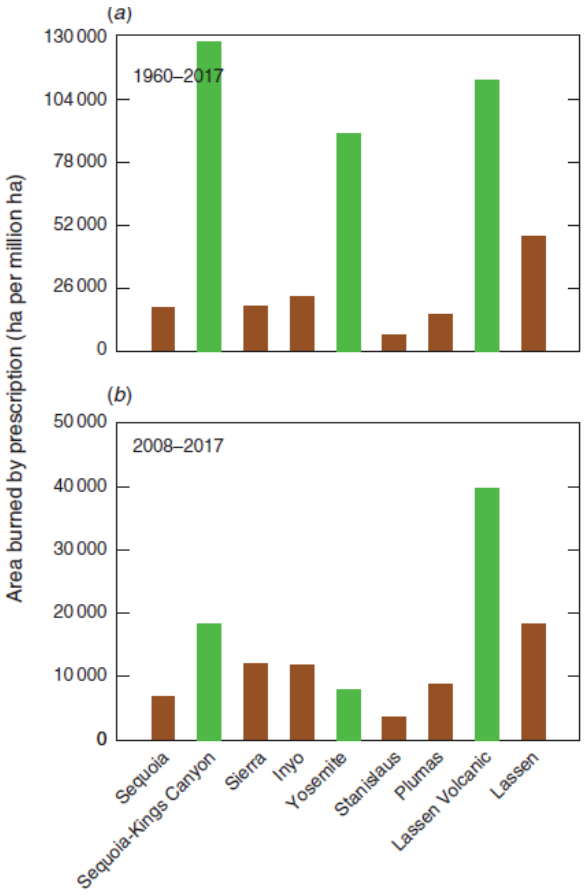

Figure 5: Area burned by planned prescription burns for the period (*a)* 1960-2017, and (*b*) 2008-2017 for the three national parks (green) and adjacent national forests (brown).