



Research Brief for Resource Managers

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The Riskiest Ignition Sources in Southern California

Syphard, A.D., and J.E. Keeley. 2015. Location, timing and extent of wildfire vary by cause of ignition. International Journal of Wildland Fire 24: 37-47.

<http://dx.doi.org/10.1071/WF14024>

With wildfire becoming more catastrophic, all possible fire control strategies must be thoroughly investigated. Good alternative strategies to the traditional fuel manipulation strategies include: using fire resistant building materials in structures, building higher density housing in safer locations, educating communities about locally optimized defensible-home-space parameters, and reducing fire ignitions. This study focuses on the latter issue, specifically on discerning the most destructive ignition sources so that they might be targeted by managers.

Because ignitions are non-random, varying in both time and space in ways that could affect the size and destructiveness of wildfires, these authors focused on whether certain types of ignitions were responsible for a disproportionate amount of area burned. They examined 3686 ignitions for two southern California subregions: the Santa Monica Mountains (Ventura and Los Angeles Counties) and the western portion of San Diego County, California.

Management Implications:

- Different ignition causes exhibit distinctive spatial and temporal patterns that affect area burned.
- Fire prevention programs should prioritize strategies and optimize resources by focusing on specific causes, locations, and timing of ignitions.
- Power lines need special attention as a major cause of wildfires under high wind conditions.
- Fuels management should consider roadside management strategies for control of fine fuels.

This study showed that the relative importance in terms of number of ignitions and area burned, as well as factors that explained ignition patterns, varied by ignition cause. Specifically, power lines proved to be a major ignition source for both regions (Fig.2a&b), while arson fires were more important for the Santa Monica Mountains (Fig.2a), and equipment use was more important in San Diego County (Fig. 2b). Regardless of ignition cause, proximity to roads was consistently important in explaining ignition location, partly because of

human access and partly because of weedy, flammable roadside vegetation. Season and fire weather also helped explain the size of a fire in terms of area (Fig.3).

Using MaxEnt modeling for evaluation of potential explanatory variables, they found that the presence of grass explained a larger proportion of ignition distribution in the Santa Monica Mountains whereas proximity to roads and structure density were more important in San Diego County.

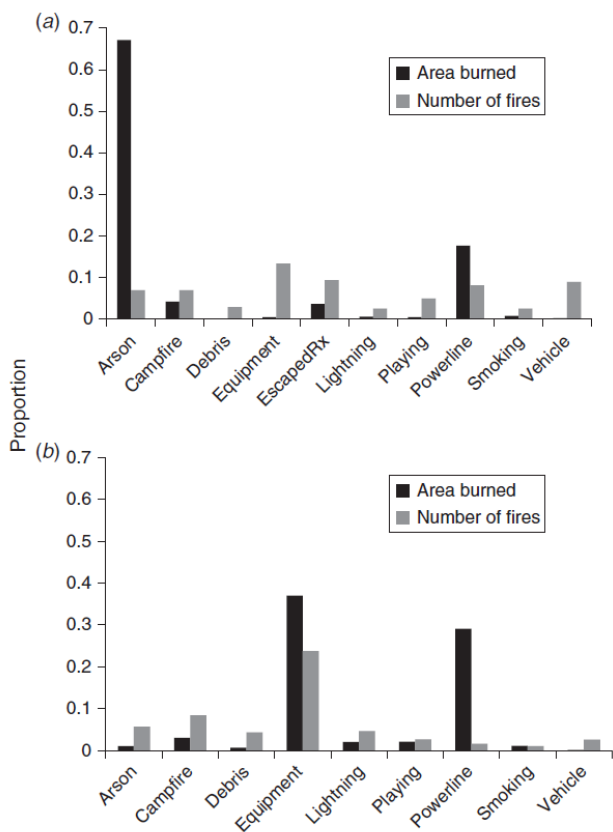


Fig. 2. Proportion of number of fires and area burned by cause of ignition in (a) the Santa Monica Mountains and (b) San Diego County. 'EscapedRX' means escaped prescribed fire.

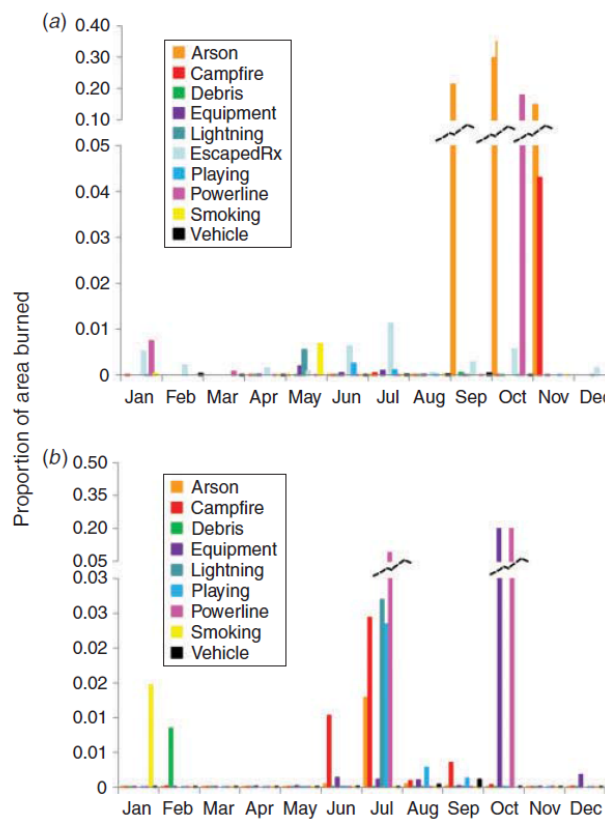


Fig. 3. Proportion of all area burned by ignition cause by month for (a) the Santa Monica Mountains and (b) San Diego County.