

Western Ecological Research Center

Publication Brief for Resource Managers

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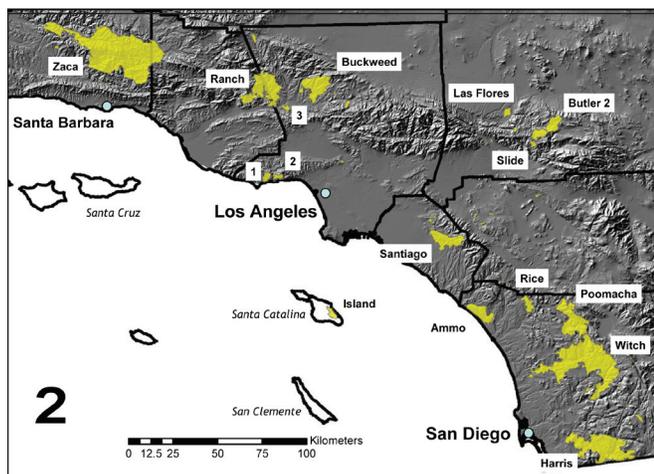
The 2007 Southern California Wildfires: Lessons in Complexity

As is evidenced year after year, the nature of the “fire problem” in southern California differs from most of the rest of the U.S., both by nature and degree and this is well illustrated by the 2007 wildfire season that burned over a million acres and included several megafires. Lessons to be drawn from these fires illustrate some of the complexity of fires in this region and are discussed in a recent paper published in *Journal of Forestry* by USGS scientists Jon E. Keeley and C.J. Fotheringham, USFS scientist Hugh Safford, Janet Franklin from San Diego State University, and Max Moritz from the University of California, Berkeley.

The authors point to the October fires of 2007 as another example of Santa Ana wind-driven fires with the capacity for doing great damage to life and property. Like many previous fires in this region, they were

Management Implications:

- Essentially all destructive fires in southern California are ignited by people and thus potentially preventable through: better restrictions on use of machinery in wildland areas during severe fire weather (cause of the 2007 Zaca Fire), placement of power lines underground in corridors of known Santa Ana winds (cause of the 2007 Witch Fire), more conspicuous arson patrols during Santa Ana wind events (cause of the 2007 Santiago Fire), or barriers along roadsides (ignition site for many of the 2007 fires).
- There is little evidence that greater vegetation management prior to 2007 would have played a significant role in diminishing the size of the biggest fires that year.
- Fires in southern California require strategic thinking that links causal factors with necessary fire management responses. Lessons from 2007 point to the most important advances in fire safety in this region will come from advances in fire prevention, fire preparedness and land use planning.



Southern California and locations of fires referred to in this study (Keeley et al. 2009). Fires greater than 1,000 ha in size are identified. Numbers refer to: 1) Corral Fire, 2) Malibu Canyon Fire, 3) Magic Fire. Los Angeles is at 34° 03.510' N latitude, 118° 14.653' W longitude.

pushed by wind gusts over 100 kph, but just like the catastrophic fires of 2003, extraordinary drought lasting one to two years prior to the fire was a major contributor to their size. The primary impact of drought is that it leads to the die-back of vegetation and these high fuel loads greatly increase long-distance spotting.

As in 2003, young chaparral stands and fuel treatments were not reliable barriers to fire in October 2007. This is well illustrated by the observation that the 2007 fires

returned over 50,000 acres of the 2003 fires. This interval between fires is expected to contribute to significant type conversion to non-native weedy communities over much of this area.

A second lesson is drawn from the Zaca Fire in July and August, 2007, which illustrated that other factors besides high winds can sometimes create conditions for large fires in southern California. Usually these summer fires are easily contained because of higher fuel moisture and the general lack of strong winds. However, the Zaca Fire burned in a remote wilderness area of rugged terrain that made access difficult. In addition, due to its remoteness, human-caused ignitions had been low in prior years and thus stand age and fuel loads were high. Coupled with this was severe drought that year that generated fuel moisture levels considerably below normal for that time of year.

A third lesson comes from 2007 conifer forest fires in southern California mountains. The Slide and Grass Valley fires of October, 2007 occurred in forests that had been subject to extensive fuel treatment, but fire control was complicated by a patchwork of untreated private properties and mountain homes built of highly flammable materials. In a fashion reminiscent of other recent destructive fires in California, burning homes themselves were a major source of fire spread.

Keeley, J.E., H. Safford, C.J. Fotheringham, J. Franklin, and M. Moritz. 2009. The 2007 southern California wildfires: Lessons in complexity. Journal of Forestry 107:287–296.

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