

LESSONS FROM THE 2003 FIRE SIEGE IN CALIFORNIA*

Jon E. Keeley

In October 2003, wildfires in southern California burned 742,000 acres (300,000 ha), destroying more than 3,000 homes and killing 26 people. It was the worst disaster ever to befall California, exceeding previous fires, earthquakes, and other natural disasters.

The fires gave reason for pause. Current wildland fire management policy is based on a philosophy that fuel management practices can reduce the ultimate size of wildland fires by creating fuel mosaics. Patches of young fuel, so the thinking goes, will act as barriers to fire spread. Did the fires in southern California bear the theory out?

Diverse Communities

The fires burned through various plant communities with very different responses to fire and fuel manipulation. Forests in the region—mainly long-needle pine types—have had their natural fire cycle of low-intensity surface fires interrupted by fire suppression policy, resulting in near fire exclusion. By October 2003, the accumulation of dead surface fuels and living ladder fuels had turned most of these forests into an extreme fire hazard.

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The Paradise Fire near San Diego, one of 14 major conflagrations in southern California in October 2003. The vast majority of the landscape burned was dominated by shrublands in the stand replacement fire regime, such as those shown burning here. Photo: Keith Redington, Eldorado Interagency Hotshots, South Lake Tahoe, CA, 2003.

The vast majority of the landscape burned is dominated by chaparral, where periodic high-intensity crown fires are natural and unavoidable.

Luckily, soon after the fires reached these forests, the weather improved. The wind died down and rain eventually extinguished the fires. However, if the weather had not improved, a century of fire suppression and lack of fuels treatments in these forests could have added to the disaster. As it turned out, forests in the region comprised only about 5 percent of the total area burned.

The vast majority of the landscape that burned was dominated by chaparral and related shrublands. The natural fuel structure in these ecosystems leads to high-intensity crown fires. Unlike the adjacent pine forests, where fire suppression policy has been effective at excluding fires, in chaparral vigorous fire suppression has not resulted in fire exclusion, despite heroic firefighting efforts over the years. In fact, there is no evidence that reduced fuel loads in chaparral are an effective barrier to fire spread.

Worst Fire Climate

That's because southern California has the worst fire climate in the country. The October 2003 wildfires were fanned by Santa Ana winds

that often reached speeds of 50 to 60 miles per hour (80–96 k/h). Under these conditions, firefighters were forced into defensive actions and could do very little to stop the conflagrations.

Fuel mosaics made little difference. Examination of stand age maps shows that much of the landscape that burned was a mosaic, with substantial patches of young fuels. But where high winds failed to push the fire through the young fuels, the fire either spread around them or jumped over them through fire brands lofted for a mile (1.6 km) or more. Under extreme weather conditions, there is overwhelming evidence that young fuels—even fuel breaks—will not prevent fire spread in southern California’s shrublands.

Nevertheless, fuel reduction should remain an important management tool, even in chaparral shrublands,

because it might lead to reduced fire intensity and increase the defensible space for firefighters. Fires driven by Santa Ana winds move extremely fast, and prefire fuel manipulation to create defensible space should be strategically

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applied, balancing potential benefits against the adverse impacts that fuel manipulation often has on natural resources. Although further economic study is needed, the most cost-effective fuel reduction would probably be in the wildland/urban interface.

Management Implications

The massive fires of October 2003 in southern California were not unprecedented, and future fires of this magnitude are to be expected in shrubland landscapes. Though perhaps beneficial in the region’s long-needle forest types, fuel reduction treatments would have done little to stop the spread of these fires because so much of the landscape is dominated by chaparral and related shrublands.

However, greater strategic use of prefire fuel manipulation in the wildland/urban interface might have reduced loss of lives and property during the southern California fire siege. Future development in the region should include planning for the high-intensity fire events that are natural to shrubland ecosystems, just as we take hazards from earthquakes and other natural catastrophes into account in our engineering plans. ■

WEBSITES ON FIRE*

Forest Service Southwestern Region Photo Library

In wildland fire management, photos are often vital for illustrating a situation, technique, or technology. Yet fire managers often find themselves short of the photos they need to make a particular point or illustrate a given

story or presentation. Internet photos abound, but usually in no particular order—useful for little more than random browsing—and almost always with a resolution size too low for some uses, particularly print publication.

That’s why the photo library posted by the USDA Forest Service’s Southwestern Region is so valuable. The photos are organized by widely recognized events and usable categories such as “Cerro Grande Fire (2 years later)” and “Success Stories.” For example, the Rodeo–Chediski series, shot by noted Forest Service photographer

Tom Iraci, illustrates articles by Paul Keller, a talented journalist and former hotshot. Many of the articles focus on treatments that kept Rodeo–Chediski from burning with uncharacteristic severity in historically open ponderosa pine forest. The articles are downloadable. Photos have short descriptions as well as thumbnails. Most are downloadable in both low- and high-resolution formats, depending on your purpose.

Found at
<http://fsweb.r3.fs.fed.us/pao/photo_library/index.html>

* Occasionally, *Fire Management Today* briefly describes Websites brought to our attention by the wildland fire community. Readers should not construe the description of these sites as in any way exhaustive or as an official endorsement by the USDA Forest Service. To have a Website described, contact the managing editor, Hutch Brown, at USDA Forest Service, Office of the Chief, Yates Building, 4th Floor Northwest, 201 14th Street, SW, Washington, DC 20024, 202-205-0878 (tel.), 202-205-1765 (fax), hutchbrown@fs.fed.us (e-mail).

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**FIRE POLICY
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