

FIRE BEHAVIOR WARNING: A letter from Mike Rohde, June 27, 2003 and distributed throughout the National Park Service Email System

Many of you are probably aware of the catastrophic timber dieback that is occurring in San Bernardino, Riverside, and San Diego Counties. Entire stands of pine trees are being devastated by drought and associated bark beetle infestations, resulting in the permanent die-off of these forests. This is particularly acute in the Lake Arrowhead-Crest Forest, Big Bear, Idyllwild, and Angelus Oaks areas and continues to spread. In the Lake Arrowhead region alone, 30,000 homes are situated among this decadent forest posing severe interface risks. This dieback condition is creating conflagration potential in the mountains, and if natural processes continue unabated, will likely result in a series of large and intense "stand-replacement" wildfires. I have included images to illustrate this condition.

This risk is particularly acute when the trees are in a "standing red and dead" phase, where the trees still have dead needles and limbs attached to the trees. These trees then serve as "catcher's mitts" for wind blown embers and spot fires. Such is the condition of the forest currently, and will be for the next several years.

A recent severe fire in the Tucson, AZ area (Aspen Fire) burned in forests in a similar condition and resulted in loss of 300+ structures within very short burn periods. In Southern California, the last several years drought has been so severe that large brush species have also perished along with the trees in many areas.

OCFA personnel need to be aware that in response to fires in these areas that firefighter risk will be particularly high for several reasons.

First, in portions of these affected areas, particularly Crest Forest-Lake Arrowhead, there are few safety zones or even deployment zones among interface areas to support firefighter safety. Many of the structures at risk lack basic defendable space or fire resistive features. Your commitment to structure protection in these areas must include a full assessment of this risk, early definition of safety zones and escape routes, and a decision whether commitment is reasonable. Evacuation of residents and firefighter access in these areas will be a significant problem given the lack of arterial roads.

Secondly, these fires will burn with great intensity. The last time historically that the forests were in this condition was 1910. Students of fire history will remember that great fires swept over 3 million acres of the west during two August days that year. By comparison, California's firestorms of 1993 burned less than 200,000 acres over two weeks.

Finally, fires in this fuel condition may burn differently from what you may have experienced in previous large fires. Southern California's classic fires are wind driven with the fire's trajectory basically moving from point A to Point B in a linear fashion with moderate range spotting. While this scenario could still occur, the fire potential for the affected areas today could also lead to "plume dominated-fuel driven" fire behavior, which is different. This fire type is

characterized by towering convection columns rising straight into the air for 25-40,000 feet. This convection appears aggressive and "angry" with a large cumulus cap, and functions as a giant "elevator" for large amounts of firebrands. The way these fires spread, as opposed to wind driven scenarios, is for large tracts of heavy fuel to burn all at once lofting firebrands high up. As the fuel burns out and the convection column's "elevator lift" weakens, the firebrands then shower into unaffected areas either at the head of the fire or sometimes to its flanks. This saturation firebombing leads to many simultaneous spot fires in these new areas and rapid area-wide ignition. This then repeats the convection development cycle. This fire type may occur without the influence of general winds, although the fire itself can generate tornado-like winds. Simply stated, you can be standing next to a structure in relatively clean air watching the massive smoke column and suddenly be surrounded by spots, which coalesce into mass fire. Spotting in this fire type can occur up to 10 miles ahead of the main fire.

CDF, the Forest Service, and other agencies are preparing briefings for all agencies and for firefighters deploying into these areas. This fire potential will go beyond this summer and exist for years. This is a fundamental and long-term increase in wildland and interface risks for these areas. Look for more information coming soon from involved agencies and the OCFA. And beyond all else, think, watch-out, and stay safe!

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