



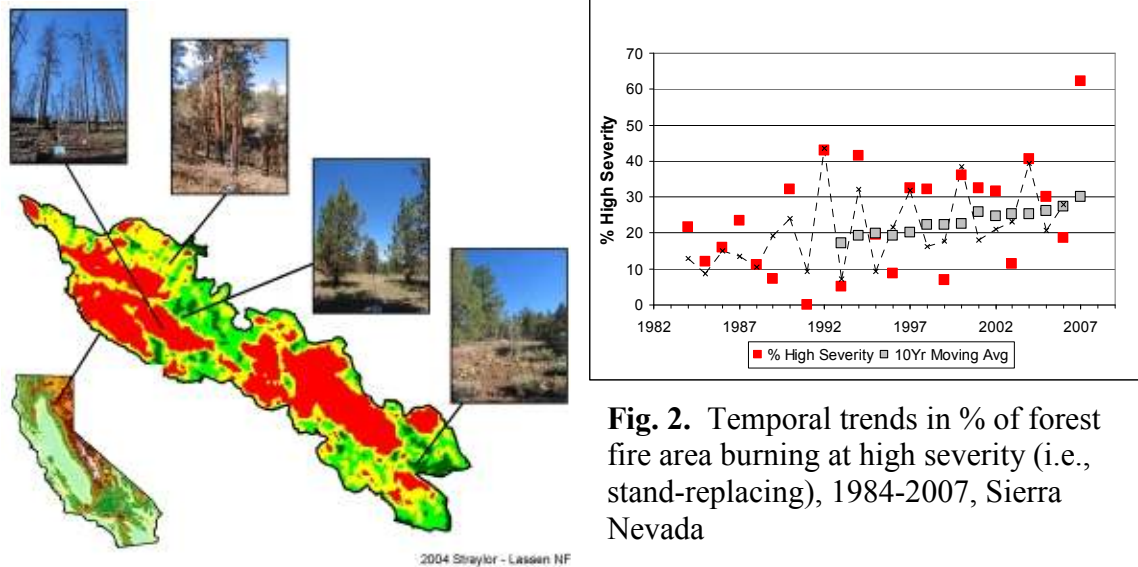
## **Fire Severity Monitoring Program Pacific Southwest Region 2007**

**Project Description:** Beginning in 2000, the Pacific Southwest Region Fire and Aviation Management staff developed a landscape level fire monitoring program to support the Sierra Nevada Framework. This program maps severity to vegetation due to wildland fires using Landsat satellite imagery and field data collection (Fig. 1). The Fire Severity Monitoring Program is part of the Strategic Planning Section in Fire, Fuels and Aviation Management. The program is cooperative with the Wildland Fire Leadership Council (WFLC)-funded Monitoring Trends in Burn Severity (MTBS) program (jointly managed by the USFS Remote Sensing Application Center (RSAC) in Salt Lake City [Brian Schwind, program manager] and the USGS EROS Data Center in Sioux Falls), and RASC's Burned Area Emergency Response (BAER) mapping program.

**Implementation Plan and Accomplishment to Date:** Recent lawsuits brought against the Forest Service to stop fuels treatments in the Sierra Nevada have cited a scientific paper that states that current fires in the Sierra are not out of the range of historic variability and therefore fuels treatments are not required<sup>1</sup>. The authors of this paper used BAER soil burn severity maps to support their erroneous arguments. The Fire Severity Monitoring program, working with the Pacific Southwest Region Ecology program, began publishing papers in 2006 to refute these erroneous conclusions. Two papers were published this year; the first one on the remote sensing methods to map vegetation severity developed by the Fire Severity Monitoring program<sup>2</sup>; the second on how soil burn severity maps produced by BAER teams do not depict severity to vegetation<sup>3</sup>. A draft report, which will be released as a Regional publication in 2008, has been written that shows the trend in the percentage of acres burned at high severity has increased in the Sierra from 1984 to 2006 (Fig. 2). A third paper summarizing the draft report, co-authored with Hugh Safford, Pacific Southwest Regional Ecologist, has been submitted to a peer-reviewed journal and is currently in review.

During 2006 the Fire Severity Program began mapping severity to vegetation immediately post-fire (usually within two weeks of fire containment) on all fires over 1000 acres on NFS lands in the Region using methods previously developed for the Sierra Nevada Monitoring program. The impetus was to support a project spearheaded by Mike Landram, Regional silviculturalist, to produce post-fire reforestation plans within thirty days of containment. In 2007, the Fire Severity Mapping Program supported this program in successfully producing reforestation plans on all fires over 1000 acres on NFS lands in Region 5. Additionally, the methods developed in the Pacific Southwest Region were transferred to RSAC for testing the reforestation planning methods in other regions.

Other Pacific Southwest Region projects have also taken advantage of the availability of immediate post-fire vegetation severity data produced by the Fire Severity Monitoring Program in 2007. For example, the Adaptive Management Services Enterprise Team (AMSET) Fire Behavior Assessment team headed by JoAnn Fites used the vegetation severity data to assess fuels treatment effectiveness on the Antelope Complex that occurred on the Plumas NF in July 2007 on a USFS Washington Office (WO) funded project. The Region 5 Ecology Program is also using the severity maps to stratify fire areas for postfire monitoring.



**Fig. 2.** Temporal trends in % of forest fire area burning at high severity (i.e., stand-replacing), 1984-2007, Sierra Nevada

**Fig. 1.** Example of fire severity map, Straylor Fire, 2004, Lassen National Forest

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- <sup>1</sup> Odion, D. C. and C. T. Hanson (2006). Fire severity in conifer forests of the Sierra Nevada, California. *Ecosystems* 9:1177-1189.
- <sup>2</sup> Miller, J. D. and A. E. Thode (2007). Quantifying burn severity in a heterogeneous landscape with a relative version of the delta Normalized Burn Ratio (dNBR). *Remote Sens. Environ.* 109(1):66-80.
- <sup>3</sup> Safford, H. D., J. Miller, D. Schmidt, B. Roath and A. Parsons (2007). BAER soil burn severity maps do not measure fire effects to vegetation: a comment on Odion and Hanson. *Ecosystems*. In press.