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The Final Newsletter from the SNAMP FFEH Science Team - Volume 8, Number 3, September 2015

SNAMP HIGHLIGHT: FFEH TEAM

This is the final newsletter for the Sierra Nevada Adaptive Management Project's (SNAMP) Fire and Forest Ecosystem Health Team (FFEH). Here we share results from 8 years of research on the effects of forest thinning on fire behavior and forest health in Sierra National Forests. The full SNAMP report (including FFEH water, wildlife, spatial and participation reports) is available at http://snamp.cnr.berkeley.edu/final report.

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Adaptive Management Project newsletter

The forest management practices and increased fire suppression capabilities in National Forests over the last 100 years have contributed to a growing risk of severe wildfires. Changes in forest structure and composition have made modifying wildland fire behavior a Forest Service management priority. The 2004 Sierra Nevada Forest Plan Amendment identified a coordinated system of vegetative fuel treatments distributed across the landscape as the best way to collectively slow fire spread and moderate fire effects across the larger landscape. These strategically placed landscape area treatments (SPLATs) are designed to modify fire behavior and improve forest health in the Sierra Nevada region. Model simulations have shown that by treating as little as 30% of an area with SPLATs, fire severity can be decreased both inside and adjacent to the treated areas.

SNAMP researchers created the fire history for the southern monitoring site in the Sierra National Forest, near Sugar Pine, CA that is pictured at the right. Each horizontal line represents a tree and the black vertical lines are dated fire scars taken from local trees. Note the time scale on the bottom axis.
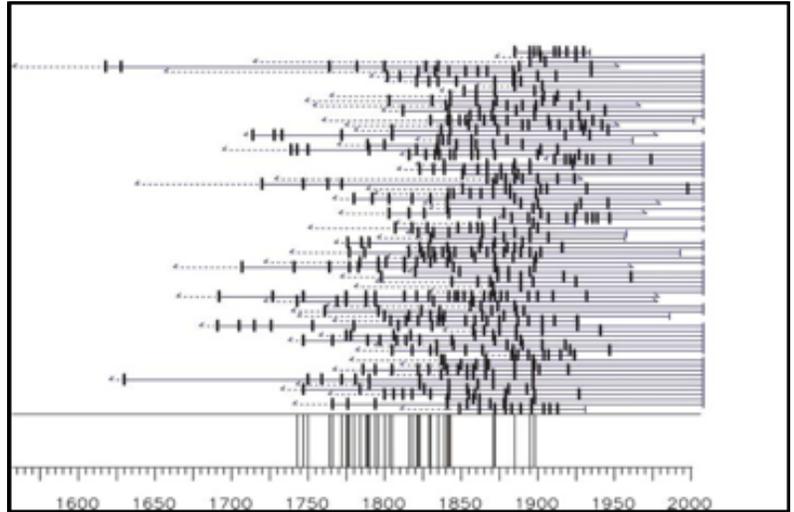
Fire scar history for the southern monitoring site in the Sierra National Forest, near Sugar Pine, CA.

This is clear evidence of decades of fire suppression. SNAMP was formed to address uncertainty regarding the effectiveness of SPLATs in modifying fire behavior and concerns regarding potential impacts on wildlife and water resources. SNAMP tested the performance of SPLATs as designed and implemented by the Forest Service in two fuels reduction projects, Last Chance in

A feller buncher is seen cutting trees at the Northern study site, Last Chance, in the Tahoe National Forest.

the Tahoe National Forest and Sugar Pine in the Sierra National Forest. Scientists conducted detailed field measurements before and after treatments in order to quantify changes in forest structure and fuel loads resulting from SPLATs. To account for potential changes unrelated to forest management, a control fireshed was paired with the treated fireshed at each site. Data from the field measurements were used to parameterize fire behavior and forest growth models. These models were then used to simulate wildfire effects on forest structure with and without SPLATs. Modeled fire effects on specific resources of interest to the other teams were then shared, i.e., changes in canopy cover for the wildlife team, leaf area index for the water team, etc.

At Last Chance, fuel treatments covered about 18% of the landscape and modeled fires based on the actual treatments predicted that the treatments would be successful in reducing the percentage of the forest exposed to damaging flame lengths 11%, from 33% (no SPLATs) to 22% (with SPLATs). The impact of SPLATs on fire behavior was predicted to be lower at Sugar Pine. Fire simulations for Sugar Pine showed that SPLATs were completed on 29% of the area and reduced exposure to damaging flame lengths from 29% of the landscape to 25% – a decline of only 4 percent.
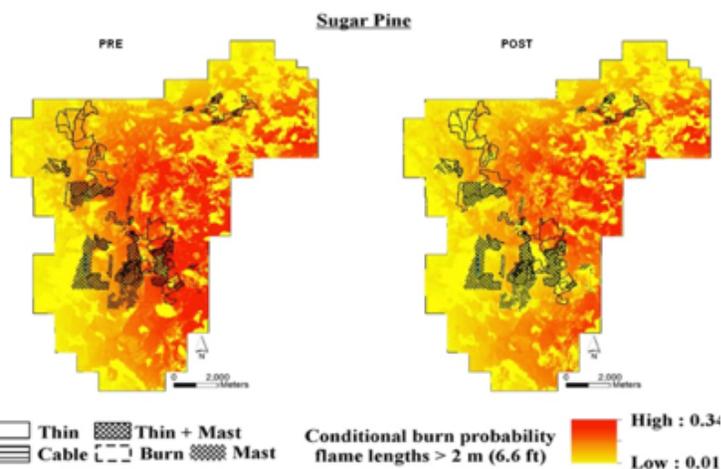
The team's fire modeling results show a reduction in fire severity (or a reduction in extreme fire behavior) pre to post treatment in the Sugar Pine project.

Models were also used to explore the tree growth efficiency responses (a measure of tree vigor) to the treatments. The models predicted there would be a larger improvement in the growth efficiency (or forest health) in the Sugar Pine project than the Last Chance project ten years following the SPLATs. The modeled difference in forest response to SPLATs was related to differences in the extent and intensity of the treatments applied at the two sites (the southern site was in a fisher conservation zone that required retention of greater tree canopy cover) as well as historical ecology and land management. These results support the effectiveness of SPLATs at reducing both fire severity and improving forest health. Coordinated treatments across part of the landscape can help minimize the hazards posed by severe fires and at the same time meet forest health objectives. For more complete information please see http://snamp.cnr.berkeley.edu under Final Report.

To read other newsletters and for more information about the SNAMP project, please visit our project website at: *http://snamp.cnr.berkeley.edu*.