

Tree mortality following reintroduction of fire to an old growth mixed conifer forest  
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More than a century of fire suppression in the Sierra Nevada has resulted in accumulation of surface fuels and higher tree densities, increasing the potential for large, destructive crown fires. Resource managers are using prescribed fire to reduce fuel loads and restore forest structure and process. However, the long fire-free interval may result in unnaturally high fire intensity, leading to excessive mortality of large overstory trees. The objective of this study was to evaluate fuel loading in an old growth mixed conifer forest having no recent history of fire and determine patterns of tree mortality in response to the reintroduction of fire. Prescribed fire and control plots were randomly assigned to six 15-hectare units in Sequoia National Park. Fuel loading was estimated using Brown's linear transect method. Diameter of each tree within subplots was determined and status noted before and after fire. Prescribed fire plots were treated in the fall of 2001 under conditions of low fuel moisture. Prior to the burns, amount of surface fuel averaged 192 metric tonnes/ hectare and was composed mainly of large pieces of wood and downed logs (41.0 %) and litter and duff (54.7 %). Fuel loading was high in comparison to non-old growth forests of the Sierra Nevada. Fires burned 85% of the plot area and consumed an estimated 93% of the litter and duff. Initial mortality of trees was patchy and locally substantial. Rates of survival of different tree species and different size categories are currently being determined and will be reported.