



Sequoia National Forest and Monument Smoke Modeling Project Sequoia National Forest 2007

Project Description: This project encompasses the 1.2 million acre Sequoia National Forest of south central California. Roughly 300,000 ac of the Forest are designated as the Sequoia National Monument. Ponderosa pine, mixed conifer, and true fir forests dominate the montane regions while subalpine forests are present along the crest of the Sierra Nevada mountain range. More than 30 Giant Sequoia groves occur in the lower-montane belt. Communities in and around the project area include Hume, Cedar Grove, Camp Nelson, California Hot Springs, Kernville, and Lake Isabella.

Historically wildfires were an extremely important ecosystem function in this region. Today, however, fire managers must balance human interests- such as clean air - with the ecological risks and benefits of fire. Decades of fire suppression have left much of the Forest at risk of higher-severity fire than was common historically. Prescribed burning can reduce that risk, but often decreases the already-poor air quality of the region. This project will compare trade-offs in the estimated smoke emissions created by statistically simulated wildfires for a variety of fire management scenarios. Simulations will also include smoke production by prescribed fires. Along with a no-management option, these scenarios will be comprised of various intensities and spatial patterns of mechanical thinning and prescribed fire. The project is being conducted collaboratively by the California chapter of The Nature Conservancy, the Region 5 Ecology Program, and the Sequoia National Forest, with funding through Sierra Nevada Legacy. The ultimate goal is to produce scientific results that promote sound fire management policies to reduce hazardous fuels while optimizing air quality and improving wildlife habitats for threatened species including the California spotted owl and the Pacific fisher. An additional result of this project will be the exploration of management scenario effects on carbon sequestration in fuels.

Implementation Plan and Accomplishment to Date: This project was formally initiated in October 2007 with a memorandum of agreement between The Nature Conservancy and the Sequoia National Forest. We plan to finish the analysis by March 2008. We are using two computer modeling tools developed by the Pacific Northwest Research Station's FERA lab for the smoke and emissions modeling: the Fuel Characteristic Classification System (FCCS) and Consume. Input data come from Forest Inventory and Analysis data processed by the Region 5 Remote Sensing Lab. We are currently formatting the input data for FCCS. Next we will design a method to determine the ignition likelihood for any given point within the project area based on human and lightning ignition records. These likelihoods can be scaled to reflect patterns in relatively

high or low-ignition decades. We intend to design the suite of management scenarios through workshops involving Forest personnel, the Region 5 Stewardship and Fireshed Assessment Cadre, local Fire Safe councils, and environmental advocacy groups.

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