

## PROPOSAL 2

### **The Effect of Site Preparation Method and Secondary Release Treatments on Three Conifer Species at 21 Years after Planting**

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A field study was conducted to compare site preparation methods and shrub control after planting on the survival and growth of ponderosa pine, sugar pine, and white fir. The seven-acre site used for this study is located in Tahoe National Forest approximately 15 miles northeast of Foresthill, CA., at a 5000 ft. elevation. The study site was occupied by mature shrub species when the study was initiated in 1978. The study design was a split plot, with site preparation being the main plots and level of shrub control being the subplots, with all plots replicated three times. Site preparation was performed in the fall of 1978, and methods included rotary mastication (Hydroax<sup>®</sup>), brush rake, and a controlled burn. Ponderosa pine, sugar pine (both 1 yr-old) and white fir (2 yr-old) were planted in the spring of 1979 on a 6 ft. by 6 ft. spacing, for a total of 88 trees per species per subplot (264 total trees per subplot). Three levels of shrub control were imposed on each main plot; no treatment after site preparation, a single herbicide treatment (September 1980), or two herbicide treatments (June 1979 – shielded application, and September 1980). Tree survival and growth were intensively measured until 1983 (Lanini and Radosevich 1986). In September 2000, tree survival, height, diameter at breast height, shrub composition and shrub volume were measured on each plot.

Data from the September measurements are currently being analyzed. Observationally, survival of ponderosa pine and white fir declined a few percent from the last measurements made in 1982. Sugar pine survival declined by over 50%, primarily due to disease (blister rust). Height and diameter growth of the all conifer species increased, with the greatest increase observed in the ponderosa pine. In subplots that received two herbicide treatments, ponderosa pine were 25 to over 40 feet tall, with diameters ranging from 8 inches to over 14 inches. In plots with no subsequent shrub control after site preparation, ponderosa pine were about 50% smaller. White fir were somewhat larger in plots with two release treatments, but the difference between trees in plots with two release treatments versus those with no release treatments was not as great as with the ponderosa pine. The surviving sugar pines were intermediate between the ponderosa pine and the white fir in their response to release. Once data are analyzed, a complete report will be submitted.

#### **Literature Cited:**

Lanini, W.T. and S.R. Radosevich. 1986. Response of three conifer species to site preparation and shrub control. *Forest Science* 32:61-77.



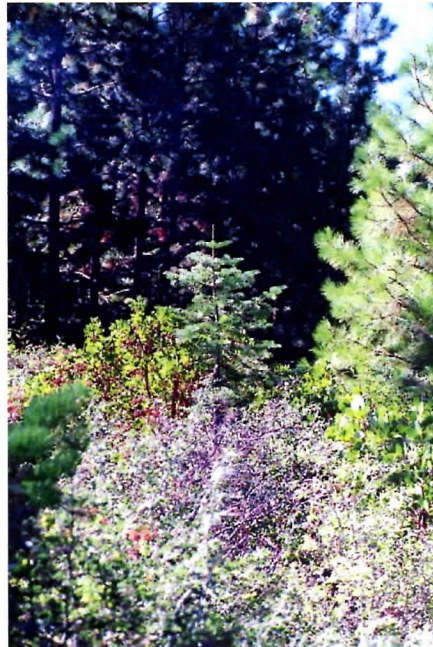
Shrubs are more than 6 feet tall, making it difficult to find and measure conifers.



Steve Radosevich and crew preparing to measure conifers.



Ponderosa pine in brushed-raked plots with two release treatments.



White fir sticking out of shrubs in plots with one release treatment after site preparation (fire).



Whitehorn and black oak competing with ponderosa pine.