

ABSTRACT

YOUNG GROWTH GIANT SEQUOIA RESPONSE TO MANAGEMENT STRATEGIES AT MOUNTAIN HOME STATE FOREST

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A total of 35, one tenth (0.1) of an acre, plots were established in 1989 on Mountain Home Demonstration State Forest in predominantly young growth giant sequoia stands. This study inventoried, compared, and analyzed overall growth and yield response of young growth giant sequoia (*Sequoiadendron giganteum*) to three management strategies in 2001. The research objective of this study is to answer two main questions: 1) is there a difference between the management strategies of no treatment, thinning only and thinning followed by prescribed burning on the effect of stand growth in young growth giant sequoia and mixed conifer species stands, and 2) is there a difference between the management strategies of no treatment, thinning only and thinning followed by prescribed burning on regeneration response of giant sequoia and other mixed conifer species?

Analysis results reveal a highly significant difference ($p = 0.005$) for cubic foot volume growth over the twelve year period and a significant difference ($p = 0.05$) for board foot volume growth for the same twelve year period for both treatments against the control . Analysis of natural regeneration data for the major conifer species show a highly significant difference ($p = 0.005$) in seedlings per acre on the thinned and burned treatment as compared to no treatment and the thin only treatment, with white fir being

the dominant naturally regenerated species (87% of total). No significant difference was observed between the control and thin only treatment themselves.

The results of this study will be useful to forest managers as they develop guidelines for giant sequoia forest structure, density and spacing at Mountain Home Demonstration State Forest. It is nearly impossible to mimic the natural disturbance processes that created the giant sequoia groves of today. Historically, giant sequoia has evolved to its present status with a combination of intense fires creating patchy canopy gaps and bare mineral soil needed for seedling establishment, growth and survival. A combination of various silvicultural strategies such as, prescribed fire, overstory thinning, and planting are needed to manage giant sequoia in perpetuity.