

Dealing with Drought: Do thinning treatments change tree response to drought in Redwood National Park?

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Coast redwood-Douglas-fir forests face changing climatic conditions and increasing drought stress over the coming century. Forest restoration techniques, including mechanical thinning and prescribed fire have been used by forest managers to decrease hazard fuels and stand competition as well as to accelerate forest maturation to old forest conditions. However, uncertainty remains as to whether restoration treatments will increase forest resistance and resilience to disturbances such as severe drought.

To address this issue, we are investigating the efficacy of mechanical thinning to promote resistance to extended drought in second-growth forests within Redwood National Park on the north coast of California. Coast redwood and Douglas-fir trees were sampled from seven forest restoration treatments and three untreated controls within upland forest sites. We quantified stand composition, structure, and tree-level competition, while annual growth was measured using dendrochronological techniques. Early results suggest that drought and competition interact to influence tree growth patterns and pattern variability. These and future results will provide information on the potential of forest restoration treatments to meet new management objectives for increased forest resistance and resilience to expected future drought and climatic changes.