

Forest Restoration and Fuels Reduction in Ponderosa Pine and Dry Mixed Conifer in the Southwest

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Abstract—Most people agree that ponderosa pine and dry mixed conifer stands need to be thinned and burned to move the stands to within a normal range of variability. Unfortunately, people are in disagreement beyond that point. To some, restoration and fuels reduction means restoring stands to more open, pre-European (pre-1880) conditions. To others, fuels reduction should involve the removal of only the smallest trees (less than 6-9") within the treated stands. The Forest Vegetation Simulator (FVS) stand model, along with the Fire and Fuels Extension (FFE) of FVS, were used to demonstrate the effects on fuel hazard and forest stand structures when various stocking levels and diameter caps are applied. The effectiveness of the various treatments was evaluated based upon resulting crowning and torching index values following various thinning treatments. The results of the stand treatment simulations point out that pine and dry mixed conifer stands need to be fairly open (residual basal areas <80 ft²) to adequately reduce fuel hazard to reduce the threat of stand-replacement fires in these forest types. Stand simulations also pointed out that when diameter caps are applied that are too small, treatments tend to remove most or all of the smaller trees, reducing within-stand diversity and moving the stands toward more even-aged stand structures. Amended forest plans (1996) in the Southwestern Region specifically call for multi-storied stand structures to increase within-stand diversity to promote better goshawk, Mexican spotted owl, and old growth habitats.

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