

# Restoration Case Studies and Ecosystem Effects





# Ecological Restoration Thinning of Ponderosa Pine Ecosystems: Alternative Treatment Outcomes Vary Widely

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Ecological restoration prescriptions should be designed using the best available scientific knowledge, have their likely consequences analyzed, and have their consequences monitored. To illustrate these points, three levels of ecological restoration thinning were analyzed for outcomes for a permanent plot established in 1909 on the Fort Valley Experimental Forest. This plot had 47.4 trees per acre in 1876 and 383 in 1997. Simulation modeling suggests that a strict restoration to 1876 densities would produce stand conditions that would support only surface burning with no crown scorch and release 491 btu/ft<sup>2</sup>. Leaving three times as many trees would produce stand conditions that would support passive crown fire with 70 percent crown scorch and release 1800 btu/ft<sup>2</sup>. Beyond fire behavior, predicted resource values vary widely as well. Strict restoration would produce a stand with high near view scenic quality (Scenic Beauty Indicator of 85), high grass and wildflower production (856 lbs/acre), and relatively high water yield (6.7 inches). The three fold level would produce low scenic quality (SBI 34), lower herbaceous production (134 lbs/acre), and lower water yield (6.1 inches). At its best, ecological restoration can improve ecosystem health, reduce unwanted fire behavior, and enhance human resource values. At its worst, it could be a waste of effort and resources.

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