

TREATED VS. UNTREATED SOUTHWEST FOREST RESPONSE FOLLOWING WILDLAND FIRE

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ABSTRACT

We compared understory and overstory stand characteristics in silviculturally treated versus untreated ponderosa pine (*Pinus ponderosa*) stands following wildland fire in New Mexico and Arizona between 2003 and 2007. Three wildland fire sites were selected (2002 Rodeo-Chediski Fire, Arizona; 2002 Borrego Fire, New Mexico; 1989 Oso Fire, New Mexico). Our objective was to characterize the annual and cumulative response and communicate management implications to managers. To determine understory stand response following wildland fire in lop, pile, burn; lop and scatter; harvest and burn; and untreated control stands, we estimated understory cover, standing crop, and dead and down fuel loading as benchmarks along a response trajectory following disturbance. Mean bare-soil cover on untreated sites was greater 2–3, 2–6, and 6–10 growing seasons following fire on Rodeo-Chediski, Borrego, and Oso study sites, respectively, as compared to treated sites. Few, if any, differences in standing crop (kg ha^{-1}) among treatments and years were noted. Coarse woody debris fuel loading (i.e., 1000-hour fuels) on untreated Oso sites was greater than treated sites 6–10 growing seasons following fire. Differences in fire severity between treated and untreated sites resulted in important ecological differences. Untreated sites had greater potential for soil erosion as a result of persistent bare-soil exposure and less litter cover up to 10 growing seasons following wildland fire. While increased fuel loads due to falling tree boles may contribute organic matter to the system, they also have the potential to increase soil heating in the event of a future reburn. According to Franklin et al. (1997), ecosystem “recovery” depends on opportunity and chance. In the case of forest stands subjected to wildland fire, managed stands were provided an immediate opportunity to rebound while untreated stands were left to rely on chance.

Keywords: managed vs. unmanaged, prescribed fire, silviculture, understory cover, wildland fire.

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