



TRADE-OFFS OF REDUCING CHAPARRAL FIRE HAZARD



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ABSTRACT

Fire risk reduction is not always mutually beneficial for people and nature especially in areas with natural stand replacing fire systems. Sometimes there is an inverse relationship, as fire risk decreases the rate of fundamental shifts in plants composition increase. For example, non-native plants invade after all fuel reduction treatments, but only persists in areas with the greatest reduction in fire risk. Therefore, land managers face an acute dilemma between protecting people or nature. Fuel reduction treatments, such as prescribed fire and mastication, are widely applied to reduce fire risk. These treatments help protect homes and communities from fire yet facilitate the invasion of non-native species in the short-term. In the long-term, the ecological trajectory and fire risk of these treatments is poorly understood. We address these research gaps with a 13 year study evaluating how fire risk, non-native species invasion, and preferred deer browse change through time in California's northern chaparral. About ten years post treatment the fuel reduction treatments (fire/ mastication) and their season (fall/winter/spring) have unique influences on plant communities and fuel loads. In contrast to fire, mastication reduces more shrub cover for longer, while it also increases the amount of non-native plants, non-native annual grasses, and preferred deer browse. The treatments' season also influences the outcome, but to a lesser magnitude. Fall fire and mastication treatments have lower shrub cover for longer, and more non-native plants, non-native annual grasses, and preferred deer browse than spring or winter treatments. Based on our findings we conclude that all fire hazard reduction treatments have trade-offs which must thoroughly considered before implementation.

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