

Comparing the effects of fire and grazing in native grasslands on the Moree Plains, north-west NSW. Which is the better management option for grassland reserves?

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Productive grasslands that are not grazed often require some form of disturbance to reduce the density of grass tussocks and allow regeneration of interstitial species. Kirramingly Nature Reserve is one of few areas, and certainly the largest area, of native grassland on the Moree Plains that is not grazed by livestock. Removal of grazing from this former pastoral property (in 1996), in the absence of other forms of disturbance may result in a reduction in species richness. This could present a problem because the National Parks and Wildlife Service aims to manage the Reserve to maintain native biodiversity. The use of fire as a disturbance mechanism is an obvious option for reserves like Kirramingly, where livestock grazing is not permitted. Controlled fire is also considered necessary for hazard reduction where the Reserve borders neighbouring properties. However, the impacts of fire on Mitchell grasslands from a conservation perspective have not been thoroughly investigated. Manipulative experiments were carried out at the Reserve to investigate the effects of fire in two seasons (autumn and spring) with and without kangaroo grazing. The effects of livestock grazing were determined through surveys comparing sites in the Reserve to sites on the surrounding stock routes. Fire treatments and kangaroo grazing had no lasting effect on species composition or richness. Species richness and composition was similar to control sites within 6 months of the spring burns and 12 months of the autumn burns. Surveys through time suggested that disturbance in the form of livestock grazing is unnecessary to maintain plant species richness in the Reserve. However, if competitive exclusion does occur over a longer time span, then fire would be recommended over the re-introduction of livestock grazing due to the more pronounced changes in composition associated with livestock grazing and a possible removal of grazing-sensitive species.

Managing fire in modified landscapes