

Reducing wildfire impacts through long term prescribed fire management: a north Australian case study

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ABSTRACT – This study aims to assess changes in a regional fire regime and commensurate environmental benefits associated with over a decade of active fire management. Given the recent history of (1) post-colonial cessation of traditional indigenous fire management and, consequently (2) fire regimes becoming dominated by frequent and extensive late dry season wildfire, being implicated in (3) ongoing collapse of biodiversity values in Australia's fire-prone northern savannas, regional conservation-based fire management programs now typically aim to mitigate wildfire through the implementation of strategic prescribed burning during the cooler early dry season. Many fire management programs are now resourced through participation in a nationally legislated emissions abatement initiative. However, it remains unclear the extent such environmental concerns are being addressed by these renewed fire management efforts. Utilising a long term fine-scale spatial fire history covering the western Arnhem Land region of northern Australia, where since 2006 fire management has been resourced through contractual agreements to abate emissions, we document trends in common landscape scale fire metrics and assess effects on measures of defined ecological thresholds of concern. Although overall area burnt did not decrease significantly over the 12-year period, the regional fire regime transitioned from late dry season, wildfire-dominated to being characterised with a majority fires occurring as small early dry season prescribed burns. Most ecological metrics improved, with 40% of those assessed attaining desired threshold levels, one exception being thresholds describing the maintenance of longer-unburnt habitat. While a decade of continuously resourced fire management could be considered long term, these results indicate that, given the temporal scales of many biotic requirements regarding fire, commitments to resourcing fire management must remain ongoing if significant environmental benefits are to be realised. This can be achieved through utilisation of carbon market-based mechanisms.

Keywords: Prescribed burning; fire regimes; ecological thresholds; emissions abatement

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