

**PROCEEDINGS OF THE AUSTRALIAN RANGELAND SOCIETY
BIENNIAL CONFERENCE**

Official publication of The Australian Rangeland Society

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Form of Reference

The reference for this article should be in this general form;
Author family name, initials (year). Title. *In*: Proceedings of the nth Australian Rangeland Society Biennial Conference. Pages. (Australian Rangeland Society: Australia).

For example:

Anderson, L., van Klinken, R. D., and Shepherd, D. (2008). Aerially surveying Mesquite (*Prosopis* spp.) in the Pilbara. *In*: 'A Climate of Change in the Rangelands. Proceedings of the 15th Australian Rangeland Society Biennial Conference'. (Ed. D. Orr) 4 pages. (Australian Rangeland Society: Australia).

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THE EFFECT OF A HIGH INTENSITY FIRE ON SAVANNA WOODLAND IN NORTH QUEENSLAND

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Woodland thickening has been identified as a major management problem in many savanna areas of north Queensland. While fire is frequently recommended as a management tool, little quantitative data exists on its effects on tree mortality or population structure in these areas.

To address this issue ten c.100 ha paddocks were burnt in October 1999 at the Wambiana experimental site, Charters Towers. Paddocks contain a mixture of three vegetation types i.e. a *Eucalyptus melanoploia* community on yellow/red kandosols, a *Acacia harpophylla* community on grey vertisols and a *E. brownii* community on brown chromosols. Prior to the fire, five (4 by 100 m) permanent belt transects were established in each community across each of six selected paddocks. All woody species within these transects were recorded using the TRAPS sampling methodology. Paddocks were burnt in October 1999. High grass fuel loads (c. 6000 kg/ha), a strong breeze and high air temperatures resulted in an extremely hot fire with flame heights of between 3 to 5 m. Transects were re-surveyed in September 2000.

Results indicated that (1) tree mortality rates were very low with nearly all (>98 %) individuals surviving through re-sprouting via epicormic buds or lignotubers. Where mortality did occur, this usually resulted from individuals being incinerated by fallen logs. (2) Fire had a major effect on vegetation structure causing a major shift to smaller size classes (<.4 m). This occurred particularly in the 1 – 4 m size classes. (3) Fire resulted in some *Eucalypt* seedling recruitment although this was largely localized to specific micro-habitats like ash beds.

Fire thus had a significant effect on vegetation structure but had little or no effect on population numbers. Further research is needed to investigate the effects of the timing and intensity of different types of fire on mortality, recruitment and structure in these woodland communities.