INFLUENCE OF SAVANNA FIRE REGIME MOSAIC IN DETERMINING THREATENED MAMMAL ASSEMBLAGE STRUCTURE IN THE NORTH KIMBERLEY

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Recent studies have suggested that modern high intensity, high frequency fire regimes are threatening vulnerable small mammal assemblages across northern Australian savannas. However studies elucidating patterns have been hampered by very low numbers of mammals in study regions. In this study we analyse patterns of mammal distribution in North Kimberley savannas which retain high abundance/diversity of mammals. Mammal data were derived from monitoring plots distributed across the North Kimberley Bioregion. Fire regime data was derived from remotely sensed MODIS fire pattern data for monitoring sites and surrounding areas. Fire regime attributes included site and areal specific fire frequency, time since fire, mean distance to fire edge, season of most recent fire, fuel age diversity and percentage of recently burnt vegetation. On-ground habitat attributes and cattle impacts were compared to elucidate the influence of additional relationships. Data was analysed using a GLM modelling approach to derive dominant fire and habitat attributes associated with mammal abundance patterns. Individual fire events, vegetation structural attributes and time since the last fire had little influence on mammals. Instead mammal patterns were most strongly influenced by fire frequency, site scale cattle impacts and the percentage of the area burnt around each study site. These data support management initiatives to reduce the extent and frequency of late season fires through intensive application of wet and early dry season mosaics. Key features of these mosaics should be low fire intensity (early season) and small grain size (<100 ha).

Dr Ian Radford was a plant ecologist specialising in invasive species including rubbervine, fireweed, hawkweed and prickly acacia in Australia and New Zealand. Ian is now in the Kimberley, northern Australia, researching fire regime impacts on threatened species including mammals.