Fire frequency and floristic variation in dry sclerophyll communities

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Abstract

Fire frequency, a function of the number of fires experienced by a community within a given time period, may be resolved into the components of time since the most recent fire and the lengths of intervals between fires. The dynamics of dry sclerophyll woodlands in the Sydney region were examined in relation to fire frequency in the recent (< 30 years) fire history. Direct gradient analysis of floristic data indicates that:

(i) Fire frequency accounts for around 60 per cent of the floristic variation among the samples.

(ii) The effect of time since fire and the length of intervals between fires on floristic composition was equal in magnitude but unrelated in the nature of the variation associated with them.

Increasing time since fire is associated with a decline in the evenness of fire-tolerant species while inter-fire intervals of decreasing length are associated with the decrease in evenness of fire-sensitive species. Increasing variability of the length of the inter-fire intervals is associated with an increase in the richness of fire-tolerant and fire-sensitive species, implying that it may be variation of inter-fire intervals that is responsible for maintaining the presence of a wide range of plant species in a particular community.