community structure reported here are easily accounted for by the indirect effects of fire-induced changes to habitat, in particular to vegetation structure. In the annually burned plots, a mid-story is virtually absent, the ground layer is sparse, and there is considerable bare ground (Fig. 1; Bowman *et al.* 1988). These open conditions are ideal for *Iridomyrmex*, hot climate specialists, and opportunistic *Rhytidoponera aurata*. Generalized myrmicines are also favored by open, well-insolated conditions, but in this case are limited by competition with *Iridomyrmex*. In the unburned plots, on the other hand, the well-developed mid-story shades the ground, which is also covered with litter. These conditions are less favorable for *Iridomyrmex* and hot climate specialists. Generalized myrmicines predominate because they can tolerate a much broader range of physical conditions (Greenslade & Thompson 1981, Greenslade 1985), and are not so limited here by competition from *Iridomyrmex*. Cryptic species are favored by the heavy litter development.

The marked differences between the two biennial replicates are noteworthy, and show that the effect of a biennial burning regime can vary considerably. There are two associated explanations that possibly account for this. Soil properties vary considerably between the Munmarlary plots (Bowman *et al.* 1988), and this is likely to affect vegetation structure and therefore ant distribution. Bowman *et al.* report that the responses of many plant species to fire varied markedly between the plots. It is possible that the communities typical of annually burned and unburned sites represent two opposing equilibrium states, with only relatively minor environmental changes being sufficient to flip a community from one state to the other. Gross changes in ant communities, apparently mediated by dominant species, following relatively minor changes in vegetation structure have been reported elsewhere in Australia (Fox & Fox 1982, Majer 1985).

Ants are one of the most important groups of animals in tropical savannas (Levieux 1983), and are closely linked with soils, vegetation, and other fauna. The effects of fire on ants are therefore likely to indicate broader effects on the ecosystem (see Greenslade & Greenslade 1984, Andersen 1990). For example, the responses of ants to environmental change can be correlated with the responses of other faunal groups (Majer 1983). Similarly, the response of cryptic ants is likely to be similar to that of a great many other soil and litter invertebrates, and consequently, to processes operating at the soil–litter interface, such as nutrient cycling. The sensitivity of ants to different fire regimes documented here has important implications for conservation management in tropical savannas. A management policy of long-term fire exclusion is unrealistic on a large scale in most tropical savannas because it is not possible to control ignition by humans, and, in the longer term, by lightning strikes. However, the results of this study suggest that fire-free intervals of only a few years can have important ecological consequences. The maintenance of areas with such fire frequencies should therefore be an objective of savanna management.

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