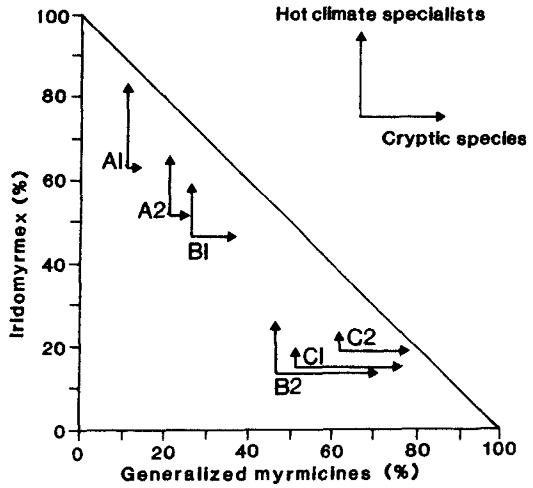

FIGURE 3. Vector diagram (Lamacraft 1979) illustrating relative abundances of major functional groups of ants in experimental fire plots (A1, A2: burned annually; B1, B2: burned biennially; C1, C2: unburned).

foraging ants, but my field observations show that arboreal ants were also severely affected by different fire regimes. In particular, leaf-nesting *Oecophylla smaragdina,* a dominant ant of the Asian and Australian tropics, was extremely abundant in the midstory of the unburned plots, but was uncommon elsewhere.

DISCUSSION

The different fire regimes had a major influence on ground-foraging ant communities. The annually burned and fire-exclusion treatments produced two distinctive communities, the first characterized by high proportions of dominant *Iridomyrmex,* hot climate specialists, and opportunistic *Rhytidoponera aurata,* and the second by high proportions of generalized myrmicines and cryptic species. These differences therefore involved gross changes in community organization, rather than simple changes in species composition. The ant communities of the biennially burned plots were generally intermediate between those of the annually burned and unburned plots, but interestingly one was more similar to those in the annually burned plots, while the other resembled those in the unburned plots. The relationships between the ant communities of each plot are summarized in Figure 3.

Fire can directly affect many arthropod groups by killing them, or by forcing them to disperse to unburned sites (Gillon 1983). However, fire often seems to have little direct effect on communities of ground-foraging ants because of the protection afforded by soil nests, and because ants are unable to disperse away from the fire front. The effects of fire occur indirectly, through fire-induced modifications to habitat, food supplies, and interspecific competition (Levieux 1983, Andersen & Yen 1985, Andersen 1988). The effects of fire regime on ant

TABLE 4. *Composition of the five groups of species generated by cluster analysis (TWO-STEP program). The functional group (Table 1) of each species is given in brackets.*

	Species	Distribution in plots
Group 1 (12 spp.)	*Iridomyrmex* spp. 3 and 14 (1), *Monomorium* (*rothsteini* gp.) sp. 2 (3), *Monomorium* ('*Chelaner*') sp. 13 (3), *Melophorus* sp. 10 (3), *M.* (*aeneovirens* gp.) sp. 1 (3), *Meranoplus* (*diversus* gp.) sp. 1 (3), *Tetramorium* sp. 1 (5), *Rhytidoponera aurata* (5), *Monomorium* sp. 23 (6), *Solenopsis* sp. 1 (4), *Paratrechina* (*minutula* gp.) sp. 2 (4)	Predominantly in annually burned plots, many completely absent from unburned plots
Group 2 (6 spp.)	*Iridomyrmex* sp. 1 (1), *I. sanguineus* (1), *Pheidole* sp. 4 (6), *Monomorium* spp. 8 and 13 (6), *Rhytidoponera trachypyx* (5)	Equally abundant in annually and biennially burned plots; absent from unburned plots
Group 3 (6 spp.)	*Iridomyrmex* sp. 2 (1), *I.* (*nitidus* gp.) sp. (1), *Tetramorium* sp. 2 (5), *Rhytidoponera* (*turneri* gp.) sp. 3 (5), *Monomorium* sp. 21 (6), *Pheidole* sp. 6 (6)	Predominantly (3 spp. exclusively) in biennially burned plots
Group 4 (5 spp.)	*Monomorium* spp. 14 and 24 (6), *Pheidole* sp. 8 (6), *Solenopsis* sp. 2 (4), *Paratrechina* (*minutula* gp.) sp. 1 (4)	Predominantly in unburned plots; uncommon in annually burned plots
Group 5 (3 spp.)	*Monomorium* spp. 13, 17, and 19 (6)	Widely distributed across plots