Buckley 1982a; Davidson 1988). The ants, predominantly species in the genera *Camponotus, Crematogaster,* and *Solenopsis,* obtain nutrition from extrafloral nectaries, elaiosomes, and fruit sap; the plants gain protection from herbivores, including leaf-cutting attines (Weber 1943). Some ant species—including *Camponotus femoratus, Crematogaster parabiotica,* and *Monacis debilis*—may be obligate ant-garden nesters.

As already mentioned, ants are important dispersers of seeds (Beattie 1985) and are frequently encouraged in this role by attractive and nutritious elaiosomes provided by plants (Handel et al. 1981; Handel and Beattie 1990a, 1990b). Ants may also exercise an underappreciated influence on seed germination. Oliveira et al. (1995) showed that the South American fungus-growing ant *Mycocepurus goeldii* (Myrmicinae) significantly enhanced germination of the seeds of the tree *Hymenaea courbaril* (Caesalpiniaceae) by removing fruit pulp and thereby reducing fungal infestation. Although ant pollination may be important for some plants in some habitats (Peakall et al. 1991), it has been suggested that, because the antibiotic secretions of the metapleural gland demonstrably inhibit normal pollen function, ants are unlikely to be recruited into insect-plant pollination symbioses (Iwanami and Iwadare 1978; Beattie et al. 1984, 1985, 1986).

Interactions with Animals

Trophic Associations

ANTS AS PREDATORS. The ancestral ant was very likely a generalized predator. Arising from this lifestyle, highly specialized predation has evolved in many ant groups. For instance, diverse groups of ants—including *Acanthostichus, Cylindromyrmex,* and *Eurhopalothrix heliscata*—have independently specialized on termites (Brown 1975; Wilson and Brown 1984; Overal and Bandeira 1985). Some myrmicine ants in the genera *Carebara, Carebarella, Erebomyrma, Liomyrmex, Paedalgus,* and *Solenopsis* are known to make their nests in close proximity to those of termites, and it is assumed that they steal termite eggs and brood for food (Forel 1901; Wheeler 1914, 1936; Wilson 1962b; Ettershank 1966). Species of *Discothyrea, Proceratium* (Ponerinae), and *Stegomyrmex* (Myrmicinae) prey on arthropod eggs (Brown 1974f, 1979; Diniz and Brandão 1993). A variety of species in the Dacetonini (Myrmicinae) prey on *Collembola* (Wilson 1953; Masuko 1984). Species of the Neotropical genus *Thaumatomyrmex* use their bizarre, pitchfork-like mandibles to remove the repellent hairs of what is apparently their sole prey item, millipedes in the family Polyxenidae (Brandão et al. 1991). A number of *Leptogenys* species specialize on isopods (pillbugs); at least one specializes on Dermaptera (earwigs) (Steghaus-Kovac and Maschwitz 1993). Adult workers of the Japanese myrmicine species *Myrmecina graminicola nipponica* and *M. flava* capture oribatid mites, skillfully tearing a hole in the highly sclerotized integument; the larvae then feed by inserting their peculiarly elongate heads into these holes (Masuko 1995). Finally, some ant species are specialized predators on other ants, including species of *Cerapachys* and *Neivamyrmex* (Wheeler 1918; Rettenmeyer 1963).

ANTS AS PREY. Many ant species represent predictable food sources for predators because of their large numbers, their tendency to forage in trails, and their long-lived, stable, usually stationary nests. In what is no doubt a continuing evolutionary arms race, ants have adopted numerous defenses, including repellent chemicals and soldier castes, to discourage predators, while predators have acquired methods of overcoming such defenses, becoming increasingly specialized in the process. Such predators