possess specialized structures for the housing of ants, yet the identities of their ant guests remain mysterious. What knowledge there is exists mostly in the form of brief notes in the literature, although repeated attempts have been made to collate subsets of this information (see references cited later in this chapter).

This chapter serves as a brief and limited introduction to the complex and fascinating subject of interactions between ants and other organisms. In discussing such interactions, we will employ two broad categories: trophic interactions, in which one organism is eaten by the other, and symbioses, in which the organisms coexist for an extended period of time. We will respect the traditional subdivisions of the latter category: (1) parasitism, in which one partner benefits at the expense of the other; (2) commensalism, in which one partner benefits and the other is neither harmed nor benefited; and (3) mutualism, in which both parties benefit. Symbioses may be further distinguished as either facultative or obligate on the part of one or both symbionts, depending on whether it is possible for that partner to survive outside the relationship. Our ability to place the variety of interactions described in the following sections into these categories is limited by our ignorance of the details of particular cases as well as by the artificiality of these groupings.

Interactions with Plants

Trophic Interactions

Myrmecological orthodoxy regards ants as carnivores, and certainly few ants are entirely herbivorous. However, as pointed out by Tobin (1994), nectar and other plant products play an important and generally underappreciated nutritional role in the diets of many ant species, especially those of the adults. Certainly many otherwise carnivorous ants are attracted to floral and extrafloral nectaries, and some (e.g., species of *Solenopsis* [Tennant and Porter 1991] and *Atta* [Quinlan and Cherrett 1979]) are known to feed on plant sap and fruit juices. Some ants (e.g., the North American *Messor pergandei*) rely entirely on seeds for nourishment, and many more (including species in *Monomorium, Pheidole,* and *Pogonomyrmex*) rely heavily on seeds. Aside from such obligate "harvesting ants," many ant species are occasional seed consumers (e.g., Beattie 1985; Kaspari 1993b), and many more forage for seeds bearing elaiosomes, ant-attractive nutritive attachments manufactured by the plant to encourage seed dispersal (Handel et al. 1981; Handel and Beattie 1990a, 1990b). As discussed in more detail subsequently, ants also consume specialized food bodies produced by plants, such as Beltian bodies in the New World *Acacia* and Müllerian bodies in the New World *Cecropia.*

From the standpoint of ecological energetics, the Neotropical leaf-cutting ants could be regarded as herbivorous (Stradling 1978), since they harvest an estimated 15% of all fresh vegetation (Cherrett 1986) in the Neotropics. Likewise, ants that rely on homopteran-produced honeydew could be regarded as essentially herbivorous, since homopteran tending is bioenergetically comparable to collecting plant fluids directly (Tobin 1994). However, both leaf-cutting and homopteran-tending ants acquire their nutrition via symbiotic intermediates (fungi and homopterans)—an important consideration from the species interaction perspective taken here.

Symbiotic Interactions

Ants participate in symbioses with over 465 plant species in over 52 families (Jolivet 1996) and, not surprisingly, the literature of ant-plant symbioses is vast (for reviews, see Bailey 1922b; Bequaert 1922; Wheeler 1942; Buckley 1982a, 1982b; Beattie 1985; Hölldobler and Wilson 1990; Huxley and Cutler 1991; Jolivet 1996). Whether the majority of these symbioses