

Ant Basics: Evolution, Ecology, and Behavior

The Life of Ants

Ants are very different from most other animals. They form large colonies of closely related individuals, many of whom have specific tasks required to maintain the colony, and most of whom are unable to reproduce themselves. The ant you see crawling up a tree trunk or along your kitchen counter is almost always a sterile female. She will never reproduce, and she works exclusively for the benefit of the queen and the rest of her colony. An active ant colony consists of one or several queens—the only females that reproduce—and anywhere from a couple of dozen to tens of thousands of female workers. These workers carry out all the activities of the colony other than reproduction. They gather food, care for the young, defend the colony from predators and invaders, maintain the chambers and passage-ways, remove waste and debris, and even (in some specialized species such as *Prenolepis imparis*) store food. Queens (and their colonies) can live for decades, but workers rarely live longer than a single year or growing season. Males are produced only when the colony is about to undergo sexual reproduction, but they contribute nothing to the care and maintenance of the colony.

How does an ant colony get started? In response to a variety of cues, including day length, temperature, crowding, or stress, the queen lays eggs that develop into special winged (alate) females (virgin queens) or winged males. After rains and during daylight hours, especially early mornings or late afternoons, the virgin queens and males fly out of the nest to mate, after which the males die and the now inseminated queens go on to form new colonies. These nuptial flights can be spectacular, especially in the boreal forests of New England, where huge clouds of winged ants in the genus *Lasius* rise into the air from many different nests (Figure 2.1).

Ant swarms often alarm homeowners because they resemble swarming termites, but a closer look reveals clear differences between termites and ants. Our common termites are small, soft, white, and fat (Figure 2.2). Even though they may be called “white ants,” they are more closely related to cockroaches than they are to any insect species in the order Hymenoptera, which includes the ants, along with the bees and wasps. Three important characters (among many others) distinguish Hymenoptera (including the ants) from termites: the front wings of Hymenoptera (present only on alate queen and male ants) are larger than their rear wings, but they are the same size in termites; most Hymenoptera, including the ants, have a “wasp waist” (a narrow constriction in their body; see Chapter 4 for more details), whereas