

We have been impressed by the lack of a clear distinction between territorial defense and predation in the repertory of weaver ants. When intruders are killed, they are treated as prey and carried back to the nest to be eaten. To the extent that a dangerous enemy cannot be told apart from a benign intruder, the very distinction between territorial defense and simple predation is also blurred. And the close similarity between recruitment to intruders and recruitment to food makes more sense: they can be conceived as merely ends of a single continuum.

Yet the ants do make a distinction between principal kinds of food in their form of recruitment. In particular, they employ long-range recruitment much less frequently to large prey items than they do to honey. Watching the capture and retrieval of prey on numerous occasions, we have discerned what we believe to be the significance of this curious difference. Large, active prey elicit short-range recruitment and clustering of foragers already present in the general vicinity. These individuals are usually able to subdue such prey items and carry them back to the nest without help. Sugar sources, on the other hand, are commonly more extensive and longer-lasting, especially when in the field they consist of populations of homopterous insects. In such cases, long-range recruitment provides the more efficient means of harvesting.

Finally, the discovery of a territorial pheromone in *O. longinoda* deserves special emphasis. In our opinion, a true territorial pheromone should be defined as a substance used to mark the living or foraging space of an animal and that by itself induces aversive behavior in intruders of the same species. Many kinds of mammals, from rodents to ungulates, carnivores, and prosimians, mark their home ranges with scent. Authors commonly ascribe at least a partial territorial function to the pheromones, but the evidence is anecdotal and relatively weak in most cases (Shorey, 1976). On the other hand, strong experimental evidence has been adduced in the mouse *Mus musculus* and the European rabbit *Oryctolagus cuniculus* that scent deposited within territories induces increased alertness and a tendency to flee on the part of intruders (Mackintosh, 1973; Jones and Nowell, 1974; Mykutowycz, 1968). The odor alone inhibits trespassing of the territory by male mice (Mackintosh, 1973). Recently, Peters and Mech (1975) have summarized anecdotal evidence indicating that wolves employ urinary scent as a territorial pheromone.

To our knowledge no true territorial pheromone has previously been demonstrated in the social insects. It is possible that the existence of such a communication system in *O. longinoda* is an anomaly, representing one more aspect of the extreme development of territorial behavior in this ant. On the other hand, additional cases in ants may well be revealed when similar research is conducted on the more than ten thousand other species known to exist on earth.

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