

It has now been possible to examine the glandular sources of the odor trail substances in four genera of the Attini and to determine their cross-specificities. The results of these studies are the subject of this paper.

TEST SPECIES

Based on morphology, behavior, and nest structure, Weber (1958) concludes that *Cyphomyrmex rimosus* (Spinola) is the most primitive of the attines. This species was selected as an ideal representative of the less specialized attine genera. Odor trail laying has not been noted in *C. rimosus*, which has been reported to forage singly. However, our own observations of the foraging behavior of workers from two colonies of this attine strongly indicate that this species lays odor trails. Both of the observed colonies were located in sandy soil at the base of trees (*Pinus* spp.) in Desoto National Forest near Gulfport, Mississippi. Each worker that emerged from the inconspicuous nest entrances moved slowly over the bark of the trees and made the same twists and turns as the workers that had preceded it. In two instances, pairs of workers emerged from the nest and moved with such complete synchrony that it seems very likely that odor trails were being followed.

The other attines examined were *Trachymyrmex septentrionalis* (McCook)⁵, *Acromyrmex octospinosus* (Reich)⁶, and *Atta cephalotes* (Linnaeus)⁷. In addition, odor trail species specificity studies were undertaken employing *Atta texana*⁷.

SOURCE OF TRAIL SUBSTANCES

The sources of the odor trail substances were determined by using either a modification of the artificial trail technique of Wilson (1959) or the method of Moser and Blum (1963). For all species examined, preliminary experiments indicated that the odor trail substances originated in the abdomen. Three organs in the abdomen, the hind gut, the paired poison glands and Dufour's gland, are known to secrete their contents into the external environment. These organs were dissected out of workers, washed in saline, and applied as smears on 75 cm. sinusoidal trails drawn on pieces of 8½" x 11" paper.

The trail-treated papers were placed either on glass platforms adjacent to laboratory colonies or in metal trays. Groups of 10 ants from laboratory colonies were placed on the treated papers and a response was considered positive when a worker followed the trail to its

⁵Collected at Baton Rouge, Louisiana.

⁶Collected at Alajuela, Costa Rica.

⁷Collected at Forest Hill, Louisiana.

⁸Collected at Barro Colorado, Canal Zone.