

## NOTAS E COMUNICAÇÕES

### ANTS MONOPOLISE PLANT RESOURCES BY SHELTER-CONSTRUCTION

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**ABSTRACT** - In Ecuadorean Amazonas, *Crematogaster* ants (Myrmicinae) were observed to construct shelters of debris and plant trichomes covering and hiding extrafloral nectaries of *Passiflora auriculata* vines. This is seen as an advanced way of excluding competing ants from a food source.

**Key Words:** Amazonas, *Crematogaster*, Extrafloral nectaries, Mutualism, *Passiflora*

#### Formigas Monopolizam Recursos através da Construção de Abrigos

**RESUMO** - Na Amazônia Equatoriana, observou-se que formigas do gênero *Crematogaster* (Myrmecinae) utilizam detritos e tricomas das plantas para construir abrigos, de modo a cobrir e esconder os nectários extraflorais de *Passiflora auriculata*, uma planta trepadeira. Este comportamento é visto como uma maneira avançada de excluir outras formigas competidoras dos recursos alimentares (néctar) produzido pela planta.

**Palavra-chave:** Amazonas, *Crematogaster*, Nectários extraflorais, mutualismo, *Passiflora*

Extrafloral nectaries (EFN) or plant glands are known from at least 20% of all families of flowering plants and they occur on all aboveground plant parts (Zimmerman, 1932). Extrafloral nectar is rich in sugars, amino acids and a range of other chemicals (Baker & Baker, 1975). Many animals and especially ants are attracted to this food resource (e.g. Oliveira & Brandão, 1991), and in several respects they respond to EFN as they do to homopterans (Hölldobler & Wilson, 1990). Ant-EFN interactions are generally regarded as an antiherbivore-defence strategy of the plant (Trelease, 1881; Bentley, 1977). A recent review of the subject is given by Koptur (1992).

Ant species which, locally, are able to monopolise this resource of food, i.e. to exclude other species, may

have a selective advantage and reporting of these ant-ant interactions is important to our understanding of ant community structure and evolution of ant-plant mutualisms. Monopoly may be achieved by ants through aggressive dominance (Bentley, 1977), camouflage of EFN or homopterans by plant debris (Way, 1954; Jolivet, 1996) or as demonstrated here by the construction of a true shelter.

Although construction of shelters of EFN and homopterans might be common, only few reports document its existence (e.g. Rabenstein *et al.*, 1994). We give a report of ants monopolising EFN by constructing shelters with thin smooth walls and a narrow entrance covering an EFN. The observations were made in the lowland primary rain forest, Yasuni Na-

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tional Park, Amazonas, Ecuador, October 5-26, 1995.

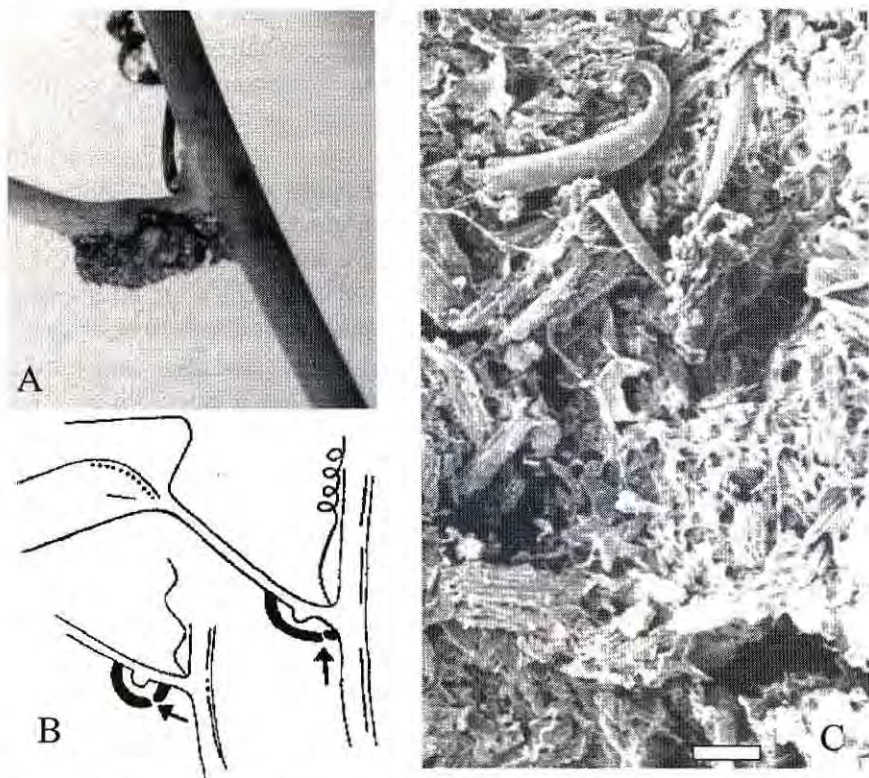
Fifteen shelters were found covering every petiolar extrafloral nectary on a shoot of *Passiflora auriculata* H. B. K. (Passifloraceae) (Fig. 1a-b). Only the youngest leaves lacked shelters. These were constructed of debris and plant trichomes (Fig. 1c). Each shelter was approximately 7 mm long and its entrance hole approximately 0.7 by 0.9 mm in diameter. The ants constructing the shelters belonged to the genus *Crematogaster* (Myrmicinae). Species of this genus are known to visit EFN of many genera and also of other *Passiflora* species (Lanza, 1988). No

other ant species were observed to enter these indoor-nectaries, whereas several species foraged outside on the stem and visited EFN on shoots not covered by shelters.

*Crematogaster* ants constructing shelters that exclude other ant species from extrafloral nectar seem to demonstrate a behaviour towards resource specialisation or monopoly, and such a behaviour is more complex than in ants that just camouflage nectar sources with a loose net of debris (Jolivet, 1996).

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**Figures 1. A, B.** Shoot of *Passiflora auriculata* with ant-built shelter covering a petiolar extrafloral nectary (arrows indicate ant entrance); **C,** SEM-photograph of wall of shelter, scale = 100  $\mu\text{m}$ .

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