

A new inquiline ant (Hymenoptera: Formicidae) in *Cataglyphis* and its phylogenetic relationship

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*Cataglyphis hanna*e, a new workerless, putatively inquiline ant species is described and its phylogenetic relationships and biology discussed. *C. hanna*e was collected in two different nests of *C. bicolor* and, based on its smaller size and the delayed production of sexuals in comparison to its host, an inquiline life style is inferred. If correct, this would be the first social parasite within *Cataglyphis*. Cladistic analysis indicates an independent origin of the inquiline with subsequent invasion of its host.

KEYWORDS: Ant, inquiline, *Cataglyphis*, taxonomy, evolution, social parasitism.

Introduction

Recently, inquiline ants have been given considerable attention (e.g. Bourke and Franks, 1991; Buschinger, 1990) with a special emphasis on their origin and evolution. Two main hypotheses have been put forward, both originating from Emery's rule (Emery, 1909). The first, the common ancestry hypothesis, stresses the immediate ancestry of host and inquiline and a sympatric mode of speciation, and the second, the social deception hypothesis, a looser relationship with an invasion of the host by the inquiline species. One way to understand the evolution of this behaviour is to study the phylogeny of taxa where this behaviour occurs, and then to superimpose the behavioural data (Bourke and Franks, 1991; Carpenter *et al.*, 1993). In ants, where inquilinism was described and discussed for the first time by Wasmann (1908), none of the genera where inquilinism occurs (Hölldobler and Wilson, 1990), have been cladistically analysed. In wasps, however, Carpenter *et al.* (1993) demonstrated that the inquilines are not sister groups of their respective hosts but rather probably form a monophyletic group whose species later immigrated to several hosts.

In ants, inquilinism occurs in several subfamilies, but mainly in myrmicine ants. In formicine ants, only 10 inquiline species are recognized in the following genera: *Anoplolepis*, *Camponotus*, *Formica*, *Paratrechina*, and *Plagiolepis* (Hölldobler and Wilson, 1990). Among those genera, *Plagiolepis* includes half of the known species, and *Formica* is well known to include many different forms of social parasitism and to be the host for other genera, such as *Polyergus*. It is interesting that, beside this very variable repertoire of social behaviour, the 150 or so *Formica* species show hardly any

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