

Short communication

First record of unicolonial polygyny in *Tetramorium cf. caespitum* (Hymenoptera, Formicidae)

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Summary. Evidence of regular polygyny in an alpine population of *Tetramorium cf. caespitum* (L.) is provided. Aggression tests suggest unicoloniality of the population.

Key words: Aggression test, Austria, polygyny, unicoloniality.

Polygyny, the presence of more than one egg-laying queen in a colony, is widespread in ants (Buschinger, 1974; Bourke and Franks, 1995). It can result from independent colony foundation by several gynes or from the adoption of gynes by a conspecific nest. Polygynous ants occasionally form unicolonial populations, which means that members of weakly delimited nests intermingle.

In *Tetramorium caespitum* (L.), polygyny was never directly observed, but a low degree of polygyny has been suggested by allozyme data (Bourke and Franks, 1995). In *T. impurum* (Förster, 1850), the presence of two to five dealate gynes has been observed repeatedly, functional polygyny however was not checked by dissection (R. Cammaerts, pers. comm.), a high degree of functional polygyny (40 gynes) was once observed in a single nest (Buschinger, 1974). Here, we report on polygyny in *Tetramorium cf. caespitum* (determination according to Seifert, 1996; Kutter, 1977). A clear distinction between *T. caespitum* and *T. impurum* is not always possible (Seifert, 1996). Recent studies indicate the existence of cryptic species (Steiner et al., 2002 and unpubl.).

On 18 June 2001, two nests with more than one dealate gyne were found on an alpine, east-exposed meadow near Strajach, Austria (12°55'E/46°42'N, 1600–1800 m a.s.l.). On 19 July 2002, 35 nests were sampled along a 1000 m transect in the same area. Five of them, 30–400 m apart, contained more than one dealate gyne (2, 3, 4, 4, 5 gynes). Dissection of the dealate gynes showed that all of them (22) were inseminated, with yellow bodies present. No consistent dif-

ferences in egg-laying activity were detected between the gynes of the single nests; functional monogyny can thus be rejected. Alate gynes (5), found in one of the polygynous nests in 2002, turned out to be not inseminated. In 2002, aggression tests with workers of the 5 polygynous nests were performed in the lab at a room temperature of 23 °C (according to Holway et al., 1998): For each pairing we randomly selected a single worker from each nest and placed them together in a fluon coated glass vial (inner diameter 2 cm). Five replicates of all intra- and inter-nest combinations were run for 5 minutes each. The behaviour was scored 0 = ignore, 1 = touch, 2 = avoid, 3 = aggression, 4 = fighting. Aggressive behaviour was observed neither in the 5 intra-nest pairings (1.0 ± 0.0), nor in the 10 inter-nest pairings (7 pairings 1.0 ± 0.0, 2 pairings 0.8 ± 0.5 due to some workers ignoring each other, 1 pairing 1.6 ± 1.3 due to one single worker fighting).

Polygyny seems to occur regularly in the investigated population. Furthermore, the nearly total absence of aggression between workers from different nests suggests unicoloniality, so far unknown in European *Tetramorium*. Genetic investigations are needed to confirm or reject unicoloniality and to elucidate the process that led to polygyny. Is it an ecological peculiarity of a normally monogynous ant or a character of a cryptic species?

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