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Hybridization and variation in the *Leptothorax tuborum* group (Hymenoptera: Formicidae)

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Abstract

Morphological and allozymatic analyses show that there are four species – *L. tuborum* (mainly in the north) and *L. nigriceps*, *L. “tubero-interruptus”*, and *L. unifasciatus* (sympatrically in the south) – in the *Leptothorax tuborum* group in West Europe north of the Alps, and that these species hybridize. The two commonly co-occurring species, *L. nigriceps* and *L. unifasciatus*, rarely hybridize, suggesting that pre-mating isolating mechanisms have evolved, whereas the rare species, *L. “tubero-interruptus”*, easily interbreeds possibly with all the other species of this group. There are distinct morphological gaps between the species, but hybridization tends to fill these gaps or even produces morphological copies (*L. nigriceps* × *L. “tubero-interruptus”*) of a third species (*L. tuborum*).

Key words: Quantitative variation – Allozymes – Hybridization

Introduction

Leptothorax Mayr, 1855 is a mainly holarctic myrmicine ant genus (EMERY 1922) with at least 40 species in Europe (COLLINGWOOD 1979); AGOSTI (1989) lists 88 species from Europe. Although the systematics of this genus is confused, the identity and distribution of the species in Northwest and Central Europe appear to be well known (COLLINGWOOD 1979; KUTTER 1977). In this area there is a group of morphologically similar species, the *L. tuborum* group, including the species *L. interruptus* (Schenck, 1852), *L. nigriceps* Mayr, 1855, *L. tuborum* (Fabricius, 1775), and *L. unifasciatus* (Latreille, 1798) (KUTTER 1977). We exclude *L. interruptus* here since this species has a different chromosome number ($n=12$) than the other species ($n=9$) (FISCHER 1987) and different alleles at two enzyme loci (DOUWES and STILLE 1987). Moreover, morphologically *L. interruptus* is characteristic enough not to be confused with any of the other species in the *L. tuborum* group. Apparently also belonging to this group is a species called *L. “tubero-interruptus”* (*Leptothorax tuborum* v. *tubero-interrupta* Forel, 1874 sensu Plateaux 1978), although it has a different chromosome number ($n=8$) (FISCHER 1987). This species appears rarely in the literature and is not mentioned by KUTTER (1977). The chromosome evidence given by FISCHER (1987) shows that it is a distinct species and from BUSCHINGER (pers. comm.), DOUWES and STILLE (1987); FISCHER (pers. comm.), and PLATEAUX (l.c.) it is obvious that *L. “tubero-interruptus”* is similar to the *L. tuborum* group species.

After having collected these ants for many years, we have learned that the systematics of the North and Central European *L. tuborum* group species is far from clear. It is still a problem to discriminate between *L. tuborum* and *L. “tubero-interruptus”* (SEIFERT, pers. comm.) and between the latter and *L. unifasciatus* (own obs.), perhaps due to the fact that some *L. “tubero-interruptus”* are hybrids (FISCHER 1987). *L. nigriceps* and *L. unifasciatus* also hybridize (SEIFERT 1984) and hybridization between *L. tuborum* group species might be more frequent than has been realized.