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Myrmica microrubra SEIFERT, 1993 (*Hymenoptera, Formicidae*) – an inquiline ant species new to Poland

Abstract. *Myrmica microrubra* SEIFERT, a social parasite of *Myrmica rubra* (L.), is first reported from Poland based on two colonies and a common mating place of these two species found in 1999 in the Krakowsko-Wieluńska Uplands. The detailed composition of one of the mixed colonies is given.

Key words: ants, *Myrmica microrubra*, *Myrmica rubra*, inquilines, social parasites, fauna of Poland

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Polymorphism of gynes, marked in the bimodal distribution of their body size, is known to occur regularly in ants. Recently, many results show that, in some cases, smaller gynes (microgynes) are females of social parasitic species that live in bigger gyne (macrogyne) nests. These results provide a factual background to the discussion on the evolution of social parasitism in ants (PEARSON 1981, BUSCHINGER 1990). A spectacular situation of this kind is found in the genus *Myrmica* LATR., where coexistence of macro- and microgynes has been known since the dawn of myrmecology (e.g. WHEELER 1910).

The presence of microgynes was observed in polygynous colonies of a few species of this genus. Microgynes that occur in *Myrmica ruginodis* NYL. colonies are still believed to belong to the same species as do ordinary macrogyne forms (BRIAN, BRIAN 1949, 1955)[1]. According to PEARSON (1981), the existence

[1]BRIAN and BRIAN used the nomenclature sensu SANTSCHI (1931) et auct. Therefore, in the quoted papers, *Myrmica ruginodis* NYL. (sensu YARROW 1955) is called *M. rubra* (L.) – the name refers to another species now.

and interactions between macrogyne and microgyne queens in this species "may provide information about the early or preparasitic condition".

Microgynes found in *M. sabuleti* (MEIN.) (ELMES 1976), and later also in *M. lonae* FINZI (a species closely related to the former; SAARISTO 1995) were very soon described as a separate species *Myrmica hirsuta* ELMES (ELMES 1978). At first, it had been considered to be a workerless inquiline, but later its rudimentary worker caste was observed (ELMES 1994). Not long ago, *M. hirsuta* was reported from Poland (CZECHOWSKA, RADCHENKO 1997).

Microgyne forms from nests of *M. rubra* (L.) were first discussed by ELMES (1973). They are usually found in colonies containing normal queens and they very rarely produce their own workers (ELMES, BRIAN 1991). ELMES (1976) stated that they were isometric reductions of macrogynes, and at first the opinion was also shared by SEIFERT (1988). However, PEARSON and CHILD (1980) found a genetic differentiation between these two forms, suggesting that they might be separate species among which the relationship may be that of social parasite (microgyne) and its host (macrogyne). Then, PEARSON (1981) held up the two-species hypothesis and BUSCHINGER (1990) ascribed the authorship of the species "*Myrmica microgyna* PEARSON, 1981" to him, yet PEARSON himself never used this name. In fact, the new species, called *Myrmica microrubra*, was first described by SEIFERT (1993) who gave the diagnostic features of its gynes and males, which distinguished them from those of the host species, *M. rubra*.

In the literature, there are many reports on the presence of microgynes in colonies of *M. rubra* (e.g. COLLINGWOOD 1979). If it is assumed that all these data refer to *M. microrubra*, the range of this species will cover at least the entire European part of the range of its host species. Nevertheless, *M. microrubra* as a separate species has so far been reported only from England (SEIFERT 1993; on the basis of ELMES's specimens), Germany (SEIFERT 1993) and Finland (SAARISTO 1995) – everywhere from separate localities.

In March 1999, in southern Poland, at the village of Bolechowice near Kraków (Krakowsko-Wieluńska Uplands), in a garden we found a singular *M. rubra* nest that contained, besides queens of this species (macrogynes), also (micro)gynes of *M. microrubra*. The nest was composed of the following: *M. rubra* workers – 814 (90.0%), *M. rubra* queens – 11 (1.2%), *M. microrubra* queens – 79 (8.7%) – 904 adults altogether. The ratio of the host queens to the parasite ones was 1 : 7.2. Thus, the *M. rubra* nest was parasitised heavily by *M. microrubra*. In England, this ratio was 1 : 4.8 on average, and the mean colony size was 1095 individuals (*M. rubra* workers – 1034, *M. rubra* queens – 10.4, *M. microrubra* queens – 50.2; $n = 13$; ELMES 1974).

Below are given the morphometric characteristics (mean values ±SD, range) of the *M. rubra* and *M. microrubra* females from the colony at Bolechowice (ML – length of the mesosoma, HL – length of the head from the lower clypeal margin to the occipital margin in full-face view, HW – width of the head with eyes).

M. rubra (n = 8)	***M. microrubra*** (n = 66)
ML 2.13 (±0.09) [1.96–2.24]	ML 1.69 (±0.18) [1.48–1.76]
HL 1.35 (±0.06) [1.28–1.48]	HL 1.10 (±0.11) [0.96–1.16]
HW 1.31 (±0.05) [1.20–1.36]	HW 1.05 (±0.11) [0.92–1.08]

On 27 August 1999, a mass interspecific nuptial flight of *Myrmica rubra* and *M. microrubra* was observed in the same region (Krakowsko-Wieluńska Uplands) close to the village of Czajowice near Ojców (the protected zone of the Ojcowski National Park), at the top of Duże Skały rocks. On the same day, two alate *M. microrubra* sexuals, a male and a female, were found in a nest of *M. rubra* at the foot of these rocks.

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STRESZCZENIE

[Tytuł: *Myrmica microrubra* SEIFERT, 1993 (*Hymenoptera, Formicidae*) – nowy dla Polski inkwilinistyczny gatunek mrówki]

W 1999 r. na Wyżynie Krakowsko-Wieluńskiej znaleziono dwie mieszane kolonie *Myrmica rubra* (L.) i *M. microrubra* SEIFERT. Praca ta jest pierwszym doniesieniem o występowaniu w Polsce *M. microrubra*, inkwilinistycznego pasożyta społecznego *M. rubra*, do niedawna uchodzącego za mikroginiczną formę gatunku gospodarza. Jedną z mieszanych kolonii (w Bolechowicach k. Krakowa) tworzyło (w marcu) 79 królowych *M. microrubra* oraz 11 królowych i 814 robotnic *M. rubra*.