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The presence of *Formica lusatica* SEIFERT, 1997 (Hymenoptera, Formicidae) in Upper Silesia, Poland

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ABSTRACT. *Formica lusatica* SEIFERT, 1997 is an ant species not distinguished from *F.cunicularia* for years, only recently recognized as a good species. All specimens earlier reported in Poland as *F. glauca* RUZSKY, 1896 show no differences from *F. lusatica*. In this respect all *F.glauca* earlier reported in Poland should now be regarded as *F. lusatica*. New locations of this species in Poland are presented, all at the xerothermal grasslands of Upper Silesia, making it an ant species new for this region.

KEY WORDS: *Formica lusatica*, *Formica glauca*, Upper Silesia, ant, fauna, xerothermal

TAXONOMICAL STATUS

The taxonomical position of *Formica lusatica* (SEIFERT, 1997) has not been satisfactory resolved yet. For years taxon known from the steppe and the forest-steppe zones of Eurasia, Asia Minor, Crimea, Caucasus, and Central Asia as *Formica glauca* (RUZSKY, 1895) has been treated as either the subspecies of *Formica rufibarbis* FABRICIUS, 1793 (EMERY 1925) or *Formica cunicularia* LATREILLE, 1798 (DLUSSKY 1965, 1967) or later as a *F. rufibarbis* x *F. cunicularia* hybrid (SEIFERT 1994a, b). Such ants, found in western and central Europe, were also reported as *F. glauca* (SEIFERT 1996, CZECHOWSKI, RADCHENKO 2000, CZECHOWSKI *et al.* 2004).

LATER , SEIFERT (1997) described *F. lusatica* from Germany as a good species, distinct from *F. cunicularia* and *F. rufibarbis*, allowing the possibility of *F. glauca* RUZSKY, 1895 being conspecific with *F. cunicularia* or *F. lusatica*.

CZECHOWSKI & RADCHENKO (2000) and CZECHOWSKA et al. (2004) reported the occurrence of the ants identified as *F. glauca* in two separate locations in Eastern Poland.

A. RADCHENKO (CZECHOWSKI & RADCHENKO 2000, repeated in CZECHOWSKA et al. 2004) recognised them as morphologically undistinguishable from ants common in the steppes of southern Ukraine and also identical with specimens from the Asiatic part of their range. However, because of the formal situation of *F. glauca* (lack of the type specimen, SEIFERT 1997), all specimens found in western, middle and northern Europe are considered as *F. lusatica* and thus all specimens recorded in Poland, earlier described as *F. glauca* should be identified now as *F. lusatica* as well (CZECHOWSKI, pers. comm.). Therefore in this paper the name *F. lusatica* is applied though the specimens found show no differences from specimens earlier reported in Poland as *F. glauca* (see: CZECHOWSKI et al 2002, RADCHENKO et al. 2004).

Study area and results

Colonies of *F. lusatica* have been enciountered in Upper Silesia, Poland. This highly urbanised area with densely populated and strongly developed industrial infrastructure affects natural habitat in various ways, causing air and soil pollution. The climate of this region is moderate, with the annual mean temperature of about 8^0C, the annual relative humidity about 78% and over 700 mm of precipitation (KRUCZAŁA 2000).

The nests of *F. lusatica* have been discovered in four different locations, between 2003 and 2006:

1. A single nest of *F. lusatica* was found in Piekary Śląskie (UTM: CA58), near the border of the two town districts: Szarlej and Brzozowice-Kamień, on northern slope of the hill, about 100 metres south-east from the crossroads of Czołgistów and Oświęcimska streets. The soil in this place was light clay on limestone, with rich admixture of calcareous rocks. Southern and western part of the hill was grown by high trees, mainly *Populus balsamifera*, *P. tremula* and *Larix decidua*. The plants of herb layer belonged mainly to the xerothermic vegetation and constituted the following: *Thymus praecox*, *Centaurea scabiosa*, *Coronilla varia*, *Melapmpyrum arvense*, *Scabiosa ochroleuca, Erigeron acre, Pimpinella saxifraga.* The nest was about 50 cm in diameter and about 20 cm high at its highest point with a flat top and the broad slope directed to the SE. The nest was situated in the distance of about 10 m from the trees thus it was only lightly shadowed during the day. It was built mainly of the clay soil with small amount of the organic material. Its highest point, directed to the NW, was scarcely overgrown by *Thymus praecox* and *Poa* sp. Other ants found in the neighbourhood of the nest were the following: *Formica cunicularia* LATR., *Lasius niger* L., *L. flavus* FAB., *Tetramorium caespitum* L., *Manica rubida* LATR., *Myrmica schencki* EMERY and *Solenopsis fugax* LATR.

2. Three nests were listed in Bobrowniki, Namiarki district (UTM: CA58), on southern hillside, about 150-250 metres north-east from the crossroads of Ł.Teligi, Czołgistów and M. Buczka streets, in the *Sileno-Phleetum* (LIBB. 1933) GŁOWACKI 1975) plant association, according to BABCZYŃSKA-SENDEK, 2005. Southern slopes of all the anthills were flat and broad.

3. A single nest was discovered in Wojkowice (UTM: CA78), Kamyce district, near the border with Bobrowniki, on the southern hillside, around 120 m south-east from the cemetery in Bobrowniki. Plant association was the *Sileno-Phleetum* and the nest was also fully exposed to the sunlight. In both locations (Bobrowniki and Wojkowice) anthills were built mainly of the mineral material and at the edges grown by *Phleum boehmeri* and *Arrhenaterum elatius*. The dominant ant species in both locations were *L. niger* and *L. flavus* but also *M. schencki* and *F. cunicularia* appeared.

4. A single nest was found in Nowe Chechło (UTM: CA59), among small hummocks at the top of the Góra Chachelska, in the *Adonido-Brachypodietum pinnati* (LIBB. 1933) Krausch 1961 plant association (BABCZYŃSKA-SENDEK 2005). The nest was similar in its shape to these above-mentioned (Fig. 1.), scarcely covered by *Arrhenaterum elatius*, *Brachypodium pinnatum* and *Gallium mollugo*. Other ant species observed here: *L. flavus, L. niger, M. sabuleti* MEINERT, *F. cunicularia.*

Fig.1. Typical nest of *F. lusatica* (Nowe Chechło).

In all researched locations the workers of *F. lusatica* were very aggressive to the researcher when disturbed. Wokreks were found up to 20 m around the nest, and although herbaceous plants affected by aphids covered all the area around, attended by ants (mainly *L. niger*), no aphids attended by *F. lusatica* were detected. Instead, workers of *F. lusatica* were often seen at the flowers of different *Umbelliferae* taking profits of nectaries in its inflorescence, together with *L. niger* but no conflicts at the plants were observed. The alate

sexuals (males) were observed in the nest in June 2004 and 2005 and also in early July 2006.

Discussion

The presence of *F. lusatica* in Upper Silesia is not surprising since it was found in the dry grasslands of other regions of Europe e.g Germany (SEIFERT 1996, 1997), Finland (CZECHOWSKI & RADCHENKO 2006), the Netherlands (Boer 2002). Since it is rather thermophilus species, it seems that xerothermal grasslands and xerothermal patches in other plant associations of Upper Silesia may create favourable conditions for it. This is the third known region in Poland (after Podlasie and Lubelska Upland) where *F. lusatica* has been recorded. In this respect we can expect new findings of this species not only in the dry grasslands of Upper Silesia but also in this type of plant associations in other parts of Poland.

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