

New species for the ant fauna of Slovenia (Hymenoptera: Formicidae)

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Abstract. A list of 14 ant species, reported for the first time for the Slovenian fauna, is given, namely: *Cryptopone ochracea*, *Proceratium melinum*, *Myrmica lonae*, *Myrmica salina*, *Aphaenogaster epirotes*, *Aphaenogaster muelleriana*, *Leptothorax albipennis*, *Leptothorax corticalis*, *Leptothorax crassispinus*, *Leptothorax exilis*, *Leptothorax flavicornis*, *Leptothorax gredleri*, *Liometopum microcephalum*, *Formica lusatica*. The new ant species were established from recently collected material and after re-examining the material from various collections by considering recent taxonomic revisions. *Leptothorax nylanderii* should be deleted from the ant list for Slovenia.

Keywords: ants, Formicidae, fauna, Slovenia

Izveček. NOVE VRSTE ZA FAVNO MRAVELJ SLOVENIJE (HYMENOPTERA: FORMICIDAE) - Predstavljen je seznam 14 vrst mravelj, ki so prvič omenjene za slovensko favno, in sicer: *Cryptopone ochracea*, *Proceratium melinum*, *Myrmica lonae*, *Myrmica salina*, *Aphaenogaster epirotes*, *Aphaenogaster muelleriana*, *Leptothorax albipennis*, *Leptothorax corticalis*, *Leptothorax crassispinus*, *Leptothorax exilis*, *Leptothorax flavicornis*, *Leptothorax gredleri*, *Liometopum microcephalum*, *Formica lusatica*. Nove vrste so bile ugotovljene iz nedavno nabranega materiala in po ponovnem pregledu materiala iz nekaterih zbirk, upošteva se novejša taksonomska revizija. Vrsto *Leptothorax nylanderii* je treba izbrisati s seznama mravelj Slovenije.

Ključne besede: mravlje, Formicidae, favna, Slovenija

Introduction

Until recently, the ants were a quite poorly investigated group of insects in Slovenia. Contributions on ant fauna were mainly restricted to particular parts of the country. Bračko (2000) was the first who published a more general review of the ant fauna of Slovenia, which included data from the literature and, until then, unpublished collected material. In his review,

105 ant species are listed. Several new species were expected to be found in Slovenia, as some parts of the country had not been researched at all and, moreover, the analysis of the species found indicated that Slovenian territory had, due to its geographical position, rather diverse ant fauna.

This paper brings a list of 14 ant species reported for the first time from Slovenia. Most of new data have been contributed by the author, and some by his colleagues as well as biology students. Certain species were confirmed to be present after re-examining some material by considering recent taxonomic revisions.

Material and methods

The author collected ants in different parts of Slovenia. Specimens were preserved in 70 % ethanol. The material, which had been collected by biology students (and deposited at the Department of Biology of the Biotechnical Faculty in Ljubljana) but not included in previous studies, was also checked. Determination keys in Müller (1923), Kutter (1977), Agosti & Collingwood (1987), and Seifert (1996) were used for identification of ant specimens. *Leptothorax exilis* was kindly identified by Andreas Schulz.

In order to take into consideration some recent taxonomic revisions (Seifert 1996, Seifert 1997, Orledge 1998, Radchenko 2000), material from the zoological collection of the Department of Biology, Jeager Collection of the Slovenian Museum of Natural History and the author's collection was re-examined from those groups, in which the mentioned revisions had not been included in previous studies (i.e. *Myrmica*, *Leptothorax*, *Formica*).

Results and discussion

In the list of ants new to Slovenia, 14 species are presented. *Leptothorax nylanderi* has been omitted from previous lists as only its sibling parapatric species *Leptothorax crassispinus* has been proved to occur in Slovenia (for details see notes for this species). Altogether, 118 ant species have been thus recorded in our country. For each new species, data on its localities in Slovenia, and some notes are given in the following list.

***Cryptopone ochracea* (Mayr, 1855)**

RECORDS FROM SLO: Fiesa, Piran, UTM UL84, lawn, 1 alate queen, 20-IX-2001, leg. G. Bračko

NOTES: hypogeic species, distributed mainly in Southern Europe, in Crimea and Caucasus (Baroni Urbani 1971, Atanassov & Dlusskij 1992), but also found in Southern Switzerland (Kutter 1977)

***Proceratium melinum* (Roger, 1860)**

RECORDS FROM SLO: near Škocjanski zatok, Bertoki, Koper, UTM VL04, 1 alate queen, IX-1996, leg. biology students

NOTES: the same as *Cryptopone ochracea*, this species is mainly known from Southern Europe, although there are also some records from Central Europe, i.e. from Austria (Steiner et al. 2002), Hungary (Gallé et al. 1998), Moravia and Slovakia (Werner 1989, Bezděčka 1996). It is a hygrophilic, hypogeic species, often nesting in the ground at the base of trees, and near human habitations (Baroni Urbani 1971).

***Myrmica lonae* Finzi, 1926**

RECORDS FROM SLO: Škrubi, Črna na Koroškem, UTM VM84, 22-VII-1974, leg. biology students; Planica valley, Kranjska Gora, UTM VM04, among *Pinus mugo*, nesting in the ground under a stone, 3-VIII-1997, leg. G. Bračko

NOTES: *Myrmica lonae* had been for years treated as a synonym or variety of *M. sabuleti*. Seifert (1993, 1996) raised it to species by considering the differences in size of its antennal lobe. Occurs in Central and Eastern Europe, Scandinavia and Southern Finland, southern part of Western Siberia, and Northern Kazakhstan (Radchenko et al. 1997). It is not as common as

M. sabuleti, but certainly more abundant in Scandinavia and S Finland (Seifert 1996, Kvamme 1999). In contrast to *M. sabuleti*, it inhabits open moorland and thermophilic deciduous or coniferous forests, although it can also be found in open xerothermous habitats where both species can occur syntopically (Seifert 1996). In Slovenia, *M. lonae* is much rarer than *M. sabuleti*.

***Myrmica salina* Ruzsky, 1905**

RECORDS FROM SLO: Lipovec pri Škofji vasi, Celje, UTM WM22, meadow, 12-IX-2002, leg. G. Bračko

NOTES: *M. salina*, which is not a common *Myrmica species*, is distributed in Central and Eastern Europe and in SW Siberia. It is characteristic of high salinity habitats, which are often margins of salt lakes. However, it can also be found in steppe-like habitats, in xerothermous limestone grasslands or xerothermous margin lines in agricultural regions (Seifert 1988).

***Aphaenogaster epirotes* (Emery, 1895)**

RECORDS FROM SLO: Fiesa, Piran, UTM UL84, forest edge, 28-IX-2002, leg. G. Bračko

NOTES: known from the Balkans (Baroni Urbani 1971, Atanassov & Dlusskij 1992)

***Aphaenogaster muelleriana* Wolf, 1914**

RECORDS FROM SLO: 2 km N of Podnanos, Vipava, UTM VL17, margin of meadow with some shrubs, nesting in wall crevice, 16-VI-2001, leg. G. Bračko

NOTES: distribution of this species is limited to the territory along the Eastern Adriatic from Italy to Albania. It is a nocturnal species, found almost exclusively in urban areas, mostly on walls and rocks, and nesting in their crevices (Zimmermann 1934, Baroni Urbani 1971). The Slovenian locality is well out of the urban area, but the ants were, as a rule, observed on the wall of a solitary ruined building.

***Leptothorax albipennis* (Curtis, 1854)**

RECORDS FROM SLO: Robanov Kot, Luče ob Savinji, UTM VM73, 27-VIII-1986, leg. biology students; Planica valley, Kranjska Gora, UTM VM04, forest edge, nesting in the ground under a stone, 3-VIII-1997, leg. G. Bračko; Globoki laz, Hrib-Loški Potok, UTM VL66, forest edge, nesting in the ground, 31-VIII-2002, leg. G. Bračko

NOTES: this species has until recently been known as *L. tuberointerruptus*, but even more often considered as a synonym of different species. Moreover, Douwes & Stille (1991) showed that *L. tuberointerruptus* could interbreed with *L. tuberum*, *L. nigriceps*, and *L. unifasciatus*, which makes the species even more difficult to distinguish. Seifert (1996) indicated certain differences in sculpture and colouration to distinguish *L. tuberointerruptus* from other species. On the basis of the material from Great Britain, Orledge (1998) established that *L. tuberointerruptus* was the junior synonym of *L. albipennis* and that all British records of *L. tuberum* referred to *L. albipennis*. In connection with this, it is also quite doubtful whether *L. tuberum* was actually recorded in Slovenia. Bračko (2000) gave 3 records for *L. tuberum*. Since the one from UTM VM73 (wrongly indicated as VM74 in that paper) is now identified as *L. albipennis*, and as "*L. tuberum*" specimen from the Jaeger Collection (UTM WM41) is a misidentification, the only unchecked data for this species is then from Mayr (1855), which could also actually be *L. albipennis*. This species is otherwise known from Central Europe, Pyrenees, The Netherlands, Italy, Southern England and Wales (Radchenko et al. 1999). It is quite rare, but is likely to become more common since it has been frequently mixed with *L. tuberum* and *L. unifasciatus*. It is a xerothermophilic species, found mostly in grasslands with single shrubs or in light scrub, and nesting in dead wood, in stony ground, or inside dry empty stems of herbaceous plants (Seifert 1996, Radchenko et al. 1999).

***Leptothorax corticalis* (Schenck, 1852)**

RECORDS FROM SLO: 1.5 km SW of Iljaševci, Ljutomer, UTM WM85, forest, 26-VII-2001, leg. G. Bračko; Urbarija, Dobrovnik, Lendava, UTM XM07, clearing with shrubs and individual trees, 27-VII-2001, leg. G. Bračko

NOTES: distributed in Southern and Central Europe, central part of Eastern Europe, S Sweden, Crimea, Caucasus and Algeria, but everywhere rare (Radchenko et al. 1999). It is an arboreal species, inhabiting mainly dry light forests and nesting in dead tree branches (mainly on oaks) or in bark crevices. Owing to its strict arboreal life, it has probably been often overlooked (Seifert 1996).

***Leptothorax crassispinus* Karawajew, 1926**

RECORDS FROM SLO: more than 130 localities from all parts of Slovenia

NOTES: Seifert (1995) first pointed out that *Leptothorax nylanderi*, a widespread species in Europe, consists of two morphologically different parapatric populations, treated as two different subspecies, *Leptothorax nylanderi nylanderi*, which is distributed in Western Europe, and *L. nylanderi slavonicus* from Eastern Europe. The two subspecies have a known contact

zone in East Germany. Seifert (1996) later regarded *L. slavonicus* to be a good species, and Radchenko (2000) then showed that *L. slavonicus* was actually a junior synonym of *Leptothorax crassispinus*. On the basis of the gross distribution pattern of the two sibling species and from the data from some neighbouring territories, it could be expected that Slovenian territory belongs to the range of *L. crassispinus*. In Austria, *L. nylanderi* is known only from Vorarlberg (westernmost part of the country), while *L. crassispinus* is distributed in the rest of Austria east of Arlberg (Glaser 2000). *L. crassispinus* is also known from NE Italy (Seifert 1995). After examining more than 130 "*L. nylanderi*" samples from all over Slovenia, they were all identified as *L. crassispinus*. It can be therefore assumed that only this species occurs in Slovenia and that *Leptothorax nylanderi* should be omitted from previous lists.

***Leptothorax exilis* Emery, 1869**

RECORDS FROM SLO: Križišče, Dragonja, Piran, UTM UL93, grove edge, 5-VII-2000, leg. G. Bračko, det. A. Schulz

NOTES: this is a Southern European species, and this Slovenian site probably delineates the northern border of its range. *L. exilis* may be found in very hot and dry habitats, usually nesting under stones (Schulz pers. comm.). The specimens were found above a limestone cliff, which is one of the few places in coastal Slovenia, where warm limestone offers refuge to true Mediterranean plant and animal species.

***Leptothorax flavicornis* Emery, 1870**

RECORDS FROM SLO: Škocjanski zatok, Bertoki, Koper, UTM VL04, bank of the brackish lagoon, nesting on stony ground between roots of the halophyte *Artemisia caerulescens*, 31-V-2001 and 17-V-2003, leg. G. Bračko

NOTES: rare species known from Italy, Southern Switzerland, and Western Balkans (Müller 1923, Petrov 2000). Nests can be found under stones, in hollow acorns in deciduous forests or in shrubs (Buschinger 1999). The Slovenian site, located in the Škocjanski Zatok Nature Reserve, could be an important contribution to the knowledge of this species.

***Leptothorax gredleri* Mayr, 1855**

RECORDS FROM SLO: near Hrastje-Mota, Radenci, UTM WM86, forest edge, 24-V-2001, leg. G. Bračko

NOTES: it has been mainly reported from Central Europe, and also from Greece and the former Yugoslavia (Radchenko et al. 1999). *L. gredleri* inhabits shady and moist deciduous or mixed forests, nesting in rotten wood and under bark.

***Liometopum microcephalum* Panzer, 1798**

RECORDS FROM SLO: 0.5 km S of Dolina pri Lendavi, Lendava, UTM XM15, meadow with individual trees, nesting in the trunk of a large *Quercus robur*, 22-V-2001, leg. G. Urbanič

NOTES: *L. microcephalum* is mainly distributed in Southern and Eastern Europe, in Caucasus and Asia Minor, but is quite scarce in Central Europe (Baroni Urbani 1971, Kutter 1977, Atanassov & Dlusskij 1992). Builds carton nests in hollow parts of trees, mostly in different *Quercus* species.

***Formica lusatica* Seifert, 1997**

RECORDS FROM SLO: Modrejce, Tolmin, UTM VM01, 4-VII-1992, leg. biology students; near Borjana, Kobarid, UTM UM82, stony ground along the road, 14-VII-2001, leg. G. Bračko

NOTES: this species was described by Seifert (1997) as a sympatric sibling species of *F. cunicularia* and *F. rufibarbis*. *Formica lusatica* is also a correct name for the ant species previously named as *Formica glauca* (Seifert 1996). It is an aggressive species, even more xerothermophilic than *F. rufibarbis*, and prefers xerothermous grasslands with sparse vegetation. In Slovenia, it appears to be much rarer than its two sibling species.

Povzetek

Za območje Slovenije je bilo do sedaj znanih 105 vrst mravelj. Ta seznam je dopolnjen s 14 vrstami, ki so prvič omenjene za slovensko favno mravelj, in sicer: *Cryptopone ochracea*, *Proceratium melinum*, *Myrmica lonae*, *Myrmica salina*, *Aphaenogaster epirotes*, *Aphaenogaster muelleriana*, *Leptothorax albipennis*, *Leptothorax corticalis*, *Leptothorax crassispinus*, *Leptothorax exilis*, *Leptothorax flavicornis*, *Leptothorax gredleri*, *Liometopum microcephalum*, *Formica lusatica*. Nekatere izmed teh novih vrst so bile nabrane v zadnjem času v okviru vzorčevanja mravlje favne na različnih koncih Slovenije. Vključen je bil tudi do sedaj še nepregledan starejši material, shranjen na Oddelku za biologijo Biotehniške fakultete v Ljubljani. Določeni rodovi mravelj (*Myrmica*, *Leptothorax*, *Formica*) so v zadnjem času doživeli taksonomske revizije, zato so bili primerki iz omenjenih skupin ponovno pregledani. Tako je z do sedaj poznanega seznama mravelj Slovenije treba izbrisati vrsto *Leptothorax nylanderii*, saj je bila na tem območju najdena le njena sorodna parapatrična vrsta *Leptothorax crassispinus*.

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