Checklist of the ants of Slovenia (Hymenoptera: Formicidae)

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Abstract. A checklist of the ants of Slovenia with 132 species is presented. Sixteen species are new for the Slovenian ant fauna (*Ponera testacea*, *Cardiocondyla elegans*, *Myrmica gallienii*, *Myrmica lobulicornis*, *Myrmica rugulosa*, *Temnothorax italicus*, *Temnothorax lichtensteini*, *Temnothorax recedens*, *Temnothorax saxonicus*, *Tetramorium hungaricum*, *Tetramorium moravicum*, *Tetramorium semilaeve*, *Formica fuscocinerea*, *Lasius balcanicus*, *Plagiolepis ampeloni*, *Plagiolepis xene*). Distribution of the recorded species according to the phytogeographic regions of Slovenia is also indicated.

Keywords: ants, Formicidae, checklist, Slovenia

Izvleček. SEZNAM MRAVELJ SLOVENIJE (HYMENOPTERA: FORMICIDAE) - Predstavljen je seznam mravelj Slovenije s 132 vrstami. Šestnajst vrst je novih za slovensko favno mravelj (*Ponera testacea*, *Cardiocondyla elegans*, *Myrmica gallienii*, *Myrmica lobulicornis*, *Myrmica rugulosa*, *Temnothorax italicus*, *Temnothorax lichtensteini*, *Temnothorax recedens*, *Temnothorax saxonicus*, *Tetramorium hungaricum*, *Tetramorium moravicum*, *Tetramorium semilaeve*, *Formica fuscocinerea*, *Lasius balcanicus*, *Plagiolepis ampeloni*, *Plagiolepis xene*). Navedena je tudi razširjenost najdenih vrst glede na fitogeografska območja Slovenije.

Ključne besede: mravlje, Formicidae, seznam, Slovenija

Introduction

For a long time, the ants were a more or less neglected group of insects in Slovenia. The investigations of myrmecofauna were mostly restricted to smaller areas. Bračko (2000) was the first who presented a more general review of the Slovenian ant fauna. Nevertheless, the ants of some parts of the country, especially in the east, were still relatively poorly known. In the ensuing years, Slovenian territory was investigated more thoroughly and the ant list was supplemented by some additional species (Bračko 2003, Schlick-Steiner et al. 2003), so that 119 species were known for Slovenia.

In the last two decades, many ant taxonomic works with more sophisticated approach have been published. This resulted in many taxonomic changes and description of new species, especially within the genera *Myrmica*, *Leptothorax* (*Temnothorax*), *Formica*, *Lasius*. The *Synopsis and Classification of Formicidae* by Bolton (2003) also brings certain novelties in ant classification. For instance, most of the species that were formerly included in *Leptothorax sensu lato* are now placed in the genus *Temnothorax*.

This paper presents an updated checklist of the ants of Slovenia. Altogether, 132 species have been recorded. Sixteen species are new for the Slovenian ant fauna. Distribution of the recorded species is given according to the phytogeographic regions of Slovenia as defined by Wraber (1969) (AL – Alpine, PA – Prealpine, SM – Submediterranean, DN – Dinaric, PD – Predinaric, SP – Subpannonian).

The following taxonomic literature was used for the species identification: Kutter (1977), Agosti & Collingwood (1987), Seifert (1995, 1996, 2000, 2002, 2003, 2005, 2006), Csősz & Seifert (2003), Csősz & Markó (2004), Csősz et al. (2007). Ant classification and taxonomic nomenclature generally follow Bolton (1995, 2003).

List of ant species

Subfamily PONERINAE Lepeletier, 1835

Cryptopone ochracea (Mayr, 1855): SM
Ponera coarctata (Latreille, 1802): AL, PA, SM, DN, PD, SP
Ponera testacea Emery, 1895 [1]: PA, SM, PD

Subfamily PROCERATIINAE Emery, 1895

Proceratium melinum (Roger, 1860): SM

Subfamily MYRMICINAE Lepeletier, 1835

Aphaenogaster epirotes (Emery, 1895): SM
Aphaenogaster ionia Santschi, 1933 [2]: SM
Aphaenogaster muelleriana Wolf, 1915: SM
Aphaenogaster subterranea (Latreille, 1798): PA, SM, DN, PD, SP
Cardiocondyla elegans Emery, 1869 [1]: SM
Chalepoxenus muellerianus (Finzi, 1922): SM
Crematogaster schmidti (Mayr, 1853): SM
Crematogaster scutellaris (Olivier, 1792): SM
Crematogaster sordidula (Nylander, 1849): SM
Formicoxenus nitidulus (Nylander, 1846): AL, SM, PD, SP
Harpagoxenus sublaevis (Nylander, 1849): AL
Leptothorax acervorum (Fabricius, 1793): AL, PA, SM, DN, PD, SP
Leptothorax gredleri Mayr, 1855: PA, SP
Leptothorax muscorum (Nylander, 1846): AL, DN
Leptothorax pacis (Kutter, 1945): AL
Manica rubida (Latreille, 1802): AL, PA, SM, DN
Messor capitatus (Latreille, 1798): SM
Messor structor (Latreille, 1798): SM
Messor wasmanni Krausse, 1910: SM
Monomorium monomorium Bolton, 1987: SM
Monomorium pharaonis (Linnaeus, 1758) (non-indigenous species)
Myrmecina graminicola (Latreille, 1802): AL, PA, SM, DN, PD, SP

Myrmica gallienii Bondroit, 1920 [1]: SP
Myrmica lobicornis Nylander, 1846: AL, SM, DN, SP
Myrmica lobulicornis Nylander, 1857 [1]: AL
Myrmica lonae Finzi, 1926: AL
Myrmica rubra (Linnaeus, 1758): AL, PA, SM, DN, PD, SP
Myrmica ruginodis Nylander, 1846: AL, PA, SM, DN, PD, SP
Myrmica rugulosa Nylander, 1849 [1]: PD
Myrmica sabuleti Meinert, 1861: AL, PA, SM, DN, PD, SP
Myrmica salina Ruzsky, 1905: PA, PD, SP
Myrmica scabrinodis Nylander, 1846: AL, PA, SM, DN, PD, SP
Myrmica schencki Viereck, 1903: AL, PA, SM, DN, PD, SP
Myrmica specioides Bondroit, 1918: AL, PA, SM, DN, PD, SP
Myrmica sulcinodis Nylander, 1846: AL
Myrmica vandeli Bondroit, 1920: DN
Myrmoxenus kraussei (Emery, 1915): SM
Myrmoxenus ravouxi (André, 1896): SM
Pheidole pallidula (Nylander, 1849): SM
Solenopsis fugax (Latreille, 1798): PA, SM, DN, PD, SP
Solenopsis wolfi Emery, 1915: SP
Stenamma debile (Förster, 1850): AL, PA, SM, DN, PD, SP
Stenamma petiolatum Emery, 1897: PA, DN
Stenamma striatulum Emery, 1895: AL, PA, SM, DN, PD, SP
Strongylognathus alboini Finzi, 1924: DN
Strongylognathus testaceus (Schenck, 1852): SP
Temnothorax affinis (Mayr, 1855): AL, PA, SM, DN, PD, SP
Temnothorax clypeatus (Mayr, 1853): SM, SP
Temnothorax corticalis (Schenck, 1852): SP
Temnothorax crassispinus (Karavaiev, 1926): AL, PA, SM, DN, PD, SP
Temnothorax exilis (Emery, 1869): SM
Temnothorax flavicornis (Emery, 1870): SM
Temnothorax interruptus (Schenck, 1852): AL, PA, SM, DN, PD
Temnothorax italicus (Consani, 1952) [1]: SM
Temnothorax lichtensteini (Bondroit, 1918) [1]: SM
Temnothorax nigriceps (Mayr, 1855): AL, PA, SM, DN, PD, SP
Temnothorax parvulus (Schenck, 1852): PA, SM, PD, SP
Temnothorax recedens (Nylander, 1856) [1]: SM
Temnothorax saxonicus (Seifert, 1995) [1]: PA, SM

Temnothorax sordidulus (Müller, 1923): PA, SM, DN, PD
Temnothorax tuberum (Fabricius, 1775) [3]: AL, DN
Temnothorax unifasciatus (Latreille, 1798): AL, PA, SM, DN, SP
Tetramorium caespitum/*impurum* complex [4]: AL, PA, SM, DN, PD, SP
Tetramorium hungaricum Röszler, 1935 [1]: PA
Tetramorium moravicum Kratochvil, 1941 [1]: SM
Tetramorium semilaeve André, 1883 [1]: SM

Subfamily DOLICHODERINAE Forel, 1878

Bothriomyrmex adriacus Santschi, 1922: SM, PD
Dolichoderus quadripunctatus (Linnaeus, 1771): AL, PA, SM, DN, PD, SP
Liometopum microcephalum (Panzer, 1798): SP
Tapinoma ambiguum Emery, 1925: AL, PA, SM, DN, PD, SP
Tapinoma erraticum (Latreille, 1798): AL, PA, SM, DN, PD, SP

Subfamily FORMICINAE Latreille, 1809

Camponotus aethiops (Latreille, 1798): PA, SM, PD, SP
Camponotus dalmaticus (Nylander, 1849): SM
Camponotus fallax (Nylander, 1856): PA, SM, DN, SP
Camponotus herculeanus (Linnaeus, 1758): AL, DN
Camponotus lateralis (Olivier, 1792): SM
Camponotus ligniperda (Latreille, 1802): AL, PA, SM, DN, PD, SP
Camponotus piceus (Leach, 1825): PA, SM, DN, PD, SP
Camponotus tergestinus Müller, 1921: SM
Camponotus truncatus (Spinola, 1808): PA, SM, PD, SP
Camponotus vagus (Scopoli, 1763): AL, PA, SM, DN, PD, SP
Formica aquilonia Yarrow, 1955: AL, PA, DN
Formica cinerea Mayr, 1853 [5]: AL, PA, SM
Formica cunicularia Latreille, 1798: AL, PA, SM, DN, PD, SP
Formica exsecta Nylander, 1846: AL, SM
Formica fusca Linnaeus, 1758: AL, PA, SM, DN, PD, SP
Formica fuscocinerea Forel, 1874 [1]: AL, PA, SP
Formica gagates Latreille, 1798: PA, SM, DN, PD, SP
Formica lemani Bondroit, 1917: AL, DN
Formica lugubris Zetterstedt, 1838: AL, PA, DN

Formica lusatica Seifert, 1997: AL, PA, SM, PD, SP
Formica polyctena Förster, 1850: AL, PA, SM, DN, PD, SP
Formica pratensis Retzius, 1783: AL, PA, SM, DN, PD, SP
Formica pressilabris Nylander, 1846: AL, SM
Formica rufa Linnaeus, 1761: AL, PA, SM, DN, PD, SP
Formica rufibarbis Fabricius, 1793: AL, PA, SM, DN, PD, SP
Formica sanguinea Latreille, 1798: AL, PA, SM, DN, PD, SP
Formica selysi Bondroit, 1918: PA, DN
Formica truncorum Fabricius, 1804: AL, SM, DN
Lasius alienus (Förster, 1850): AL, PA, SM, DN, PD, SP
Lasius balcanicus Seifert, 1988 [1]: SM, PD
Lasius bicornis (Förster, 1850): SP
Lasius brunneus (Latreille, 1798): AL, PA, SM, DN, PD, SP
Lasius carniolicus Mayr, 1861: PA, SM
Lasius citrinus Emery, 1922: PA, DN
Lasius distinguendus (Emery, 1916): AL, PA, SM, DN, PD, SP
Lasius emarginatus (Olivier, 1792): AL, PA, SM, DN, PD, SP
Lasius flavus (Fabricius, 1781): AL, PA, SM, DN, PD, SP
Lasius fuliginosus (Latreille, 1798): AL, PA, SM, DN, PD, SP
Lasius jensi Seifert, 1982: DN
Lasius meridionalis Bondroit, 1920: SM, DN
Lasius mixtus (Nylander, 1846): PA, DN
Lasius myops Forel, 1894: PA, SM, DN, PD, SP
Lasius niger (Linnaeus, 1758): AL, PA, SM, DN, PD, SP
Lasius nitidigaster Seifert, 1997: SM, DN
Lasius paralienus Seifert, 1992: AL, PA, SM, DN, PD, SP
Lasius platythorax Seifert, 1991: AL, PA, SM, DN, PD, SP
Lasius psammophilus Seifert, 1992: AL, PA, SM, DN, PD, SP
Lasius reginae Faber, 1967: SM
Lasius sabularum (Bondroit, 1918): AL, PA, SM, DN, PD, SP
Lasius umbratus (Nylander, 1846): AL, PA, SM, DN, PD, SP
Plagiolepis ampeloni (Faber, 1969) [1]: SM
Plagiolepis pygmaea (Latreille, 1798): PA, SM, DN, PD, SP
Plagiolepis vindobonensis Lomnicki, 1925: AL, PA, SM
Plagiolepis xene Stärcke, 1936 [1]: SM
Polyergus rufescens (Latreille, 1798): AL, PA, SM, PD, SP
Prenolepis nitens (Mayr, 1853): PA, SM, DN, PD, SP

[1] New species for the ant fauna of Slovenia.

[2] Cobelli (1906) reported *Aphaenogaster testaceo-pilosa* (Lucas, 1849) from the vicinity of Piran. Müller (1923) placed this record under *A. testaceopilosa* var. *balcanica* (Emery, 1898) which was later raised to species. *A. balcanica* was also mentioned in the list of Slovenian ants in Bračko (2000). However, the right identity of this record should be *A. ionia*. Already Baroni Urbani (1971) placed Cobelli's data under *A. semipolita* ssp. *ionia* (= *A. ionia*). This species is quite common along the Adriatic coast, while *A. balcanica* has more southern Balkan distribution. Moreover, few workers of *A. ionia* were found in Piran in 2004, nearby the locality where Cobelli found »*Aphaenogaster testaceo-pilosa*«.

[3] Bračko (2003) gave records of *Leptothorax* (= *Temnothorax) albipennis* (Curtis, 1854). That material was re-checked and identified as *T. tuberum* (det. A. Schulz, G. Bračko).

[4] A multidisciplinary approach utilizing molecular genetic methods and morphological analyses, and incorporating cuticular hydrocarbons data revealed the existence of seven very similar species from the *Tetramorium caespitum*|*impurum* complex, i.e. *T. caespitum* (L.), *T. impurum* (Förster, 1850) and five other yet undescribed species (Schlick-Steiner et al. 2006). The samples from Slovenia that were included in this study were classified into two species with code names B and E. Steiner et al. (2006) also presented a morphology-based identification engine for ants of the *Tetramorium caespitum*|*impurum* complex which requires 21 characters, captured with high-precision morphometry. In the present paper, all the material determined as *T. caespitum* or *T. impurum* according to previous taxonomic keys, and older literature data for the two mentioned species, are designated as *Tetramorium caespitum*|*impurum* complex in the list of species. The available material was not identified further.

[5] Two species that were listed in Bračko (2000), i.e. *F. balcanina* Petrov & Collingwood, 1993 and *F. imitans* Ruzsky, 1902, were synonymized with *F. cinerea* (Seifert 2002). The re-checking of two samples of »*F. imitans*« from Ptuj and Gornja Radgona showed that they actually belong to *F. fuscocinerea*, a sibling species of *F. cinerea*.

Povzetek

Mravlje so bile v Sloveniji dolgo precej zapostavljena skupina žuželk. Bračko (2000) je predstavil prvi splošnejši pregled slovenske favne mravelj. S kasnejšimi raziskavami so bile najdene še dodatne vrste, tako da je bilo skupaj znanih 119 vrst mravelj (Bračko 2003, Schlick-Steiner et al. 2003).

V zadnjem času je bilo objavljenih več taksonomskih del, ki so prinesla veliko sprememb v taksonomiji določenih skupin mravelj in opise novih vrst, predvsem pri rodovih *Myrmica*, *Leptothorax* (*Temnothorax*), *Formica*, *Lasius*. Tudi pri določanju vrst za potrebe te raziskave je bila večinoma uporabljena novejša taksonomska literatura.

V prispevku je podan trenutni seznam mravelj Slovenije. Skupaj je bilo najdenih 132 vrst, od teh pa jih je 16 prvič omenjenih za Slovenijo (*Ponera testacea*, *Cardiocondyla elegans*, *Myrmica gallienii*, *M. lobulicornis*, *M. rugulosa*, *Temnothorax italicus*, *T. lichtensteini*, *T. recedens*, *T. saxonicus*, *Tetramorium hungaricum*, *T. moravicum*, *T. semilaeve*, *Formica fuscocinerea*, *Lasius balcanicus*, *Plagiolepis ampeloni*, *P. xene*). Podatek za vrsto *Aphaenogaster balcanica*, ki je bila navedena v seznamu v Bračko (2000), se nanaša na *A. ionia*. Ta vrsta je bila tudi ponovno najdena v Piranu leta 2004. S prejšnjih seznamov je prav tako treba izbrisati vrste *Leptothorax* (*Temnothorax*) *albipennis* (podatki se nanašajo na *T. tuberum*), *Formica balcanina* in *Formica imitans* (podatki se nanašajo na *F. cinerea* oziroma *F. fuscocinerea*). Material, ki je bil doslej določen in objavljen kot *Tetramorium caespitum* ali *T. impurum*, je tu definiran kot kompleks *Tetramorium caespitum/impurum*.

V seznamu vrst je navedena tudi njihova razširjenost na ozemlju Slovenije, in sicer na osnovi njihovega pojavljanja v posameznih fitogeografskih območjih (AL – alpsko, PA – predalpsko, SM – submediteransko, DN – dinarsko, PD – preddinarsko, SP – subpanonsko fitogeografsko območje).

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