

Six new ant species (Hymenoptera: Formicidae) for the Romanian myrmecofauna

Bálint MARKÓ

Abstract

The author presents six new ant species for the Rumanian fauna, describing their main characteristics, distributional area and their habitat-preferences. These species are the following: *Myrmica hellenica* FOREL 1913, *Myrmica salina* RUZSKY 1905, *Crematogaster schmidti* (MAYR 1852), *Lasius paralienus* SEIFERT 1992, *Lasius neglectus* VAN LOON, BOOMSMA & ANDRÁSFALVY 1990, and *Formica balcanina* PETROV & COLLINGWOOD 1993.

The number of known ant species becomes 82 for Romania, which is still considered low by the author, who expects the real number of species to exceed 100.

Rezumat

Şase specii de furnici (Hymenoptera: Formicidae) noi pentru fauna României

În această lucrare autorul prezintă şase specii de furnici noi pentru fauna României. Totodată sunt descrise caracterele lor morfologice pe baza cărora ele pot fi separate de speciile asemănătoare și este prezentată și distribuția lor pe teritoriul Europei și pe teritoriul României împreună cu preferințele lor față de habitat. Speciile prezentate sunt următoarele: *Myrmica hellenica* FOREL 1913, *Myrmica salina* RUZSKY 1905, *Crematogaster schmidti* (MAYR 1852), *Lasius paralienus* SEIFERT 1992, *Lasius neglectus* VAN LOON, BOOMSMA & ANDRÁSFALVY 1990 și *Formica balcanina* PETROV & COLLINGWOOD 1993.

Numărul speciilor semnalate pe teritoriul României astfel devine 82, număr care este însă considerat a fi prea mic, autorul considerând că mai mult de 100 de specii de furnici trebuie să existe în România. Această afirmație este bazată pe faptul că în Ungaria la momentul de față sunt cunoscute mai mult de 100 de specii de furnici, cu toate că varietatea biotopurilor din această țară este mai mică în comparație cu România.

keywords: Formicidae, Romania, new species.

Introduction

The first myrmecological studies on the territory of Rumania were carried out in the XIXth century. Later, at the beginning of the XXth century Worrell and MÜLLER studied the ant fauna of Transylvania. RÖSZLER and MOCSÁRY, too, collected in Transylvania, the former even described a few new ant species and subspecies which taxonomical status is still unclear. From the 50's KNECHTEL and later PARASCHIVESCU began to study the Rumanian myrmecofauna. PARASCHIVESCU published a Rumanian checklist in 1978, and he is still active. Additionally CÎRDEI also contributed to the knowledge of the Rumanian ants.

Methods

The author identified each of the species below presented. The collections were made using pitfall traps and by hand, too, made using pitfall traps and by free sampling, too. For the identification of

the ants several keys were used written by Agosti COLLINGWOOD (1987b), COLLINGWOOD (1979), KUTTER (1977), PETROV COLLINGWOOD (1993), and SEIFERT (1988 1992).

Presentation of the species

Subfamily Myrmicinae

1. *Myrmica hellenica* FOREL 1913

Its closest relatives are *M. rugulosa* NYLANDER 1849 and *M. specioides* BONDROIT 1918. From these two species it can be precisely separated on the basis of SEIFERT's (1988) index: $I = HW / FR * FL / FR * PP / HL$, which amounts 0.8479 0.0390 in *M. rugulosa* 1.0637 0.0614 (northern populations) or 1.168 0.0790 (southern populations) in *Myrmica hellenica*, and 1.4482 0.1017 in *M. specioides* (HW - maximum head width including eyes, FR - minimum distance between frontal carinae, FL - maximum distance of frontal lobes, PP

- maximum width of postpetiole, HL - maximum head length) (SEIFERT 1988).

Up to now it has been recorded from Greece, Italy, Bulgaria, Austria, Switzerland, Germany (SEIFERT 1988), from Poland (RADCHENKO et al. 1997), and from Yugoslavia, and Albania (FINZI 1926 in SEIFERT 1988, BARONI URBANI 1971). In Rumania it was found in Transylvania so far, in the Criş-Strait (Bihar county, in 1995, cca. 270 m) on the bank of the river Crişul-Repede (MARKÓ 1998), from the „Fânaşele Clujului” near Cluj-Napoca city (Cluj county, in 1996, 370 m), from Sălard (Mureş county, in 1997, cca. 550 m), and from Moacşa (Covasna county, in 1997, 590 m). *Myrmica hellenica* is characteristic for sun-exposed, but only superficially dry areas - e.g. riverbanks with sandy soils (SEIFERT 1988, 1993). In our case this statement is valid, too, all sample-points wore these characteristics, even if they were not all riverbanks. SEIFERT (1988) considers *Myrmica hellenica* as being a species with pioneer characters, due to the fact that it mostly occurs in unstable environment, like riverbanks, where the flood ensures a constant instability. SEIFERT (1993) supposes that its distributional center could be the Balkans and Northern Italy.

2. *Myrmica salina* RUZSKY 1905

SEIFERT (1988) synonymize *Myrmica slovacica* SADIL 1952, as being in fact *Myrmica salina* RUZSKY 1905. This species has a scape clearly angled at the base with a *sabuleti*-like lobe. However, the characteristic shape of the petiolus, and the ratios HW/FR and FL/FR (see previously) (SEIFERT 1988), which are significantly higher than in *sabuleti*, separate it well from this species (Fig. 1.).

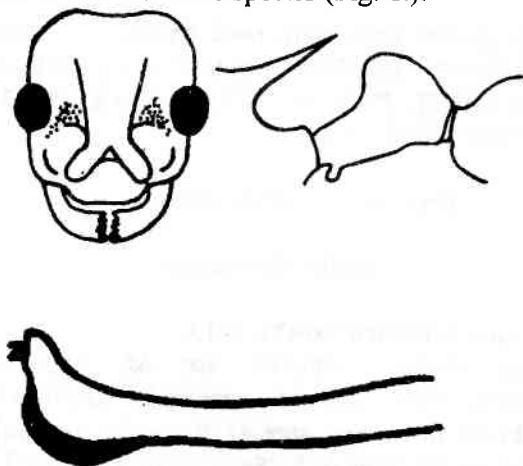


Fig. 1. *Myrmica salina*: above-left its head, above-right its petiolus, below its scapus.

Along its specific morphological characters, *salina* has specificity in its biotope-preference, too. It prefers soils with high salinity for instance the

bank of salt-lakes. In addition we collected it at Vetiş village (Satu Mare county, in 1996, ca. 130 m) on a pasture near a cornfield inside the dams of the river Someş in North-Western Rumania (MARKÓ 1998). SEIFERT (1988, 1993) also reports it from such xerothermous areas.

Up to now it was recorded from Germany, Slovakia, Hungary, Ukraine, Bulgaria, South Russia, Kazakhstan, Altai and Novosibirskij Oblast' (SEIFERT 1988). It is worth of interest that PARASCHIVESCU (1972) didn't report *Myrmica salina* when studying several saline areas in Rumania.

3. *Crematogaster (Acrocoelia) schmidti* (MAYR 1852)

As a close relative of the *Crematogaster scutellaris* (OLIVIER 1791) it was for a long time handled as a subspecies of this species (BARONI URBANI 1971), and as such it might have been omitted in Rumania. It is characterized by a trapezoid petiolus as *C. scutellaris*, too, but it can be distinguished on the basis of its red coloured head, alitrunk and petiolar nodes.

This species is characteristic for submediterranean, and warm areas. It has been reported from Hungary (GALLÉ et al. 1998), Bulgaria, Greece, and Yugoslavia (Agosti COLLINGWOOD 1987a). We found it in Băile Herculane (Caraş-Severin county, in 1996 160 m) at the feet of the Domogled Mountain (Southern Carpathians) at a forest side. This limestone area is characterized by submediterranean climate.

Subfamily Formicinae

4. *Lasius (Lasius) paralienus* SEIFERT 1992

This species makes part of the *alienus*-group of the *Lasius* subgenus along the *L. alienus* (FÖRSTER 1850), and the *L. psammophilus* SEIFERT 1992 species having normally 8-toothed mandibles and no setae on the scapes. A more robust body and darker brown colour than *alienus* or *psammophilus* characterize it. Alike the *psammophilus*, it has 2-5 setae on the area between the propodeal spiracle and the metapleural gland which distinguishes it well from *alienus* (Fig. 2.), which has max. a single setae in this area. This character can be used efficiently - along with its darker colour - when carrying out quantitative studies in areas where *paralienus* and *alienus* occur together.

It seems that it is almost as widespread as the *alienus* in Rumania, and it certainly has not been reported up to now due to its recent description as a separate species. It is characteristic for xerothermous steppe-like zones, and warm limestone areas, too. Up to now it has been recorded from Turkey (Anatolia), South-Bulgaria, Greece, Yugoslavia, Italy,

Hungary, Germany and its northernmost record is from Sweden (ÖLAND) (SEIFERT 1992). The Balkan peninsula is supposed to be its distributional center (SEIFERT 1992 1993).

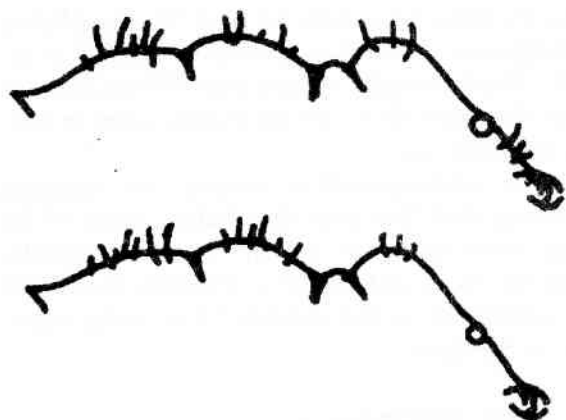


Fig. 2. The propodeal area of (above) *Lasius paralienus* SEIFERT and (below) of *Lasius alienus* (FÖRSTER)

We collected this species from Băile Herculane (Caraș-Severin county, in 1996, 160 m) in the surroundings of the Domogled Mountain (Southern Carpathians) a warm limestone area close to the Danube in South-Western Rumania. In Transylvania we collected it from a xerothermous steppe-like area, the Botanical Reserve „Fânațele Clujului” (Cluj county, in 1996, cca. 370 m) near the city of Cluj-Napoca, from Cojocna (Cluj county, in 1996, 400 m) on a xerothermous grassland, from Stânceni (Mureș county, in 1997, cca. 600 m) at the feet of the Gurghiu Mountains (Eastern Carpathians), and close to Sovata town in the Gurghiu Mountains (Mureș county, 1996, cca. 1000 m), too. It was also found in South-Eastern Rumania close to the Black Sea, in Babadag (Tulcea county, in 1995, cca. 80 m).

Based on a long-term quantitative study we concluded that the species *paralienus* and *alienus* more or less exclude each other. The study was carried out in the Fânațele Clujului and the *paralienus* proved to be dominating in bush stretches while the *alienus* in open grasslands (MARKÓ unpubl. data). The reciprocal exclusion was reported by SEIFERT (1992), too. By analysing several datasets he concluded that there was only an 5.8% habitat overlap of the two species (SEIFERT 1992).

5. *Lasius (Lasius) neglectus* VAN LOON, BOOMSMA & ANDRÁSFALVY 1990

This species has been synonymized by SEIFERT (1992) as the polygyn form of the *Lasius turcicus* SANTSCHE 1921 based on its morphological characters. Later he proposed the separate use of *L. neglectus* for the European forms which are reduced in size and suspected to be polygyn, at least as far as further firm evidence is not discovered to support the full synonymy of these taxa (SEIFERT pers. comm.).

The *neglectus*' scapes bear no setae, and this species normally has cca. 7-denticled mandibles, which includes it in the *brunneus*-group, along the *Lasius brunneus* (LATREILLE 1798) and the *Lasius lasioides* (EMERY 1869). It's a slender species with a paler body colour than *L. brunneus*, having not so contrasting colour-combination.

Up to now it has been recorded from France, Hungary, Bulgaria, Greece, Georgia, Turkey, and Iran (SEIFERT 1992). It is supposed to be an introduced species in West and Central Europe where in cities it can develop huge polygyn supercolonies of several 100 m²-s surface as in Budapest (Hungary) (TARTALLY pers. comm.), whereas in its original area it is considered to be mainly monogynous (SEIFERT 1992). Its distributional centre is identified as Asia Minor and Transcaucasia. SEIFERT supposes that it could have been brought into Western and Central European countries for instance with plants for Botanical Gardens (SEIFERT 1992) from South-Eastern European and Western Asian regions.

In Rumania it has been collected in the surroundings of Băile Herculane (Caraș-Severin county, in 1996, 160 m), a little town at the feet of the Domogled Mountain, a warm, limestone area - typical habitat for this species (SEIFERT 1992). Its colonies were found under stones, but we have no evidence either of the polygyny or of the monogyny of these colonies.

6.) *Formica (Serviformica) balcanina* PETROV & COLLINGWOOD 1993

The *Formica balcanina* makes part of the *cinerea*-group of the *Serviformica* subgenus. It is a close relative of the *Formica cinerea*, and it was separated and described as a separate species in 1993. It can be safely distinguished by the former species based on its pubescence: this species has a fringe of setae on its head, which extends from the occiput round the head, down below the eyes to the genae (fig. 3.). On the other hand *F. cinerea* has a fringe of hair extending round the head not further than the level of the eyes, and has no or very few (1-3) setae on the genae. (PETROV & COLLINGWOOD 1993).

We collected *F. balcanina* at Bologa (Cluj county, in 1995, cca. 400 m), at Ciucea (Cluj county, in 1995, cca. 350 m), in the Crișul Repede river's strait (Bihar county, in 1995, cca. 270 m), at Aleșd (Bihar county, in 1995, cca. 180 m), at Fughiu (Bihar county, in 1995 140 m) along the Crișul-Repede river's bank (MARKÓ 1998). We also collected it on the bank of the Mureș river at Sălard (Mureș county, in 1997, cca. 550 m), at Stânceni (Mureș county, in 1997, cca. 600 m), and in the valley of the river Mureș at Senetea (Harghita county, in 1997, 780 m).

In Transylvania it was also collected from Bulzești de Sus (Hunedoara county, in 1996, cca. 500 m, leg. URÁK I.). In South-Western Rumania it was recorded from Băile Herculane (Caraș-Severin county, in 1996, 160 m). In South-Eastern Rumania it was recorded from Brăila (Brăila county, in 1996, cca. 30 m, leg. MACALIK K.) near the Danube. All sample-points can be characterized as xerothermous, warm areas, or in the case of riverbanks and of Senetea as sun-exposed stretches and spots with low vegetation cover and sandy or sandy-like soils.

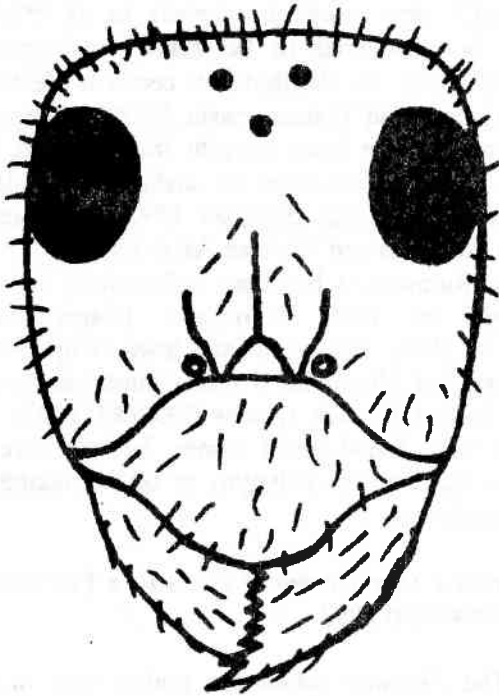


Fig. 3. The head of *Formica balcanina* PETROV & COLLINGWOOD

Formerly this species presence was reported from Serbia, Bulgaria, Greece and Turkey by PETROV & COLLINGWOOD (1993), and recently from Slovenia, too, by GALLÉ (1998). Based on this information it seems that the known northernmost point of its distribution is at Aleșd (4705''), near the Crisul-Repede river. However, this species is considered as one of the most xerothermous *Formica* species, and it seems that it is also an euryptent species occupying quite a wide range of xerothermous biotopes from the planes and steppe-like areas up into the mountains. Its preference for riverbanks also gives it a pioneer character, by bearing the annual disturbance caused by the flood.

Discussions

Based on PARASCHIVESCIVU's Rumanian checklist (PARASCHIVESCIVU 1978) the number of known ant-species becomes 82 from 76. Considering the Hungarian checklist presented by GALLÉ et al. (1998), which consists of more than 100 species, we assume that more than 100 ant species occur in reality in Rumania, too.

The above-presented species are common considering their European distribution. Some of the species were currently described; some currently recognized as separate species. Provided these facts their occurrence is not considered as being unexpected in Rumania.

Acknowledgements

We are indebted to Dr. Prof. László GALLÉ for his help and advices: We are also grateful to Ivan Petrov and Bernhard SEIFERT for confirming our determinations. József RUDNER, Kunigunda MACALIK, István URÁK, and Tamás UJVÁROSI also helped us considerably in our work.

REFERENCES

- AGOSTI D. & COLLINGWOOD C. A. 1987a. A provisional list of the Balkan ants (Hym. Formicidae) and a key to the worker caste. I. Synonymic List. - Mitt. Schweiz. Ent. Ges. **60**: 51-62.
- AGOSTI D. & COLLINGWOOD C. A. 1987b. A provisional list of the Balkan ants (Hym. Formicidae) and a key to the worker caste. II. Key to the worker caste, including the European species without the Iberian. - Mitt. Schweiz. Ent. Ges. **60**: 261-293.
- BARONI URBANI, C. 1971: Catalogo delle specie di Formicidae d'Italia. - Memoire della Societa Entomologica Italiana, **50**: 5-287.
- COLLINGWOOD C. A. 1979. The Formicidae (Hymenoptera) of Fennoscandia and Denmark. - Fauna Entomologica Scandinavica vol. **8**, Klampenborg, Denmark.
- GALLÉ L. 1998. Contribution to the ant fauna of Slovenia with special reference to the Submediterranean and Eudinaric regions. - Annales - Annals for Istrian and Mediterranean Studies. **11**(97): 209-214.
- GALLÉ L., CSÓSZ S., TARTALLY A., KOVÁCS É. 1998. A check-list of Hungarian ants (Hymenoptera: Formicidae) - Folia entomol. hung., **59**: 213-220.
- KUTTER H. 1977. Hymenoptera, Formicidae. - Insecta Helvetica, Fauna 6. Zürich

- MARKÓ B. 1998. Contribution to the knowledge of the ant-fauna (Hymenoptera, Formicidae) of the Crişul Repede river valley., pp. 345-352, in: SÁRKÁNY-KISS, A. & HAMAR, J. (eds.): The Cris/Körös Rivers' Valleys - TISCLIA Monograph Series, Szolnok-Szeged-Târgu Mureş.
- MARKÓ B. (in press). Contribution to the knowledge of the ant-fauna (Hymenoptera: Formicoidea) of the Someş river-Valley. - in: SÁRKÁNY-KISS, & A. HAMAR, J. (eds.): The Someş/Szamos Rivers' Valleys - TISCLIA Monograph Series. Szolnok-Szeged-Târgu Mureş.
- PARASCHIVESCU D. 1972: Fauna mirmecologică din zonele saline ale României. - St. și Cerc. Biol. seria Zoologie, vol. 24(5): 489-495.
- PARASCHIVESCU D. 1978: Elemente balcanice în mirmecofauna R.S.România - Nymphaea vol. 6: 463-474.
- PETROV I. & COLLINGWOOD C. A. 1993. *Formica balcanina* sp. n., a new species related to the *Formica cinerea*-group (Hymenoptera: Formicidae). - Eur. J. Entomol. 90: 349-354.
- RADCHENKO A., CZECHOWSKI W., CZECHOWSKA W. 1997. The genus *Myrmica* LATR. (Hymenoptera, Formicidae) in Poland - a survey of species and a key for their identification. - Annales Zoologici (Warszawa), 47(3-4): 481-500.
- SEIFERT B. 1988. A taxonomic revision of the *Myrmica* species of Europe, Asia Minor and Caucasia (Hymenoptera, Formicidae) - Abh. Ber. Naturkundemus., Görlitz, 62(3): 1-75.
- SEIFERT B. 1992. A taxonomic revision of the Palearctic Members of the ant subgenus *Lasius* s. str. (Hymenoptera: Formicidae). - Abh. Ber. Naturkundemus., Görlitz 66(5): 1-67.
- SEIFERT B. 1993. Die freilebenden Ameisenarten Deutschlands (Hymenoptera: Formicidae) und Angaben zu deren Taxonomie und Verbreitung. - Abh. Ber. Naturkundemus. Görlitz 67(3): 1-44.

Bálint MARKÓ
 Dept. of Zoology,
 Univ. Babes-Bolyai,
 str. Clinicilor 5-7,
 RO-3400 Cluj-Napoca

present address:
 Dept. of Ecology,
 JATE University,
 HU-6701 Szeged, P.O.Box 51

Primit la redacție / Received: 30.11.1998
 Acceptat / Accepted: 2.04.1999.
 Apărut / Printed: 30.11.1999