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CONTRIBUTION TO THE MYRMECOFAUNA (FORMICIDAE, HYMENOPTERA) OF MT. KOPAONIK (SERBIA). I. Z Petrov. *Institute of Zoology, Faculty of Biology, University of Belgrade, 11000 Belgrade, Serbia and Montenegro.*

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The myrmecofauna of Serbia is still insufficiently investigated. In the past, ants were not a challenge for the entomologists of Serbia, only a few of which paid attention to ants and registered some ant species among other insect species. Živojinović (1950) registered 18 species of ants in the forest region of Majdanpek (Serbia), although he considered some valid species (*Lasius alienus*, *L. brunneus*, *Camponotus herculeanus*, and *Formica pratensis*) as subspecies. Vogrin (1955) elaborated Hymenoptera Aculeata of Yugoslavia, and registered 16 species of ants in Serbia (Srem). Gradojević (1963) listed 11 species of ants of Deliblatska Peščara (Deliblato Sands) (Vojvodina, Serbia).

The first data on the myrmecofauna of Serbia can be found in a work of Petrov (1986), who registered eight genera and 12 species on Mt. Jastrebac (Serbia). Petrov and Mesaroš (1988) found 14 species from nine genera in the Stara Planina Mountains (Serbia). Petrov (1992) listed 55 ant species known for Serbia by that time. Petrov and Collingwood (1993) described a new species (*Formica balcanina*), which belonged to the *Formica cinerea* group and replaced *F. cinerea* on the Balkan Peninsula. The holotype was taken from Rošijana (Deliblatska Peščara, 15 July 1987), about 70 km northeast of Belgrade. Petrov (1994) elaborated the myrmecofauna of Deliblatska Peščara and registered 32 species in its wide area. He subsequently (2002a) added 14 more species to the myrmecofauna of Deliblatska peščara. Petrov (1995) gave a preliminary list of the ants of Yugoslavia that included 136 species, 92 of which were registered in Serbia. Collingwood and Petrov (1999) registered 17 new species in the myrmecofauna of Yugoslavia. Petrov (2000) listed 160 ant species in the myrmecofauna of Yugoslavia, 140 being found in Serbia. The following year, Petrov (2001) listed 19 species of ants in the Jevremovac Botanical Garden in Belgrade. Later, Petrov (2002b) registered 75 species of ants in Vojvodina (Serbia). The same author (2002c) found 67 species in the myrmecofauna of Banat Province (Vojvodina, Serbia).

Mount Kopaonik figured in some of these investigations, but species were not indicated.

Ants were collected on Mt. Kopaonik by the author and some of his colleagues and friends after accidental findings and in searching for potential nests.

Janković (1962) mentioned 18 species of ants of grassland communities on Mt. Kopaonik. The ants collected were identified by Samšinak. However, the valid species *Formica lemani* was identified as a subspecies (*F. fusca lemani*) in his list.

The presented list of ants consists of 32 species belonging to four subfamilies (Ponerinae, Myrmicinae, Dolichoderinae, Formicinae) (Table 1). In the presented list include nine species collected by Janković (*Ponera coarctata*, *Myrmica sabuleti*, *M. scabrinodis*, *M. schencki*, *Tapinoma erraticum*, *Lasius alienus*, *L. flavus*, *Formica rufa*, and *F. sp.*).

Comparing these results with some former ones, we see that some of the species found on Mt. Kopaonik have been registered before at other localities in Serbia. Thus, Živojinović (1950) recorded elsewhere 12 of the species found by us on Mt. Kopaonik (*Ponera coarctata*, *Myrmica rubra*, *M. scabrinodis*, *Tetramorium caespitum*, *Tapinoma erraticum*, *Lasius alienus*, *L. brunneus*, *L. niger*, *Camponotus herculeanus*, *Formica gagates*, *F. pratensis*, and *F. rufa*). According to Petrov (1986) seven species (*Ponera coarctata*, *Myrmica sabuleti*, *Lasius alienus*, *L. flavus*, *Camponotus herculeanus*, *Formica cunicularia*, and *F. gagates*) found in oak-tree communities at Mt. Jastrebac (Serbia) were the same as those found on Mt. Kopaonik. In some meadows and pastures in the Stara Planina Mountains (Serbia), Petrov and Mesaroš (1988) registered seven of the species found by us on Mt. Kopaonik (*Myrmica lobicornis*, *M. rubra*, *Lasius alienus*, *L. brunneus*, *Formica cunicularia*, *F. pratensis*, and *F. rufibarbis*).

According to available data on ant species of former Yugoslavia some of the species found at Mt. Kopaonik have been recorded before in certain republics. Doflein (1920) registered *Myrmica rubra*, *Tetramorium caespitum*, *Lasius fuliginosus*, *L. niger*, *Camponotus herculeanus*, *Formica rufa*, and *F. sanguinea* in the Former Yugoslav Republic of Macedonia. Zimmermann (1934, 1934a) found *Myrmica sabuleti*, *Tetramorium caespitum*, *Tapinoma erraticum*, *Lasius alienus*, *L. brunneus*, *L. distinguendus*, *L. flavus*, *L. fuliginosus*, *L. niger*, *Formica fusca*, *F. gagates*, *F. lemani*, and *F. rufa* in Southern Dalmatia, on the coast of Montenegro, and on Kvarner islands. Also, Vogrin (1955) registered the species *Myrmica lobicornis*, *M. rubra*, *M. ruginodis*, *M. scabrinodis*, *Leptothorax acervorum*, *Tetramorium caespitum*, *Tapinoma erraticum*, *Lasius brunneus*, *L. flavus*, *L. fuliginosus*, *L. niger*, *Camponotus herculeanus*, *C. ligniperdus*, *Formica fusca*, *F. gagates*, *F. pratensis*, *F. rufa*, *F. rufibarbis*, and *F. sanguinea* in Croatia and some localities in Serbia (Srem). Bračko (2000) in his review of the ant fauna of Slovenia registered almost all species found at Mt. Kopaonik. The only ones he did not mention are *Leptothorax angustulus*, *Lasius fuliginosus*, *Camponotus ligniperdus* and *Formica glauca*.

According to these investigations myrmecofauna of Mt. Kopaonik consists of Holarctic (*Lasius alienus*, *L. niger*, and *Formica fusca*); Palearctic (*Myrmica rubra*, *M. schencki*, *M.*

Table 1. List of Ants Collected on Mt. Kopaonik.

Subfam.: PONERINAE
Ponera coarctata (Latreille) 1802

Subfam.: MYRMICINAE
Manica rubida Latreille 1802
Myrmica lobicornis Nylander 1846
M. rubra (L.) 1758
M. ruginodis Nylander 1846
M. sabuleti Meinert 1861
M. scabrinodis Nylander 1846
M. schencki Emery 1895
Leptothorax acervorum (F.) 1793
L. angustulus (Nylander) 1856
Tetramorium caespitum (L.) 1758

Subfam.: DOLICHODERINAE
Tapinoma erraticum (Latreille) 1798

Subfam.: FORMICINAE
Lasius alienus (Foerster) 1850
L. brunneus (Latreille) 1798
L. distinguendus (Emery) 1916
L. flavus (F.) 1781
L. fuliginosus (Latreille) 1798
L. niger (L.) 1758
L. psamophilus Seifert 1992
L. sp.
Camponotus herculeanus (L.) 1758
C. ligniperdus (Latreille) 1802
Formica cunicularia Latreille 1798
F. fusca L. 1758
F. gagates Latreille 1798
F. glauca Ruzsky 1895
F. lemani Bondroit 1917
F. pratensis Retzius 1783
F. rufa L. 1758
F. rufibarbis Fabricius 1793
F. sanguinea Latreille 1798
F. sp.

ruginodis, *Tetramorium caespitum*, *Lasius brunneus*, *L. flavus*, *Formica cunicularia*, *F. lemani*, *F. rufibarbis*, and *F. sanguinea*); European (*Manica rubida*, *Myrmica scabrinodis*, *Leptothorax acervorum*, *Tetramorium caespitum*, *Tapinoma erraticum*, *Camponotus ligniperdus*, *Lasius fuliginosus*, *Formica rufa*, and *F. rufibarbis*); and Euroasian (*Formica pratensis*) species. In addition, some Mediterranean species (*Tapinoma erraticum*, and *Formica gagates*) (Stitz, 1939; Bernard, 1968; Collingwood, 1979; Seifert, 1988; Paraschivescu, 1993) were registered as well (Table 1).

The ant diversity of Mt. Kopaonik is shown by the presence of species living in different habitats. To be specific, some of the species prefer open, warm habitats (*Tetramorium caespitum*,

Tapinoma erraticum, *Formica cunicularia*, and *F. rufibarbis*). However, species preferring covered habitats (*Myrmica rubra*, *M. sabuleti*, and *Formica pratensis*), and ones that tolerate humid habitats (*Myrmica scabrinodis*, *Lasius flavus*, and *L. fuliginosus*) were also found, as well as one species lives at the edges of woods, or in woods (*Ponera coarctata*) (Stitz, 1939; Bernard, 1968; Collingwood, 1979) (Table 1).

All of the species found on Mt. Kopaonik could have been expected. However, the finding of *Manica rubida* was the first record of that species in the myrmecofauna of Serbia, although Agosti and Collingwood (1987) found the given species in the former Yugoslavia. They did not specify a locality, but it was probably not in Serbia because their data pertain mostly to ants from the Adriatic Coast, Croatia, Bosnia, Slovenia, Former Yugoslav Republic of Macedonia, and Cernica at Kosovo and Metohija.

This is just a beginning of investigations on the myrmecofauna of Mt. Kopaonik, and these results must therefore be considered only preliminary.

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