Ants (Hymenoptera, Formicidae) of Sarnena Sredna Gora Mountains (Bulgaria)

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Abstract. A list of 61 ant species from the Sarnena Sredna Gora Mountains (Bulgaria), based on 32 studied localities is provided. Two morphospecies from each of the Messor semirufus group and Tetramorium caespitum complex were also found. There have been only two species – Stigmatomma denticulatum Roger, 1859 and Formica pratensis Retzius, 1783 reported so far from the region, the latter confirmed here. The ant species found in this survey belong to three zoogeographical classes as Euro-Caucasian and Mediterranean zoogeographical elements prevail. Despite the significant increase in the number of recorded species, we expect that their number should be higher in a long-term study.

Key words: faunistic data, new records, insect fauna, Bulgaria

Introduction

The ants (Hymenoptera, Formicidae) in Bulgaria are relatively well studied and about 180 species are known. However, a number of areas in the country remain poorly known or unexplored (Lapeva-Gjonova et al. 2010). So far, only two species are known from the Sarnena Sredna Gora Mountains – Stigmatomma denticulatum Roger, 1859 and Formica pratensis Retzius, 1783 (Gateva 1975; Atanassov & Dlussky 1992). The presence of a variety of natural habitats (Georgiev 2020), especially in the higher parts of the mountain, as well as semi-natural xerothermic habitats in the lower parts, suggests the existence of a rich myrmecofauna.

The aim of the present study is to summarize the results for the ant fauna from short-term ant collections in the area.

Material and Methods

The present study is based on the ant material collected in the period 10.08.-14.08.2020 and on 27.09.2020 from 18 localities in the western and central parts of the mountain. There are also additional data from 14 localities collected on 05.08.2014, 10.06.-12.06.2016, and 19.04.-30.05.2018 (Table 1). The collected material by A. Lapeva-Gjonova and I. Gjonov were identified by A. Lapeva-Gjonova and were deposited in the Sofia University collection (BFUS). Material collected by V. Antonova, T. Ljubomirov, V. Peneva and R. Bańkowska were identified by V. Antonova, unless otherwise noted, and were deposited in IBER's collection, Sofia. Specimens collected by R. Bańkowska (Museum and
FORMICIDAE

Institute of Zoology, Warsaw) were included but some information for sampling from Kazanlak and Stara Zagora is not available and they are not included in Table 1. The main applied collection method was by hand, but sweeping, Tullgren funnel extraction and Moerike traps (blue, red and yellow) were also used. The following abbreviations in the results are used: for ant castes – q. - queen/s, m. - male/s, w. - worker/s; for collectors – ALG – A. Lapeva-Gjonova, IG – I. Gjonov, RB – R. Bańkowska, TL – T. Ljubomirov, VA – V. Antonova, VP – V. Peneva.

Table 1. Studied localities (in alphabetical order).

<table>
<thead>
<tr>
<th>locality name</th>
<th>GPS coordinates</th>
<th>altitude</th>
<th>type of habitat / collecting method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherganovo vill.</td>
<td>N42.5854 E25.4652</td>
<td>339 m</td>
<td>field with essential oil crops / sweeping</td>
</tr>
<tr>
<td>Domlyan dam, near Domlyan vill. 1</td>
<td>N42.5408 E24.9407</td>
<td>369 m</td>
<td>xerothermophilous grassland / hand collecting</td>
</tr>
<tr>
<td>Domlyan dam, near Domlyan vill. 2</td>
<td>N42.5408 E24.9407</td>
<td>369 m</td>
<td>the edge of a forest of <em>Carpinus</em> / hand collecting</td>
</tr>
<tr>
<td>Hrishteni vill.</td>
<td>N42.4567 E25.7342</td>
<td>211 m</td>
<td>ruderal grassland with trees of <em>Quercus, Carpinus</em> / hand collecting, sweeping</td>
</tr>
<tr>
<td>Kalofer (S)</td>
<td>N42.5959 E24.9756</td>
<td>602 m</td>
<td>forest edge of <em>Picea abies</em> (L.) H.Karst. / hand collecting</td>
</tr>
<tr>
<td>Kriva krusha vill.</td>
<td>N42.5477 E25.8782</td>
<td>435 m</td>
<td>grassland with single trees of <em>Quercus, Carpinus</em> / hand collecting, sweeping</td>
</tr>
<tr>
<td>Momino vill. 1</td>
<td>N42.2919 E24.8805</td>
<td>175 m</td>
<td>oilseed rape (<em>Brassica napus</em> L.) field at the margin of the crop plantation / sweeping</td>
</tr>
<tr>
<td>Momino vill. 2</td>
<td>N42.2942 E24.8836</td>
<td>175 m</td>
<td>pasture land next to oilseed rape field / sweeping</td>
</tr>
<tr>
<td>Momino vill. 3</td>
<td>N42.2950 E24.8836</td>
<td>175 m</td>
<td>grassland / Tullgren funnel extraction</td>
</tr>
<tr>
<td>Mrachenik vill.</td>
<td>N42.5054 E24.9403</td>
<td>577 m</td>
<td>near road, grassland with single trees of <em>Carpinus, Quercus</em> / hand collecting, sweeping</td>
</tr>
<tr>
<td>Mrachenik vill., the grave of Hadzhi Dimitar</td>
<td>N42.5177 E24.9877</td>
<td>939 m</td>
<td>forest of <em>Quercus, Carpinus</em> / hand collecting</td>
</tr>
<tr>
<td>Novo selo vill.</td>
<td>N42.4867 E25.5102</td>
<td>481 m</td>
<td>xerothermophilous <em>Quercus</em> forest / hand collecting</td>
</tr>
<tr>
<td>Pryaporets vill.</td>
<td>N42.4508 E25.521</td>
<td>356 m</td>
<td>xerothermophilous <em>Quercus</em> forest / hand collecting, sweeping</td>
</tr>
<tr>
<td>Rozovets vill. 1</td>
<td>N42.4946 E25.0868</td>
<td>1062 m</td>
<td>grassland along a road / hand collecting</td>
</tr>
<tr>
<td>Rozovets vill. 2</td>
<td>N42.4975 E25.1105</td>
<td>978 m</td>
<td>along a road, mixed deciduous forest / hand collecting</td>
</tr>
<tr>
<td>Rozovo vill.</td>
<td>N42.5722 E25.4132</td>
<td>339 m</td>
<td>field with essential oil crops / sweeping</td>
</tr>
<tr>
<td>Sarnevets vill.</td>
<td>N42.4177 E25.3487</td>
<td>411 m</td>
<td>xerothermophilous <em>Quercus</em> forest / hand collecting, sweeping</td>
</tr>
</tbody>
</table>
## Results

**Subfamily Amblyoponinae**

*Stigmatomma denticulatum* Roger, 1859


**Subfamily Ponerinae**

*Ponera coarctata* (Latreille, 1802)

Material examined: Rozovets vill. 1, 12.08.2020, 4 w., leg. ALG; Novo selo vill., 13.08.2020, 1 w., leg. ALG; Sarnevets vill., 14.08.2020, 1 w., leg. ALG; Pryaporets vill., 14.08.2020, 2 w., leg. ALG.

*Ponera testacea* Emery, 1895

Material examined: Rozovets vill. 1, 12.08.2020, 3 w., leg. ALG.

**Subfamily Myrmicinae**

*Myrmica rugulosa* Nylander, 1849

Material examined: Srednogorovo vill., 13.08.2020, 5 w., leg. ALG; Turiya vill., 13.08.2020, 26 w., leg. ALG.
**Myrmica speciodes** Bondroit, 1918  
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 6 w., leg. ALG.

**Myrmica scabrinodis** Nylander, 1846  
Material examined: Zelenikovo vill. 2, 26.04.2018, 3 w., leg. TL; Svezhen vill. 2, 11.08.2020, 2 w., leg. ALG; same locality, 11.08.2020, 1 w., leg. IG; Novo selo vill., 13.08.2020, 11 w., leg. ALG.

**Myrmica sabuleti** Meinert, 1861  
Material examined: Svezhen vill. 2, 11.08.2020, 4 w., leg. IG; Sarnevets vill., 14.08.2020, 10 w., leg. ALG.

**Myrmica lonae** Finzi, 1926  
Material examined: Domlyan dam, near Domlyan vill. 1, 11.08.2020, 3 q., 2 m., 28 w., leg. ALG.

**Myrmica curvithorax** Bondroit 1920  
Material examined: Zelenikovo vill. 2, 27-28.05.2018, 1 m., 3 w., leg. TL.

**Myrmica lobicornis** Nylander, 1846  
Material examined: Svezhen hut 1, 12.08.2020, 11 w., leg. ALG.

**Aphaenogaster subterranea** (Latreille, 1798)  
Material examined: Domlyan dam, near Domlyan vill. 2, 11.08.2020, 9 q., 50 m., 55 w., leg. ALG; Pryaporets vill., 14.08.2020, 10 q., 46 m., 47 w., leg. ALG; Hrishteni vill., 27.09.2020, 22 w., leg. ALG.

**Messor structor** (Latreille, 1798)  
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 10 w.; Svezhen vill. 1, 11.08.2020, 4 w.; Novo selo vill., 13.08.2020, 11 w.; Kriva krusha vill., 27.09.2020, 6 w..

**Messor semirufus** group  
Material examined: Stara Zagora, 1959, leg. RB; Momino vill. 2, 30.05.2018, 7 w., leg. TL.

**Crematogaster schmidti** (Mayr, 1853)  
Material examined: Zelenikovo vill. 1, 11.06.2016, 1 w., leg. IG; Mrachenik vill., 11.08.2020, 3 w., leg. ALG; same locality, 11.08.2020, 3 w., leg. IG; Turiya vill., 13.08.2020, 15 w., leg. ALG; Sarnevets vill., 14.08.2020, 8 w., leg. ALG; Hrishteni vill., 27.09.2020, 3 w., leg. IG; Kriva krusha vill., 27.09.2020, 4 w., leg. ALG.

**Crematogaster sordidula** (Nylander, 1849)  
Material examined: Sarnevets vill., 14.08.2020, 3 w., leg. IG.

**Pheidole cf. pallidula**  
Material examined: Kriva krusha vill., 27.09.2020, 70 w., leg. ALG.  
Recenty Seifert (2016) distinguished 3 cryptic species with sympatric ranges in the Balkans and Asia Minor, namely *Ph. pallidula* (Nylander, 1849), *Ph. balcanica* Seifert, 2016 and *Ph. kosheunikovi* Ruzsky, 1905, the first two recorded for Bulgaria. The standard comparative morphology is not sufficient for their reliable distinction.

**Solenopsis fugax** (Latreille, 1798)  
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 6 w., leg. ALG; Domlyan dam, near Domlyan vill. 2, 11.08.2020, 41 w., leg. ALG; Sarnevets vill., 14.08.2020, 9 w., leg. ALG; Hrishteni vill., 27.09.2020, 8 q., 3 m., 57 w., leg. ALG; Kriva krusha vill., 27.09.2020, 11 m., 26 w., leg. ALG.

**Myrmecina graminicola** (Latreille, 1802)  
Material examined: Sarnevets vill., 14.08.2020, 2 w., leg. ALG.

**Temnothorax affinis** (Mayr, 1855)  
Material examined: Pryaporets vill., 14.08.2020, 2 w., leg. ALG.

**Temnothorax interruptus** (Schenck, 1852)  
Material examined: Turiya vill., 13.08.2020, 1 w., leg. ALG.
**Temnothorax parvulus** (Schenck, 1852)
Material examined: Mrachenik vill., 11.08.2020, 1 m., 7 w., leg. ALG; Svezhen vill. 1, 11.08.2020, 30 q., 8 m., 63 w., leg. ALG; Novo selo vill., 13.08.2020, 5 w., leg. ALG; Turiya vill., 13.08.2020, 23 q., 11 m., 16 w., leg. ALG; Sarnevets vill., 14.08.2020, 1 m., 7 w., leg. ALG.

**Temnothorax helenae** Csösz, Heinze & Mikó, 2015
Material examined: Srednogorovo vill., 13.08.2020, 1 w., leg. ALG.

**Temnothorax lichtensteini** (Bondroit, 1918)
Material examined: Novo selo vill., 13.08.2020, 2 w., leg. ALG.

**Temnothorax semiruber** (André, 1881)
Material examined: Sarnevets vill., 14.08.2020, 9 w., leg. IG.

**Tetramorium caespitum** complex
Material examined: Momino vill. 3, 21.04.2018, 1 w., leg. VP; Domlyan dam, near Domlyan vill. 1, 10.08.2020, 30 w., leg. ALG; Domlyan dam, near Domlyan vill. 2, 11.08.2020, 65 w., leg. ALG; Rozovets vill. 1, 12.08.2020, 26 w., leg. ALG; Srednogorovo vill., 13.08.2020, 2 w., leg. ALG; Turiya vill., 13.08.2020, 24 w., leg. ALG; Pryaporets vill., 14.08.2020, 13 w., leg. ALG; Sarnevets vill., 14.08.2020, 15 w., leg. ALG; Kriva krusha vill., 27.09.2020, 19 w., leg. ALG.

**Tetramorium impurum** (A. Förster, 1850)
Material examined: Rozovets vill. 2, 12.08.2020: 1 q., 8 m., 13 w., leg. ALG.
The presence of all castes from the studied nest sample and especially morphology of the male genitalia allowed to delimit this species from the *T. caespitum* complex.

**Tetramorium moravicum** Kratochvíl, 1941
Material examined: Svezhen vill. 2, 11.08.2020, 4 w., leg. IG; Novo selo vill., 13.08.2020, 11 w., leg. ALG; Pryaporets vill., 14.08.2020, 3 w., leg. ALG; Sarnevets vill., 14.08.2020, 14 w., leg. ALG; Hrishteni vill., 27.09.2020, 40 w., leg. ALG; Kriva krusha vill., 27.09.2020, 30 w., leg. ALG.

**Tetramorium chefketi** Forel, 1911
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 12 w., leg. ALG; Mrachenik vill., 11.08.2020, 2 w., leg. ALG; Hrishteni vill., 27.09.2020, 2 w., leg. IG.

**Subfamily Dolichoderinae**

**Dolichoderus quadripunctatus** (Linnaeus, 1771)
Material examined: Mrachenik vill., 11.08.2020, 1 w., leg. IG; Mrachenik vill., the grave of Hadzhi Dimitar, 3 w., leg. ALG; Svezhen vill. 1, 11.08.2020, 2 w., leg. ALG; same locality, 11.08.2020, 3 w., leg. IG; Novo selo vill., 13.08.2020, 11 w., leg. ALG; Pryaporets vill., 14.08.2020, 3 w., leg. ALG; Sarnevets vill., 14.08.2020, 14 w., leg. ALG; same locality, 14.08.2020, 2 w., leg. IG.

**Tapinoma cf. erraticum**
Material examined: Zelenikovo vill. 2, 26.04.2018, 2 w., leg. TL; same locality, 27-28.05.2018, 5 w., leg. TL; Zelenikovo vill. 3, 26-27.04.2018, 2 w., leg. TL; Momino vill. 2, 27.04.2018, 2 w., leg. TL; same locality, 30.05.2018, 1 m., 6 w., leg. TL; Svezhen vill. 1, 11.08.2020, 1 w., leg. IG; Novo selo vill., 13.08.2020, 1 w., leg. ALG; Sarnevets vill., 14.08.2020, 1 q., 17 w.; 54 w., leg. ALG.

In Wagner et al. (2018) is noted that a species close to *T. erraticum* (Latreille, 1798) is widespread in the southern Balkans and its description is forthcoming.

**Tapinoma subboreale** Seifert, 2011
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 12 w., leg. ALG; Mrachenik vill., 11.08.2020, 2 w., leg. ALG; Hrishteni vill., 27.09.2020, 2 w., leg. IG.

**Liometopum microcephalum** (Panzer, 1798)
Material examined: Kazanlak, 1964, 5 w., leg. RB.
**Subfamily Formicinae**

*Plagiolepis pygmaea* (Latreille, 1798)

Material examined: Zelenikovo vill. 2, 27-28.05.2018, 2 w., leg. TL; Zelenikovo vill. 3, 26-27.04.2018, 2 w., leg. TL; Zelenikovo vill. 5, 28.05.2018, 1 w., leg. TL; Momino vill. 2, 30.05.2018, 5 m., leg. TL; Domlyan dam, near Domlyan vill. 1, 10.08.2020, 22 w., leg. ALG; Novo selo vill., 13.08.2020, 3 w., leg. ALG; Srednogorovo vill., 1 w., leg. IG; Turiya vill., 13.08.2020, 1 w., leg. ALG; Pryaporet vill., 14.08.2020, 5 m., 12 w., leg. ALG; same locality, 14.08.2020, 1 w., leg. IG; Sarnevs vill., 14.08.2020, 16 w., leg. ALG; same locality, 14.08.2020, 2 w., leg. IG; Kriva krusha vill., 27.09.2020, 1 q., 10 w., leg. ALG.

*Prenolepis nitens* (Mayr, 1853)

Material examined: Zelenikovo vill. 6, 11.06.2018, 2 m., leg. VP, det. T. Ljubomirov.

*Camponotus herculeanus* (Linnaeus, 1758)

Material examined: Svezhen hut 1, 12.08.2020, 5 w., leg. ALG.

*Camponotus vagus* (Scopoli, 1763)

Material examined: Sarnevs vill., 14.08.2020, 1 w., leg. IG.

*Camponotus lateralis* (Olivier 1792)

Material examined: Sarnevs vill., 14.08.2020, 20 w., leg. ALG; Hrishteni vill., 27.09.2020, 9 w., leg. ALG; Kriva krusha vill., 27.09.2020, 2 q., 1 m., 16 w., leg. ALG.

*Camponotus piceus* (Leach, 1825)

Material examined: Zelenikovo vill. 2, 27-28.05.2018, 1 w., leg. TL; Zelenikovo vill. 5, 28.05.2018, 1 w., leg. TL; Momino vill. 2, 30.05.2018, 3 w., leg. TL; Svezhen vill. 1, 11.08.2020, 1 w., leg. ALG; Novo selo vill., 13.08.2020, 5 w., leg. ALG.

*Camponotus atricolor* (Nylander, 1849)

Material examined: Mrachenik vill., 11.08.2020, 3 w., leg. IG; Svezhen vill. 2, 11.08.2020, 1 w., leg. IG; Turiya vill., 13.08.2020, 2 w., leg. ALG; Pryaporet vill., 14.08.2020, 1 w., leg. IG; Sarnevs vill., 14.08.2020, 4 w., leg. IG.

*Camponotus aethiops* (Latreille, 1798)

Material examined: Stara Zagora, 1959, 6 w., leg. RB; Zelenikovo vill. 2, 27-28.05.2018, 2 w., leg. TL; Zelenikovo vill. 3, 26-27.04.2018, 2 w., leg. TL; Zelenikovo vill. 5, 28.05.2018, 1 w., leg. TL; Mrachenik vill., 11.08.2020, 2 q., 2 m., 8 w., leg. ALG; Svezhen vill. 1, 11.08.2020, 2 w., leg. ALG; same locality, 11.08.2020, 1 w., leg. IG; Novo selo vill., 13.08.2020, 5 w., leg. ALG; Turiya vill., 13.08.2020, 1 w., leg. ALG; Sarnevs vill., 14.08.2020, 1 w., leg. IG; Hrishteni vill., 27.09.2020, 12 w., leg. ALG; same locality, 27.09.2020, 1 w., leg. IG.

*Camponotus samius* Forel, 1888

Material examined: Hrishteni vill., 27.09.2020, 2 w., leg. ALG.

*Colobopsis truncata* (Spinola, 1808)

Material examined: Zelenikovo vill. 1, 11.06.2016, 1 w., leg. IG; Mrachenik vill., 11.08.2020, 1 w., leg. IG.

*Lasius alienus* (A. Förster, 1850)

Material examined: Momino vill. 3, 21.04.2018, 1 w., leg. VP; Momino vill. 2, 27.04.2018, 2 w., leg. TL; same locality, 30.05.2018, 7 w., leg. TL; Zelenikovo vill. 4, 27.05.2018, 3 w., leg. TL; Zelenikovo vill. 5, 28.05.2018, 3 w., leg. TL; Mrachenik vill., 11.08.2020, 15 w., leg. ALG; Svezhen hut 1, 12.08.2020, 1 q., 7 m., 12 w., leg. ALG; Rozovets vill. 1, 13.08.2020, 35 q., 24 m., 10 w., leg. ALG.

*Lasius psammophilus* Seifert, 1992

Material examined: Svezhen vill. 1, 11.08.2020, 11 w., leg. ALG; Novo selo, 13.08.2020, 7 w., leg. ALG; Turiya vill., 13.08.2020, 7 w., leg. ALG.
**Lasius paralienus** Seifert, 1992  
Material examined: Zelenikovo vill. 4, 28.05.2018, 3 w., leg. TL; Novo selo vill., 13.08.2020, 5 w., leg. ALG; Srednogorovo vill., 1 w., leg. IG.

**Lasius bombycina** Seifert & Galkowski, 2016  
Material examined: Turiya vill., 13.08.2020, 7 w., leg. ALG; Pryaporets vill., 14.08.2020, 2 w., leg. IG; Sarnevets vill., 14.08.2020, leg. IG; Kriva krusha vill., 27.09.2020, 15 w., leg. ALG.

**Lasius niger** (Linnaeus, 1758)  
Material examined: Cherganovo vill, 10.06.2016, 1 w., leg. IG; Zelenikovo vill. 2, 26.04.2018, 12 w., leg. TL.

**Lasius emarginatus** (Olivier, 1792)  
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 23 w., leg. ALG.

**Lasius brunneus** (Latreille, 1798)  
Material examined: Stara Zagora, 1959, 1 w., leg. RB; Mrachenik vill., the grave of Hadzhi Dimitar, 11.08.2020, 12 w., leg. ALG; Srednogorovo vill., 13.08.2020, 2 w., leg. ALG; Pryaporets vill., 14.08.2020, 2 w., leg. IG.

**Lasius myops** Forel, 1894  
Material examined: Mrachenik vill., 11.08.2020, 9 w., leg. ALG.

**Lasius meridionalis** (Bondroit, 1920)  
Material examined: Pryaporets vill., 14.08.2020, 20 w., leg. ALG.

**Lasius fuliginosus** (Latreille, 1798)  
Material examined: Mrachenik vill., the grave of Hadzhi Dimitar, 11.08.2020, 9 w., leg. ALG.

**Cataglyphis nodus** (Brullé, 1832)  
Material examined: Zelenikovo vill. 2, 27-28.05.2018, 1 w., leg. TL; Domlyan dam, near Domlyan vill. 1, 10.08.2020, 1 w., leg. ALG; Kriva krusha vill., 27.09.2020, 1 w., leg. ALG.

**Proformica** sp.  
Material examined: Kriva krusha vill., 27.09.2020, 1 w., leg. IG.  
A single minor worker was collected by sweeping net and the lack of sufficient specimens did not allow correct species identification.

**Formica fusca** Linnaeus, 1758  
Material examined: Mrachenik vill., the grave of Hadzhi Dimitar, 11.08.2020, 10 w., leg. ALG.

**Formica gagates** Latreille, 1798  
Material examined: Hrishteni vill., 27.09.2020, 1 w., leg. ALG; same locality, 27.09.2020, 1 w., leg. IG.

**Formica cunicularia** Latreille, 1798  
Material examined: Zelenikovo vill. 2, 27-28.05.2018, 1 w., leg. TL; Momino vill. 1, 29.05.2018, 1 w., leg. TL; Domlyan dam, near Domlyan vill. 1, 10.08.2020, 6 w., leg. ALG; Svezhen vill. 1, 11.08.2020, 1 w., leg. ALG; Svezhen vill. 2, 11.08.2020, 1 w., leg. IG; Svezhen hut 1, 12.08.2020, 8 w., leg. ALG; Rozovets vill. 1, 12.08.2020, 5 w., leg. ALG; Kriva krusha vill., 27.09.2020, 4 w., leg. ALG.

**Formica rufibarbis** Fabricius, 1793  
Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 8 w., leg. ALG; Svezhen vill. 1, 11.08.2020, 3 w., leg. ALG; Novo selo vill., 13.08.2020, 5 w., leg. ALG; Turiya vill., 13.08.2020, 2 w., leg. ALG; Sarnevets vill., 14.08.2020, 1 w., leg. IG.
**Formicidae**

*Formica cinerea* Mayr, 1853

Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 13 w., leg. ALG; Svezhen vill. 2, 11.08.2020, 3 w., leg. IG; Rozovo vill., 12.06.2016, 1 w., leg. IG; Srednogorovo vill., 13.08.2020, 4 w., leg. ALG; same locality, 13.08.2020, 3 w., leg. IG; Turiya vill., 13.08.2020, 5 w., leg. ALG.

*Formica pratensis* Retzius, 1783 (Fig. 1: 1)

Material examined: Stara Zagora (Gateva 1975)

Literature data: Svezhen hut 1, 12.08.2020, 8 w., leg. ALG; Svezhen hut 3, 12.08.2020, 10 w., leg. ALG; Rozovets vill. 1, 12.08.2020, 3 w., leg. ALG.

*Formica rufa* Linnaeus, 1761 (Fig. 1: 2)

Material examined: Mrachenik vill., the grave of Hadzhi Dimitar, 11.08.2020, 15 w., leg. ALG; Svezhen hut 2, 12.08.2020, 10 w., leg. ALG.

*Polyergus rufescens* (Latreille, 1798)

Material examined: Domlyan dam, near Domlyan vill. 1, 10.08.2020, 2 w., leg. ALG.

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**Fig. 1.** 1: nest of *Formica pratensis* (Svezhen hut 1 locality), 2: nest of *Formica rufa* (Svezhen hut 2 locality).

**Discussion**

In total, 61 ant species from 32 localities were found with different sampling methods. They are about 30% of the Bulgarian myrmecofauna (Lapeva-Gjonova et al. 2010). We consider the number of ants should be higher in long-term studies as the geographical location, relief and climate are favourable for their high diversity. Additionally, few more species could exist in *Tetramorium caespitum* complex and *Messor semirufus* group. According to Wagner et al. (2017) there are 10 species in the *T. caespitum* complex in Europe, for the correct determination of some of which the study of the male genitalia is also necessary. The studied nest samples belong to at least two morphospecies, but none of them contained males to be identified. The *Messor semirufus* group from the Balkans needs thorough modern revision, given the large number of names of various rank (Bračko et al. 2016; Salata & Borowiec 2019).
Sarnena Sredna Gora Mts has a significant conservation value as *Formica rufa* and *F. pratensis* are considered as species of special conservation measures in Europe (IUCN 2021). They are recognized as Lower Risk /Near Threatened species and included in CORINE biotopes checklist (Annex 4). In addition, *F. rufa* is protected by the Bulgarian Biodiversity Act (2002), Annex 2 and 3.

The ant species found in this survey belong to three zoogeographical classes (according to Czechowski et al. 2012): Coniferous forest zone (9.8%), Mixed and deciduous forest zone (45.9%) and a zone of Semi-arid and arid areas (39.3%). The zoogeographical elements in Coniferous forest class are represented only by two: Boreo-montane (2 species) and North-Palaearctic (4 species). The rest elements are highly heterogenous and are shown on Fig. 2.

**Fig. 2.** Ant species by zoogeographical categories (in percentage). **A** - Mixed and deciduous forest class: EC (Euro-Caucasian), EWS (Euro-West-Siberian), SP (South-Palaearctic), E (European forests), WE (West-European) and ES (Euro-Siberian); **B** – Semi-arid and arid class: MD (Mediterranean), SE (South-European), BA (Balkan-Anatolian), T (Tethyan) and TST (Turano-Steppic).

Most of the species are Euro-Caucasian and Mediterranean. As the climate of Sarnena Sredna Gora Mts is transitional-continental, with strong submediterranean influence (Georgiev 2020), the findings of Mediterranean, South-European, South-Palaearctic and Balkan-Anatolian elements are expected. The high participation of Euro-Caucasian and Euro-West Siberian elements is related to the forests, mainly of oak and hornbeam, and in the higher parts of beech. Most likely, the mountain shares a common ant fauna with that of the neighboring Central Stara Planina Mts and Sashtinska Sredna Gora Mts.

**Conclusion**

The myrmecofauna of Sarnena Sredna Gora Mts is highly diverse of faunistical and zoogeographical aspect. Nevertheless, the number of ants should be higher in long-term research on larger area. The region contains two ant species with conservation significance.

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