

Ants (Hymenoptera: Formicidae) from Vrachanska Planina Mountains

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Abstract. We give a list of 29 ant species in Vrachanska Planina Mts. from 24 localities. Nine species were confirmed by previously reported data. Among all 19 unpublished species (found in 50's of last century and during 2013-2014), 10 are new for the region. Four species are of nature conservation importance.

Keywords: ants, Balkans, fauna, protected species.

Introduction

No any detailed investigations had been carried out on the myrmecofauna in Vrachanska Planina Mts. Atanassov (1934, 1936), Atanassov & Vasileva (1976) and Hubenov *et al.* (1998) reported 15 species, later Atanassov & Dlusskij (1992) added two species, Seifert (2006), Csósz *et al.* (2013) and Seifert & Csósz (2015) noted other three species from the region. As the studied area provides various habitats and relatively great difference in altitude (from about 200 to 1482 m), we expected that the ant fauna is more diverse.

The aim of this study was to collect all data available and to represent original records of ants from Vrachanska Planina Mts.

Material & Methods

Ants records from the Vrachanska Planina Mts. is given according to literature survey, museum collections and newly collected samples. Geographical coordinates and altitude information were taken about the new and confirmed species. In total, 23 localities were studied during the last two years (Table 1). The full names of the species are given in the same table. The most recent material was collected by hand by D. Gradinarov (April-October 2014) and V. Antonova (October 2013 and August 2014). The material was stored in 96 % ethanol. The samples of D. Gradinarov were determined by A. Lapeva-Gjonova and stored in her collection in the Faculty of Biology at Sofia University. The material collected by V. Antonova was stored in her collection in the Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences (IBER – BAS). The unpublished ant species from Vrachanska Planina Mts. found in the collection of Museum and Institute of Zoology (MIIZ) in Warsaw were also included in this paper. They were collected by few researchers (see Table 1) and determined by V. Antonova in 2007.

Results

The unpublished museum material and newly collected ants count 19 species in Vrachanska Planina Mts. During the recent field studies 17 ant species were found. Among all 19 species, 10 were new records for the study area (see the species marked by “*” in Table 1) and nine species were confirmed to occur there.

Four species are of conservation statute:

Formica pratensis: Lower Risk/near threatened ver 2.3 (IUCN 2015); Threatened (Checklists for the CORINE Biotopes – Annex 4).

Formica rufa: Lower Risk/near threatened ver 2.3 (IUCN 2015); Protected (Bulgarian Biodiversity Act, Annex 2 and 3); Threatened (Checklists for the CORINE Biotopes – Annex 4).

Formicoxenus nitidulus: Vulnerable A2c ver 2.3 (IUCN 2015).

Temnothorax recedens: Lower Risk/least concern ver 2.3 (IUCN 2015).

Table 1. Species composition and distribution of the ant species of Vrachanska Planina Mts.

Species	Locality and altitude	Date and GPS coordinates	Literary source/ Collected by
* <i>Myrmica rubra</i> (Linnaeus, 1758)	Below Temnata Dupka Cave, under a stone, 370 m	23.04.2014; N43°05.274' E23°23.259'	D. Gradinarov
<i>Myrmica sulcinodis</i> Nylander, 1846	Milanovo Village		Atanassov (1936)
<i>Messor structor</i> (Latreille, 1798)	1. Milanovo Village		Atanassov (1934, 1936); Atanassov & Vasileva (1976)
	2. Lakatnik Station		Atanassov (1934, 1936); Atanassov & Vasileva (1976)
	3. Vratsata locality		Atanassov & Vasileva (1976)
	4. Zgorigrad Village		Atanassov & Vasileva (1976)
	5. Vratsa		Hubenov <i>et al.</i> (1998)
	6. Lakatnik	1957	Umińscy (MIIZ)
		1959	Bańkowska (MIIZ)
	7. Near Lakatnik Village, 600 m	19.10.2014; N43°05.508' E23°24.137'	D. Gradinarov
8. Between Lakatnik Station and Milanovo Village, 480 m, karst near oak-hornbeam forest	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov	

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<i>Pheidole pallidula</i> (Nylander, 1849)	1. Lakatnik station		Atanassov (1934, 1936)
	2. Near Lakatnik Village, 690 m, meadow among <i>Carpinus</i> forest	19.10.2014; N43°05.663' E23°24.147'	D. Gradinarov
	3. Between Lakatnik Station and Milanovo Village, 480 m, karst near oak-hornbeam forest	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov
<i>Crematogaster schmidti</i> (Mayr, 1853)	1. Lakatnik station		Atanassov (1936)
	2. Above Lakatnik Station, near the road to Milanovo Village, 460 m	25.07.2014; N43°05.365' E23°24.001'	D. Gradinarov
** <i>Formicoxenus nitidulus</i> (Nylander, 1846)	Zgorigrad Village		Atanassov (1936)
<i>Solenopsis fugax</i> (Latreille, 1798)	1. Milanovo Village		Atanassov (1934)
	2. Above Milanovo Village, meadow toward Parshevitsa Hut, 990 m	07.06.2014; N43°07.796' E23°23.329'	D. Gradinarov
	3. Between Lakatnik Station and Milanovo Village, 620 m	19.10.2014; N43°05.538' E23°24.123'	D. Gradinarov
	4. Near Lakatnik Village, 690 m, meadow among <i>Carpinus</i> forest	19.10.2014; N43°05.663' E23°24.147'	D. Gradinarov
* <i>Temnothorax crassispinus</i> (Karavajev, 1926)	5 km South of Vratsa, 1000 m	07.06.2009; N43.137 E23.591	Seifert & Csősz (2015)
* <i>Temnothorax lichtensteini</i> (Bondroit, 1918)	2 km NE Zverino, 300 m	07.06.2009; N43.0956 E23.5770	Csősz <i>et al.</i> (2013)
<i>Temnothorax nylanderi</i> (Foerster, 1850)	Vratsa		Atanassov & Dlusskij (1992)
** <i>Temnothorax recedens</i> (Nylander, 1856)*	Between Lakatnik Station and Milanovo Village, 480 m, karst near oak-hornbeam forest	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov
<i>Temnotorax tergestinus</i> (Finzi, 1928)	Vrachanska Planina Mts 1 km SE Vola Peak, 5 km S Vratsa, 1000 m	07.06.2009; N48.13 E23.59	Csősz <i>et al.</i> (2015)
<i>Tetramorium cf. caespitum</i> (Linnaeus, 1758)	1. Milanovo Village		Atanassov (1934)
	2. Vrattsata locality		Atanassov (1934)
	3. Lakatnik Station		Atanassov (1936)
	4. Above Milanovo Village, meadow toward Parshevitsa Hut, 990 m	07.06.2014; N43°07.796' E23°23.329'	D. Gradinarov
* <i>Tapinoma erraticum</i> (Latreille, 1798)	Between Lakatnik Station and Milanovo Village, 480 m, karst near oak-hornbeam forest	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov

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<i>* Plagiolepis pygmaea</i> (Latreille, 1798)	1. Between Lakatnik Station and Milanovo Village, 480 m, karst near oak-hornbeam forest	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov
	2. Above Milanovo Village, meadow towards Parshevitsa Hut, 990 m	07.06.2014; N43°07.796' E23°23.329'	D. Gradinarov
	3. Near Lakatnik Village, 690 m, meadow among <i>Carpinus</i> forest	19.10.2014	D. Gradinarov
	4. Near Lakatnik Village, 600 m	19.10.2014	D. Gradinarov
<i>Lasius alienus</i> (Foerster, 1850)	Lakatnik Station		Atanassov (1936)
<i>* Lasius emarginatus</i> (Olivier, 1792)	1. Lakatnik	1959	Bańkowska (MIIZ)
	2. Between Lakatnik Station and Milanovo Village, 620 m	19.10.2014; N43°05.538' E23°24.123'	D. Gradinarov
<i>Lasius flavus</i> (Fabricius, 1782)	Milanovo Village		Atanassov (1934)
<i>* Lasius niger</i> (Linnaeus, 1758)	Lakatnik	1959	Bańkowska (MIIZ)
<i>* Lasius platythorax</i> Seifert, 1991	Lakatnik	1959	Bańkowska (MIIZ)
<i>* Lasius psammophilus</i> Seifert, 1992	Above Milanovo Village, 900 m, on <i>Quercus</i> sp.	07.06.2014; N 43°07'26" E 23°23'32"	D. Gradinarov
<i>Camponotus aethiops</i> (Latreille, 1798)	1. Ledenika Cave		Atanassov (1934)
	2. Lakatnik	1959	Bańkowska (MIIZ)
	3. Between Lakatnik Station and Milanovo Village, 690 m, meadow among <i>Carpinus</i> forest	19.10.2014; N43°05.663' E23°24.147'	D. Gradinarov
<i>* Camponotus piceus</i> (Leach, 1825)	1. Between Lakatnik Station and Milanovo Village, 480 m	25.07.2014; N43°05.348' E23°24.098'	D. Gradinarov
	2. Above Milanovo Village, 900 m, on oak trees	07.06.2014; 43°07'26" N 23°23'32" E	D. Gradinarov
	3. Between Lakatnik Station and Milanovo Village, 620 m	19.10.2014; N43°05.538' E23°24.123'	D. Gradinarov
<i>Camponotus vagus</i> (Scopoli, 1763)	1. Ledenika Cave		Atanasov (1936)
	2. Above Milanovo Village, towards Parshevitsa Hut, 1000 m, nest in a stump	25.06.2014; N 43°08.090 E 23°23.364	D. Gradinarov
<i>Formica exsecta</i> Nylander, 1846	Gerana mine near Milanovo Village		Atanassov (1936)
<i>* Formica gagates</i> Latreille, 1798	Above Lakatnik Station, near the road to Milanovo Village, 460 m, hornbeam forest	25.07.2014; N43°05.365' E23°24.001'	D. Gradinarov

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** <i>Formica pratensis</i> Retzius, 1783	1. Zgorigrad Village		Atanassov (1936)
	2. Above Milanovo Village, meadow toward Parshevitsa Hut, 990 m	07.06.2014; N43°07.796' E23°23.329'	D. Gradinarov
	3. Road towards to Ledenika Cave, 930 m, ecotone of <i>Pinus nigra</i> forest	02.08.2014; N43.20058 E23.48381	V. Antonova
	4. Road towards to Ledenika Cave, 1025 m, mixed forest	02.08.2014; N43.19722 E23.49050	V. Antonova
	5. South of Zgorigrad Village, 620 m, ecotone of mixed forest	19.10.2013; N43.16441 E23.50330	V. Antonova
		19.10.2013; N43.16493 E23.50314	V. Antonova
		19.10.2013; N43.16525 E23.50271	V. Antonova
** <i>Formica rufa</i> Linnaeus, 1761	1. Milanovo Village, Zgorigrad Village		Atanassov (1934)
	2. Road towards to Ledenika Cave, 930 m, <i>Pinus nigra</i> forest ecotone	02.08.2014; N43.20118 E23.48568	V. Antonova
	3. Road towards to Ledenika Cave, 1025 m, mixed forest	02.08.2014; N43.19746 E23.48977	V. Antonova
	4. Between Ledenika Cave and Parshevitsa Hut, 1030 m, <i>Pinus sylvestris</i> forest	19.10.2013; N43.17981 E23.48440	V. Antonova
		19.10.2013; N43.17978 E23.48438	V. Antonova
	5. Zgorigrad Village, 537 m, ecotone of <i>Pinus sylvestris</i> forest	19.10.2013; N43.17415 E23.50953	V. Antonova
		19.10.2013; N43.17427 E23.50946	V. Antonova
<i>Formica sanguinea</i> Latreille, 1798	Gerana mine near Milanovo Village		Atanassov (1934)

* - new records for the region

** - species of conservation statute

Considering the ecological preferences of the ants (according to Seifert 1996), 17 of all known species in Vrachanska Planina Mts. were thermophilic and occur mainly in open habitats (e.g. *Messor structor*, *Pheidole pallidula*, *Solenopsis fugax*, *Tapinoma erraticum*, *Plagiolepis pygmaea*, the three *Camponotus* species), two were eurytopic (*Myrmica rubra* and *Lasius niger*) and three – mesophilic species of open areas (*Myrmica sulcinodis*, *Lasius emarginatus* and *Lasius flavus*). The rest of the species (e.g. *Temnothorax crassispinus*, *Lasius platythorax* and *Formica rufa*)

prefer shady habitats (woods, hedges etc.). Such high number of thermophilic species was expected according to the physico-geographical characteristics of this karst region.

According to the recent catalogue of the ants in Bulgaria (Lapeva-Gjonova *et al.* 2010) and later papers regarding some Bulgarian species (e.g. Borowiec & Salata 2012, Borowiec 2014, Seifert & Csósz 2015), the total number in the country is 175 species. All known ant species (29 species) of Vrachanska Planina Mts. represent about 16 % of the Bulgarian myrmecofauna. We expect that this number will increase after detailed future investigations.

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Мравки (Hymenoptera: Formicidae) от Врачанска планина

ВЕРА АНТОНОВА, АЛБЕНА ЛАПЕВА-ГЪОНОВА, ДЕНИС ГРАДИНАРОВ

(Резюме)

Съобщават се 29 вида мравки от 24 находища за района на Врачанска планина. Девет вида, дадени по литературни данни, са потвърдени. От 19-те непубликувани видове (събирани през 50-те години на XX век и в периода 2013-2014 год.), 10 са нови за района. Четири вида мравки са консервационно значими.