

Faunistic Records of the Ground Beetles (Coleoptera: Carabidae) from the Belasitsa Mountain, Southeastern Part of the Republic of Macedonia

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Abstract: We provide faunistic data on the ground beetle fauna from the Belasitsa Mountain (South-eastern parts of the Republic of Macedonia) collected as a result of a short-term intensive research. A total of 79 taxa of ground beetles are listed based on both recent samplings and previous literature data. One species, *Atranus ruficollis* (Gautier des Cottés, 1858) and one subspecies, *Pterostichus melanarius bulgaricus* (Lutshnik, 1915), are new records for the fauna of the Republic of Macedonia. Information about the occurrence of the ground beetles in the studied area and their general distribution are presented.

Key words: faunistic records, Coleoptera, Carabidae, Belasitsa Mountain, Republic of Macedonia

Introduction

The fauna of Carabidae of the Republic of Macedonia includes 576 species (HRISTOVSKI & GUÉORGUIEV 2015, CHEHLAROV et al. 2016). The species-area

correlation (SAR), $SAR = \frac{\log(N)}{\log(S)}$, (N – number of

known species; S – surface of the studied area in km²) shows that the country has the highest index among the neighbouring countries (HRISTOVSKI & GUÉORGUIEV 2015). This fact is also consistent with the maximum diversity of the Balkan endemic carabids established in the western regions (Albania and Western Macedonia) of the central and eastern Balkans (GUÉORGUIEV 2007). However, certain border territories of the Republic of Macedonia are still insufficiently explored, which suggests that both number of the carabid species in the country and SAR index may increase as a result of further studies.

Belasitsa (in Bulgarian and Macedonian; *Belles*

or *Kerkini* in Greek) is a mountain range shared by the Republic of Macedonia, Bulgaria and Greece. Due to its transboundary position, it is included into the Balkan Green Belt (BRAJANOSKA et al. 2009) and represents a subject of considerable international conservation interests. Recently, two purposive studies of ground beetles were conducted in the Bulgarian and Macedonian parts of the range. As a result, GUÉORGUIEV et al. (2010) and GUÉORGUIEV & KOSTOVA (unpublished data) registered 112 ground beetle taxa (111 species and one subspecies, including 14 endemic taxa) from the Bulgarian part of Belasitsa and 23 for part situated in the Republic of Macedonia. HRISTOVSKI & GUÉORGUIEV (2015) recorded 28 species and subspecies for the Macedonian part of Belasitsa.

The aim of this paper is to summarise both the literature data and provide additional comprehensive information about the occurrence of the ground beetles in the Macedonian part of the Belasitsa Mountain.

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Materials and Methods

The ground-beetle material from the Belasitsa Mountain was collected using two methods. We gathered 198 specimens by hand collecting; 8927 specimens were caught through pitfall traps placed along the altitudinal gradient (Fig. 1). The material is deposited in the personal collections of S. Hristovski, K. Arsovski, the National Collection of Invertebrates at the Institute of Biology, Faculty of Natural Sciences and Mathematics in Skopje and the collection of the National Museum of Natural History, Sofia. Data about the localities and field-work period are presented in Table 1.

Results

In total, 79 ground beetle species-group taxa were recorded from the part of the Belasitsa Mt. situated in the Republic of Macedonia (Table 2). This represented 13.71% of the species and subspecies known from the country. Two species, *Philorhizus notatus* and *Platyderus (Platyderus) minutus minutus*, have just recently been recorded as new for the country (HRISTOVSKI & GUÉORGUIEV 2015). In the present study, we report *Atranus ruficollis* and *Pterostichus*

melanarius bulgaricus for the first time from the Republic of Macedonia. Other 40 species-group taxa are new records for the part of the Belasitsa Mt. belonging to the Republic of Macedonia.

Although numerous samples of *Molops Bonelli* were collected by pitfall traps (Table 2), we have not been able to confirm the presence of *Molops dilatatus dilatatus*, which was reported for Belasitsa by MLYNÁŘ (1977). For this reason, we have excluded this subspecies from the regional list as well from the register of the Macedonian Carabidae (HRISTOVSKI & GUÉORGUIEV 2015).

So far, seven carabid species (*Cicindela campestris olivieria*, *Harpalus progrediens*, *Harpalus metallinus metallinus*, *Apristus subaeneus*, *Licinus silphoides*, *Calathus metallicus*, *Amara messae*) are known only by literature data (HRISTOVSKI & GUÉORGUIEV 2015). Altogether, 12 endemic taxa have been registered in the studied area. Two of them are local endemics: *Tapinopterus balcanicus belasicensis* and *Molops rufipes belasicensis*. Ten taxa are Balkan endemics or subendemics: *Pachycarus cyaneus*, *Carabus violaceus azurescens*, *Platyderus minutus minutus*, *Pterostichus oblongopunctatus bosnicus*, *Pterostichus bruckii*,



Fig. 1. Topographic map of the studied area, with localities in the Belasitsa Mountain

Table 1. List of the studied localities with data about altitude, dominant vegetation type and GPS coordinates

Code	Altitude (m)	Locality	GPS coordinates
Research period: April - November 2010; Leg. A.C.Gjorgjievska			
L1	250	near the locality of Markova Skala; ass. <i>Quercus-Carpinetum orientalis macedonicum</i> Rud. 1939 ap. Ht. 1946	41°22'6.34"N 22°48'4.54"E
L2	327	under the viewing point near the Koleshino Waterfall; ass. <i>Quercus-Carpinetum orientalis macedonicum</i> Rud. 1939 ap. Ht. 1946	41°22'37.62"N 22°48'46.14"E
L3	415	near the Koleshino Waterfall; ass. <i>Quercus-Carpinetum orientalis macedonicum</i> Rud. 1939 ap. Ht. 1946	41°22'17.82"N 22°48'25.38"E
L4	500	near the locality of Pod; ass. <i>Quercus-Carpinetum orientalis macedonicum</i> Rud. 1939 ap. Ht. 1946	41°22'12.90"N 22°48'25.38"E
L5	587	between the localities of Pod and Suva Cheshma ass. <i>Quercus-Carpinetum orientalis macedonicum</i> Rud. 1939 ap. Ht. 1946	41°22'6.34"N 22°48'4.54"E
L6	693	near the locality of Suva Cheshma; ass. <i>Orno-Quercetum petraeae</i> Em 1968 (<i>Fraxino orni-Quercetum petraeae</i> Em 1968)	41°22'3.87"N 22°48'13.20"E
L7	767	near the locality of Popadija; ass. <i>Orno-Quercetum petraeae</i> Em 1968 (<i>Fraxino orni-Quercetum petraeae</i> Em 1968)	41°22'0.88"N 22°48'8.80"E
L8	847	near the locality of Popadija; ass. <i>Orno-Quercetum petraeae</i> Em 1968 (<i>Fraxino orni-Quercetum petraeae</i> Em 1968)	41°22'0.88"N 22°48'8.80"E
L9	1038	near the locality of Popadija; ass. <i>Orno-Quercetum petraeae</i> Em 1968 (<i>Fraxino orni-Quercetum petraeae</i> Em 1968)	41°22'0.88"N 22°48'8.80"E
L10	1100	near the locality of Popadija; ass. <i>Festuco heterophyllae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'0.88"N 22°48'8.80"E
L11	1200	near the locality of Popadija; ass. <i>Calamintho grandiflorae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'0.88"N 22°48'8.80"E
L12	1300	near the locality of Groba; ass. <i>Calamintho grandiflorae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'0.88"N 22°48'8.80"E
L13	1385.	near the locality of Pisana Skala; ass. <i>Calamintho grandiflorae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'16.55"N 22°48'13.88"E
L14	1442	near the locality of Pisana Skala; clear-cut area	41°22'0.88"N 22°48'8.80"E
Research period: April 2014 – June 2015; Leg. K. Arsovski			
L15	127	Tatarli Chuka, near the village of Sobri; ass. <i>Pruno webbii-Juniperetum excelsae</i>	41°22'0.67"N 22°48'7.80"E
L16	486	Lisnica, near the Smolari Waterfall; ass. <i>Festuco heterophyllae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'0.88"N 22°48'8.80"E
L17	1057	a clearing at the locality of Piperka; ass. <i>Festuco heterophyllae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°21'46.97"N 22°48'20.76"E
L18	1336	Tomin Kamen; ass. <i>Calamintho grandiflorae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	41°22'7.70"N 22°48'23.89"E
L19	1692	Sechena Skala; ass. <i>Vaccinietum myrtilli</i>	41°21'55.46"N 22°48'31.77"E
Research period: July 2003; Leg. S. Hristovski			
H1	1400-1500	Sharena Chesma; ass. <i>Calamintho grandiflorae-Fagetum</i> (Em 1965) Rizovski & Džekov ex Matevski et al. 2011	/
H2	1600	meadow near sheepfold	/
Research period: September 2009; Leg. B. Guéorgiev & S. Hristovski			
H3	400-500	near Smolarski Waterfall, Lomnica River above village Smolari	/
H4	1600	near the locality Sredno Bilo; ass. <i>Fagetum subalpinum scardo-pindicum</i> (Ht. 1938) Em 1961	/

Table 1. Continued.

Code	Altitude (m)	Locality	GPS coordinates
H5	1600	near the locality Semer Kajas; heathland	/
Research period: September 2016; Leg. S. Hristovski			
H6	200	v. Sobri, Saramesha; ass. <i>Juglando-Platanetum orientalis</i> Em et Dzekov 1961	/
Acronyms for the research periods used in Table 2			
(1) - April 2010/2014/2015			
(2) - May 2010/2014/2015			
(3) - June 2010/2014/2015			
(4) - July 2010/2014			
(5) - August 2010/2014			
(6) - September 2010/2014			
(7) - October 2010			
(8) - November 2010			

Zabrus aetolus, *Cychrus semigranosus balcanicus*, *Platynus scrobiculatus charleswernerii*, *Myas chalybeus* (inhabiting also Italy) and *Pterostichus melanarius bulgaricus* (inhabiting also Austria).

Two taxa, *Carabus convexus dilatatus* and *Carabus intricatus intricatus*, are included in the checklist of the threatened invertebrates of the CORINE biotopes project (KOOMEN & VAN HELSDINGEN 1996). Two endemics and one protected taxon, i.e., *T. balcanicus belasicensis*, *M. rufipes belasicensis* and *C. convexus dilatatus*, are among the most frequently collected ground beetles in the studied area.

Discussion

The results demonstrate the existence of a diverse carabid fauna (79 spp.) and high percentage (15.2%) of endemic taxa in the Macedonian part of the Belasitsa Mountain. These relatively high values, compared with those from other Balkan areas (GUÉORGUIEV 2007, HRISTOVSKI & GUÉORGUIEV 2015), are due to the transboundary position of the mountain (preserved habitats in the Balkan Green Belt) and the central location of the mountain range within the Balkan Peninsula. This core area of the peninsula, especially its western territories, exhibits a maximum concentration of Balkan endemic carabid species and subspecies and the highest percentage of species-area relationships. This is likely a consequence of the complex topography of this area, especially its prevailing rugged mountainous terrains. This type of relief alone determines the presence of numerous microhabitats and represents the main reason for speciation in the central part of the Balkans.

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Table 2. List of the ground beetle taxa in the studied localities of the part of the Belasitsa Mountain on the territory of the Republic of Macedonia, with data on the general distribution and previous literature records.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(*)	Literature records from the investigated area
Subfamily Carabinae					
Tribus Carabini					
1	<i>Calosoma (Calosoma) inquisitor inquisitor</i> L., 1758*	L1 (1) 1♂; L1 (2) 4 ♀ 24 ♂; L1 (3) 3♂; L1 (5) 1♂; L3 (2) 1♀ 20♂; L3 (3) 1♂; L4 (2) 16♀ 43♂; L5 (2) 1♀ 1♂; L6 (2) 13♀ 39♂; L7 (2) 11♀ 312♂; L8 (2) 2♀ 4♂		Europe-Mediterranean	[1]: 29
2	<i>Carabus (Archicarabus) montivagus montivagus</i> Palliardi, 1825*	L1 (1) 2♀; L1 (2) 1♀; L1 (3) 4♀ 2♂; L1 (4) 2♀ 2♂; L2 (1) 1♀ 2♂; L2 (2) 9♀ 3♂; L2 (3) 2♀ 1♂; L2 (4) 1♀ 7♂; L2 (8) 1♂; L3 (1) 2♀; L3 (3) 1♀; L3 (4) 2♀ 3♂; L3 (5) 1♀; L4 (1) 1♂; L4 (4) 1♀ 2♂; L4 (7) 1♂; L5 (7) 1♂; L7 (5) 1♂; L7 (7) 1♀; L12 (6) 1♂		SE European	[1]: 30
3	<i>Carabus (Chaetocarabus) intricatus intricatus</i> L., 1761	L1 (1) 1♀; L2 (2) 4♂; L3 (2) 1♂; L3 (4) 1♀ 1♂; L3 (5) 2♂; L4 (3) 3♀ 2♂; L5 (3) 1♂; L5 (4) 1♂; L6 (5) 1♀; L6 (7) 1♀; L12 (3) 1♂; L12 (4) 1♂; L16 (3) 1♂; L16 (4) 1♂		European	[1]: 31; [2]: 3
4	<i>Carabus (Megodontus) violaceus azureus</i> Dejean, 1826	L14 (5) 2♂	H1 - 1 ex.	Bal (BE)	[1]: 33; [2]: 3; [14]: 153; [15]: 115
5	<i>Carabus (Oreocarabus) hortensis hortensis</i> L., 1758*	L12 (6) 1♂		Eur	[1]: 34
6	<i>Carabus (Pachystus) graecus morio</i> Mannerheim, 1830	L15 (3) 1♀ 1♂; L15 (6) 1♀ 3♂		Bal and AM	[1]: 35
7	<i>Carabus (Procrustes) coriaceus cerisyi</i> Dejean, 1826*	L1 (1) 1♀; L1 (2) 3♂; L1 (3) 15♀ 12♂; L1 (7) 18♀ 23♂; L1 (8) 5♀ 3♂; L2 (1) 1♀; L2 (2) 11♀ 3♂; L2 (3) 14♀ 8♂; L2 (6) 3♀ 2♂; L2 (7) 23♀ 21♂; L2 (8) 5♀ 2♂; L3 (2) 9♀ 1♂; L3 (3) 9♀ 8♂; L3 (7) 12♀ 2♂; L3 (8) 12♀ 11♂; L4 (2) 1♀ 1♂; L4 (3) 6♀ 3♂; L4 (7) 1♂; L4 (6) 1♂; L4 (7) 3♀; L4 (8) 4♀; L5 (2) 1♀; L5 (3) 5♀ 12♂; L5 (7) 5♀ 8♂; L5 (8) 1♀ 6♂; L6 (2) 3♀ 1♂; L6 (3) 1♀ 5♂; L6 (4) 1♂; L6 (7) 10♀ 9♂; L7 (7) 2♀ 1♂; L16 (3) 3♀; L16 (4) 1♀		Bal, AM and Syria	[1]: 36
8	<i>Carabus (Tomocarabus) convexus dilatatus</i> Dejean, 1826*	L1 (1) 10♀ 12♂; L1 (2) 12♀ 9♂; L1 (3) 16♀ 12♂; L1 (4) 25♀ 28♂; L1 (5) 5♀ 8♂; L1 (7) 1♀ 2♂; L1 (8) 2♀ 3♂; L2 (1) 5♀ 2♂; L2 (2) 14♀ 10♂; L2 (3) 10♀ 5♂; L2 (4) 2♀ 4♂; L3 (1) 6♀ 3♂; L3 (2) 7♀ 9♂; L3 (3) 8♀ 3♂; L3 (4) 27♀ 21♂; L3 (8) 1♀; L4 (1) 10♀ 21♂; L4 (2) 8♀ 6♂; L4 (3) 7♀ 10♂; L4 (4) 60♀ 45♂; L4 (5) 1♀; L4 (7) 3♀ 2♂; L4 (8) 1♀; L5 (2) 2♂; L5 (3) 7♀ 5♂; L5 (4) 3♀ 1♂; L5 (7) 1♀; L5 (8) 4♀ 5♂; L6 (1) 4♀ 1♂; L6 (2) 5♀ 2♂; L6 (3) 4♀ 3♂; L6 (4) 50♀ 37♂; L6 (5) 6♀ 3♂; L6 (7) 8♀ 10♂; L6 (8) 2♀ 1♂; L7 (1) 35♀ 38♂; L7 (2) 7♀ 16♂; L7 (3) 11♀ 7♂; L7 (4) 186♀ 155♂; L7 (5) 14♀ 15♂; L7 (7) 3♀ 8♂; L7 (8) 6♀ 6♂; L8 (1) 1♀; L8 (2) 7♀ 2♂; L8 (3) 1♀; L8 (4) 5♀ 6♂; L8 (5) 8♀ 3♂; L8 (7) 2♀ 2♂; L8 (8) 2♀ 4♂; L9 (2) 1♂; L11 (2) 1♀; L12 (2) 1♀; L16 (3) 7♀ 6♂; L16 (4) 1♀ 1♂; L16 (6) 3♂		s-Eur	[1]: 37

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area
Tribus Cycchrini					
9	<i>Cychrus semigranosus balcanicus</i> Hopffgarten, 1881	L6 (2) 1♀; L6 (8) 1♀ 2♂; L8 (3) 1♀ 2♂; L8 (7) 1♀ 1♂; L8 (8) 2♂; L9 (3) 1♀ 3♂; L9 (7) 7♀ 4♂; L9 (8) 2♀; L10 (1) 1♀; L10 (2) 1♂; L10 (3) 10♀ 5♂; L10 (4) 1♀ 2♂; L10 (5) 2♀ 2♂; L10 (6) 5♀ 1♂; L10 (7) 2♀ 9♂; L10 (8) 2♀ 1♂; L11 (2) 1♂; L11 (3) 4♀ 5♂; L11 (4) 3♀ 3♂; L11 (5) 1♂; L11 (6) 3♀ 1♂; L11 (7) 2♀ 2♂; L11 (8) 3♀; L12 (3) 6♀ 4♂; L12 (4) 6♀ 5♂; L12 (5) 3♀ 3♂; L12 (6) 6♀ 10♂; L12 (7) 6♀ 10♂; L12 (8) 1♀; L13 (3) 1♀ 1♂; L13 (4) 2♀ 1♂; L13 (5) 1♀ 1♂; L13 (6) 1♀ 2♂; L13 (7) 2♀	H1 - 3 ex.	Bal (SE)	[1]: 38; [10]: 88; [13]: 134; [16]: 71
Subfamily Cicindelinae					
Tribus Cicindelini					
10a.	<i>Cicindela (Cicindela) campestris campestris</i> L., 1758		H2 - 1 ex.	Pal	[1]: 27
10b.	<i>Cicindela (Cicindela) campestris olivieria</i> Brullé, 1832			EA	[1]: 27
Subfamily Harpalinae					
Tribus Harpalini					
11	<i>Pachycarus (Mystropterus) cyaneus</i> Dejean, 1830	L15 (6) 1♀		Greece	[1]: 81
12	<i>Acinopus (Acinopus) picipes</i> (Olivier, 1795)	L15 (3) 1♀ 3♂; L15 (4) 5♀ 17♂; L15 (6) 2♂		EA	[1]: 82
13	<i>Harpalus (Cryptophonus) tenebrosus</i> Dejean, 1829*	L5 (5) 1♀		Pal	[1]: 83
14	<i>Harpalus (Harpalus) affinis</i> (Schränk, 1781)*		H2 - 1 ex.	Hol	[1]: 92
15	<i>Harpalus (Harpalus) atratus</i> Latreille, 1804*	L5 (4) 1♀; L5 (6) 1♀; L6 (3) 1♀; L7 (3) 1♂; L7 (4) 2♀		Eur and Syria	[1]: 85
16	<i>Harpalus (Harpalus) distinguendus distinguendus</i> (Duftschmid, 1812)*	L7 (3) 1♀ 1♂		Pal	[1]: 92
17	<i>Harpalus (Harpalus) honestus</i> (Duftschmid, 1812)	L5 (2) 1♀ 2♂; L5 (4) 2♀ 3♂; L5 (5) 1♀; L5 (6) 1♀; L6 (3) 2♀ 3♂; L14 (3) 1♀ 2♂		Eur and Syria	[1]: 84; [12]: 213
18	<i>Harpalus (Harpalus) laevipes</i> Zetterstedt, 1828*	L18 (4) 1♀	H2 - 1 ex.	EA	[1]: 85
19	<i>Harpalus (Harpalus) metallinus metallinus</i> Ménétriés, 1836			Pal	[1]: 91
20	<i>Harpalus (Harpalus) progrediens</i> Schaubberger, 1922			c- and e-Eur	[1]: 88; [6]: 105

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area
21	<i>Harpalus (Harpalus) rubripes</i> (Duftschmid, 1812)*	L8 (2) 1♀; L14 (2) 1♀; L14 (3) 6♀; L17 (3) 1♀		Hol	[1]: 84
22	<i>Harpalus (Harpalus) rufipalpis rufipalpis</i> Sturm, 1818	L5 (4) 3♀ 1♂; L5 (5) 1♀; L5 (6) 1♀ 1♂; L6 (3) 2♀; L14 (2) 1♂; L14 (3) 56♀ 41♂; L6 (3) 2♀; L14 (3) 56♀ 41♂; L14 (4) 67♀ 129♂; L14 (5) 15♀ 44♂; L14 (6) 1♀; L19 (4) 1♂	H1 - 1 ex.; H2 - 9 ex.	Pal	[1]: 84
23	<i>Harpalus (Harpalus) smaragdinus</i> (Duftschmid, 1812)*	L14 (3) 1♀; L14 (4) 1♀		Pal	[1]: 90
24	<i>Harpalus (Harpalus) tardus</i> (Panzer, 1796)*	L1 (2) 2♀ 1♂; L2 (2) 3♀ 1♂; L2 (3) 1♀; L4 (3) 1♀; L6 (3) 1♂; L7 (2) 1♀		Pal	[1]: 88
25	<i>Harpalus (Pseudoophonus) rufipes</i> (DeGeer, 1774)*	L11 (4) 1♂	H1 - 1 ex.; H2 - 3 ex.	Hol	[1]: 94
26	<i>Ophonus (Hesperophonus) subquadratus</i> (Dejean, 1829)	L15 (4) 1♀		Pal	[1]: 95
Subfamily Lebiinae					
Tribus Dromiini					
27	<i>Microlestes fissuralis</i> (Reitter, 1901)	L15 (9) 1♂		EA	[1]: 108
28	<i>Philorhizus notatus</i> (Stephens, 1827)	L11 (2) 1♀		Pal	[1]: 110
Tribus Lionychini					
29	<i>Apristus subaeneus</i> Chaudoir, 1846			s-Eur	[1]: 112; [9]: 364
Subfamily Licininae					
Tribus Licinini					
30	<i>Licinus (Licinus) silphoides</i> (Rossi, 1790)			Med and se parts of c-Eur	[1]: 115
Subfamily Nebrinae					
Tribus Nebrini					
31	<i>Nebria (Nebria) brevicollis</i> (Fabricius, 1792)	L8 (2) 1♀; L10 (2) 2♀; L10 (8) 2♀; L11 (2) 8♀ 5♂; L12 (2) 1♀; L12 (7) 1♀; L13 (2) 3♀; L13 (7) 1♂; L14 (2) 1♂; L18 (4) 1♀; L19 (4) 1♀ 1♂	H4 - 2 ex.	Pal	[1]: 22
Tribus Notiophilini					
32	<i>Notiophilus biguttatus</i> (Fabricius, 1779)*		H4 - 1 ex.	Hol	[1]: 24
33	<i>Notiophilus substriatus</i> Waterhouse, 1833	L2 (2) 2♀; L6 (3) 1♀ 2♂	H1 - 6 ex.	Pal	[1]: 25

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area
Subfamily Platyninae					
Tribus Platynini					
34	<i>Atramus ruficollis</i> (Gautier des Cottés, 1858) **		H6 - 1 ex.	Eur and AM	
35	<i>Platynus scrobiculatus charleswerneri</i> Schmidt, 2009		H3 - 6 ex.	Bal (BE)	[1]: 122
36	<i>Platyderus (Platyderus) minutus minutus</i> (Reiche & Sauley, 1855)	L16 (3) 1 ♀	H1 - 1 ex.	Greece (BE)	[1]: 139
37	<i>Platyderus (Platyderus) rufus rufus</i> (Duftschmid, 1812)*		H3 - 1 ex.	s parts of c-Eur	[1]: 139
Tribus Sphodriini					
38	<i>Calathus (Calathus) fuscipes fuscipes</i> (Goeze, 1777)*	L6 (3) 1 ♀; L6 (5) 1 ♂; L7 (4) 1 ♂; L8 (3) 4 ♀; L8 (4) 1 ♀ 2 ♂; L8 (5) 1 ♀ 3 ♂; L10 (4) 1 ♂; L11 (3) 1 ♀ 1 ♂; L11 (4) 1 ♀ 1 ♂; L17 (4) 1 ♂		Hol	[1]: 140
39	<i>Calathus (Neocalathus) erratus erratus</i> (Sahlberg, 1827)*	L6 (3) 1 ♀	H5 - 1 ex.	ES	[1]: 142
40	<i>Calathus (Neocalathus) melanocephalus melanocephalus</i> (L., 1758)*		H1 - 1 ex.; H2 - 1 ex.; H3 - 1 ex.; H5 - 1 ex.	Pal	[1]: 142
41	<i>Calathus (Neocalathus) metallicus</i> Dejean, 1828*			e and s parts of Eur	[1]: 143; [11]: 88
42	<i>Synuchus (Synuchus) vivalis vivalis</i> (Illiger, 1798)	L11 (4) 2 ♀; L13 (4) 1 ♀; L13 (5) 1 ♀ 1 ♂; L14 (5) 1 ♀	H1 - 1 ex.	Pal	[1]: 146
Subfamily Pterostichinae					
Tribus Pterostichini					
43	<i>Abax (Abacoperus) carinatus carinatus</i> (Duftschmid, 1812)*	L2 (4) 1 ♂		Eur and AM	[1]: 123

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area	
44	<i>Molops (Molops) rufipes belasicensis</i> Mlynář, 1977	L3 (1) 12♀ 11♂; L3 (5) 22♀ 13♂; L3 (3) 2♀ 5♂; L3 (8) 3♂; L4 (1) 8♀ 7♂; L4 (2) 6♀ 19♂; L4 (3) 1♀ 2♂; L5 (2) 3♂; L6 (1) 1♀; L6 (2) 2♀ 8♂; L6 (3) 1♀ 2♂; L6 (8) 1♂; L7 (1) 6♀; L7 (2) 10♀ 20♂; L7 (3) 6♂; L8 (1) 18♀ 5♂; L8 (2) 21♀ 60♂; L8 (3) 2♀ 10♂; L8 (5) 1♂; L8 (7) 1♂; L9 (2) 38♀ 91♂; L9 (3) 29♀ 83♂; L9 (4) 2♂; L9 (7) 1♀ 1♂; L10 (1) 40♀ 25♂; L10 (2) 90♀ 118♂; L10 (3) 116♀ 173♂; L10 (4) 7♀ 39♂; L10 (5) 1♀; L10 (7) 1♀ 1♂; L11 (1) 30♀ 24♂; L11 (2) 116♀ 96♂; L11 (3) 32♀ 84♂; L11 (4) 6♀ 32♂; L11 (7) 2♀ 1♂; L12 (1) 17♀ 7♂; L12 (2) 63♀ 35♂; L12 (3) 46♀ 64♂; L12 (4) 2♀ 1♂; L12 (7) 1♂; L13 (2) 27♀ 18♂; L13 (3) 25♀ 38♂; L13 (3) 3♂; L13 (7) 1♀ 1♂; L13 (8) 2♀ 1♂; L16 (3) 1♀ 1♂; L17 (2) 6♀ 10♂; L17 (3) 12♀ 2♂; L17 (4) 2♀ 1♂; L17 (5) 1♀ 1♂; L18 (2) 8♀ 4♂; L18 (4) 2♀; L19 (4) 3♀ 11♂; L19 (4) 6♀ 16♂	H1 - 7 ex.	Mt. Belasitsa (Bulgaria and the Republic of Macedonia) (SE)	[1]: 125; [6]: 85; [8]: 125-126	
45	<i>Myas (Myas) chalybeus</i> (Palliard, 1825)*	L1 (1) 2♀ 1♂; L1 (2) 2♀ 2♂; L1 (3) 3♀; L1 (7) 12♀ 9♂; L2 (2) 23♀ 25♂; L2 (3) 2♀ 2♂; L2 (4) 1♀ 1♂; L2 (6) 1♀ 1♂; L2 (7) 8♀ 6♂; L3 (1) 1♀ 1♂; L3 (2) 5♀ 3♂; L3 (3) 2♀ 2♂; L3 (4) 1♀ 4♂; L3 (7) 5♀ 10♂; L4 (3) 1♀; L4 (4) 1♀ 1♂; L4 (6) 1♀; L4 (7) 2♀ 3♂; L5 (3) 1♀; L5 (7) 1♂; L6 (2) 2♀; L6 (3) 1♂; L6 (6) 1♂; L6 (7) 8♀ 4♂; L7 (3) 3♀ 1♂; L7 (4) 3♀; L7 (5) 1♂; L7 (7) 1♂; L8 (6) 1♂; L8 (7) 1♀ 2♂; L11 (3) 1♂; L12 (7) 1♂; L16 (3) 5♀ 3♂; L16 (4) 2♂	L19 (4) 1♀ L6 (3) 1♂ L1 (8) 1♂	H3 - 1 ex.	Bal and Italy	[1]: 127
46	<i>Pterostichus (Bothriopterus) oblongopunctatus</i> bosnicus Apfelbeck, 1904		H1 - 4 ex.	Bal (BE) (Löbl & Smetana, 2003)	[1]: 131	
47	<i>Pterostichus (Morphnosoma) melanarius</i> bulgaricus (Lutshnik, 1915)**	L19 (4) 1♀		Bal (BE)		
48	<i>Pterostichus (Platysma) niger niger</i> (Schaller, 1783)*	L6 (3) 1♂		Pal	[1]: 133	
49	<i>Pterostichus (Pseudomaseus) anthracinus</i> anthracinus (Illiger, 1798)*	L1 (8) 1♂		Pal	[1]: 134	
50	<i>Pterostichus (Pseudomaseus) nigrita</i> (Paykull, 1790)*		H3 - 2 ex.; H6 - 1 ex.	Pal	[1]: 134	
51	<i>Pterostichus (Pterostichus) bruckii</i> Schaum, 1859		H1 - 6 ex.	Bal (BE)	[1]: 134; [4]: 107	

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area
52	<i>Tapinopterus (Tapinopterus) balcanicus belasicensis</i> Matan, 1933	L2 (1) 1♀ 10♂; L2 (2) 6♀ 7♂; L2 (3) 2♀ 2♂; L2 (4) 1♀ 1♂; L2 (5) 2♀; L2 (6) 1♂; L2 (8) 1♂; L3 (1) 4♀ 10♂; L3 (2) 2♀ 6♂; L3 (3) 2♀; L3 (4) 4♀ 2♂; L3 (8) 1♂; L4 (1) 1♂; L4 (2) 2♀ 6♂; L4 (3) 1♀ 3♂; L6 (1) 1♀ 2♂; L6 (2) 3♂; L6 (3) 1♂; L6 (4) 2♀; L6 (5) 2♀ 2♂; L6 (8) 1♀; L7 (1) 2♀ 5♂; L7 (2) 16♂; L7 (3) 5♀ 8♂; L7 (4) 1♀ 1♂; L7 (7) 1♀ 2♂; L7 (8) 1♂; L8 (1) 14♀ 36♂; L8 (2) 22♀ 65♂; L8 (3) 24♀ 39♂; L8 (4) 27♀ 26♂; L8 (5) 15♀ 10♂; L8 (6) 5♀ 4♂; L8 (7) 3♀ 6♂; L8 (8) 6♀ 6♂; L9 (2) 21♀ 36♂; L9 (3) 67♀ 70♂; L9 (4) 3♀ 10♂; L9 (5) 3♀ 9♂; L9 (6) 4♀ 2♂; L9 (7) 1♀ 4♂; L9 (8) 6♀ 5♂; L10 (1) 51♀ 89♂; L10 (2) 182♀ 195♂; L10 (3) 266♀ 257♂; L10 (4) 150♀ 168♂; L10 (5) 79♀ 68♂; L10 (6) 49♀ 46♂; L10 (7) 26♀ 22♂; L10 (8) 21♀ 30♂; L11 (1) 8♀ 6♂; L11 (2) 70♀ 95♂; L11 (3) 85♀ 91♂; L11 (4) 93♀ 97♂; L11 (5) 35♀ 51♂; L11 (6) 19♀ 18♂; L11 (7) 9♀ 17♂; L11 (8) 12♀ 13♂; L12 (1) 2♀ 7♂; L12 (2) 21♀ 59♂; L12 (3) 34♀ 41♂; L12 (4) 26♀ 47♂; L12 (5) 3♀ 7♂; L12 (6) 6♀ 2♂; L12 (7) 4♀ 2♂; L12 (8) 7♀ 5♂; L13 (2) 8♀ 42♂; L13 (3) 14♀ 27♂; L13 (4) 17♀ 38♂; L13 (5) 5♀ 7♂; L13 (6) 1♀; L13 (7) 1♀ 1♂; L13 (8) 2♀ 2♂; L14 (2) 3♂; L14 (3) 1♀ 1♂; L14 (5) 1♂; L14 (7) 1♀ 2♂; L14 (8) 9♀ 5♂; L16 (3) 1♀ 2♂; L17 (3) 1♀; L17 (4) 1♀; L17 (5) 10♀ 11♂; L17 (6) 1♀; L18 (2) 4♀ 7♂; L18 (4) 5♀ 18♂; L19 (4) 1♀ 8♂	H1 - 3 ex.; H3 - 3 ex.	Bulgaria and the Republic of Macedonia (SE)	[1]: 136; [4]: 125; [6]: 79; [7]: 2118
Tribus Zabrimi					
53	<i>Amara (Amara) aenea</i> (DeGeer, 1774)*	L11 (3) 2♀; L13 (2) 1♀; L14 (2) 1♀ 1♂; L14 (4) 1♀ 1♂; L19 (4) 1♀		Holarctic and Afro-tropical region	[1]: 146
54	<i>Amara (Amara) convexior</i> Stephens, 1828*	L13 (2) 1♂; L14 (2) 1♀ 1♂; L14 (3) 1♀ 1♂		Pal	[1]: 147
55	<i>Amara (Amara) curta</i> Dejean, 1828	L14 (2) 1♀; L14 (3) 2♀; L19 (4) 2♀ 1♂	H1 - 1 ex.	Pal	[1]: 147
56	<i>Amara (Amara) eurynota</i> (Panzer, 1796)*	L14 (3) 15♀ 4♂; L14 (4) 1♀; L14 (5) 1♂		Hol	[1]: 148
57	<i>Amara (Amara) similata</i> (Gyllenhal, 1810)*	L1 (6) 1♂; L5 (2) 1♀ 1♂; L8 (6) 1♀		Pal	[1]: 150
58	<i>Amara (Bradytus) apricaria</i> (Paykull, 1790)*		H2 - 2 ex.	Hol	[1]: 151
59	<i>Amara (Xenocelia) messae</i> Baliani, 1924			s and w parts of Eur	[1]: 153; [3]: 65
60	<i>Amara (Percosia) equestris equestris</i> (Dufschmid, 1812)*		H2 - 1 ex.	Pal	[1]: 154

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(c)	Literature records from the investigated area
61	<i>Zabrus (Pelor) aetolus</i> Schaum, 1864*		H2 - 2 ex.	Bal (BE). We were not able to determine the exact subspecies status of the specimens of this polymorphic species that is represented by eight subspecies on the Balkan Peninsula	[1]: 156
62	<i>Zabrus (Pelor) incrassatus</i> (Ahrens, 1814)	L15 (3) 1♀ 1♂; L15 (6) 3♀ 2♂		Bal and AM	[1]: 158
Subfamily Trechinae					
Tribus Bembidiini					
63	<i>Asaphidion flavipes</i> (L., 1761)	L10 (4) 1♀; L10 (7) 1♀; L11 (3) 6♀ 6♂	H1 - 2 ex.; H3 - 2 ex.; H6 - 6 ex.	Pal	[1]: 49
64	<i>Bembidion (Bembidionetolitzkya) concoeruleum</i> Netolitzky, 1943*		H3 - 1 ex.	s-Eur and AM	[1]: 51
65	<i>Bembidion (Bembidionetolitzkya) geniculatum</i> geniculatum Heer, 1837*		H3 - 1 ex.	Eur	[1]: 50
66	<i>Bembidion (Bembidionetolitzkya) tibiale</i> (Dufschmid, 1812)*		H3 - 8 ex.	Eur and AM	[1]: 50
67	<i>Bembidion (Metallina) lampros</i> (Herbst, 1784)		H1 - 1 ex.; H2 - 1 ex.; H4 - 1 ex.	Hol	[1]: 54
68	<i>Bembidion (Ocydromus) decorum decorum</i> (Panzer, 1799)		H6 - 5 ex.	Europeo-Mediterranean	[1]: 56

Table 2. Continued.

No.	Taxon	Beetle material collected by pitfall trapping	Beetle material collected by hand	General distribution ^(*)	Literature records from the investigated area
69	<i>Bembidion (Ocydromus) siculum slymense</i> Apfelbeck, 1904*		H3 - 8 ex.	Pal	[1]: 56
70	<i>Bembidion (Peryphanes) dalmatinum dalmatinum</i> Dejean, 1831*		H3 - 44 ex.; H6 - 16 ex.	PC	[1]: 58
71	<i>Bembidion (Peryphanes) deletum deletum</i> Audinet-Serville, 1821		H1 - 2 ex.; H6 - 1 ex.	Pal	[1]: 58
72	<i>Bembidion (Peryphanes) stephensis stephensis</i> Crotch, 1866		H1 - 1 ex.	Hol	[1]: 59
73	<i>Bembidion (Peryphus) subcostatum vau</i> Netolitzky, 1913		H6 - 7 ex.	se-Eur	[1]: 60
74	<i>Sinechostictus (Pseudolimnaeum) doderoi</i> (Ganglbauer, 1891)*		H3 - 1 ex.	ES	[1]: 63
Tribus Trechini					
75	<i>Trechus (Trechus) austriacus</i> Dejean, 1831*		H6 - 2 ex.	c- and e-Eur and AM	[1]: 74
76	<i>Trechus (Trechus) nigrinus</i> Putzeys, 1847*		L14 (5) 1♂	Eur and AM	[1]: 73
77	<i>Trechus (Trechus) quadristriatus</i> (Schrank, 1781)*		H3 - 3 ex.; H4 - 1 ex.	Hol	[1]: 69
78	<i>Trechus (Trechus) subnotatus subnotatus</i> Dejean, 1831*		H6 - 1 ex.	Med	[1]: 70

Sources: [1] HRISTOVSKI & GUÉORGUEV (2015); [2] BRAJKOVIĆ et al. (2004); [3] HIEKE (1981); [4] SCHATZMAYR (1943); [5] DROVENIK & PEKS (1994); [6] DROVENIK & PEKS (1999); [7] ČURČIĆ et al. (2008); [8] MLYNÁŘ (1977); [9] GUÉORGUEV et al. (2010); [10] MAŘAN (1933); [11] MAŘAN (1934); [12] MAŘAN (1935); [13] MAŘAN (1940); [14] ŠTĚRBA (1945); [15] MANDL (1985); [16] MANDL (1989).

(*) The general distribution of taxa was assessed according to TRAUTNER & GEIGENMÜLLER (1987), HURKA (1996) and LÖBL & SMETANA (2003). Abbreviations: AM – Asia Minor; Afr – Afrotropical region; Bal – Balkan Peninsula; BE – Balkan endemic; CH – China; EA – Eurasia; EM – endemic of the Republic of Macedonia; ES – Euro-Siberian region; Eur – Europe; Med – Mediterranean; Nea – Nearctic Region; Pal – Palearctic Region; PC – Ponto-Caucasian Region; SE – Stenodemic; c – central; e – east; n – north; s – south; w – west.

New taxa for the Macedonian part of the Belasitsa Mountain are presented with an asterisk (*). New taxa for the ground beetle fauna of the Republic of Macedonia are shown with two asterisks (**).

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