An annotated catalogue of the millipede order Julida (Diplopoda) in Bulgaria

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Abstract. The paper presents the first catalogue of the millipede order Julida (Diplopoda: Helminthomorpha) in Bulgaria. The order is currently known to comprise 3 families (Blaniulidae, Nemasomatidae and Julidae), 21 valid genera, 51 species and 3 subspecies in the country. Another 11 species and the genus Thachypodoiulus were quoted probably erroneously for Bulgaria. Archiboreoicus pallidus and Megaphyllum dentatum were reported without mention of their exact localities, and have never been found since. All relevant literature sources are given for each species group taxon with exact pages; detailed distribution by geographical regions; as well as a list of habitats where the species was found in the country; altitudinal range; chorotype; and sometimes additional remarks. New data, among which the second and third finds in the country of Megaphyllum anatolicum denticulatum and Brachyiulus bagnalli, respectively, are given for 19 species. The paper also provides brief analysis about the habitat preferences and zoogeographical affinities of Bulgarian julids.

Key words: Myriapoda, Julidae, Blaniulidae, Nemasomatidae, review, distribution, habitats, Bulgaria

Introduction

The study of the millipedes of order Julida in Bulgaria began with CHRISTOVICH (1892) who reported Iulus sabulosus from the Vitosha Mts. In the next fifty years julids found in Bulgaria were mentioned in the papers of ATTEMS (1904), JURINICH (1904), VERHOEFF (1926a, 1926b, 1928, 1937), SCHUBART (1934), LANG (1935, 1958) and JAWLOWSKI (1938). An exceptional contribution to the knowledge of Bulgarian julids was made by K. Strasser, who described 9 new species, and reported another 5 as new for the country (STRASSER, 1960, 1962a, 1962b, 1966, 1969, 1973, 1975). In the 1960s and 1970s three short papers by GULIČKA (1967a, 1967b) and CEUCA (1973) were published where, however, new species have also been described. Yasen Christov defended his PhD thesis on the millipede fauna of Sredna Gora Mts. (1986b) publishing the results of his study in five short papers (CHRISTOV, 1983, 1984a, 1984b, 1985, 1986a). GOLOVATCH & KONDEVA (1992) and KONDEVA (1996, 1998, 2000, 2002, 2004) have contributed with new species and new records for the country.
Additional information concerning the order can also be found in the general biospeleological reviews of GUÉORGUIEV & BERON (1962), BERON (1972, 1978) and others. Alticolous fauna in the country has been reviewed by BERON (1999), where myriapods were also recorded. The protozoans found in the intestines of Julida have been studied by GOLEMANSKY (1973, 1991). In more recent times, STOEV & RIBAROV (1995), STOEV (2001, 2003, 2004a, 2004b, 2004c) and STOEV & LAPEVA-GJONOVA (2005) published on different aspects of the taxonomy, distribution and biology of the order in Bulgaria. STOEV (2007) published an updated checklist of all myriapods hitherto registered in Bulgaria.

Bulgarian millipedes, and in particular julids, are considered comparatively well known (STOEV, 2007), however, new species are yet to be found in some remote regions. Several regions of the country, like Pirin, Eastern Stara Planina and Predbalkan, Plana, Verila, Kraishte, Sakar and partly the Danubian Plane remain more or less unexplored. Better known are some parts of the Rhodopes, Rila, Vitosha, Strandzha, Sredna Gora, Western Stara Planina and Predbalkan. The cavernicolous millipedes and those living in deciduous forests have been better investigated compared to e.g. those occurring in urban and open habitats, coniferous forests, etc.

Methodology

All the literature sources relevant to the Julida in Bulgaria were checked for information regarding species distribution and habitat preferences. Papers that only repeat already known data are not quoted. Authors’ unpublished data and such found in the the PhD thesis of Dr. Yasen Christov (also unpublished to a large extent) were added too. The genus and species names are given in the literature review only if they differ from currently accepted combination. The list of the localities for each species is arranged according to the main geographical regions of the country in the following sequence: 1. Mountains: Stara Planina, Rhodopes, Vitosha, Rila, Pirin, Osogovo, Belasitsa, Slavyanka, Sredna Gora, Western Stara Planina and Predbalkan (only central and eastern Predbalkan; having vary vague boundaries the western part is included within the Stara Planina Mts.), Konyavska Planina, Penkovska Planina, Lozenska Planina, Lyulin, Strandzha, Sakar; 2. Heights, ridges, plateaus: Bakadzhishki Heights, Derventski Heights, Pianets Ridge, Shumensko Plateau; 3. Plains, valleys, lowlands, gorges: Danubian Plain, Thracian Lowland, Kamchya Valley, Mesta Valley, Struma Valley, Kresna Gorge; 4. Black Sea Coast; 5. Cities (cf. STOEV, 2002). Habitat information is given as originally quoted in the literature. Each habitat is separated by semicolon. Abbreviations: M/MM – male/males; F/FF – female/females; J.P.M. – Jean-Paul Mauriès. To avoid repeating “railway station”, “village”, “town” and “city” in the catalogue part, if not otherwise specified, all locality records refer to these settlements. Chorotypes are mainly as defined by STOEV (2007) with modifications based on the distribution data in Fauna Europaea (ENGHOFF & KIME, 2007). The names of plants in the habitat information are according to Flora Europaea (http://rbg-web2.rbge.org.uk/FE/fce.html).
Species list

Family BLANIULIDAE

Nopoiulus kobchii (Gervais, 1847)


Localities: Stara Planina Mts.: Kalenska Pesht Cave near Kalen [5], deserted mine galleries near Bov [6], Vreloto Cave near Prevala [6], cave in Zmeyovi Dupki Area [9]; Vitosha Mts.: Boyana [3, 5], Knyazhevo [5]; Pirin Mts.: near Melnik [6]; Predbalkan: Temnata Dupka Cave near Lukovit [2, 5], Vodopada Cave [5] and Urushka Maara Cave [4] near Krushuna, Futovskata Cave near Karpacevo [4], Samuilitsa Cave near Kunino [4], Emenska Cave near Emen [9], Andaka Cave near Dryano Monastery [10], Peshtta Cave near Yablanitsa [10], Saeva Dupka Cave near Brestnitsa [10]; Gergitsova Dupka Cave near Bezhanovo [10], Skoka Cave near Draga [10], Strandzha Mts.: (?)Gramatikovo [5]; Sakar Mt.: deserted mine gallery near Radovets [9]; Derventski Heights: deserted mine gallery near Lesovo [9]; Danubian Plain:

Fig. 1. Map of Bulgaria showing the main geographical regions in the country.
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(?) cave near Pleven [1], cave near Byala Slatina [2], Haidushkata Cave near Deventsi [5], Magura Cave near Rabisha [5], Sedlarkata Cave near Rakita [7], Nanin Kamak Cave near Muselievo [10], Haidushkata Cave near Gortalovo [10], Gininata Cave near Sadovets [10], (?) Kapalak Cave near Pleven [10].

Altitude: from ca. 380 m (Magura Cave) to 500 m [5]
Habitat: Caves [1, 2, 5, 6, 7, 8, 9, 10]

Distribution in Bulgaria: widespread in the country, so far not registered in northeastern Bulgaria. The record from Strandzha is uncertain.

Chorotype: European. Introduced in Siberia, North and South America, New Zealand and other regions of the world.

*Blaniulus guttulatus* (Fabricius, 1798)

Localities: *Sredna Gora Mts.*: Polyanovtsi [1].
Altitude: 600-700 m [1]
Habitat: Forest habitats: *Pinus sylvestris et Quercus petraea* [1]

Distribution in Bulgaria: recorded only once from Sredna Gora Mts.

Chorotype: European. Introduced in the Australian, Nearctic and East Palearctic regions.

*Archiboreoiulus pallidus* (Brade-Birks, 1920)

Localities: unspecified locality.
Altitude: missing data
Habitat: missing data

Distribution in Bulgaria: recorded for Bulgaria without exact locality only in the list of Balkan millipedes (CEUCA, 1992). Record needs confirmation. In neighbouring countries *A. pallidus* is known from Turkey (European part) and Romania.

Chorotype: European. Introduced in the Nearctic region.

*Cibiniulus phlepsii* (Verhoeff, 1897)

Localities: *Stara Planina Mts.*: Medven [3]; *Rhodopes Mts.*: between Avren and Strazhets [4]; *Kamchya Valley*: Dolni Chiflik [1, 2]; *Black Sea Coast*: near Varna [1], Ropotamo near Primorsko [3].

Altitude: from the sea level (Ropotamo, Varna) to ca. 500 m [3]
Habitat: missing data

Distribution in Bulgaria: several scattered locations, mainly in Eastern Bulgaria.

Chorotype: East European-Anatolian.

*Proteroiulus fuscus* (Am Stein, 1857)

Localities: *Stara Planina Mts.*: Vodnata Cave near Tserovo [1]; *Rhodopes Mts.*: deserted mine gallery near Madzharovo [1].
Altitude: 250 m (Vodnata Cave)
Habitat: known from a cave and disused mine gallery [1]
Distribution in Bulgaria: two records from Western Stara Planina and Eastern Rhodopes.
Chorotype: European. Introduced in the Nearctic region.

Family NEMASOMATIDAE

Nemasoma varicorne C.L. Koch, 1847


Localities: Vitosha Mts.: Boyana [1]; Rila Mts.: Rila Monastery Natural Park [5]; Sredna Gora Mts.: P. Deliradev Hut [2], Dushkov Pchelin Area [3]; Lozenska Planina Mts.: German [4]; Kamchya Valley: Dolni Chiflik [1]; Black Sea Coast: Zlatni Pyasatsi (Uzun Kum) [1].
Altitude: from the sea level (Zlatni pyasatsi) to 1250 m [2, 3]
Habitat: Forest habitats: Fagus sylvatica [2], Quercus petraea [3]; Open habitats: pastures [4].
Distribution in Bulgaria: several scattered locations.
Chorotype: European.

Family JULIDAE

Leptoiulus borisi Verhoeff, 1926


Localities: Rhodopes Mts.: near Beglika Dam [9]; Vitosha Mts.: unspecified location [7, 8, 10], Knyazhevo [8], Edelvais Hut [10], Aleko Hut [13]; Rila Mts.: Borovets (Cham-Kuria, type locality of L. rylaicus and L. macrovelatus) [2, 3, 5], Musala Hut (type locality of L. macrovelatus) [3], Chadar Tepe (type locality of L. macrovelatus) [3], between Borovets and Maritsa lift stations [8], near Yakoruda [13], Rila National Park [15], Rila Monastery Natural Park [16]; Pirin Mts.: unspecified location, 2750 m alt. (type locality!) [1], Kamenitsa Peak [10]; several exempl., Peyo Yavorov Hut, 1700-2200 m, 26.viii.1995, B. Petrov leg., P.S. det.; 2 MM, 2 FF, Vihren Peak, 2600-2700 m, 01.ix.2001, N. Simov leg. P.S. det.; several exempl., south slope of Vihren Peak, 2600-2914 m, 27.viii.1995, B. Petrov leg., P.S. det. [new records]; Belasitsa Mts. [4]; Sredna Gora Mts.: Panagyurski Kolonii Resort [11, 12], Fetintsi [12]; Struma Valley: near Petrich [4]; Black Sea Coast: Zlatni Pyasatsi [8].
Altitude: from the sea level (Zlatni pyasatsi) to 2750 m [1]
Habitat: Forest habitats: Fagus sylvatica [11], Quercus petraea [12], coniferous forests [13]; Subalpine and Alpine habitats: limestones [1], granite breakstone [3].
Distribution in Bulgaria: mainly in Southwestern Bulgaria, two records from the Black Sea coast and Sredna Gora Mts.
Chorotype: Bulgarian endemic.
Remarks: The synonymy of *L. macrovelatus* under *L. rylaicus* was proposed by STRASSER (1960). Later, in 1973 he synonymized *L. rylaicus* with *L. borisi*.

**Leptoiulus sarajevensis** Verhoeff, 1898


Localities: Vitosha Mts. [1, 2].
Altitude: 1450 m [1]
Habitat: missing data
Distribution in Bulgaria: known only from Vitosha Mts.
Chorotype: Balkan.

**Leptoiulus trilineatus** (C.L. Koch, 1847)


Localities: Stara Planina Mts.: Ledenitsa Cave near Kotel [2], Botev Peak [4, 5], Kotel [7], Central Balkan National Park [17], Sinite Kamani Natural Park [new record]; Rhodopes Mts.: near Hvoina [1, 7], Kosovo [7], Dobrostan [7], Pesnopeni [7], Snezhinka (Gorna Snezhinka) [7], Peshtera [8], Asenova Fortress [8], Bachkovo Monastery [8], Bedenski Bani near Smolyan [8], between Avren and Strazhets [24], Gorata Ridge [24], Gluhite Kamani Area above Dabovets [24], Konevo [24]; ad. M forma buresci, Laki Dist., Dryanovo, Agovski Kamak Area, Prikazna Cave, 1120 m, under stones, 9.x.2005, B. Petrov; T. Ivanova, I. Borissov leg., P.S. det. [new record]; Vitosha Mts.: unspecified location [7], Knyazhevo (type locality of *L. trilineatus buresci*) [3, 7], Boyana [7], Dragalevtsi [8], Zlatni Mostove [13], Bistritsa [13], Zhelezniatsa [13], Chiupeletovo [13], Selimitsa Peak [13], Simeonovo [13]; Rila Mts.: near Ribnite Lakes [1], Borovets (Cham-Kuria) [5, 7], near Pastra [5], Rila Monastery [7, 8], Rila National Park [18], Rila Monastery Natural Park [22]; Sredna Gora Mts.: near Turia [1], Sashtinska Sredna Gora Mts. [9], Mecha Glava Locality near Panagyurishte [12], near the upper current of Luda Yana River [12], Koprivshtitsa [12], Panagyurski Kolonii Resort [12], Bratiya Peak [12], near Topolnitsa Dam [12], Fetiintsi [12], Verinsko [12], Tsarevi slivi Area [12], Dushkov Pehelin Area [12], Yogada [12], Milevo [12], Zlati Voivoda [12], near Stara Zagora [12]; Predbalkan: Preobrazhenski Monastery near Veliko Tarnovo [1]; Lozenska Planina Mts.: unspecified location [21], German [13]; Lyulin Mt. [7]; Strandzha Mts.: near Varovnik [14], near Brashlyan [14], Indzhe Voyvoda [15]; Derventski Heights: Popova Dupka Cave near Golyam Dervent [16], Cave near Lesovo [23] 2 MM, Yambol Dist., Dennitsa, 200 m of crossroad to Stefan Karadzhovo, karst, *Quercus* forest, shrubs, near road, under stones, 26.iii.2005, P.S. leg. & det. [new record]; Pianets Ridge: 1 M, Gabra Reserve, Kyustendil Distr., Tsarvaritsa, *Pinus nigra*, *Fagus silvatica* forest, 800-1000 m, leaf
litter and under barks, 06.iv.2001, B. Petrov & G. Stoyanov leg., P.S. det. [new record]; **Danubian Plain**: Tabachka [8], Grivitsa [13], Beglesh [13], Ralevo [13]; **Kamchya Valley**: Dolni Chiflik [7, 8]; **Struma Valley**: near Skakavitza Waterfall [8]; **Kresna Gorge** [19]; **Black Sea Coast**: Varna: Asparuhovo [8], Euxinograd Palace near Varna [5], Zlatni Pyasatsi [7], Aladzha Monastery [7], Sveti Konstantin [7], Arkutino Swamp [8], Primorsko [4], Atya [8], Tsarevo (Michurin) [8], near Ropotamo [8], Sozopol [8], Galata Cape [8], Novo Panicharevo [13, 15], Drachevo [13], Prisad [15], Gabar [15]; **Cities**: Petrich [7].

**Altitude**: from the sea level (Zlatni Pyasatsi, Ropotamo) to ca. 2200-2300 m (Botev Peak, Ribnite Lakes)

**Habitat**: Forest habitats: *Quercus dalechampii* [9], *Fagus sylvatica* [10, 11, 12, 13], *Quercus petraea* et *Quercus cerris* [12], *Fagus sylvatica* et *Quercus petraea* [12], *Quercus petraea* et *Carpinus orientalis* [12], *Quercus frainetto* [12], *Quercus sp.* [13, 14, 15, 20, 21, 24], *Carpinus betulus* [14, 15, 20, 21], *Fagus sylvatica* et *Pinus nigra* [new data]; Open habitats: meadows [13]; Caves [2, 16, 23]

**Distribution in Bulgaria**: common species throughout the country

**Chorotype**: East European.

**Remark**: The status of subspecies *bureschi* is uncertain.

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**Xestoiulus fontisherculis** (Verhoeff, 1899)


**Localities**: **Stara Planina Mts.**: Cherepish Monastery [1]; **Rhodopes Mts.**: Asenova Fortress (type locality of *M. urbanskii*) [2], Bachkovo Monastery [2]; **Vitosha Mts.**: Zlatni Mostove [5], Chuipetlovo [5]; **Sredna Gora Mts.**: Panagyurski Kolonii Resort [4], Dushkov Pchelin Area [4]; **Black Sea Coast**: near Ropotamo [2].

**Altitude**: from the sea level (near Ropotamo) to 1300 m [5]

**Habitat**: Forest habitats: *Quercus petraea* [5]; Open habitats: meadows [5].

**Distribution in Bulgaria**: several scattered locations

**Chorotype**: Carpathian-Balkan.

**Remark**: The synonymy of *Microiulus urbanskii* with *M. fontisherculis* was proposed by STRASSER (1973).

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**Xestoiulus rebeli** (Attems, 1904)


**Localities**: **Stara Planina Mts.**: Kush Bunar near Sliven (type locality!) [1].

**Altitude**: missing data

**Habitat**: missing data

**Distribution in Bulgaria**: a single record from Eastern Stara Planina Mts.

**Chorotype**: endemic of the Stara Planina Mts.

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**Xestoiulus pirinicus** (Gulička, 1967)


**Localities**: **Pirin Mts.**: Demyanitsa Valley (type locality!) [1].

**Altitude**: missing data
Habitat: missing data

Distribution in Bulgaria: a single record from Northern Pirin.

Chorotype: endemic of the Pirin Mts.

**Typhloiulus bURESCHI Verhoeff, 1926**


**Localities:** **Stara Planina Mts.:** Temnata Dupka Cave near Lakatnik Railway station (type locality!) [1, 2, 5, 13], Vodnata Cave near Tserovo [1], Promakialno Cave near Dolna Beshovitsa [1], Mechata Dupka Cave near Bov [5], Svinskata Cave near Lakatnik Railway station [5], Yamata pot-hole near Milanovo [5], Zidanka Cave near Lakatnik Railway station [5, 8], Tsarkveto Cave near Breze [7], Bankovets [8], and Vodnata Pesht [8] caves near Lipnitsa Village, Yamata pot-hole near Gintsi [8], Padezh Cave near Breze [12], Ledenika Cave near Vratsa [13], Kalna Matnitsa Cave near Glavatsi Beli Izvor [10, 12], Paraklisa Cave near Bov Railway station [12], Gornata (= Rzhishkata peshtera) Cave near Lakatnik Railway station [16], Mandrata Cave near Mikre [16], Vodni Pech Cave near Dolni Lom [8], Sipo pot-hole in Vrachanska Planina Mts. [8], Sopotskata Cave near Sopot [12], Ponor Cave near Chiren [10, 12], Nikolova Yama pot-hole near Glazhene [12], Mayanitsa Cave near Tserovo Railway station [16], 1 M, Sofia Distr., disused mine gallery near Tompson Railway Station, 08.x.1979, P. Beron leg., J.P.M. det. [new record]; **Predbalkan:** Haidushka Dupka Cave near Karluchovo [2, 3, 8, 10], Bezimenna Cave near Karluchovo [10], Svirchovska Cave near Karluchovo [11], Shipochinska Cave near Kunino [16], Zadanenka and Svirchovska Caves near Karluchovo [8], Moravata Cave near Gabare [9, 12], Popovata Cave near Gabare [9].

**Altitude:** from ca. 250 m (Vodnata Cave near Tserovo) to ca. 830 m (Ledenika).

**Habitat:** Caves [1, 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16]

**Distribution in Bulgaria:** known from caves in Western Stara Planina Mts. and Predbalkan.

**Chorotype:** endemic of the Stara Planina Mts and Predbalkan.

**Typhloiulus georgievi Strasser, 1962**


**Localities:** **Predbalkan:** Toplya Cave near Golyama Zhelyazna [1, 4], Futyovska Cave near Karpachev (type locality!) [2], Popskata Cave near Krushuna [3], Tsarskata Cave near Belyakovets [4].

**Altitude:** 500 m (Toplya Cave)

**Habitat:** Caves [1, 2, 3]

**Distribution in Bulgaria:** so far known only from four caves in the Predbalkan.

**Chorotype:** endemic of the Predbalkan.

**Typhloiulus kotelensis Jawlowski, 1938**

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Localities: Stara Planina Mts.: Beli Vodi near Kotel (type locality!) [1], Magliva Cave near Kotel [3]; Sredna Gora Mts.: near Panagyurishte [5], Panagyurski Kolonii Resort [7], Dushkov Pchelin Locality [7], Sredniya gyol Locality [7], Oborishte locality [7], near the upper current of Luda Yana River [7].

Altitude: 600-1200 m [1, 5, 7]

Habitat: Forest habitats: Fagus sylvatica [5, 7], Quercus sp. [5], Quercus dalechampii [6], Quercus petraea, Quercus cerris et Carpinus orientalis [7]; Caves [3]

Distribution in Bulgaria: Known only from the eastern part of Stara Planina and Sushtinska Sredna Gora mountains.

Chorotype: endemic of the Stara Planina Mts. and Sredna Gora Mts.

**Typhloiulus longipes Strasser, 1973**


Localities: Stara Planina Mts: Belyar Cave near Vratsa (type locality!) [1] (? Vankova Dupka Cave near Chiren [1].

Altitude: 860 m (Belyar Cave)

Habitat: Caves [1, 2]

Distribution in Bulgaria: known only from its type locality in the Vrachanska Planina Mts., which is part of the Stara Planina massif.

Chorotype: endemic of the Stara Planina Mts.

**Typhloiulus staregai Strasser, 1973**


Localities: Stara Planina Mts: Prelaz Cave near Salash (type locality!) [1].

Altitude: 1050 m (Prelaz Cave)

Habitat: Caves [1, 2]

Distribution in Bulgaria: known only from its type locality in the western part of Stara Planina Mts.

Chorotype: endemic of the Stara Planina Mts.

**Typhloiulus strictus (Latzel, 1882)**


Localities: Stara Planina Mts: Koritska Glama Cave near Salash [3, 4]; Danubian Plain: Varkan Cave near Druzhba [3].

Altitude: missing data

Habitat: Caves [2, 3, 4]

Distribution in Bulgaria: known only from two caves in Northwestern Bulgaria.

Chorotype: Carpathian-Balkan.

**Serboiulus spelaeophilus Gulička, 1967**


**Localities:** Stara Planina Mts.: deserted mine gallery near Thompson Railway station [5, 6], Vodni Pech Cave near Dolni Lom (type locality!) [1, 7], Shokoyevts Cave near Cherksaki (type locality of *S. popovi*) [2], Mramornata Cave near Berkovitsa [2, 3], Tamnina Dupka Cave near Targovishte [2, 3], Tamnina Pech Cave near Varbovo [4], Redaka 1 Cave near Salash [3, 4], Yame 3 pot-hole near Targovishte [3, 4], Redaka 2 Cave near Salash [3, 4], Medzhak Dupka Cave near Replyana [3, 4], Stanishina Dupka Cave near Replyana [3, 4], Zmiiskata Propast Cave near Krachimir [3, 4], Neprivetlivata pot-hole near Belogradchik [5], Pech Cave near Gorna Luka [5], Yama 2 pot-hole near Chuprene [5], Lipova Dupka Cave near Mitrovtsi [5], Vreloto Cave near Prevala [5], Desni Suh Pech Cave near Prevala [5], Randzholova Tarsha pot-hole near Prevala [5], Mishin Kamik Cave near Gorna Luka [5], Parasinska Propast Cave near Belimel [5], Lisicha Dupka Cave near Belimel [5], Propastta Cave near Georgi Damyanovo [5], Prelaz Cave near Salash [6], Parnak Cave near Oreshets Railway station [5], Pleshovskata Cave near Prevala [8]; Danubian Plain: Zankovskata Cave near Belotintsi [3, 4], Falkovskata Cave near Falkovets [3, 4], Propastta near Vladimirinovo [5], Dupkata Cave near Stuel [5], Kopanata Dupka Cave near Portivovtsi [6].

**Altitude:** 450 m (Vodni Pech Cave) – 1050 m (Prelaz Cave)

**Habitat:** Caves [1, 2, 3, 4, 5, 6, 7, 8]

**Distribution in Bulgaria:** known from several caves in the Western Stara Planina and Danubian Plain.

**Chorotype:** endemic of the Stara planina Mts and Danubian Plain.

**Remark:** STRASSER (1973) proposed the synonymy of *S. popovi* with *S. spelaeophilus*.

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**Cylindroiulus abaligetanus Verhoeff, 1901**


**Localities:** Strandzha Mts.: Kachul Locality near Malko Tarnovo [1], Bosna Ridge [2], near Kosti [2], Indzhe Voivoda [3]; Black Sea Coast: Kiten [1].

**Altitude:** from the sea level (Kiten) to 360 m [4]

**Habitat:** Forest habitats: *Quercus cerris* et *Quercus frainetto* [2], *Fagus orientalis* et *Rhododendron ponticum* [2], *Quercus sp.* [3, 4]

**Distribution in Bulgaria:** known from the central parts and periphery of Strandzha Mts.

**Chorotype:** Balkan-Anatolian. Known also from Hungary.

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**Cylindroiulus arborum Verhoeff, 1928**


**Localities:** Vitosha Mts.: near Boyana Waterfall [1, 2], Knayzhevo [2]; Sredna Gora Mts.: Panagyurishte [4]; Kamchya Valley: Dolni Chiflik [1, 2], Marin-Tepa near Dolni Chiflik [3]; Black Sea Coast: Zlatni Pyasatsi [2].

**Altitude:** from the sea level (Zlatni pyasatsi) to ca. 500-550 m [2, 4]

**Habitat:** *Pinus nigra* [4]

**Distribution in Bulgaria:** known from three distant regions in the country situated in the eastern, central and western parts of the country.

**Chorotype:** Central European.
**Cylindroiulus bellus** (Lignau, 1903)


**Localities: Rhodopes Mts.:** 1 M, Kardzhali Distri., Devesilitsa, 04.vi.1982, P. Beron leg., J.P.M. det. [new record]; **Strandzha Mts.:** Gramatikovo [1]; **Black Sea Coast:** near Ropotamo [2].

**Altitude:** from the sea level (near Ropotamo) to ca. 250-300 m (Gramatikovo)

**Habitat:** missing data

**Distribution in Bulgaria:** known from only from southeastern Bulgaria.

**Chorotype:** Pontian.

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**Cylindroiulus boleti** (C.L. Koch, 1847)


**Localities: Stara Planina Mts.:** Botev Peak [4], Lakatnik Railway station [6], Shipka [6], Kotel [7], Petrohan Pass [8], Sinite Kami Natural Park [new record]; **Rhodopes Mts.:** Ostrets Peak near Velingrad [9]; **Vitosha Mts.:** unspecified location [7, 9], Knyazhevo [7], Boyana [7], Dragalevtsi [8], Zlatni Mostove [15], Selimitsa Peak [15], Ostritsa Peak [15], Akademik [15], Simeonovo [15, 19], Chuiptelovo [15], Bosnek [15], Bistritsa [15], 1 ad. M, 1 ad. F, Sofia Distr., Zhelezntisa, Yarema Area, under stones in house yard, 30.v.2003, P.S. leg. & det. [new record]; **Rila Mts.:** Borovets (Cham Kuria) [3, 5, 6], Rila Monastery [3, 7, 8], Rila Monastery Natural Park [17]; **Pirin Mts.:** near Bansko [6], FF, MM, 5 subad., Oshtavski mineral baths, west of Stara Kresna, 550 m, in ant-hill of *Camponotus vagus* (Scopoli), 10.iv.2004, A. Lapeva-GjonoVA leg., P.S. det. [new record]; **Osogovo Mts.:** near Bogoslov [1], Ruen Peak [2]; **Sredna Gora Mts.:** Sashtinska Sredna Gora Mts. [10, 11], near Panagyurishche [14], Kukla Locality [14], Panagyurski Kolonii Resort [14], Y. Kiskinov Hut [14], Turchinov Rad Locality [14], Oboristes Locality [14], Bratiya Peak [14], Konska Polyanica Locality [14], near Topolnitsa Dam [14], the upper current of Luda Yana River [14], the road between Stara Zagora and Zmeyovo [14], Rozovo [14], G. Dimitrov Dam [14], Domlyan Dam [14], the road between Strelcha and Panagyurishte [14], Dushkov Peclin Locality [14], Krastevich [14], Banya [14], Zlati VoiVoda [14], Hisarya [14], Lyulyakovitsa Locality [14], Iskar Dam [14], Verinsko [14], Sucvetsi [14], Polyanyovtsi Village [14]; **Lozenska Planina Mt.:** German [15], unspecified location [18]; **Lyulin Mt.** [6, 7]; **Strandzha Mts.** [5]; **Struma Valley:** Kresna Gorge [4]; **Black Sea Coast:** Zlatni Pyasatsi (Uzun Kum) [7], Sveti Konstantin Monastery [7], Aladzha Monastery [7], Poda Locality [7], near Ropotamo [7, 8], Primorsko [4], Arkutino Swamp [8]; **Cities:** Blagoevgrad [15], Dupnitsa (Stanke Dimitrov) [6].

**Altitude:** from the sea level (Zlatni Pyasatsi, Ropotamo, etc.) to ca. 2200-2400 m [2, 16]

**Habitat:** Forest habitats: *Fagus sylvatica* [3, 6, 12, 13, 14, 15], *Pinus* [6, 14, 18], *Robinia pseudo-acacia* [6], *Picea abies* [6], *Quercus dalechampii* [11], *Quercus petraea* [14], *Quercus petraea et Carpinus orientalis* [14], *Quercus frainetto* [14], *Quercus pubescens* [14], *Quercus sp. et Carpinus betulus* [14, 18]; ant-hills [19]

**Distribution in Bulgaria:** widespread in the country.

**Chorotype:** East European.
**Cylindroiulus horvathi** (Verhoeff, 1897)


Localities: **Rhodopes Mts.**: Asenova Fortress [3]; **Vitosha Mts.**: unspecified location (type locality!) [1, 2, 8], Knyazhevo [2], Zhelezntsita [6, 7], Chuipetlovo [6]; **Sredna Gora Mts.**: the upper current of Luda Yana River [5]; **Predbalkan**: Lyaskovska Cave near Veliko Tarnovo [1]; **Lyulin Mt.** [2]; **Thracian Lowland**: Pesnopi [2]; **Black Sea Coast**: Asparuhovo near Varna [3], near Ropotamo [3], Gyundyuza Locality [3].

Altitude: from the sea level (Ropotamo) to 1500 m [1]

Habitat: Forest habitats: *Quercus petraea* et *Carpinus orientalis* [5]; Open habitats: meadows [6]; Caves [1].

Distribution in Bulgaria: known from the central and southern parts of the country.

Chorotype: East European.

Remark: KORSÓS & READ (1994) proposed the synonymy of *C. vitosae* with *C. horvathi*.

**Cylindroiulus luridus** (C.L. Koch, 1847)


Localities: **Stara Planina Mts.**: near Vratsa [2]; Petrohan Pass [3]; **Vitosha Mts.**: unspecified location [2], near Boyana Waterfall [2], Bistritsa [4], Zhelezntsita [4], Ostritsa Peak [4], Dragalvetsi [4], Chuipetlovo [4], Selimitsa Peak [4], Zlatni mostove [4], Yarema Locality [4]; **Rila Mts.**: Rila Monastery [2, 3, 4], Rila Monastery Natural Park [5]; **Black Sea Coast**: near Varna [1].

Altitude: 500-1630 m [2, 3, 4]

Habitat: Forest habitats: *Fagus sylvatica* [4]

Distribution in Bulgaria: known from the higher mountains in central and southern Bulgaria, also from a single locality on the Black Sea coast.

Chorotype: Central European.

**Enantiulus nanus** (Latzel, 1884)


Localities: **Rhodopes Mts.**: Peshtera [2]; **Vitosha Mts.**: unspecified location [3], Edelvais Hut [2], Fonfon Hut [2], near Boyana Waterfall [1, 3], Selimitsa Peak [9], Ostritsa Peak [9], Chuipetlovo [9], Zhelezntsita [9]; **Rila Mts.**: Borovets [2], Musala (Stalin) Hut [2], Rila Monastery [1, 3], Parangalitsa Reserve [8], Rila Monastery Natural Park [10]; **Pirin Mts.**: Damyanitsa Hut [2], near Bansko [2], 1 M, 1 F, below Peyo Yavorov Hut, 1600 m, 01.ix.2001, N. Simov leg., P. S. det. [new record]; **Sredna gora Mts.**: Panagyurski Kolonii Resort [4, 8], the upper current of Luda Yana River [8], Konska Polyana Locality [8], Sredniya Gyol Locality [8], Dushkov Pehelin Locality [8].
Altitude: 500-2400 m [1, 2, 3, 4, 8, 9]
Habitat: Forest habitats: Fagus sylvatica [2, 4, 6, 7, 8, 9], Picea abies [2], Quercus dalechampii [5], Quercus petraea [8]
Distribution in Bulgaria: mainly in the mountains in southwestern Bulgaria.
Chorotype: Central European.

Unciger transsilvanicus (Verhoeff, 1899)
Localities: Stara Planina Mts.: near Vratsa [5]; Vitosha Mts.: Knyazhevo [1], Boyana and near Boyana Waterfall [5], Selimitsa Peak [11], Chuipeplovo [11], Zhelezniata [11], Bistritsa [11]; Rila Mts.: Borovets (Cham Kuria) [1, 2], Pastra [3], Rila Monastery [4, 5, 6], Rila Monastery Natural Park [12]; Sredna Gora Mts.: Sashtrinska Sredna Gora Mts. [7], Panagurski Kolonii Resort [10], Sredniya Gyol Locality [10]; Lozenska Planina Mt. [13]; Lyulin Mt. [5].
Altitude: 800-1400 m [1, 5, 6, 7, 10, 11]
Habitat: Forest habitats: Fagus sylvatica [8, 9, 10, 11]; Open habitats: meadows [11]
Distribution in Bulgaria: known mainly from the mountains of western Bulgaria.
Chorotype: Central European.

Brachyiulus apfelbecki Verhoeff, 1898
Localities: Kresna Gorge: Strumyani [1].
Altitude: 200 m [1]
Habitat: Open habitats: meadows [1]
Distribution in Bulgaria: known only from Kresna Gorge.
Chorotype: Balkan.

Brachyiulus bagnalli (Brolemann, 1924)
Localities: Derventski Heights: 1 M, 1 F, Yambol Distr., Oman, under fallen trees and barks in house yard, 04.v.2003, P.S. leg. & det. [new record]; Danubian Plain: Agricultural Institute in Dobrudzha close to the Romanian border [1], near Orlovo [1].
Altitude: ca. 200-300 m [new data]
Habitat: Suburban habitat: under fallen trees and barks in house yard [new data]
Distribution in Bulgaria: known only from three localities in Danubian Plain and Derventski Heights.
Chorotype: East European.
Remark: This is the third find of the species in the country, and the first one outside Danubian Plain.
Brachyiulus lusitanus Verhoef, 1898


Altitude: 244-900 m [1, new data]
Habitat: Forest habitats: mixed forests [1]; Open habitats: meadows [1], stone debris in disused quarry [new data]; Urban habitats: city park [new data]

Distribution in Bulgaria: known only from five distant localities in southern Pirin, Derventski Heights and the city of Sofia.

Chorotype: North Mediterranean? Introduced in the Australian and Nearctic regions.

Megaphyllum anatolicum denticulatum (Strasser, 1969)


Localities: Derventski Heights: 3 MM, 1 F, Yambol Distri., Kamenets, disused quarry, 244 m, under stones, 30.iv.2005, P.S. leg. & det. [new record]; Black Sea Coast: Sozopol (type locality) [1].

Altitude: ca. 50-244 m [1, new data]
Habitat: Open habitat: stone debris in disused quarry [new data]

Distribution in Bulgaria: known only from two localities in southeastern Bulgaria.

Chorotype: endemic of the Strandzha Mts.

Megaphyllum beroni (Strasser, 1973)


Localities: Rhodopes Mts.: Dyavolskoto Garlo Cave near Trigrad (type locality!) [1].

Altitude: 1150 m [1]
Habitat: Caves [1]

Distribution in Bulgaria: known only from its type locality.

Chorotype: endemic of the Rhodopes Mts.

Megaphyllum bosniense (Verhoeff, 1897)


Localities: Rhodopes Mts.: Sveti Konstantin Resort near Peshtera [2], Kosovo [2], Peshtera [3], Beglika Hut [4], near Devin [4], near Pamporovo [4], Snezhanka Peak [4]; Vitosha Mts.: unspecified location [2, 4, 11], Knyazhevo [2], Boyana [2], Dragalevtsi [3], Selimitsa Peak [6], Yarema Locality [6], Zhelezmita [6], Chuiptelovo [6], Bosnek [6]; Rila Mts.: Borovets (Cham Kuria) [1, 2], Pastra [1], Rila Monastery [2, 3], Rila Monastery Natural Park [7]; Sredna Gora
Mts.: Bunay Peak [5]; Lozenska Planina Mt.: unspecified location [9]; German [6], Lyulin Mt. [2]; Black Sea Coast: Zlatni Pyasatsi (Uzun Kum) [2], Aladzha Monastery [2]; Cities: Blagoevgrad [6], Sofia: Knyaz Borisovata Gradina, also Severen and Loven Parks [10], 2 MM, 2 FF, Sofia, City Park Zapaden, 04.v.2003, R. Spasova leg. [new record].

Altitude: from the sea level (Zlatni Pyasatsi) to 1400 m [5]
Habitat: Forest habitats: Fagus sylvatica [6], Quercus [6], Quercus et Carpinus betulus [8, 9], Pinus [9]; Open habitats: pastures [6]; Urban habitats [10]

Distribution in Bulgaria: various scattered locations mainly in Western Bulgaria; two records from the Black Sea coast.

Chorotype: Balkan. Known also from Austria, Hungary and Italy.

Megaphyllum dentatum (Verhoeff, 1898)


Localities: “Ostrumelien” [1].
Altitude: missing data
Habitat: missing data

Distribution in Bulgaria: reported by ATTEMS (1929) from East Rumelia (former region of Bulgaria) without exact locality. Included in the STRASSER’S (1966) annotated list of Bulgarian millipedes and Fauna Europaea data base (ENGOFF & KIME, 2007).

Chorotype: Balkan.

Megaphyllum glossulifer (Schubart, 1934)


Localities: Stara Planina Mts.: Central Balkan National Park [4]; Rila Mts.: Musala Hut (type locality) [1], Granchar Peak [2], Rila National Park [5].
Altitude: 2200-2400 m [1, 2, 3]
Habitat: Subalpine and Alpine Habitats [1]

Distribution in Bulgaria: known only from the higher parts of Rila and Stara Planina Mts.

Chorotype: Bulgarian.

Megaphyllum hercules (Verhoeff, 1900)


Altitude: 200-1100 m [3, 4]
Habitat: Forest habitats: mixed forests [4]; Open habitats: meadows [4]
Distribution in Bulgaria: known mainly from the southern regions of the country.
Chorotype: Balkan.
Remark: One of the specimens from Kalimantsi was attacked by the scuttle fly *Megaselia elongata* (Wood, 1914) (M. Langourov det.), which is known to feed on the limpha of injured animal.

**Megaphyllum lictor** (Attems, 1904)


Localities: **Stara Planina Mts.**: Kush Bunar near Sliven (type locality!) [1], Tvarditsa Hut between Tvarditsa and Elena [4], Central Balkan National Park [9]; **Rhodopes Mts.**: Asenova Fortress [3]; **Vitosha Mts.**: Serimita Peak [7]; **Sredna Gora Mts.**: on the road between Strelcha and Koprivshtitsa [5], Dushkov Pchelin Locality [6]; **Strandzha Mts.**: Dokuzak Locality near Malko Tarnovo [2], Indje Voivoda [8]; **Danubian Plain**: Grivitsa [7]; **Black Sea Coast**: near Ropotamo [3].

Altitude: 200-1500 m [4, 6, 7, 10]
Habitat: Forest habitats: *Quercus* sp. [5, 7, 10], *Quercus petraea* et *Quercus cerris* [6], *Quercus petraea* [8]
Distribution in Bulgaria: known mainly from the southern regions of the country.
Chorotype: East Balkan.

**Megaphyllum rhodopinum** (Verhoff, 1928)


Localities: **Rhodopes Mts.**: near Batak (type locality!) [1, 4], Syutkya Peak [1], near Slashten [2], near Breshten [2], Kosovo [3], Bachkovo Monastery [4], Chepelare [4], Yogodina [4], Dolna Karansa Dupka Cave near Yagodina [4], Mihalkovo [4], Studenets Hut near Snezhanka Peak [4, 5], Beglika Dam [5], Debrashitsa [5], 1 M, 1 F, Asenovgrad Distr., Martsigantitsa Hut, Gyola Arca, Gargini Dupki Cave, 1367 m, 22.x.2005, P.S. & D. Delchev leg., P.S. det. [new record]; **Vitosha Mts.**: Zlatni Mostove [9], Zhelezntisa [9], Chiureplovto [9]; **Rila Mts.**: Rila Monastery Natural Park [10]; **Slavyanka Mts.** [2]; **Sredna Gora Mts.**: Koprivshtitsa Railway station [6], near Panagyurishte [7, 8]; **Mesta Valley**: Banichan [9]; **Cities**: Petrich [3].

Altitude: 550-2100 m [1, 2, 4, 7, 8, 9]
Habitat: Forest habitats: *Fagus sylvatica* [3], coniferous forests [7]; Open habitats: pastures [9], meadows [9]; Caves [4].
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**Distribution in Bulgaria**: mainly Southwestern Bulgaria; two records from Sredna Gora Mts. Widely distributed in Western Rhodopes.

**Chorotype**: East Balkan.

**Megaphyllum rossicum strandschanum** (Verhoeff, 1937)


**Localities**: Rhodopes Mts.: Kardzhali [4]; Strandzha Mts. (without exact type locality!) [1]; Black Sea Coast: Tsarevo (Michurin) [3].

**Altitude**: from the sea level to ca. 300 m

**Habitat**: missing data

**Distribution in Bulgaria**: known only from the Eastern Rhodopes and Strandzha mountains.

**Chorotype**: East Balkan.

**Megaphyllum transsylvanicum** (Verhoeff, 1897)


**Localities**: Stara Planina Mts.: Lakatnik Railway Station [2], Peshtera Cave near Beledie Han [2], Svoje [3], Ptichata Dupka pot-hole near Troyan [2], Kotel [2]; Rhodopes Mts.: Peshtera [3], Bachkovo Monastery [3], Chepelare [3], Druzhaba pot-hole near Dobrostan [10]; Predbalkan: Karlukovo [2]; Lozenska Planina Mts.: unspecified location [9], German [5]; Strandzha Mts.: unspecified location [1], Kachul Location near Gramatikovo [2], Indje Voivoda [5, 6]; Bakadzhishki Heights: 1 M, Yambol Distr., Voinishki Bakadzhik Hill near Voinika, 250-500 m, broad-leaved forest, grassland, under stones, 29.iv.2005, P.S. leg. & det. [new record]; Danubian Plain: Grivitsa [5]; Black Sea Coast: Zlatni Pyasatsi (Uzun Kum) [2], Aladzha Monastry [2], Varna: Asparuhovo [3], Arya [3], Kiten [3], Primorsko [3], Tsarevo (Michurin) [3], near Ropotamo [3], Sozopol [3], Galata Cape [3], Drachevo [5], Novo Panicharevo [5, 6], Gabar [6], Priat [6].

**Altitude**: from the sea level (Zlatni Pyasatsi, Ropotamo) to ca. 1300 m (Ptichata Dupka pot-hole)

**Habitat**: Forest habitats: *Quercus* [5, 6, 8, 9], *Carpinus betulus* [6, 9], *Pinus* [9]; Open habitats: pastures [5]; Caves [2, 10]

**Distribution in Bulgaria**: common species, so far not recorded from southwestern Bulgaria.

**Chorotype**: East European.

**Megaphyllum unilineatum** (C.L. Koch, 1838)


Localities: Stara Planina Mts.: Petrohan Pass [1], Stoletov Peak [5], near Aitos [4]; Rhodopes Mts.: near Bratsigovo [1], Brestovitsa [1], Bachkovo Monastery [1], Spahiëve (Siipeli) [1], Asenovgrad [6], Kardzhali [6], Sveti Konstantin Resort near Peshtera [6], between Avren and Strazhets [12], 1 F, 4 juv., Kardzhali Distr., Tarnovtsi near Dzhebel, 05.vi.1982, P. Beron leg., J.P.M. det. [new record]; Vitosha Mts.: Knyazhevo [6], Zheleznitsa [10]; Rila Mts.: Borovets [5]; Osogovo Mts. [1]; Belasitsa Mts. [3]; Sredna Gora Mts.: Sashtinska Sredna Gora Mts. [8], near Panagyurishte [9]. Predbalkan: near Gabrovo [1], near Veliko Tarnovo [1, 5]; Lozenska Planina Mt. [11]; Thracian Lowland: near Haskovo [1]; Shumensko Plateau: Kyoshkovete [1]; Mesta Valley: Banichan [10]; Black Sea Coast: near Varna [1, 5, 6], Beloslav [5], Sveti Konstantin [6]; Cities: Petrich [3], Plovdiv [7].

Altitude: from the sea level (Varna) to ca. 1300 m [8]

Habitat: Forest habitats: Robinia pseudoacacia [5], Picea abies [5], coniferous forests [8, 11], Pinus sylvestris et Pinus nigra [9]; Open habitats: meadows [10]; Urban habitats [7].

Distribution in Bulgaria: various locations throughout the country.

Chorotype: East European. Known also from Majorca.

Balkanophoenix borisi Verhoeff, 1937


Localities: Stara Planina Mts.: Suchata Cave near Lakatnik Station (type locality!) [1]; Rhodopes Mts.: near Chukurska River [1].

Altitude: from 460 m (Suchata Cave) to 800 m [1]

Habitat: Caves [1]

Distribution in Bulgaria: known only from Stara Planina Mts. and the Rhodopes.

Chorotype: Bulgarian.

Pachyiulus cattarensis (Latzel, 1884)


Localities: Stara Planina Mts.: near Svoage [1], Ko znitsa Peak near Petrohan Pass [1], Iskar Gorge [5], close to Ledenika Cave near Vratsa [7], Macha Poliana near Vratsa [7], Zgorigrad near Vratsa [7]; Yamata pot-hole near Lakatnik [7], Lakatnik [8], near Rebrovo Railway Station [7], Peshterata Cave near Beledie Han [7], Botov Peak [4], Kotel [7]; Rhodopes Mts.: Bratsigovo [1], Chepelare [1], Brestovitsa [1], Hvoina [1, 7], Bachkovo Monastery [1], Asenovgrad [7], Kardzhali [7], Asenova Fortress [8], Bedenski Bani near Devin [8], on the road between Velingrad and Yundola [9], near Devin [9], Ostretts Peak near Velingrad [9], Slashten [15]; Vitosha Mts.:
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Boyana [7], near Studena Dam [7], Zlatni Mostove [15], Zheleznitsa [15], Chuipetlovo [15];  
**Rila Mts.**: Borovets [7], Rila Monastery [3, 7, 8], Rila Monastery Natural Park [17]; **Pirin Mts.**: Hotovo [7], Melnik [15], Musomishta [15], 1 M, between Pirin and Popovi Livadi Pass, 900 m, under stones, 14.iv.1996, B. Petrov leg., P. S. det. [new record]; **Osogovo Mts.**: Ruen Peak [2];  
**Belasitsa Mts.** [4]; **Sredna Gora Mts.** near: turiya [1], Panagyurishte [8], Sashtinska Sredna Gora Mts. [10, 11], the upper current of Luda Yana River [14], Mecha Glava Locality [14], Dushkov Pchelin Locality [14]; **Konyavska PlaninaMt.** [8]; **Lyulin Mt.** [7]; **Bakadzhishki Heights**: 1 M, Yambol Distr., Voinishki Bakadzhik Hill near Voinika, 250-500 m, broad-leaved forest, grassland, under stones, 29.iv.2005, P. S. leg. & det. [new record]; **Derventski Heights**: 2 MM, 1 F, Yambol Distr., Dennitsa, 200 m of crossroad to Stefan Karadzhovo, karst, *Quercus* forest, shrubs, near road, under stones, 26.iii.2005, P. S. leg. & det. [new record]; **Mesta Valley**: Banichan [15], Hadjidimovo [15]; **Struma Valley**: Skakavitsa Waterfall [8], Sandanski [15]; **Kresna Gorge**: Strumyani [15], P. Yavorov Railway Station [16]; **Black Sea Coast**: near Varna [7], Zlatni Pyasatsi (Uzun Kum) [7], Zmiiski Island [7].  
Altitude: from the sea level (Zlatni Pyasatsi) to 2200 m (Ruen Peak) [2]  
**Habitat**:  
Forest habitats: *Fagus sylvatica* [3, 12], *Quercus dalechampii* [10, 11], *Quercus petraea* et *Quercus cerris* [14], *Quercus cerris* et *Carpinus orientalis* [14]; Open habitats: pastures [15], meadows [15], limestone areas [15]; Caves [7]  
**Distribution in Bulgaria**: very common species throughout the country; so far not recorded from the Danubian Plain and Strandzha Mts.  
**Chorotype**: Balkan.  

*Pachyiulus hungaricus* (Karsch, 1881)  
**Localities**: **Stara Planina Mts.**: Chepan Peak [7], Lakatnik Railway Station [4], Botev (Yumrukchal) Peak [6], Shipka [8], Stoletov Peak [8], Kotel [10], Sinite Kamani Natural Park [new record]; **Rhodopes Mts.**: near Bratsigovo [1], near Chepelare [1], Lepenitsa Cave near Velingrad [7], Peshtera [8, 11], Yundola [10], Asenova Fortress [11], Bachkovo Monastery [11], Mihalkovo [11], on the road between Velingrad and Yundola [12], 1 ad. M, Smolyan Distr., Koshnitsa, Prohodna (Kaleto) Cave, 19.vii.2005, T. Ivanova & I. Borissov leg., P. S. det. [new record]; **Vitosha Mts.**: unspecified location [10], Boyana Waterfall [3, 7, 10], Boyana [10], Knayazhevo [10], Bistritsa [17, 18], Zlatni mostove [18], Zheleznitsa [18], Selimitsa Peak [18], Dragalevtsi [18]; **Rila Mts.**: at the foot of Tsarev Peak [1], Rila Monastery [3, 5, 8], near Kostenets (type locality of *P. h. gracilis*) [4, 10, 11], Borovets (Cham Kuria) [4, 5, 8, 10, 11], Rila Monastery Natural Park [21]; **Pirin Mts.**: near Gotse Delchev [7], near Banderitsa River [8]; **Belasitsa Mts.** [6]; **Sredna Gora Mts.**: Turiya [2], near Panagyurishte [13], Poibrene [16], Turchinov Rad Locality [16], Konska Polyana Locality [16], Topolnitsa Dam [16], Oboristshe
Locality [16], Bratiya Peak [16], Iskar Dam [16], Verinsko [16], Barikadite Hut [16], Fenera Hut [16], Rozovo [16], Dushkov Pehelin Locality [16], Tsarevi Silvi Locality [16]; Predbalkan: near Gabrovo [1], Toplya Cave near Golyama Zhelazna [22], Vodopada Cave near Krushuna [9]; Lozenska Planina Mt. [22]; Lyulin Mt. [8]; Danubian Plain: near Preslav [7], near Ladhene (Malchika) [7], Beglesh [18, 20], Krivokroi Locality [18], Ladzhenskata Cave near Lovech [23]; Thracian Lowland: near Haskovo [1]; Black Sea Coast: Yaila Locality [11]; Cities: Petrich [6], Dupnitsa (Stanke Dimitrov) [8].

Altitude: 150-1500 m [3, 4, 5, 7, 8, 10, 11, 13, 16, 18, 20]

Habitat: Forest habitats: Fagus sylvatica [5, 8, 13, 15, 16, 18, 19], Pinus sp. [8], Picea abies [8], Abies alba [8], Quercus dalechampii [13, 14], Quercus dalechampii et Quercus cerris [13], Quercus frainetto [13, 16], Quercus petraea [16], Quercus petraea et Quercus cerris [16], Pinus nigra [16], Quercus sp. [18, 20], Quercus sp. et Carpinus betulus [16, 22]; Open habitats: meadows [18]; Caves [7, 22, 23]

Distribution in Bulgaria: common species throughout the country.

Chorotype: Carpathian-Balkan.

Remark: STRASSER (1966) considered P. hungaricus gracilis as nothing but a variety of P. hungaricus.

Pachyiulus varius (Fabricius, 1781)


Localities: Stara Planina Mts.: Petrohan Pass [1], Kalofer Monastery [1], Botev (Yumrukchal) Peak [4]; Rhodopes Mts.: Chepelare [1], Brestovitsa [1], Chepintsi [1], Bachkovo Monastery [1]; Rila Mts.: at the foot of Tsarev Peak [1]; Belasitsa Mts. [4]; Sredna Gora Mts.: Turiya [2]; Sakar Mt.: Dranchi Dupka pot-hole near Mramor [10]; Predbalkan: Rezelets [9]; Thracian Lowland: near Haskovo [1]; Black Sea Coast: near Varna [1], Primorsko [4], Sveti Toma Island [5], Sozopol [8], Nesebar [8], Ghristos Cape near Sozopol [8], FF, MM, Burgas Distr., Rezovo, seacoast, beach, approx. 10 m of the water line and approx. 5 m of the sand, under stones in a small rock niche, 29.viii.2004, P.S. leg. & det. [new record]; Cities: Petrich [4].

Altitude: from 0 m (new data) to ca. 1500 m (Petrohan Pass)

Habitat: Caves [10]; Open habitats: subhalophilic habitat: rock niche on the seacoast [new record]

Distribution in Bulgaria: various locations throughout the country. Not recorded from the north and central regions, Pirin, Vitosha, Slavyanka, Strandzha and other smaller mountains in southwestern Bulgaria.

Chorotype: North Mediterranean. Known also from Malta.

Apfelbeckiella bulgarica Verhoeff, 1926

Localities: **Strandzha Mts.**: near Bulgari (Wurgari) (type locality!) [1], Kachul Local (near Gramatikovo) [3], Kachulskata Propsat pot-hole near Gramatikovo [3], Kaleto Cave near Mladzho [3,8], Dokuzak Local (near Malko Tarnovo) [3], near Fakya [6], Malkata Chuma Cave near Byala voda [8]; **Derventski Heights**: Mecha Dupka Cave near Leyarovo [8], Popova Dupka Cave near Golyam Dervent [5], Samardaala pot-hole near Voden [8], 2 FF, Yambl Distr., Oman, karst hole in the middle of cornfield, 246m, under stones, 30.iv.2005, PS. leg. & det. [new record].

Altitude: 250 m [7]

Habitat: Forest habitats: *Quercus cerris* et *Quercus frainetto* [6], *Quercus* sp. [7]; Caves [3, 5, 8]; Open habitats: under stones in karst area situated in the middle of cornfield

Distribution in Bulgaria: known only from Strandzha Mts. and Derventsky Heights.

Chorotype: endemic of the Strandzha Mts.

*Apfelbeckiella golemanskyi* Ceuca, 1973


Localities: **Rhodopes Mts.**: near Batak (type locality!) [1], near Smolyan [1], near Devin [1].

Altitude: missing data

Habitat: missing data

Distribution in Bulgaria: known only from three locations in Western Rhodopes Mts.

Chorotype: endemic of the Rhodopes Mts.

*Apfelbeckiella trnowensis trnowensis* (Verhoeff, 1928)


Localities: **Stara Planina Mts.**: Dolnata Maaza Cave near Sliven [3]; **Rhodopes Mts.**: Dolno Dryanovo [9]; **Pirin Mts.**: Banderitsa Valley [9]; **Predbalkan**: Prolazkata (Dupkata) Cave near Prolaz [6, 10], Kulo corridor Dupka Cave near Arbanasi (type locality!) [1, 6, 8], Golema Podlistsa Cave near Veliko Tarnovo [1]; **Shumensko Plateau**: Katakombite (Labirinta) Cave [8], Zandana Cave [10].

Altitude: ca. 400-600 m [8, 9]; the record from 1700 m [9] may refer to another subspecies or species

Habitat: Caves [1, 3, 6, 8]

Distribution in Bulgaria: mainly known from caves in the Predbalkan and Stara Planina Mts.

Chorotype: Bulgarian.

Remark: Since the taxonomic status of some of the subspecies and species of the *trnowensis* group is still uncertain, the records from Pirin and the Rhodopes may belong to closely related but different taxa. Lang’s record (1935) from Primorsko (Kyupriya) may actually belong to the closely related *A. bulgarica.*

*Apfelbeckiella trnowensis deliormana* Strasser, 1966

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Localities: Danubian Plain: Tamnata Cave near Tabachka (type locality!) [1].
Altitude: missing data
Habitat: Caves [1]
Distribution in Bulgaria: a single record from the Danubian Plain.
Chorotype: endemic of the Danubian Plain.

Apfelbeckiella trnouensis rhodopina Strasser, 1966

Localities: Rhodopes Mts.: Hasarskata Cave near Gorna Snezhinka (type locality!) [1], Studenets Hut near Snezhanka Peak [2], Tilki Ini Cave near Kardzhali [1].
Altitude: from 220 m (Hasarskata Cave) to ca. 1600 m (Studenets Hut)
Habitat: Caves [1]
Distribution in Bulgaria: known only from caves in the Eastern Rhodopes Mts.
Chorotype: endemic of the Rhodopes Mts.

Rhodopiella beroni beroni (Strasser, 1966)

Localities: Rhodopes Mts.: Erkyupria Cave near Mostovo (type locality!) [1], Popsko [3], Mezek (type locality of M. bulgaricus!) [2], Karangil Cave near Shiroko Pole [6], Gouk In Cave near Oreshari [6], Zlatnata Yama Cave near Kremen [6], Maarata Cave near Madrets [6]; Danubian Plain: Orlova Chuka Cave near Pepelina [5].
Altitude: from ca. 340 m (Karangil Cave) to 814 m (Erkyupria Cave)
Habitat: Caves [1, 5, 6]; known also from outdoor habitats.
Distribution in Bulgaria: several records from the Rhodopes Mts. and one isolated location in the Danubian Plain.
Chorotype: East Balkan.
Remark: MAURIÈS (1978) raised Rhodopiella to full generic rank. STOEV (2004c) synonymized M. bulgaricus with R. beroni. Besides Bulgaria, this species is known also from Greece and Republic of Macedonia.

Rhodopiella beroni saetigera (Strasser, 1973)

Localities: Strandzha Mts.: Kaleto Cave near Mladezhko (type locality!) [1].
Altitude: missing data
Habitat: Caves [1]
Distribution in Bulgaria: known only from the type locality.
Chorotype: endemic of the Strandzha Mts.

Rossiulus vilnensis (Jawlowski, 1925)
Localities: Sredna Gora Mts.: the upper current of Luda Yana River [1], the road Strelcha – Panagyurishte [1], Lyulyakovitsa Locality [1].
Altitude: 600-800 m [1]
Habitat: Forest habitats: Quercus sp. et Fagus sylvatica [1], Quercus frainetto [1], Carpinus orientalis [1]
Distribution in Bulgaria: known only from Sredna Gora Mts.
Chorotype: Central European.

Ommatoiulus sabulosus (Linnaeus, 1758)


Altitude: 450-1600 m [4, 6, 7, 11, 12]
Distribution in Bulgaria: numerous locations throughout the country.
Chorotype: European.

Discussion

In Bulgaria, the Julida are currently known to comprise 51 species and 3 subspecies, representing 21 genera and three families – Blaniulidae, Nemasomatidae and Julidae. This makes Julida the richest in species millipede order in the country. The largest share (48 species) belongs to the family Julidae (STOEV, 2007). Two species, Archiboreoiulus pallidus and Megaphyllum dentatum, have been reported from Bulgaria without mentioning their exact localities and were never found since. Dubious is the occurrence of further eleven species, which are listed in Table 1. They were recorded from the country by CHRISTOVICH (1892) and JURINICH (1904) – the
<table>
<thead>
<tr>
<th>Species</th>
<th>Author</th>
<th>Locality</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Leptoiulus proximus</em> (Nemec, 1896)</td>
<td>LANG, 1958</td>
<td>Rila Mts., near Musala Lakes, 2389 m alt.</td>
</tr>
<tr>
<td><em>Cylindroiulus meinerti</em> (Verhoeff, 1891)</td>
<td>LANG, 1958</td>
<td>Lyulin Mts.; Vitosha Mts., Belite Brezi Hut; Vitosha Mts., above Fonfon Hut</td>
</tr>
<tr>
<td><em>Julus scandiavicus</em> Latzel, 1884</td>
<td>LANG, 1958</td>
<td>Near Rila Monastery, 1200-1300 m alt.</td>
</tr>
<tr>
<td><em>Julus terrestris</em> Linnaeus, 1758</td>
<td>HRISTOVICH, 1892</td>
<td>Vitosha Mts., Studenata Voda</td>
</tr>
<tr>
<td><em>Megaphyllum austriacum</em> (Latzel, 1884)</td>
<td>JURINICH, 1904</td>
<td>Rhodopes Mts, Bachkovo Monastery and Chepelare; Thracian Lowland, near Haskovo</td>
</tr>
<tr>
<td><em>Megaphyllum platyurn</em> (Latzel, 1884)</td>
<td>JURINICH, 1904</td>
<td>Rhodopes Mts., Bachkovo Monastery</td>
</tr>
<tr>
<td><em>Megaphyllum projectus</em> Verhoeff, 1894</td>
<td>LANG, 1958</td>
<td>Pirin Mts., Demyanitsa Hut, 1800 m alt.</td>
</tr>
<tr>
<td><em>Megaphyllum sjaelandicum</em> (Meinert, 1868)</td>
<td>LANG, 1958</td>
<td>Pirin Mts., Banderitsa Valley</td>
</tr>
</tbody>
</table>
first generation of Bulgarian zoologists – as well as by LANG (1935, 1958), and were not found by contemporary zoologists. Given the overall poor quality of Lang’s work on millipedes (see, e.g. ENGHOFF, 2006), these records should be treated with doubt until re-confirmed with new material. Christovich and Jurinich did not apply gonopod conformation for the determination of species, so most likely some of their identifications were wrong too. In addition to these species, LANG (1958) also reported Typhloiulus albanicus Attems, 1929 from Temnata Dupka Cave near Lakatnik. Being the type locality of another typhloiulid, i.e. T. buresci, we assume that it is a clear case of misidentification. This is the reason for not including it even in the list of uncertain species. In a faunistic report about the fauna of Varna area MATZKE (2000) mentioned the genus Tachypodoiulus for the Zlatni Pyasatsi Resort. This record is highly speculative, too.

The richest in species is the genus Megaphyllum represented in the country with 11 taxa, followed by Typhloiulus and Cylindroiulus, each with 6 species. Slightly less diverse is the pachyiulinae genus Apfelbeckiella represented in the country with 5 species.

Millipedes are primary (trophically) confined to forests, that is why we most often found them in the forest litter. Almost two thirds of Bulgarian julids inhabit different types of deciduous or mixed deciduous-coniferous forests. Only few of them, such as Cylindroiulus arborum, Megaphyllum transsylvanicum and M. unilineatum, occur in pure coniferous forests. A significant share of Bulgarian millipedes occurs in caves. Out of 68 hitherto registered cave-dwellers, 24 species belong to Julida. Only species from the genera Typhloiulus and Serboiulus can be considered true troglobites, while Rhodopiella and Apfelbeckiella, whose members are often found also outside caves are most likely geobionts.

Some species like Ommatoiulus sabulosus, Pachyiulus cattarensis and P. varius, often inhabit open habitats outside or inside forests. The latter species is also known from sublitoral areas in close proximity to the water line. The millipedes living in urban habitats and in ant nests were studied by STOEV (2004b) and STOEV & LAPEVA-GJONOVA (2005), respectively. However, these, and other specific habitats like MSS (mesovoid shallow substratum), intertidal zone, rodent burrows, tree trunks, etc., remain poorly investigated in Bulgaria.

Leptoiulus borisi and Megaphyllum glossulifer are the commonest julids in the subalpine and alpine mountains belts (BERON, 1999). Found at the foot of the Vihren summit in Pirin Mts, the former reaches almost as high as 2900 m and sets the upper limit of the julid distribution in the country.

The level of endemism of the group in the country is extremely high – 19 taxa are hitherto known only from Bulgaria, very often restricted only to one or another geographical region. Further 9 species have wider distribution in the Balkan Peninsula. Some species surpass the boundaries of Bulgaria, including parts of Carpathians (Xestoiulus fontisberculis, Typhloiulus strictus, etc.) or Anatolia (Cylindroiulus abaligetanus). Northern complex (European, Central European, East European and European – Anatolian species) comprise 17 species. Only one species, namely Pachyiulus varius, has Mediterranean distribution. Cylindroiulus bellus can be considered as Pontian element in the Bulgarian fauna. Within Bulgaria, the highest level of endemism is registered in the Stara Planina Mts. and neighbouring mountain massifs Predbalkan and Sredna Gora, where 7 endemic species occur. Three julids are known only from the Rhodopes Mts., two – from Strandzha, and one each from Pirin Mts. and Danubian Plain. However, we expect that the zoogeographical characteristics of Bulgarian julids will change in the future, when the millipede fauna of several poorly studied regions becomes better known.
Acknowledgements

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DELTSHEV Ch., BERON P., BLAGOEV G., GOLEMANSKY V., PENEVA V., STOEV P.,
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Осъвременен каталог на разред Julida (Diplopoda) в България

Бойн ВАГАЛИНСКИ, Павел СТОЕВ

(Резюме)

Представен е осъвременен каталог на видовете от разред Julida (Diplopoda: Helminthomorpha) в България. Понастоящем в страната разредът наброява 3 семейства – Blaniulidae, Nemasomatidae и Julidae, 21 рода, 51 вида и 3 подвида. Други единадесет вида и род Thachypodoiulus са съобщени вероятно погрешно за България. Archiboreoiulus pallidus и Megaphyllum dentatum са включени в списъка, въпреки че точните им находища са неизвестни. За всеки вид в каталожната част е дадена следната информация: 1) списък на статиите, в които е съобщен за страната (с точните страници, на които е цитиран); детайлно разпространение по географски региони; местообитанията, в които е намерен до момента в България; височинното разпространение; зоогеографската принадлежност; а понякога също и допълнителни таксономични бележки. Оригинални данни за 19 вида, включващи второто и третото находища в страната на редките стоножки Megaphyllum anatolicum denticulatum и Brachyiulus bagnalli, допълват настоящото изследване. Направена е и кратка характеристика на зоогеографската и хабитатната принадлежност на българските юлиди.