

New Distributional Records of Millipedes from Bulgarian Caves (Myriapoda: Diplopoda)

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Abstract: The paper is devoted to the treatment of the collection of cave millipedes of the National Museum of Natural History, Sofia. It reports 25 species and subspecies found in 87 Bulgarian caves and pot holes. Three troglomorphic millipedes, *Brachydesmus radewi*, *Bacillidesmus bulgaricus dentatus* and *Anamastigona lepenicae*, previously known only from their type localities, were found elsewhere. After re-examination of old materials, *Apfelbeckeilla byzantina* is excluded from the list of Bulgarian millipedes, inasmuch as its presence in the country is based on misidentification.

Key words: Millipedes, Diplopoda, Faunistics, Caves, Bulgaria

Introduction

The Bulgarian cave millipedes are among the best studied in the Balkan Peninsula mainly due to the efforts of Karl Verhoeff and Karl Strasser. About 4 700 vertical and horizontal caves are discovered until now on the territory of Bulgaria, as only about one seventh of them are known to harbour cave fauna (BERON 1994). This number is likely to increase in the course of the recent intensive research carried out by a group of Bulgarian biospeleologists. A brief historical review of the investigations on the Bulgarian cave myriapods was already presented in a previous paper (STOEV, RIBAROV 1995). Since then additional information on the millipedes was published by STOEV, ENGHOFF (2003), two other papers are still in press (STOEV; GOLOVATCH, STOEV). The current paper is devoted to the treatment of the collection of cave millipedes kept in the National Museum of Natural History, Sofia (NMNHS). It deals with materials collected by different generations of Bulgarian biospeleologists in the period 1924-2002.

Materials and Methods

The studied material comes mainly from the recent collecting activities of P. Beron, B. Petrov, T. Ivanova and P. Stoev (all from NMNHS). Along with it, some older collections gathered by the founders of the Bulgarian biospeleology, I. Buresch, N. Atanasov, N. Radev, D. Ilchev and P. Tranteev, were examined and incorporated, too. The identifications were made with a Russian binocular microscope MBC-10. All specimens are preserved in the collection of the NMNHS, in 70 % ethanol. Abbreviations: v. - village; ad. - adult; juv. - juvenile; H. E. - Henrik Enghoff det.

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Results

Species account

GLOMERIDA BRANDT, 1833

GLOMERIDAE LEACH, 1815

Glomeris balcanica VERHOEFF, 1906

Material examined: Elhovo District: ad. ♂, 2 ad. ♀♀, v. Golyam Dervent, Suhata peshtera Cave, 03-04.04.1993, P. Stoev, G. Seizov leg.; ad. ♂, 3 ♀♀, the same village, Dalbokata dupka Cave, 3-4.04.1993, P. Stoev, G. Seizov leg.; ad. ♀, between v. Krainovo and v. Golyam Dervent, Bezimenna [Nameless] propast Pot hole, 22.04.1991, P. Stoev leg.; 4 exempl., v. Lesovo, Bezimenna [Nameless] peshtera Cave, 28.04.1991, P. Stoev, G. Seizov leg.; ad. ♀, the same locality, 09.09.1992, P. Stoev, G. Seizov leg.; Stara Zagora District: 4 ad. ♀♀, v. Ostra mogila, Labirinta Cave, 03.11.1994, P. Beron leg.

Glomeris hexasticha BRANDT, 1833

Material examined: Sofia District: ad. ♂, v. Bosnek, Duhlata Cave, November, 1992, B. Petrov leg.; Velingrad District: ad. ♀, W. Rhodope Mts., Dupcheto Cave, 09.08.1997, B. Petrov leg.

Glomeris pustulata LATREILLE, 1804

= *G. balcanica*: STOEV, RIBAROV, 1995: 90, partim; from Tsarkvishte Cave; BERON, 1994: 37. Misidentification!

Material examined: Sofia District: ♂, ♀, v. Zasele, Kopanata dupka Cave, at the bottom of 34 m deep precipice, 16.04.2002, A. Zhalov leg.; ad. ♀, juv., v. Breze, Tsarkvishte [Tsarkveto] Cave, 900 m alt., 14.11.1992, B. Petrov leg.

Remark: In our previous paper (STOEV, RIBAROV 1995) the specimens from the Tsarkvishte Cave were erroneously identified as *G. balcanica*. A re-examination of the material showed that these were *G. pustulata*.

Glomeris sp.

Material examined: Montana District: juv., Berkovitsa, Mramornata peshtera Cave (in a quarry), 19.06.1998, B. Petrov leg.

Remark: With only a single juvenile at our disposal this specimen could not be reliably identified.

DODERIIDAE SILVESTRI, 1904

Trachysphaera sp.

Material examined: Gotse Delchev District: ♂♂, ♀♀, v. Goleshevo, Starshelitsa Cave, 900 m alt., 17.04.1992 and 02.05.1994, B. Petrov leg.; ♂♂, ♀♀, the same locality, 16.05.1993, P. Stoev leg.; Ivailovgrad District: 2 ♀♀, v. Belopolyane, Belopolyanskata peshtera [= Kodzha Kaya] Cave, 06.04.1992, B. Petrov leg.; ♀♀, the same locality, 23.04.1996, P. Stoev, B. Petrov leg.; 1 exempl., the same locality, 11.06.1999, B. Petrov, B. Barov leg.; Krumovgrad District: ♂♂, ♀♀, v. Beli dol, Mechkina dupka Cave, 22.04.1996, B. Petrov, P. Stoev leg.; the same locality, under stones in guano, 15.04.1998, B. Petrov, B. Barov leg.; Kyustendil District: ♂♂, ♀♀, v. Chetirts, Uske Cave, under stones, clay, 22.06.2000, B. Petrov leg.; Lovech District: ♂, ♀♀, v. Devetaki, Devetashkata peshtera Cave, 15.08.1994, P. Beron, T. Ivanova leg.; 2 ♀♀, v. Divchovoto, Boroveshka dupka Cave, 950 m alt., 29.09.1997, P. Beron, T. Ivanova leg.; Pernik District: 2 ♂♂, 2

♀♀, v. Kozhintsi, Mecha dupka Cave, 01.05.1972, P. Beron, V. Beshkov leg.; Shumen District: Shumen Plateau, Nahodka 13 Cave, 28.09.1996, P. Beron leg.; Vratsa District: juv. ♂, 3 ♀♀, v. Glavatsi, Toshova dupka [= Kalna Matnitsa] Cave, 12.06.1994, T. Ivanova leg.; ♀, Vrachanski Balkan Mts., v. Opletnya, Chetvaritata peshtera Cave, 22.05.1994, P. Stoev, B. Petrov leg.; 1 exempl., v. Kunino, Shipochinata Cave (No 1186), 17.03.1995, P. Stoev, T. Ivanova, B. Guéorguiev leg.

Remarks: Trachysphaerids are very often collected in cave habitats in Bulgaria. Thus, the NMNHS has accumulated a large material (listed above), which awaits further treatment. In Europe the genus comprises more than 40 nominal taxa. Unfortunately, most of them are still of uncertain taxonomic position awaiting more comprehensive revision. For the time being, I prefer to refrain from identifications on species level.

POLYDESMIDA POCOCK, 1887

POLYDESMIDAE LEACH, 1815

Polydesmus complanatus (LINNAEUS, 1761)

Material examined: Burgas District: ad. ♂, 2 ad. ♀♀, v. Kosti, Maharata Cave, 14.05.2000, I. Pandurski leg.; Gabrovo District: 2 ad. ♂♂, 7 ♀♀, Suhata peshtera Cave near Dryanovo Monastery, 06.09.1936, N. Atanasov, D. Papazov leg.; Gotse Delchev District: ad. ♂, W. Rhodopes, v. Ribnovo, Manuilovata peshtera Cave, 30.04.1994, B. Petrov leg.; ad. ♂, the same locality, 22.06.2000, B. Petrov leg.; Kotel District: ♂, Prikazna Cave near Kotel, 31.10.2002, P. Beron leg.; Lovech District: ad. ♂, v. Lesidren, Balduinovata peshtera Cave, 05.10.1994, R. Pandurska leg.; ad. ♂, v. Divchovoto, Boroveshka dupka Cave, 950 m alt., 29.09.1997, P. Beron, T. Ivanova leg.; 2 ad. ♂♂, the same village, Grazhdenitsa Cave, 750 m alt., 28.09.1997, P. Beron leg.; ad. ♂, v. Krushuna, Boninskata peshtera Cave, 1982, B. Garev leg.; Lukovit District: 3 ♂♂, 3 ♀♀, v. Bezhanovo, Parnitsite Cave, 16.07.1985, P. Beron leg.; ad. ♂, the same locality, 1 km from the entrance, creeping on a tree, 21.01.1995, P. Stoev, B. Petrov leg.; Pernik District: 3 ad. ♂♂, v. Kozhintsi, Mecha dupka Cave, clay, 24.11.1996, B. Petrov leg.; Shumen District: 3 ad. ♂♂, ad. ♀, Shumen Plateau, Nahodka 13 Cave, 28.09.1996, P. Beron leg.; ad. ♂, the same place, Mladost Cave, 30.09.1996, T. Ivanova leg.; Smolyan District: ad. ♂, v. Yagodina, Imamova dupka Cave, 28.11.1973, P. Beron, K. Kumanski leg.; Troyan District: ad. ♂, v. Golyama Zhelyazna, Toplya Cave, 11.10.1996, B. Guéorguiev leg.; ad. ♀, the same locality, 02.03.1995, B. Petrov leg.

Polydesmus denticulatus C. L. KOCH, 1847

Material examined: Razgrad District: 7 ♂♂, 4 ♀♀, Krivnya near Senovo, Boikova (Kulina) dupka Cave, clay, guano, 28.06.1997, B. Petrov leg.; 2 ad. ♂♂, 2 ♀♀, the same locality, 22.01.2000, B. Petrov, T. Ivanova leg.; Shumen District: ad. ♂, Shumen Plateau, Zandana Cave, 28.09.1996, P. Beron leg.; ad. ♂, the same place, Deli Borun Pot hole, 30.09.1996, T. Ivanova leg.

Polydesmus herzogowinensis VERHOEFF, 1897

Material examined: Smolyan District: ad. ♂, v. Smilyan, Kraipatnata peshtera Cave, 700 m alt., clay, 11.07.1997, B. Petrov leg.

Polydesmus renschi SCHUBART, 1934

Material examined: Burgas District: ad. ♂, v. Kosti, Maharata Cave, 14.05.2000, I. Pandurski leg.; Montana District: several fragmented ♂♂, ♀♀, v. Prevala, Pleshovskata peshtera Cave, 07.12.1992, P. Stoev, R. Ivanov leg.

Polydesmus sp.

Material examined: Asenovgrad District: ad. ♀ (aff. *complanatus*), Modarskata peshtera Cave near Modar Peak, 1600 m alt., 26.09.1994, B. Petrov leg.; Gabrovo District: 2 ♀♀, Dryanovo Monastery, “malka peshtera” [small cave], 27.07.1928, K. Tuleshkov leg.; Lovech District: ad. ♀, v. Yablanitsa, Peshtta Cave, 17.04.1994, P. Beron, A. Zhalov leg.; Lukovit District: 2 ad. ♀♀ (aff. *complanatus*), v. Bezhanovo, Vodnitsata Cave, 21.07.1985, P. Beron leg.; Montana District: 2 ♀♀, v. Gorna Luka, Pot hole in Gradishte area, 08.12.1992, P. Stoev, R. Ivanov leg.; Plevan District: ad. ♀ (aff. *complanatus*), v. Bohot, Vodnitsata Cave, 25.06.1983, B. Garev leg.

Remark: Without adult males the above material could hardly be identified to species level.

Brachydesmus herzogowinensis VERHOEFF, 1897 s.l.

Material examined: Blagoevgrad District: ♂ (subsp. n.?), v. Leshko, Koryanska dupka Cave, 27.04.1997, B. Petrov leg.; Kyustendil District: 4 ♂♂ (subsp. *trifidus*? STRASSER, 1973), v. Gorna Koznitsa, Asandeliya Cave, 09.02.1994, B. Petrov, P. Stoev, T. Ivanova leg.; 2 ♀♀, the same locality, under stones near the entrance, 06.06.1998, B. Petrov leg.; Sofia District: ♂ (subsp. *septentrionalis*? STRASSER, 1940), Bov Railway Station, Mecha dupka Cave, 30.01.1994, B. Petrov leg.

Remarks: This polymorphic species is represented in Bulgaria with three endemic subspecies. The material from Koryanska dupka differs significantly from all of them and might actually prove to be a new (sub)species. However, until the variability of the shape of male gonopods is more profoundly studied, I prefer to refrain from using subspecific names.

Brachydesmus radewi VERHOEFF, 1926

Material examined: Vratsa District: 3 ♂♂, 15 ♀♀, 3 juv., Kunino Railway Station, Chelovecha dupka Cave, 16.01.1994, P. Beron leg.; 1 ♂, 15 ♀♀ and juv., the same locality, 26.11.1994, P. Stoev, T. Ivanova leg.; 8 ♀♀, juv., the same locality, 17.03.1995, P. Stoev, T. Ivanova, B. Guéorguiev leg.

Remarks: *Brachydesmus radewi* is described from the Promakinyalo Cave near v. Dolna Beshovitsa (VERHOEFF 1926a). The new locality is situated in the same karst region, ca. 20 km eastwards. Probably the numerous females and juveniles found in the Shipochinata Cave also belong to this species (see under *Brachydesmus* sp.).

Brachydesmus sp.

Material examined: Gotse Delchev District: 2 ♀♀, v. Goleshevo, Starshelitsa Cave, 900 m alt., 16.05.1993, P. Stoev leg.; ♂, v. Gospodintsi, Salievata peshtera Cave, 02.11.1994, B. Petrov leg.; Lovech District: ♀, v. Karlukovo, Bezimenna 22, 14.05.1995, P. Mitov leg.; Teteven District: ♀, Malkata yama Pot hole near Teteven (Cherven area), 24.11.1968, P. Beron leg.; Vratsa District: 8 ♀♀, juv. (aff. *radewi*), v. Kunino, Shipochinata Cave (No 1186), 17.03.1995, P. Stoev, T. Ivanova, B. Guéorguiev leg.

Remarks: The male found in the Salievata peshtera Cave has very peculiar gonopods, thus perhaps representing a new species. Given the fact that the diversity of brachydesmids in the Balkan Peninsula is very high and a good revision is still wanted, I prefer to leave the question of its identity open for the future, when more material becomes available for study. The remaining females and juveniles cannot be reliably identified due to the lack of adult males.

PARADOXOSOMATIDAE DADAY, 1889

Strongylosoma stigmatosum (EICHWALD, 1830) subsp. *balcanicum* SCHUBART, 1934

Material examined: Plovdiv District: ad. ♂, v. Hristo Danovo, Zlatnata peshtera Cave, 970 m alt., 27.09.1997, P. Beron, T. Ivanova leg.; Vratsa District: 3 ad. ♂♂, 4 ♀♀, juv., Vrachanski Balkan Mts., v. Zgorigrad, Malkata peshtera Cave, 16.05.1999, B. Petrov leg.

TRICHOPOLYDESMIDAE VERHOEFF, 1910

Bacillidesmus bulgaricus bulgaricus STRASSER, 1962

Material examined: Vratsa District: ad. ♂, juv., v. Chiren, Ponora Cave, clay, 27.01.1998, B. Petrov, T. Ivanova leg.

Bacillidesmus bulgaricus dentatus STRASSER, 1966

Material examined: Lovech District: 3 ♂♂, 2 ♀♀, v. Brestnitsa, Saeva dupka Cave, 500 m alt., clay, 13.10.1997, B. Petrov, P. Stoev leg.

Remarks: This subspecies was known only from the Drashanskata peshtera Cave near v. Drashan (STRASSER 1966). The new locality is situated 50-60 km south-east of it, on the opposite side of the Iskar River. Though there are only slight differences in the gonopod shape, I do not exclude it from representing a new (sub)species, when more material becomes available for study.

CHORDEUMATIDA POCOCK, 1894

ANTHROLEUCOSOMATIDAE VERHOEFF, 1899

Anamastigona lepenicae (STRASSER, 1975)

Material examined: Velingrad District: ad. ♀, Suhata peshtera Cave, 25.11.1993, P. Stoev, B. Petrov leg.

Remarks: This is the second find of *A. lepenicae* since its original description from the cave Lepenitsa (STRASSER 1975). The Suhata peshtera Cave is located only 200 m apart from it, and although only a single female is examined, I have no doubts that the specimen belongs to this species.

Anamastigona aff. *delcevi* (STRASSER, 1973)

Material examined: Gotse Delchev District: ♀, Pirin Mts., v. Goleshevo, Starshelitsa Cave, 900 m alt., 16.05.1993, P. Stoev leg.

Remarks: Having at disposal only a single female I can't be completely sure that the examined material belongs to *A. delcevi*. However, this species is described from the Rupata Cave (mislabelled as a deserted mine gallery) near v. Paril in the Slavyanka Mountain (STRASSER 1973), which is only a few kilometers apart from the new locality. The cave Starshelitsa is situated at the southern slopes of Pirin Mountain, and though still poorly explored, seems to maintain a very rich cave fauna.

JULIDA BRANDT, 1833

BLANIULIDAE C. L. KOCH, 1847

Nopoiulus kochii (GERVAIS, 1847)

Material examined: Gabrovo District: several ♂♂, ♀♀, Andaka Cave near Dryanovo Monastery, rotten log on sand, 20.01.2000, B. Petrov leg.; Lovech District: 2 ad. ♀♀, v. Yablanitsa, Peshtta Cave, 17.04.1994, P. Beron, A. Zhalov leg.; ♂, ♀, v. Bezhanovo, Gergitsova dupka Cave, 15.06.1986, B. Garev leg.; several specimens (one ♂), v.

Brestnitsa, Saeva dupka Cave, 17.04.1994, P. Beron leg., H. E. det.; Nikopol District: dried ♀, v. Muselievo, Nanin kamak Cave, 12.08.1994, P. Stoev leg.; Pleven District: ad. ♂, v. Dragana, Skoka Cave, under stones, guano, clay, 29.01.1998, B. Petrov, T. Ivanova, T. Troanski leg., H. E. det.; ♀, v. Gortalovo, Haidushkata peshtera Cave, 1981, B. Garev leg., H. E. det.; several ♂♂, ♀♀, v. Sadovets, Gininata peshtera Cave, 17.12.1995, B. Petrov leg., H. E. det.; 2 ♂♂, 6 ♀♀, labelled "*Nopoiulus* sp. (*pulchellus* Leach?)" [Verhoeff det.], Peshtera Kapitalak bei Pleven [Kapalak Cave near Pleven], 25.09.1924, D. Ilchev leg.

JULIDAE LEACH, 1814

Typhloiulus bureschi VERHOEFF, 1926

Material examined: Lovech District: ♂, v. Mikre, Mandrata Cave, 29.01.1997, T. Ivanova leg.; Sofia District: ad. ♂, 3 ♀♀, 4 juv., Gornata (= Rzhishkata, Arzhishkata) peshtera Cave near Lakatnik Railway Station, 23.03.1930, P. Drenski leg.; juv., the same locality, 28.10.1934, I. Buresch leg.; dried ad. ♀, the same locality, 07.07.1948, P. Drenski leg.; 2 ♀♀, the same locality, 22.02.1995, B. Petrov leg., H. E. det.; 3 ad. (1 ♂), Tserovo Railway Station, Mayanitsa Cave, 06.02.1992, P. Stoev leg., H. E. det.; Vratsa District: 12 ♂♂, 7 ♀♀, 6 juv., v. Kunino, Shipochinata Cave (No 1186), 17.03.1995, P. Stoev, T. Ivanova, B. Guéorguiev leg.

Typhloiulus georgievi STRASSER, 1962

(= *Typhloiulus bureschi*: VERHOEFF, 1926b: 208, partim; from Toplya Cave)

Material examined: Troyan District: 3 ♂♂, 3 ♀♀, v. Golyama Zhelyazna, Toplya Cave, 03.10.1925, N. Radev leg.; ad. ♀, the same locality, 12.06.1993, B. Guéorguiev leg.; several ♂♂, ♀♀, juv., the same locality, clay, 02.03.1995, B. Petrov leg.; juv. ♂, ad. ♀, the same locality, 10.11.1996, B. Guéorguiev leg.; 6 ad. ♂♂, the same locality, under stones and rotten log, 15.11.1997, B. Petrov, P. Mitov, B. Guéorguiev leg.; Veliko Tarnovo District: 2 ad. ♂♂, ad. ♀, v. Belyakovets, Tsarskata peshtera Cave, 14.04.1996, T. Ivanova leg.

Remarks: This species has hitherto known only from two caves, Futyovskata peshtera near v. Karpachevo (STRASSER 1962) - its type locality, and Boninskata (= Popskata) peshtera near v. Krushuna (STRASSER 1969). The new localities extend the species range ca. 60 km southwards and ca. 50 km eastwards. VERHOEFF (1926b) erroneously reported *T. bureschi* from the Toplya Cave. This record should be addressed to the above species, which seems to occur in caves in the Central Stara Planina Mts. Probably the females and the juveniles from the Andaka and Rushavata peshtera caves (see under *Typhloiulus* sp.) should also be referred to *T. georgievi*.

Typhloiulus sp.

Material examined: Gabrovo District: juv. ♂, ♀, Andaka Cave near Dryanovo Monastery, rotten log on sand, 20.01.2000, B. Petrov leg.; Lovech District: ♀♀, juv., v. Gradshnitsa, Rushovata peshtera Cave, 22.03.1993, D. Dimova leg.; ad. ♀ (aff. *bureschi*), v. Karlukovo, Imaneto Cave, 03.03.1936, R. Radushev leg.; Mezdra District: ad. ♀, Cherepish Railway Station, Labirinta Cave, 07.03.1992, P. Stoev leg.; Pernik District: ♀♀, v. Filipovtsi, Filipovskata peshtera Cave, 04.11.1996, B. Petrov, D. Vasilev leg., H. E. det.; Sofia District: ad. ♀, v. Breze, Marina dupka Cave, 08.07.1925, N. Radev leg.; ad. ♀, v. Zasele, Kopanata dupka Cave, at the bottom of 34 m deep precipice, 16.04.2002, A. Zhalov leg.; Vratsa District: ad. ♀ (aff. *bureschi*), Vrachanski Balkan Mts., Medenik Cave near Plakalnitsa Mine, 13.07.1924, I. Buresch, N. Radev leg.; ad.

♀ (aff. *buresschi*), v. Kunino, Chelovecha dupka Cave, 16.01.1994, P. Beron leg.; 2 ad. ♀♀, the same locality, P. Stoev, T. Ivanova, B. Guéorguiev leg.

Remark: The lack of adult males does not allow more precise identification.

Serboiulus spelaophilus GULIČKA, 1967

Material examined: Montana District: 3 ♂♂, ♀, v. Prevala, Pleshovskata peshtera Cave, 21.09.1992, R. Ivanov leg.; 2 ad. ♂♂, 6 ♀♀, juv., the same locality, 07.12.1992, P. Stoev, R. Ivanov leg.; ♂, ♀, the same locality, 09.01.1994, D. Kozhuharov leg.

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

= *Leptoiulus borisi*: BERON, 1994: 38; STOEV, RIBAROV, 1995: 91. Misidentification!

Material examined: Elhovo District: 2 ad. ♀♀, v. Lesovo, Bezimenna [Nameless] peshtera Cave, 09.09.1992, P. Stoev, G. Seizov leg.

Remark: The above material was wrongly reported as *Leptoiulus borisi* in our previous paper (STOEV, RIBAROV 1995). Since the gonopods were not extracted and examined then, it is now obvious that the material belongs to *L. trilineatus*, one of the most common Bulgarian millipedes.

Megaphyllum transsylvanicum (Verhoeff, 1897)

Material examined: Asenovgrad District: ad. ♂, v. Dobrostan, Druzha Pot hole, 26.09.1992, P. Beron leg.

Megaphyllum sp.

Material examined: Elhovo District: ad. ♀, v. Golyam Derwent, Suhata peshtera Cave, 03-04.04.1993, P. Stoev, G. Seizov leg.; ad. ♀, v. Mramor, Dranchi dupka Pot hole, 29.03.1992, P. Stoev, G. Seizov leg.; ad. ♀, the same village, Mladezhka Cave, 31.03.1992, P. Stoev, G. Seizov leg.; Pernik District: ad. ♀, Strazha planina Mts., v. Filipovtsi, Filipovskata peshtera Cave, 06.11.1995, B. Guéorguiev leg.

Remark: The examined material could not be reliably identified to species level with only females and juveniles at disposal.

Pachyiulus hungaricus (KARSCH, 1881)

Material examined: Lovech District: ad. ♂, Ladzhenskata peshtera Cave near Lovech [v. Ladzhene = v. Malchika since 1950], April, 1929, Parvanov leg.; Troyan District: ad. ♂, v. Golyama Zhelyazna, Topya Cave, clay, 11.03.1995, B. Petrov leg.

Pachyiulus varius (FABRICIUS, 1781)

Material examined: Elhovo District: ♂, ♀, v. Mramor, Dranchi dupka Pot hole, 29.03.1992, P. Stoev, G. Seizov leg.

Pachyiulus sp.

Material examined: Lovech District: juv., v. Krushuna, Urushka maara Cave, 21.05.1994, T. Ivanova leg.; Sandanski District: ♀, v. Ploski, Zandana Cave, 450 m alt., under stones, 07.04.2002, B. Petrov leg.; Sofia District: ad. ♀ (aff. *hungaricus*), v. Gintsi, Saguro Pot hole, 55 m, 10.08.1985, D. Kozhuharov leg.

Remark: The lack of adult males does not allow more precise identification.

Apfelbeckiella bulgarica VERHOEFF, 1926

= *Apfelbeckiella byzantina*: BERON 1994: 39; STOEV, RIBAROV 1995: 91. Misidentification!

Material examined: Burgas District: 3 ad. ♀♀, v. Mladezhko, Kaleto Cave, 310 m alt., clay, guano, 18.07.2002, B. Petrov leg.; 2 ♂♂, 2 ♀♀, 5 juv., 1 larva, v. Byala voda, Malkata chuma Cave, 03.07.1998, P. Beron leg.; Elhovo District: ♂, ♀, v. Voden, Samardaala Pot hole, 11.09.1992, P. Stoev, G. Seizov leg.; 2 ♂♂, 1 juv., v. Leyarovo,

Mecha dupka Cave, 05.05.1991, P. Stoev leg.

Remarks: In our previous paper (STOEV, RIBAROV 1995) we erroneously reported *A. byzantina* from two caves (Mecha dupka and Samardaala) in South-East Bulgaria. I have re-examined the material on which these two reports are based, and the gonopods showed no difference from those of *A. bulgarica* as illustrated by VERHOEFF (1926b) and STRASSER (1966). So far *A. bulgarica* is known only from six caves in the Strandzha Mountain and the Derventska Heights, as well as outside caves in the surroundings of v. Fakiya (KONDEVA 1996) and v. Bulgari (VERHOEFF 1926b).

Apfelbeckiella trnowensis trnowensis (VERHOEFF, 1928)

Material examined: Shumen District: 3 ♂♂, 3 ♀♀, 5 juv., Shumen Plateau, Zandana Cave, 28.09.1996, P. Beron leg.; 4 ♂♂, 11 ♀♀, the same locality, rotten log, 20.01.2000, B. Petrov, T. Ivanova leg.; Targovishte District: ♂, ♀, v. Prolaz, Prolazkata peshtera [= Derventska peshtera] Cave, guano, clay, 05.09.2000, B. Petrov leg.

Apfelbeckiella sp.

Material examined: Dobrich District: ad. ♀, v. Balik, Asar Kale, Sarkaya Cave, 19.04.1999, N. Simov leg.; Kavarna District: ♀, Yailata, Cave No 9, July 1997, leg.?

Remark: The examined material, though represented by females only, is of peculiar interest, due to the fact that it might be *A. dobrigica*, a species described from the Romanian part of Dobrudzha (TABACARU 1966), and so far unknown on the territory of Bulgaria.

Rhodopiella beroni STRASSER, 1966

Material examined: Russe District: 2 ♂♂, 3 ♀♀, v. Pepelina, Orlova chuka Cave, guano, clay, 31.01.1998, B. Petrov, T. Ivanova leg.

Remarks: This locality is far outside the species range, being 250-300 km north-east of the nearest localities in the Rhodope Mountains. So far, *R. beroni* is known from caves and epigeic habitats in Greece, Bulgaria and the Republic of Macedonia (Stoev, in press).

Discussion

The Bulgarian millipedes have been an object of taxonomic interest for a long time, as presently 66 species and subspecies are reported to occur in caves in the country. Despite that, a very large number of caves remains still unexplored, especially in regions such as the Eastern Stara Planina Mts., the Rhodope Mts., the Predbalkan, etc., thus the number is expected to increase considerably in the future. Five genera, namely *Polydesmus*, *Brachydesmus*, *Balkanopetalum*, *Typhloiulus* and *Apfelbeckiella*, as well as family Anthroleucosomatidae characterize the cave millipede fauna of Bulgaria, including more than a half of the already reported species.

The studied collection comprises 25 species and subspecies identifiable to species level. Additionally, part of the material, represented only from juveniles or females, was determined to genus level. The whole collection originates from totally 87 Bulgarian caves and pot holes. Three taxa, *Brachydesmus radewi*, *Bacillidesmus bulgaricus dentatus* and *Anamastigona lepenicae*, up to now known only from their type localities, were found elsewhere. It is worth to mention the discovery of *R. beroni* far away from its current range in Southern Bulgaria, as well as the presence of yet unidentified apfelbeckiellids in the Bulgarian part of Dobrudzha. I use the opportunity to correct earlier erroneous

records of *G. balcanica*, *L. borisi*, *T. bureschi* and *A. byzantina* (cf. VERHOEFF 1926b, STOEV, RIBAROV 1995) from some caves in the country. The latter is excluded also from the list of Bulgarian millipedes.

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Нови данни за разпространението на многоножките в българските пещери (Myriapoda: Diplopoda)

П. Стоев

(Резюме)

Настоящата статия обобщава резултатите от обработката на пещерните диплоподи в колекцията на Националния природонаучен музей. Съобщени са 25 вида и подвида, събрани в 87 български пещери. Три трогломорфни стеножки – *Brachydesmus radewi*, *Bacillidesmus bulgaricus dentatus* и *Anamastigona lepenicae*, до момента известни единствено от типовите им находища, са намерени в нови пещери. *Apfelbeckiella byzantina* е изключена от списъка на българските диплоподи, тъй като става въпрос за погрешно определени екземпляри на *A. bulgarica*.