

A synopsis of the Bulgarian cave centipedes (Chilopoda)

Обзор болгарских пещерных губоногих многоножек (Chilopoda)

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КЛЮЧЕВЫЕ СЛОВА: Chilopoda, пещеры, синопсис, фаунистика, таксономия, распространение, Болгария.

ABSTRACT: Forty-three centipede species or subspecies found in 148 Bulgarian caves are listed, with complete, most detailed faunistic data provided based on both old and new material. Of these taxa, three are new to the country's fauna, including one that also seems to be new to science. The following new synonymy (valid names to the right) is formally advanced: *Lithobius popovi* Matic, 1973 and *L. hrissiae* Stavropoulos et Matic, 1990 = *L. tiasnatensis* Matic, 1973; *Lithobius beschkovi* Matic et Golemansky, 1967 = *L. rushovensis* Matic, 1967; and *Oligobothrus luciani* Folkmanova, 1935 and *Lithobius erythrocephalus cerberi* Verhoeff, 1943 = *L. stygius* Latzel, 1880. Morphological, ecological and distributional evidence concerning each of the (sub)species is presented.

РЕЗЮМЕ: Составлен список, включающий сорок три вида и подвида губоногих, найденных в 148 болгарских пещерах, и для них приведены самые полные фаунистические данные на основе как старых, так и новых материалов. Из этих таксонов три вида оказались новые для болгарской фауны, включая один подвида или вид, вероятно, новый для науки. Предложена следующая новая формальная синонимика (валидные названия справа): *Lithobius popovi* Matic, 1973 и *L. hrissiae* Stavropoulos et Matic, 1990 = *L. tiasnatensis* Matic, 1973; *Lithobius beschkovi* Matic et Golemansky, 1967 = *L. rushovensis* Matic, 1967; а *Oligobothrus luciani* Folkmanova, 1935 и *Lithobius erythrocephalus cerberi* Verhoeff, 1943 = *L. stygius* Latzel, 1880. Приведены данные по морфологии, экологии и распространению для каждого из рассмотренных видов.

Introduction

Bulgaria lies at the heart of the Balkans, a region known as the richest in caves all over Europe. Considering its comparatively small territory (111,000 sq. km), the

country maintains an amazing diversity of caves and cave faunas. Karst supports nearly 22.5 % of the national territory and at present over 4,500 caves or pot holes have been investigated and mapped. Of them, only 646, i.e. about 1/7th of the total, have been found to contain a fauna [Beron, 1994]. While the studies go on quite actively, the above figures can hardly be considered as final.

Verhoeff [1926a, 1926b, 1928] was the first to record a cave-dwelling centipede in Bulgaria. Later, Demange [1961], Matic [1964, 1967, 1973], Negrea [1965], Matic & Golemansky [1967], Matic & Darabantu [1974] and Stoev & Ribarov [1995] added new information on Bulgarian cave Chilopoda. All records of the centipedes discovered in subterranean habitats are reviewed in the works of Guéorguiev & Beron [1962], Beron & Guéorguiev [1967] and Beron [1972, 1994].

This is my second paper devoted to cave myriapods of Bulgaria. The previous one, published in collaboration with Dr. Georgi Ribarov, dealt mainly with material taken during my research trips carried out between 1990 and 1993 [Stoev & Ribarov, 1995]. Since then I have carried out many new expeditions for collecting subterranean myriapods. A significant part of the examined material comes from my colleagues Mr. Boyan Petrov and Dr. Petar Beron, both very active biospeleologists.

The present paper is a review of all cave centipedes hitherto known in Bulgaria. The list comprises 43 taxa recorded from 148 caves. Of them, three species are new to the centipede fauna of Bulgaria, including one subspecies or species probably new to science. These are *Clinopodes trebevicensis* (Verhoeff, 1898), *Lithobius stygius* Latzel, 1880, and *Eupolybothrus glogiastygis* (Absolon, 1916), subsp.n.? At least five other morphospecies found among the material examined are left aside for a later consideration either due to scarcity of samples or their bad preservation.

Five species/subspecies, *Lithobius popovi* Matic, 1973, *L. beschkovi* Matic et Golemansky, 1967, *L. erythrocephalus cerberi* Verhoeff, 1943, *L. hrissiae* Stavropoulos et Matic, 1990, and *Oligobothrus* (=Litho-

bius luciani Folkmanova, 1935, prove to be junior synonyms of certain species described earlier. A few other records seem to be based on misidentifications, hence omitted from the present list of the Bulgarian cave centipedes. *L. curtipes* has been registered in a cave [Ribarov, 1989] but as the original label shows the specimen had been found beyond the cave, so it has likewise been excluded from the present work. Additional notes on the taxonomy and distribution, sometimes also on the ecology and biology of the species are given. A list of the Bulgarian caves harbouring centipedes and a distribution map of the troglobites are also presented.

Materials and methods

Most of the material was collected by hand inside the caves, seldom taken with a Barber pitfall trapping. Earlier collections from caves, now housed in the National Museum of Natural History (NMNH) in Sofia, were re-examined as well. All centipedes examined were preserved in 70% ethanol. Species identification was made with the aid of an MBC-10 stereoscope, Russian made, mostly at 7x or 4x magnification. Drawings of some taxonomically important characters of insufficiently illustrated species supplement the study. The entire collection is currently preserved in the Department of Non-Insect Invertebrates in the NMNH.

Species accounts

GEOPHILOMORPHA

Family Himantariidae

Thracophilus beroni Matic et Darabantu, 1974

Thracophilus beroni Matic et Darabantu, 1974: 93–95.

LITERATURE RECORDS: Asenovgrad District (Western Rhodopi Mts.), Dobrostan, Hralupa Cave.

REMARKS: The description of this species is based on a single female taken in the Hralupa Cave, Western Rhodopi Mountains. Since then this species has never been recollected. Although geophilomorphs are often to be found in caves, only a few of them could be considered as true troglobites. As regards *T. beroni*, it is hardly a troglobite.

The genus *Thracophilus* ranges from the Middle East to the Balkans, with seven species already described. Only two of them, *T. bulgaricus* and *T. pachypus*, are better known while the remaining require re-evaluation [Zapparoli, 1995].

Thracophilus bulgaricus Verhoeff, 1926

Thracophilus bulgaricus Verhoeff, 1926b: 98–101.

LITERATURE RECORDS: Pazardzik District, Belovo, Peshterata Cave.

REMARKS: Verhoeff [1926b] erected *T. bulgaricus* as based on material taken from a cave in Bulgaria. Later, Attems [1959] reported this species from a few caves in Herzegovina. Since then the species has only been recorded beyond caves [Kaczmarek, 1969; Ribarov, 1989], therefore it probably represents but an occasional cave-dweller.

Family Linotaeniidae

Strigamia crassipes (C. L. Koch, 1835)

Scolioplanes crassipes: Matic, 1967: 235.

Strigamia crassipes: Beron, 1994: 35.

LITERATURE RECORDS: Chepelare District (Western Rhodopi Mts.), near Chudnite Mostove Natural Phenomenon, Ledenitsata Cave; Vidin District Salash, Mechata doupka Cave; Vratsa District (Vrachanska planina Mts.), Ledenika Cave.

REMARKS: Although it has been registered several times in caves, *Strigamia crassipes* is not a typical cave inhabitant. This species is widely spread in the country.

Strigamia transsilvanica (Verhoeff, 1928)

New records: Lovetch District, 1 ♂, length 22 mm with 49 pairs of legs, Karpachevo, Sestrinskata propast Pot hole (No. 21), 17.07.1982, P. Beron leg.; Stara Zagora District (central Stara planina Mts.), 1 ♀ with 49 pairs of legs, Stoletov Peak, Stoletovskata peshtera Cave, 26.09.1973, P. Beron & S. Andreev leg.; 1 ♀, length 27 mm, same locality, 13.10.1979, P. Beron & S. Andreev leg.

REMARKS: The ♂ from the Sestrinskata propast Pot hole has 10–11 coxal pores on the last pairs of legs, instead of 7–9 as reported by Matic and Kaczmarek for the Romanian and Polish populations, respectively. *S. transsilvanica* is a species common in Bulgaria.

Family Dignathodontidae

Henia illyrica (Meinert, 1870)

New records: Lovetch District, 1 ♂, length 45–46 mm, Devetaki, Devetashkata Cave, entrance, 13.08.1994, P. Stoev leg.; Sofia District (Vrachanska planina Mts.), 1 ♂, Lakatnik, Temnata doupka Cave, 03.10.1926, I. Buresch leg.

REMARKS: This species is widespread in the country, the above being the first records from caves.

Family Geophilidae

Clinopodes flavidus C. L. Koch, 1847

New records: Krumovgrad District (Eastern Rhodopi Mts.), 1 specimen, length 38 mm with 69 pairs of legs, Beli dol, Mechkina doupka Cave, 22.04.1996, B. Petrov & P. Stoev leg.; 2 specimens, same locality, 15.04.1998, B. Petrov & B. Barov leg.

REMARKS: As there are several yet poorly-known taxa in the genus *Clinopodes*, a generic revision is highly necessary. This species is but an occasional cave-dweller.

Clinopodes trebevicensis (Verhoeff, 1898)

Clinopodes linearis: Stoev & Ribarov, 1995: 94 (misidentification).

LITERATURE RECORDS: Asenovgrad District (Western Rhodopi Mts.), 1 specimen, length 45 mm with 69 pairs of legs, Orehovo, Chelevshnitsa Cave.

REMARKS: This specimen was misidentified by Ribarov and referred to as such elsewhere [Stoev & Ribarov, 1995]. The above is the first formal record of *C. trebevicensis* in Bulgaria.

Pachymerium sp.

New records: Asenovgrad District (Western Rhodopi Mts.), 1 specimen, length 70 mm, with 63 pairs of legs, Dobrostan, Hralupa Cave, 07.07.1975, P. Tranteev leg.

REMARKS: This specimen is very large, strongly resembling *P. ferrugineum maderianum* Demange, 1959, yet it might prove to represent a new, still undescribed species of *Pachymerium*. The specimen differs from *maderianum* in displaying no basal teeth on the forcipular claw but having strongly enlarged coxal pores. The clypeal setae and the last pairs of legs are similar to those as depicted by Kaczmarek [1969a] for *P. ferrugineum insulanum*, a form currently considered as a strict synonym of the nominate subspecies.

Family Schendylidae

Schendyla sp.

New records: Gotse Delchev District, 1 specimen, length 3–4 mm, Gospodintsi, Salievata peshtera Cave, 02.11.1994, B. Petrov leg.; Kardzhali District (Eastern Rhodopi Mts.), 1 specimen, length 14 mm with 55 pairs of legs, Ostrovitsa, Tilki-ini Cave, alt 285 m, 17.02.1991, B. Petrov leg.; Krumovgrad District (Eastern Rhodopi Mts.), 1 specimen, length 17 mm with 47 pairs of legs, Beli dol, Mechkina douпка Cave, under stones, 15.04.1998, B. Petrov & B. Barov leg.

REMARKS: Several small schendylids have hitherto been collected in Bulgarian caves. The ones from the Tilki-ini and Mechkina douпка caves strongly resemble *S. nemorensis* (C. L. Koch, 1836) in having the same prosternal shape, coxal pores and identical leg number. However, more comparative material is required to confirm the identity.

SCOLOPENDROMORPHA

Family Scolopendridae

Cryptops anomalans Newport, 1844

New records: Vratsa District (Vrachanska planina Mts.), 1 specimen, Medenik Cave near Plakalnitsa Mine, 13.07.1924, I. Buresch & N. Radev leg.

REMARKS: This specimen has already been examined by both K. Verhoeff and G. Ribarov, the vial containing two labels. The first is handwritten, by Verhoeff, reading “*Cryptops* sp.”, the second, by Ribarov, reading “*Cryptops anomalans*”. My own observation confirms Ribarov’s identification. As I have failed to trace this record in the literature, I refer to it as new. Although the species has long been known as superficial to soil-dwelling, a truly troglobitic population of *anomalans* has recently been discovered by Negrea [1993] in Romania’s Dobrogea.

Cryptops croaticus Verhoeff, 1931

New records: Vratsa District, 1 specimen, Kunino, Shipochinata Cave (No. 1186), 17.03.1995, P. Stoev leg.; Targovishte District, 1 specimen, Prolaz, Prolazkata peshtera Cave, guano clay, 05.09.2000, B. Petrov leg.

REMARKS: Although *C. croaticus* is widespread in the country, the above are the first records from caves. The specimens possess a femoral field of trichomes on the last pairs of legs and two parallel, uninterrupted stripes dorsally on the head as described by Zalesskaja & Schileyko [1991].

The specimen from Kunino was collected deep inside the cave, creeping near a small puddle, thus behaving very much as a truly cave animal.

Cryptops hortensis (Donovan, 1810)

Cryptops hortensis: Matic, 1973: 254.

LITERATURE RECORDS: Lovetch District, Karlukovo, Haidushkata douпка Cave.

New records: Ivaylovgrad District (Eastern Rhodopi Mts.), 1 specimen, Belopolyane, Zmiyarnika Cave, 25.04.1995, B. Petrov & B. Barov leg.; Krumovgrad District (Eastern Rhodopi Mts.), 1 specimen, Egrek, Rupata Cave, alt 500 m, under stones in guano, 06.11.1999, B. Petrov, S. Beschkov & D. Vassilev leg.; 1 ad., 2 juv., same locality, 11.12.2000, B. Petrov, S. Beshkov, M. Langourov leg.; Vratsa District, 1 specimen, Deventsi, Haidushkata peshtera Cave, date ?, leg. ?

REMARKS: This species is widespread in the country, known to exist in various habitats, being also an occasional cave inhabitant.

Cryptops cf. *hortensis* (Donovan, 1810)

New records: Kardzhali District (Eastern Rhodopi Mts.), 1 subadult specimen, Ostrovitsa, Tilki-ini Cave, alt 285 m, 17.11.1991, B. Petrov leg.

REMARKS: This juvenile specimen could not be reliably determined. It bears one labral tooth, a reason to be referred to as *hortensis*, with the necessary qualifications though.

Cryptops parisi Brölemann, 1920

Cryptops hortensis: Verhoeff, 1928: 123 (misidentification).

LITERATURE RECORDS: Kotel District (eastern Stara planina Mts.), Ledenitsata Cave (sub *Cryptops hortensis*).

New records: Ivaylovgrad District (Eastern Rhodopi Mts.), 1 specimen, Douпка Cave, clay, under stones, 23.04.1999, B. Petrov leg.; Shoumen District (Shoumensko Plateau), 1 specimen, Nahodka 13 Cave, 28.09.1996, P. Beron leg.

REMARKS: I have re-examined Verhoeff’s [1928] material of *Cryptops hortensis* from Ledenitsata Cave, near Kotel and it appears to actually belong to *C. parisi*. Verhoeff did not dissect the mouthparts, which is the main character distinguishing these two species. Another label in the vial, reading “*C. hortensis* Ribarov det.”, seems to solely be based on Verhoeff’s misidentification. Both *C. hortensis* and *C. parisi* are known to exist in Bulgarian caves, although truly cave populations have never been found there.

Cryptops cf. *parisi* Brölemann, 1920

New records: Sliven District, 1 specimen with a damaged labrum, Zmeyovi douпки Cave, 04.07.1926, N. Radev leg.

REMARKS: As the labrum of the single specimen was broken during preparation, it could not be reliably determined. However, I believe it belongs to *parisi*; moreover, it has earlier been identified as such by Ribarov. As I could find no publication of this record, here I refer to it as new.

Cryptops rucneri Matic, 1967

Cryptops rucneri: Beron, 1994: 35.

LITERATURE RECORDS: Vratsa District, Lilyache, Peshketo Cave.

REMARKS: This is the only record of *C. rucneri* in Bulgaria. The species resembles *C. hortensis*, but it can easily

be distinguished by its reddish colour, elongated forcipules and very long 20th pair of legs. At present, *C. rucneri* is known from Austria, Slovenia, Croatia, Romania, Bulgaria and Albania.

Cryptops sp.

New records: Belogradchik District (western Stara planina Mts.), 1 specimen, Krachimir, Krachimirskoto vrelo Cave, guano, clay, 26.02.2000, B. Petrov leg.

REMARKS: Because the specimen is damaged, this species could not be reliably identified.

LITHOBIOMORPHA

Family Lithobiidae

Lithobius (s. str.) *agilis* C. L. Koch, 1847

Lithobius agilis pannonicus: Negrea, 1965: 92.

Lithobius agilis: Matic, 1973: 254.

Lithobius agilis: Beron, 1994: 35.

LITERATURE RECORDS: Gabrovo District, Stanchovhan, Vodnata Velchovska peshtera Cave; Karlovo District (central Stara planina Mts.), near Rai Hut, Han maara Cave; Lovetch District Teteven, Dyado Draganovata peshtera Cave; Vratsa District (Vrachanska planina Mts.), Reznyovete Pot hole.

New records: Devin District (Western Rhodopi Mts.), 2 subad. ♀♀, Trigrad, Dyavolskoto garlo Cave, 05.04.1985, D. Raychev leg.; 1 ad. ♂, same locality, 30.11.1995, B. Petrov leg.; 1 ad. ♂, Trigrad, Suihya dol, Suhodolska 2 Cave, alt 1,350 m, under stones, sand, 03.06.2000, B. Petrov leg.; Lovetch District, 3 ♀♀, Aglen, Ochilata Cave, 16.08.1974, P. Beron leg.

REMARKS: As all specimens examined are without or with feeble projections on the 9th tergite, this may prove to characterise the Bulgarian populations.

Lithobius (s. str.) *forficatus* (Linnaeus, 1758)

New records: Lovetch District, 1 ad. ♂, 1 ad. ♀, cave near Ladzhene (= Malchika since 1950), 16.09.1926, leg.?, 2 ♀♀, Chavdarts, Mandrata Cave, 20.07.1982, P. Beron leg.; Varna District (Black Sea Coast), 1 ad. ♀♀, 2 subad. ♀♀, 1 subad. ♂, Balgarevo, Kaliakra Cape, a small limestone cave, under stones, 06.09.2000, B. Petrov leg.

REMARKS: Although *L. forficatus* is a well-known eurytopic species virtually cosmopolitan in distribution, these are its first reliable records from caves in Bulgaria.

Lithobius (s. str.) *lakatnicensis* Verhoeff, 1926

Lithobius lakatnicensis Verhoeff, 1926a: 295–296.

Lithobius (Monotarsobius) lakatnicensis Verhoeff, 1928: 115–116. syn? *Monotarsobius auritus* Verhoeff, 1943: 143–144, Abb. 19–21.

Lithobius gueorguievi Demange, 1961: 179–181.

Lithobius (Monotarsobius?) (sic!) lakatnicensis: Negrea, 1965: 96–98.

Lithobius (M.) lakatnicensis: Matic, 1967: 235.

Lithobius lakatnicensis: Matic, 1973: 259.

Lithobius lakatnicensis: Beron, 1994: 35.

Lithobius lakatnicensis: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Asenovgrad District (Western Rhodopi Mts.), Dobrostan, Yamata Pot hole; Orehovo, Chelevshnitsa Cave; Gotse Delchev District (Pirin Mts.), Goleshevo, Starshelitsa Cave; Kyustendil District, Boboshevo, Boboshevskata peshtera Cave; Chetirsi, Uske Cave;

Montana District, Dolno Ozirovo, Grebenyo Pot hole; Cherehovitsa, Peshterata v Selishte Cave; Stubel, Doupkata Cave; Pernik District, Bankya, Peshterata Cave; Kozhintsi, Mecha douпка Cave; Peshtera District (Western Rhodopi Mts.), Yubileina Cave, Novata peshtera Cave; Smolyan District, Kremene (Mogilitsa), Rizovitsa Cave (although originally reported as situated near both Kremene and Mogilitsa, in fact the cave is closer to Poprelka, B. Petrov, pers. comm.); Sofia District (Vrachanska planina Mts.), Lakatnik, Temnata douпка

Table 1. Variation in some characters in cave *L. lakatnicensis* populations from Bulgaria.

Locality (Cave)	Age/ Sex	Length (mm)	Antennal segments	15CxaD
Kraiputnata	juv. ♂	5.5*	27–32	No
Kraiputnata	♂	13	55	No
Kraiputnata	ad. ♂	13	51	No
Suhodolska 1	♀	11	38–43	Yes
Asandelia	juv. ♂	4.5	18	-
Asandelia	juv.	4–5	32	-
Novata peshtera	♀	9	40–41	1/2 yes
Novata peshtera	♀	10	43–45	Yes
Novata peshtera	♂	10	50	No
Novata peshtera	♂	10	49	1/2 yes
Novata peshtera	♀	11	49–51	Yes
Chelevshnitsa	♀	9	33–35	?
Zidanka	juv.	6	24	No
Boevskata peshtera	♀	13	44	No
Parnak	♂	11	42–45	Yes
Peshterata v Selishte	juv. ♂	6	30	No?
Cave near Zelenigrad	juv. ♂	7	39–40	1/2 yes
Grebenyo	♀	11	44	1/2 yes
Mecha douпка	♀	10.5	40	1/2 yes
Toshova douпка	♀	14	42	Yes
Uske	juv. ♂	5	19–25	-
Uske	♂	11	44–45	Yes
Starshelitsa	larva IV	3.8–4	15	No
Starshelitsa	♀	13.5	57–58	Yes
Starshelitsa	♂	14	51	Yes
Starshelitsa	♂	15	60–61	Yes
Starshelitsa	ad. ♂	15	54–57	Yes
Starshelitsa	ad. ♀	14	55	1/2 yes
Yubileina	juv. ♀	8	34–35	1/2 yes
Gergitsovata peshtera	juv. ♂	7	31–32	1/2 yes
Toshova douпка	ad. ♀	13	40–41	No
Toshova douпка	♀	12	27–42	Yes

*Body length measured to an accuracy of +/- 0.5 mm, antennal segments counted with a precision of +/- 1.

ka Cave (terra typica!); Svinskata doupka Cave; Zidanka Cave; (western Stara planina Mts.), Bov, Mechata doupka Cave; Vidin District, Oreshets, Parnak Cave; Vratsa District (Vrachanska planina Mts.), Botunya, Toshova doupka Cave.

New records: Asenovgrad District (Western Rhodopi Mts.), 1 ♀, cave near Orehovo (= ? Cheleveshnitsa Cave), 01.07.1924, leg.?, Devin District (Western Rhodopi Mts.), 1 ♀, Trigrad, Suhodolska 1 Cave, alt. 1,400 m, 13.07.1997, B. Petrov leg.; Gotse Delchev District (Western Rhodopi Mts.), 1 ♂, 1 ♀, Gospodintsi, Salievata peshtera Cave, 02.11.1994, B. Petrov leg.; (Pirin Mts.), 2 ♂♂, 4 ♀♀, Goleshevo, Starshelitsa Cave, 18.06.1988, P. Beron leg. (E.H. Eason det., in collection); Kustendil District, 3 ♂♂, 2 ♀♀, 1 juv., 1 larva, Chetirtsi, Uske Cave, 03.03.1994, B. Petrov leg.; 1 ad. ♀, same locality, 22.06.2000, B. Petrov leg.; (Konyavska planina Mts.), 1 juv. ♂, Gorna Koznitsa, Asandelia Cave, 09.02.1994, P. Stoev, T. Ivanova & B. Petrov leg.; 1 juv., same locality, 06.06.1998, B. Petrov leg.; Lovetch District, 1 ♀, 1 subad. ♂, Bezhanovo, Gergitsovata peshtera Cave, 15.07.1985, P. Beron & B. Garev leg.; Momchilgrad District (Eastern Rhodopi Mts.), 1 ad. ♀, Kremen, Kremenskata peshtera Cave, alt. 250 m, under stones in clay, 07.11.1999, B. Petrov, S. Beshkov & D. Vassilev leg.; Peshtera District (Western Rhodopi Mts.), 3 ♂♂, 4 ♀♀, Novata peshtera Cave, 30.03.1996, B. Petrov leg.; 1 ad. ♂, 1 juv., same locality, 15.01.2000, B. Petrov leg.; 1 subad. ♀, Yubileina Cave, 09.04.1974, P. Beron leg.; Rudozem District (Western Rhodopi Mts.), 1 ♀, Boevskata peshtera Cave, 02.04.1988, M. Barzakova leg.; Smolyan District (Western Rhodopi Mts.), 2 ad. ♂♂, 1 juv. ♂, Smilyan, Kraiputnata Cave, alt. 700 m, clay, 11.07.1997, B. Petrov leg.; 1 ♀, same locality, 09.11.1997, B. Petrov leg.; 1 ad. ♂, same locality, under stones in clay, 06.08.1999, B. Petrov & V. Beshkov leg.; Sofia District (Vrachanska planina Mts.), 2 badly damaged ad. ♀♀, Lakatnik, Malkata peshtera near Temnata doupka (= Zidanka) Cave, 08.07.1948, P. Tranteev leg.; 1 ad. ♀, 1 juv., same locality, 24.01.1996, B. Guïorguiev & V. Beshkov leg.; (western Stara planina Mts.), 1 ad. ♀, Bov, Mechata doupka Cave, alt. 910 m, 17.02.1975, P. Beron leg.; (Rui region), 1 juv. ♂, cave near Zelenigrad 02.05.1972, P. Beron & V. Beshkov leg. (Z. Matic det.); Vratsa District (Vrachanska planina Mts.), 1 ad. ♂, 1 ad. ♀, 1 subad. ♂, Botunya, Toshova doupka Cave (= Kalna Matnitsa; Toshina doupka; Vodnata doupka), 12.06.1971, P. Beron leg.; 1 ♀, same locality, 12.06.1994, T. Ivanova leg.; 1 ♂, 1 ♀, same locality, clay, guano, 03.04.1999, B. Petrov leg.; 2 ad. ♂♂, 1 ad. ♀, same locality, 10.06.2000, B. Petrov leg.

REMARKS: Tab. 1 shows variations in certain characters in the cave material of *L. lakatnicensis* from Bulgaria. These data can be augmented by the following observations.

In an adult male from Starshelitsa Cave, body length 15 mm; head broader rather than long; antennae with 60–61 segments, coxal pores: 4, 5, 5, 4; spinulation: 15 CxAd present on both coxae; all (m) spines on prefemur, femur and tibia very long; internal pores on 14th and 15th pairs of legs. In a juvenile from Zidanka Cave, body length 6 mm, antennae with 24 segments; spinulation: 15 Pf pD, 15 PfmV, 14 PfmD, 14PfmV present; internal pores on last pairs of legs almost invisible. Juveniles from Uske Cave: body length 5 mm; antennae with 19 (first) and 25 (second) segments; Tömösvary's organ very large; coxal pores: 1, 2, 2, 1?; tarsi 1–13 distinctly articulated; forcipules elongated.

Verhoeff [1926a] described *L. lakatnicensis* based on two females collected in Temnata doupka Cave, western Stara planina Mts. It has since been reported several times from caves in other parts of the country, thus extending its geographical range from the western Stara planina in the east to the Eastern Rhodopi Mts., Konyavska planina Mts., Rui region and southern Pirin Mts., and even to the Vernjicka Cave in eastern Serbia in the west [Matic & Darabantu, 1968]. As *L. lakatnicensis* has always been reported from inside caves, never superficially, it seems Zapparoli [1994] erred in having recorded *lakatnicensis* epigeically in the Falakro Mts.,

North Greece. His record might actually prove to refer to the closely related *L. christovici* Matic et Golemansky, 1964.

From Temna doupka Cave in southern Macedonia (now in Greece), Verhoeff [1943] described another species, which he named *Monotarsobius auritus*, morphologically close to *lakatnicensis* but different in having much longer antennae (with 58–60 segments), a different spinulation pattern of the 1st and 14th pairs of legs, and a larger Tömösvary's organ. The author provided illustrations of the head, tarsus 5, and the female gonopods. Although *auritus* shows a quite feeble spinulation of the legs, all of its other characters lie within the range of intraspecific variation of *L. lakatnicensis*. Furthermore, the *auritus* gonopod conformation fits well with that of *lakatnicensis*. Yet, until the type of *auritus* is re-examined, I refrain from formally synonymising *auritus* with *lakatnicensis*.

At present, the *L. lakatnicensis* group includes five distinct species: *L. lakatnicensis* Verhoeff, 1926 (western and southern Bulgaria, East Serbia), *L. ergus* (Chamberlin, 1952) (Turkey, southeastern Bulgaria), *L. christovici* Matic et Golemansky, 1964 (southern Bulgaria), *L. thracicus* Matic et Golemansky, 1967 (southern Bulgaria) and *L. strandzanicus* (Ribarov, 1987) (southeastern Bulgaria).

Lithobius (s. str.) *lucifugus* L. Koch, 1862

New records: Sofia District, 1 ad. ♂, Berende izvor, Temnata doupka Cave, 18.09.1924, leg.?

REMARKS: This is the only record of *L. lucifugus* from a cave in Bulgaria. The species seems to enter caves but occasionally.

Lithobius (s. str.) *mutabilis* L. Koch, 1862

Lithobius mutabilis: Matic & Golemansky, 1967: 125.

Lithobius mutabilis: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Kotel District (eastern Stara planina Mts.), Medven, Lednitsata Pot hole; Sofia District, Berende izvor, Temnata doupka Cave.

New records: Shoumen District (Shoumensko Plateau), 1 ♂, Nahodka 13 Cave, 28.09.1996, P. Beron leg.; Lovetch District, 1 ♂, Golyama Zhelyazna, Yalovitsa Cave, 12.06.1993, B. Guïorguiev leg.; 1 specimen, same locality, 3.10.1925, N. Radev leg. (K. Verhoeff det., in collection).

REMARKS: A vial labeled "*L. mutabilis*? K. Verhoeff det." has been relocated among the others in the Verhoeff Collection of the NMNH. Re-examination of the specimen has confirmed Verhoeff's identification. This species is only an occasional cave inhabitant.

Lithobius (s. str.) *muticus* C. L. Koch, 1862

New records: Lovetch District, 1 ad. ♀, Golyama Zhelyazna, Toplya Cave, 18.09.1997, B. Guïorguiev & P. Mitov leg.

REMARKS: This species has been collected by sieving some leaf litter at the cave entrance (B. Petrov, pers. comm.). Although widespread in the country, this is the only record of *L. muticus* from a "cave" habitat.

Lithobius (s. str.) *nigripalpis* L. Koch, 1867

Lithobius nigripalpis: Beron, 1994: 35.

Lithobius nigripalpis: Stoev & Ribarov, 1995: 92.

LITERATURE RECORDS: Elhovo District (Derventski Heights), Krainovo, Bezimenna (Nameless) Pot hole; Vidin District, Rabisha, Magura Cave.

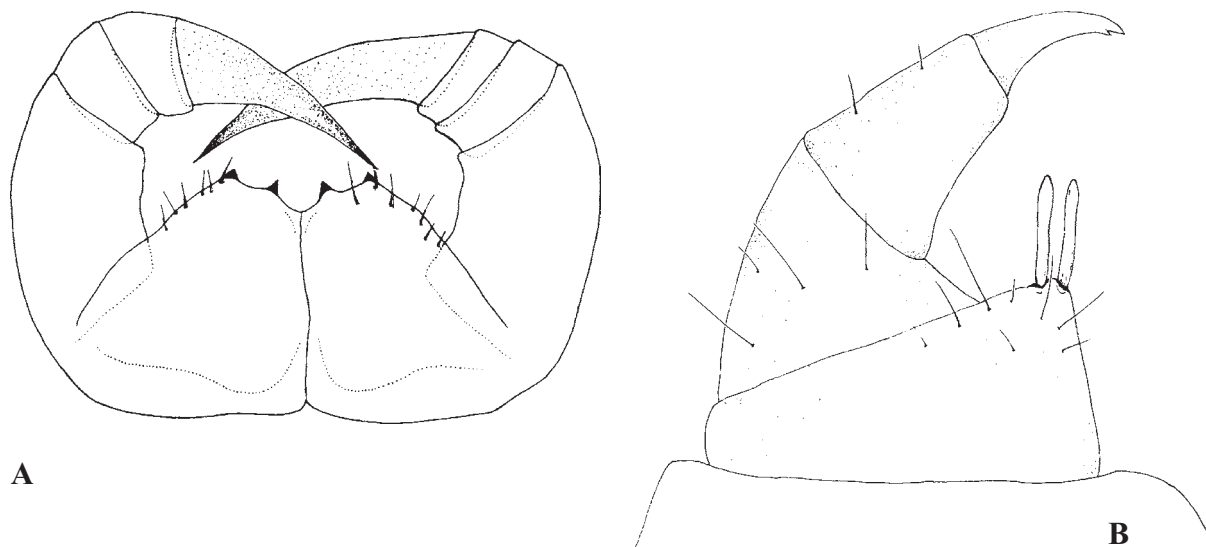


Fig. 1. *Lithobius rushovensis* Matic, 1967. A — Prosternum, ventral view; B — Female gonopod, lateral view.
Рис. 1. *Lithobius rushovensis* Matic, 1967. A — прoстернум, вид снизу; B — гоноподий самки, вид сбоку.

REMARKS: This species is very common in Bulgaria, though it has been registered in caves only twice.

Lithobius (s.str.) cf. *nigripalpis* L. Koch, 1867

Lithobius nigripalpis: Beron, 1994: 35.

Lithobius nigripalpis: Stoev & Ribarov, 1995: 92.

LITERATURE RECORDS: Elhovo District (Sakar Mts.), Mramor, Mladezka Pot hole (sub *L. nigripalpis*).

New records: Lovetch District, 1 ♂, Karlukovo, Bankovitsa Cave, 12.06.1968, P. Tranteev leg.; Shoumen District (Shoumensko Plateau), 1 ♂, Nahodka 13 Cave, 28.09.1996, P. Beron leg.

REMARKS: As the males of *L. viriatus* and *L. nigripalpis* are hard to distinguish, all male-based records are to be considered doubtful, hence the above qualifications.

Lithobius (s. str.) *parietum* Verhoeff, 1899

Lithobius forficatus parietum: Verhoeff, 1928: 120.

LITERATURE RECORDS: Lovetch District, Devetaki, Devetashkata Cave.

REMARKS: This is the only cave record of *L. parietum* in Bulgaria.

Lithobius (s. str.) *rushovensis* Matic, 1967

Fig. 1.

Lithobius rushovensis Matic, 1967: 239.

Lithobius beschkovi Matic et Golemansky, 1967: 126–128, syn.n.

LITERATURE RECORDS: Lovetch District, 1 adult ♂ of *L. rushovensis* [Lectotype] together with 1 larval stadium IV [Paralectotype], Gradeshnitsa, Rushovata peshtera Cave, 06.05.1964, V. Guéorguiev leg.; 1 adult ♂ of *L. beschkovi* [Lectotype], 3 subadult ♂♂ and 1 specimen larval stadium IV [Paralectotypes], Golyama Zhelyazna, Toplya Cave, 14.07.1960, V. Beshkov leg.

New records: Gotse Delchev District (Western Rhodopi Mts.), 2 subad. ♂♂, 1 subad. ♀, Pletena, Banyan Cave, alt. 950 m, under stones, clay, 07.06.1999, B. Petrov & B. Barov leg.; 3 ad. ♂♂,

4 ad. ♀♀, 1 subad. ♂, 1 subad. ♀, same locality, 02.06.2000, B. Petrov leg.; Lovetch District 2 ♂♂, Gradeshnitsa, Rushovata peshtera Cave, 22.03.1993, D. Dimova leg.; 1 ad. ♀, Glozhene, Planinets Cave, on wet surface of stones, 04.07.1999, B. Petrov & K. Ruskov leg.; numerous specimens of both sexes, Golyama Zhelyazna, Toplya Cave, 11.03.1995, B. Petrov leg.; 1 ♂, 1 ad. ♀, 1 juv. ♀, same locality, 11.10.1996, B. Guéorguiev leg.; 1 ad. ♂, 2 ad. ♀♀, 3 km from Polaten towards Cherni vit, Nameless cave on road, clay, 03.07.1999, B. Petrov & K. Ruskov leg.; Plovdiv District (central Stara planina Mts.), 1 subad. ♀, Christo Danovo, Mazata Cave, alt. 1,220 m, 26.09.1997, P. Beron & T. Ivanova leg.; 1 subad. ♂, 1 subad. ♀, same village, Zlatnata peshtera Cave, alt. 970 m, 27.09.1997, P. Beron & T. Ivanova leg.; Smolyan District (Western Rhodopi Mts.), 1 subad. ♂ lacking last pair of legs, Zabardo, Vakhite douпки Cave, July, 1962, P. Beron & S. Andreev leg.

DIAGNOSIS. *L. rushovensis* is easily distinguishable from the other Balkan species of *Lithobius* (s.str.) by the following set of diagnostic characters: very long and thin anterior legs; 2+2 prosternal teeth; reduced number of ocelli (4–9), almost always decolorate; Tömösvary's organ larger than adjacent ocelli; head always broader rather than long; gonopodial spurs remarkably long and slender; 15CxaV spine usually present; tergites 9, 11, 13 each with a well-developed projection, 7th tergite with a small posterior projection. Colour in ethanol violet-blue as in *Harpolithobius* spp.

REDESCRIPTION: In the adult male from Toplya Cave, head pale brownish, antennae yellow to pale brownish, body brown-blue; body length 16 mm; head distinctly broader rather than long, slightly emarginate posteriorly; antennae with 39–41 segments, as long as the middle of tergite 7, terminal antennal segment 2.5–3 times longer than penultimate one; Ocelli in two unequal rows, 1+3+2+1, decolorate, principal ocellus isolated from main group of ocelli; Tömösvary's organ a little larger than adjacent ocelli; prosternum: 2+2 prosternal teeth with porodonts placed laterally to lateral tooth, forcipules elongated (Fig. 1A); tergite 1 narrower than head, tergites 5, 8, 10, 12, 14 markedly emarginate; tergites 9, 11, 13 with well-developed projections; tergite 7 with a small projection; coxal pores: 3, 4, 4, 3, large, elliptical. Spinulation as in Table 2.

Table 2. Spinulation pattern in *L. rushovensis*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1			–	–	m			mp	a	a
2			–	–	m			mp	a	a
3			p	a	m			mp	ap	a
4			p	a	m			mp	ap	a
5			p	am	m			mp	ap	a
6			m	am	am			mp	ap	a
7			m	am	am			mp	ap	a
8			m	am	am			mp	ap	ap
9			m	am	am			mp	ap	ap
10			m	am	am			mp	ap	ap
11			mp	am	am			mp	ap	ap
12			mp	am	am			mp	ap	ap
13		m	mp	amp	am			amp	p	ap
14	–	m	amp	amp	am	a		amp	p	p
15	–	m	amp	m	–	a		amp	p	–

In the adult female from Toplya Cave, body length 17 mm; head distinctly broader rather than long, slightly emarginate posteriorly; antennae broken off; ocelli in three unequal rows, 1+3+3+2, decolorate, principal ocellus isolated from main group of ocelli; Tömösvary's organ a little larger than adjacent ocelli; tergite 1 narrower than head, tergites 5, 8, 10, 12, 14 markedly emarginate; tergites 9, 11, 13 with well-developed projections; tergite 7 with a small projection; coxal pores: 5, 5, 5, 5 – 4, 5, 5, 4, large, elliptical; female gonopods: 2+2 very long and slender spurs, almost 5–6 times as long as broad; claw tripartite, lateral and distal denticles less strongly devel-

oped; dorsolateral spines on 1st, 2nd and 3rd parts of gonopods absent, several setae placed instead of spines (Fig. 1B).

In the juvenile female from Toplya Cave, body length 10 mm; head: broader rather than long; antennae broken off; ocelli 3–4?, decolorate; prosternum: 2+2 prosternal teeth with porodonts placed laterally to lateral tooth, forcipules elongated; tergites 8, 10, 12, 14 markedly emarginate; tergite 5 less strongly emarginate; tergites 9, 11, 13 with well-developed projections; coxal pores: 2, 2, 2, 2; female gonopods not developed.

In an adult male from Rushovata peshtera Cave, body yellow-brown blackish; body length ca. 11 mm; head distinct-

Table 3. Intraspecific age-related variability in *L. rushovensis*.

Age/ Sex	Length (mm)	Antennal segments (+/-1)	Ocelli	Coxal pores
Toplya Cave population				
subad. ♀	10	–	(3–4 ?)	2222
ad. ♀	15	36–37	1+3+4 (8)	4554–3454
ad. ♀	16	39–41	1+3+2+1 (7)	3443
ad. ♀	17	–	1+3+3+2 (9)	5555–4554
Rushovata peshtera Cave population				
<i>L. rushovensis</i> ad. ♂ [Lectotype] original description	15	35	5	3333
<i>L. beschkovi</i> ad. ♂ [Lectotype]	10–15	33–41	1+4-1+8 (5–9)	3444
<i>L. beschkovi</i> larva [Paralectotype]	–	18	3	–
ad. ♂	11	35-36	1+3+2+2-1+3+3+1 (8–9)	2443–3443
ad. ♂	14	35	1+3-1+2+2 (4–5)	3443
Planinets Cave population				
ad. ♀	15	33	1+3+3+2	?

ly broader rather than long, slightly emarginate posteriorly; antennae with 35–36 segments, as long as tergite 7; ocelli in three rows, 1+3+2+2 - 1+3+3+1, decolorate; Tömösvary's organ a little larger than adjacent ocelli; prosternum: 2+1 prosternal teeth with porodonts placed laterally to lateral tooth, forcipules elongated; tergite 1 distinctly narrower than head, tergites: 10, 12, 14 markedly emarginate; tergites 9, 11, 13 with well-developed projections; tergite 7 with a small projection; tergite 8 with a deep concavity (damaged); coxal pores: 2, 4, 4, 3 - 3, 4, 4, 3, large, elliptical; last pairs of legs missing.

The following characters prove to be intraspecifically variable between populations and also age-related: spinulation of legs, number of ocelli, of antennomeres and of coxal pores (see Tab. 3).

Another highly variable characteristic of this species is 15Cxv spine, which is usually present in both coxae in adults, but could also be absent in one of them or totally lacking.

TAXONOMIC REMARKS: *L. rushovensis* is morphologically close to *L. decapolitus* Matic, Negrea et Prunesco, 1962, a species restricted to caves in the Carpathians of Romania. The main differences between *rushovensis* and *decapolitus* are summarised below:

Character	<i>L. rushovensis</i>	<i>L. decapolitus</i>
Tergites	6 th and 7 th tergites each with a projection	6 th and 7 th tergites without projection
Female gonopodial spurs	with long gonopodial spurs, some 6–7 times longer rather than broad	not so long spurs, 4–5 longer rather than broad
Female gonopodial claw	with well-developed lateral and medial denticles	with small, less strongly developed denticles
15Cxv spine	usually present	absent

Both species seem to have a direct common ancestor while speciation seems to be quite ancient. At the moment, these two species are completely allopatric, the Danube dividing their ranges. *L. rushovensis* is known to occur in caves of the Predbalkan, central Stara planina and Western Rhodopi mountains, recently reported in Turkey as well [Zapparoli, 1999 sub *L. beschkovi*].

The above new synonymy and lectotype designations refine the taxonomy of this quite variable species.

ECOLOGICAL NOTES. This species lives in the inner, dark parts of caves. Its long legs, reduced ocelli, large Tömösvary's organ and coxal pores show clear-cut adaptations to cavernicolous (= troglomorphy). The caves inhabited by *L. rushovensis* appear to also harbour such troglobites as *Tranteeva paradoxa* Kratochvil, 1958 (Opiliones) and *Genestiella gueorguievi* Giachino, 1992 (Bathyscinae).

The *Lithobius* (s. str.) sp. *schuleri* Verhoeff, 1925 group

Lithobius erythrocephalus: Matic, 1973: 260.

Lithobius erythrocephalus borisi: Stoev & Ribarov, 1995: 92.

Lithobius erythrocephalus subsp.?: Stoev & Ribarov, 1995: 92.

LITERATURE RECORDS: Mezdra District, Kunino, Chelovecha doupka Cave (sub *L. erythrocephalus* subsp.?): between Kunino and Karlukovo, Cave No. 294; Sofia Dis-

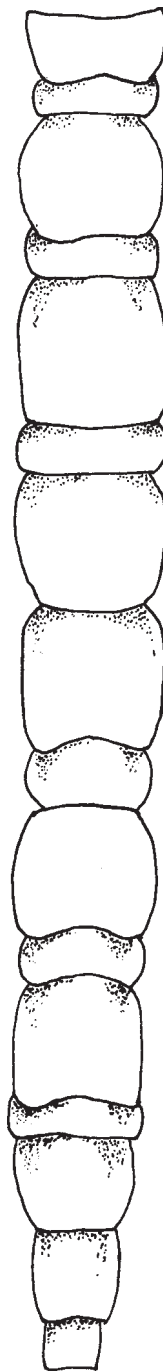


Fig. 2. *Lithobius stygius* Latzel, 1880. Tergites, dorsal view.

Рис. 2. *Lithobius stygius* Latzel, 1880. Тергиты, вид сверху.

trict, Breze, Padezh Pot hole (sub *L. erythrocephalus*); Vratsa District, Cherepish, Serapionovata Cave (sub *L. erythrocephalus borisi*).

REMARKS: Although this species is among the most frequent cave-dwelling centipedes in the western Stara planina Mts. region, its identity could not be reliably established. A forthcoming revision of the *schuleri* group of *Lithobius* in the Balkans is to answer the question.

Lithobius (s. str.) *stygius* Latzel, 1880

Fig. 2.

Oligobothrus Luciani Folkmanova, 1935: 7–8, **syn.n.**

Lithobius erythrocephalus cerberi Verhoeff, 1943: 143, Abb. 22, **syn.n.**

syn.? *Lithobius temensis* Verhoeff, 1943: 141, Abb. 16–18.

Lithobius pusillus: Matic, 1967: 239 (misidentification).

Lithobius microps: Matic, 1967: 242 (misidentification).

Lithobius sp. (from Lepenica Cave): Matic, 1967: 242.

Lithobius stygius: Matic & Darabantu, 1968: 216.

syn.? *Lithobius jugoslavicus* Matic & Darabantu, 1968: 216, fig. 6.

Lithobius cerberi: Eason, 1983: 135, **syn.n.**

Lithobius erythrocephalus (partim): Beron, 1994: 35.

Lithobius cerberi: Stoev, 1997: 99, **syn.n.**

syn.? *Lithobius corneliae* Stoev, 1997 (substitute name for *Lithobius jugoslavicus* Matic et Darabantu, 1968): 90.

LITERATURE RECORDS: Velingrad District (Western Rhodopi Mts.), Suhata Cave; Lepenitsa Cave (sub *Lithobius pusillus*, *Lithobius microps*, *L. erythrocephalus* and *Lithobius* sp.).

New records: Asenovgrad District (Western Rhodopi Mts.), 1 subad. ♀, 2 larvae, Modar Peak, Modarskata peshtera

Cave, alt. 1,600 m, 26.09.1994, B. Petrov leg.; 1 subad. ♀, Shiroka Laka, Ledenik Cave (= Lednitsata Cave near Gela), 28.06.1914, leg.?: Peshtera District (Western Rhodopi Mts.), numerous specimens of both sexes, Yubileina Cave, 09.04.1974, P. Beron leg.; 2 ad. ♀♀, same locality, clay, 28.06.2000, B. Petrov & P. Nikolov leg.; Velingrad District (Western Rhodopi Mts.), 2 ad. ♂♂, 2 juv. ♂♂, Lepenitsa Cave (= Vodnata doupka near Ladzhene), 06.08.1926, leg.? (*L. erythrocephalus*, G. Ribarov det., in collection); 1 subad. ♀, same locality, 01.07.1927, I. Buresch & P. Drensky leg. (*Lithobius (Monotarsobius)* sp., G. Ribarov det., in collection); 3 damaged specimens of different age, same locality, 02.06.1963, C. Deltchev leg. (published as *Lithobius* sp., Matic [1967, p. 242]); 1 ad. ♀, same locality, 04.04.1972, C. Deltchev leg.; 2 ♂♂, 3 ♀♀, same locality, 07.04.1974, P. Beron leg.; numerous

Table 4. Spinulation pattern in *L. stygius*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1			p	am(p)	m			p	a	a
2			p	amp	am			mp	ap	a
3			p	amp	am			mp	ap	a
4			p	amp	am			mp	ap	ap
5			p	amp	am			mp	ap	ap
6			p	amp	am			mp	ap	ap
7			p	amp	am			mp	ap	ap
8			p	amp	am			mp	ap	ap
9			mp	amp	am			mp	ap	ap
10			mp	amp	am			mp	ap	ap
11			mp	amp	am			mp	ap	ap
12		(m)	(a)mp	amp	am			mp	p	ap
13		m	amp	amp	am			amp	p	ap
14		m	amp	amp	am	a		amp	p	p
15		m	amp	amp	(a)	a		amp	p	

specimens of both sexes, same locality, 25.11.1993, P. Stoev & B. Petrov leg.; 2 juv. ♂♂, Suhata doupka near Ladzhene (= Suhata Cave near Velinograd), alt. 1,000 m, 06.08.1926, leg.?, 12 ♂♂, 5 ♀♀, 3 subadults, same locality, under stones, guano, 25.11.1993, P. Stoev & B. Petrov leg.; 4 ad. ♂♂, 4 ad. ♀♀, 7 juv., same locality, 05.06.2000, B. Petrov leg.; 1 subad. ♂, Dupcheto Cave, 25.11.1993, P. Stoev & B. Petrov leg.; 2 ad. ♀♀, 2 subad. ♀♀, same locality, under stones, 09.08.1997, B. Petrov leg.

DIAGNOSIS: Although rarely possessing a 15CxaV spine, *L. stygius* definitely belongs to the *Lithobius erythrocephalus* group which encompasses medium-sized congeners with 2+2 prosternal teeth, a double claw on the last pairs of legs, none or only traces of a projection on the 13th tergite, and usually a 15CxaV spine. The following diagnostic characters clearly distinguish the adult *stygius* from other congeners: 7–10 decolorate or slightly pigmented ocelli in two rows; Tömösvary's organ always larger than adjacent ocelli; antenna comparatively long, with 30–40 segments, more often 33–37; all tergites without projections, head always broader rather than long; very long gonopodial spurs neither serrate nor expanded subterminally [see Eason, 1983, p. 136, sub *L. cerberi*]; large, oval coxal pores 3–6 in number; 14th and 15th CxaV spines either absent or present; 15th apical accessory claw very slender, in some cases almost invisible or totally absent, principal claw often supplied with a basal seta.

REDESCRIPTION: In an adult female from Lepenitsa Cave, body colour yellow-brownish; body length 15.5 mm; head broader rather than long; antennae with 36 segments, as long as tergite 5; ocelli in two rows, 1+3+3, decolorate; Tömösvary's organ a little larger than adjacent ocelli; prosteronum: 2+2 prosternal teeth with lateral prodonts; all tergites without distinct projections (Fig. 2); tergites 1, 3, 5 moderately, tergites 7, 8, 10, and 12 markedly emarginate; tergite 14 straight or slightly emarginate posteriorly; coxal pores: 3, 4, 4, 3, oval; 14th pair of legs with an accessory apical claw; 15th pair with a basal seta and a well-developed accessory apical

claw; glandular pores in medial aspect on prefemur, femur, tibia and tarsalia 14 and 15; female gonopods: 2+2 long spurs and a tridentate claw, medial denticle being larger [see Eason, 1983, Fig. 21]. Spinulation as in Tab. 4.

The following characters prove to be variable intraspecifically between populations and also age-related: leg spinulation, presence of 14CxaV and 15 CxaV spines, number and colour of ocelli, number of antennomeres and of coxal pores (see Tab. 5). Subadult females frequently possess only one gonopodial spur. In some specimens, 15th accessory apical claw is absent. A 15CxaV spine is the only character that proves to vary between populations, being more often present in specimens from Yubileina Cave and almost totally absent in the populations from Suhata, Dupcheto and Lepenitsa caves.

Taxonomic remarks: Latzel [1880] erected *Lithobius stygius* based on several specimens of different sex and age, found in "Grotten Krains" (Slovenia). Although lacking illustrations, the original description was very profound. Later, Verhoeff [1900] recorded *stygius* from the region of Trebinje in Herzegovina and mentioned that his specimens were without 15VCxa spine.

Lithobius erythrocephalus cerberi was proposed by Verhoeff [1943] based on material from Poganjaca Cave near Trebinje. This taxon was distinguished from the typical *erythrocephalus* by the much richer spinulation on the 15th prefemur and the absence of a 15VCxa spine. No notice was made of the very strong resemblance existing between *cerberi* and *stygius*. Eason [1983] believed the specimens kept in the Natural History Museum in London and labeled by Verhoeff as *L. stygius* belonged in fact to *cerberi*, and he provided a good redescription of that material. In my opinion, he was misled by the lack of the 15th ventral spine and by the long female gonopodial spurs, which he believed both to distinctly separate *cerberi* from *stygius*.

As shown above, since the presence or absence of a 15th

Tab. 5. Intraspecific age-related variability in *L. stygius*.

Sex	Length (mm)	Antennal segments (+/-1)	Ocelli	Coxal pores	14CxaV	15CxaV
Yubileina Cave population						
ad. ♂	9	33	1+3+3 (7)	3443–3333	S yes	no
subad. ♀	9	31–32	1+3+2 (6)	2343–2333	No	no
ad. ♂	11	32	1+3+3-1+3+4 (7–8)	3443	No	1/2 yes
ad. ♂	11	32–33	1+3+3 (7)	3433	Yes	yes
ad. \$	ca. 11	34–35	1+3+3-1+3+4 (7–8)	3443	S yes	yes
ad. ♂	–	32	1+3+3 (7)	3443	Yes	yes
ad. ♀	ca. 12	33–34	1+3+3 (7)	3454–3444	Yes	yes
ad. ♂	13	33	1+3+3 (7)	3443–4443	No	yes
Lepenitsa Cave population						
larva IV	4	19	1+2 (3)	1	No	no
larva IV	5	18	1+1+1 (3)	1	No	no
subad. ♂	9	30–31	1+3+2 (6)	2332	No	no
subad. ♀	10	32	1+3+2 (6)	2332	No	no
subad. ♀	11	34	1+3+3 (7)	2443–3443	No	no
ad. ♀	12.5	34	1+4+3+1 (9)	3454–3443	No	1/2 yes
ad. ♀	13	37	1+4+3-1+2+4+2 (8–9)	3443–3444	No	no
ad. ♂	14	34	1+3+3 (7)	3443	No	no
ad. ♀	16.2	35	1+4+2+2 (9)	4554–4544	No	no
Suhata Cave population						
subad. ♂	9	31–32	1+3+3-1+2+3 (6–7)	2221–2231	No	no
ad. ♂	14	32–37	1+3+4-1+3+3 (7–8)	3443–3343	No	no
ad. ♀	14.2	35–38	1+3+3+2-1+4+3+1 (9)	4444–3443	No	no
ad. ♂	ca. 15	34–35	1+2+3+2-1+2+3+3 (8–9)	3443–4443	No	no
Dupcheto Cave population						
subad. ♂	6	25	1+3 (4)	1221	No	no
ad. ♀	–	–	–	–	–	1/2 yes
subad. ♀	9	28–30	1+2+3 (6)	–	No	no

CxaV spine varies at least between *stygius* populations in Bulgaria, its taxonomic value seems fairly limited. The gonopods of *stygius* have originally been described by Latzel as “langen und dünnen”, i.e. just as they appear to be in *cerberi* as well. In addition to the above morphological identity of the two taxa compared, their distribution overlaps in the karst near Trebinje. So a new formal synonym is proposed here: *Lithobius erythrocephalus cerberi* Verhoeff, 1943 = *Lithobius stygius* Latzel, 1880, syn.n.

Another little-known taxon from the same species group is *Oligobothrus* (= *Lithobius*) *luciani*, erected by Folkmanova [1935]. It has been described based on an adult male collected in Vilina Pechina Cave near Trebinje. In her work, Folkmanova mentioned that the new species strongly resembled *stygius* but differed in the shape of the head, in the length of the antenna, in the ventral spinulation of the 15th pair of legs, and the presence of dark spots on the last leg pairs. Since all of these characters are known to vary in Lithobiidae, the taxon appears very unstable. Moreover, Folkmanova de-

scribed *luciani* from near Trebinje, a region where *stygius* is known to occur as well. So a new formal synonym is proposed here: *Oligobothrus luciani* Folkmanova, 1935 = *Lithobius stygius* Latzel, 1880, syn.n.

Further possible synonyms of *L. stygius* are *Lithobius temnensis* Verhoeff, 1943, *Lithobius jugoslavicus* Matic et Darabantu, 1968 and *Lithobius corneliae* Stoev, 1997 (substitute name for *Lithobius jugoslavicus* Matic et Darabantu, 1968). However, no formal synonymy is introduced here as it would probably be premature prior to a revision/study of further material.

This is a species new to the Bulgarian centipede fauna, preliminarily reported in Stoev [1997] sub *Lithobius cerberi*.

Ecological and zoogeographical notes: The species shows all adaptive characteristics of a typical cave-dweller: reduced number of ocelli, comparatively enlarged Tömösvary's organ, large coxal pores, elongated forcipules and legs, and pale body. I have observed *stygius* to be among the most numerous cave animals in the Lepenitsa and Suhata caves. Other troglo-

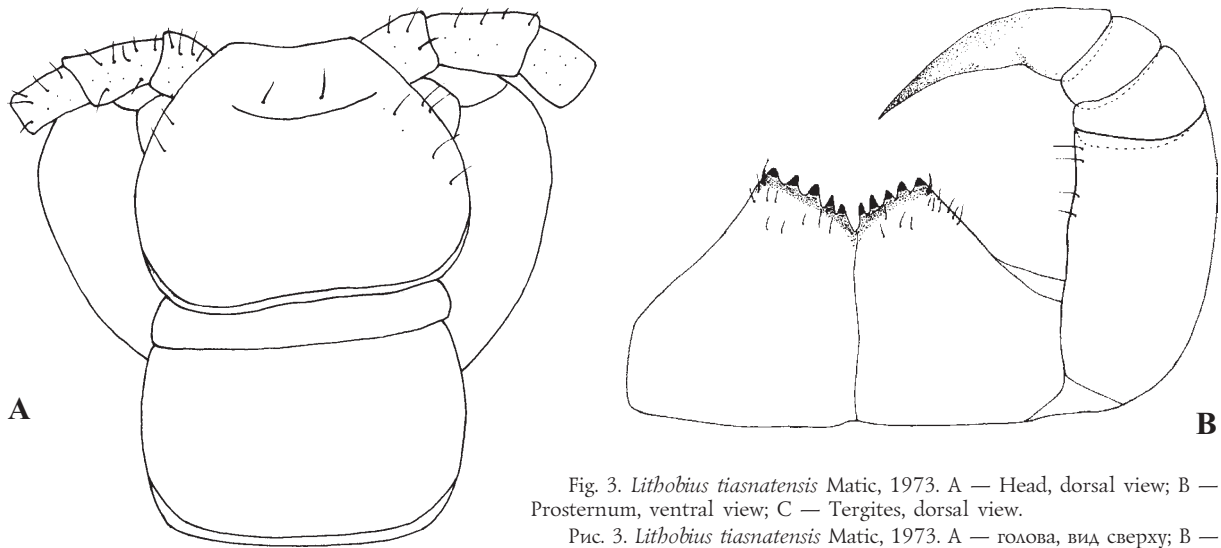


Fig. 3. *Lithobius tiasnatensis* Matic, 1973. A — Head, dorsal view; B — Prosternum, ventral view; C — Tergites, dorsal view.

Рис. 3. *Lithobius tiasnatensis* Matic, 1973. А — голова, вид сверху; В — простернум, вид снизу; С — тергиты, вид сверху.

morphic animals inhabiting the caves together with *stygius* are *Lithobius lakatnicensis* (Lithobiidae), *Balkanopetalum rhodopinum* Verhoeff, 1937 (Diplopoda), *Anamastigona lepenicae* (Strasser, 1975) (Diplopoda), *Troglohyphantes drenskii* Deltshv, 1973 (Aranei). Until now, the only place in the country where two troglobitic lithobiomorphs co-occur is Yubileina Cave, Rhodopi Mts. This deserves special attention and further detailed research. From a zoogeographical point of view, *stygius* seems to be confined to caves in the Balkans, i.e. being a Balkan endemic. Additional collecting efforts in caves in Albania, the Republic of Macedonia, Bosnia, Kosovo (Serbia), Montenegro and Greece are required to better outline the species' distribution.

GENERAL DISTRIBUTION: North-East Italy, Slovenia, Croatia, Bosnia, Montenegro, Albania (unpublished record), Bulgaria (Rhodopi Mts.), North Greece?, Serbia?, Hungary?, Korfu (Kerkira) Island?

Lithobius (s. str.) *tiasnatensis* Matic, 1973

Fig. 3.

Lithobius tiasnatensis Matic, 1973: 255.

Lithobius popovi Matic, 1973: 257, **syn.n.**

Lithobius hrissiae Stavropoulos et Matic, 1990: 43, **syn.n.**

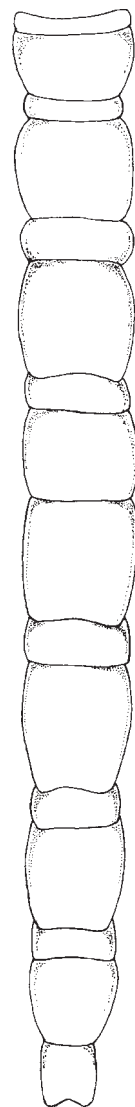
LITERATURE RECORDS: Lovetch District, Devetaki, Devetashkata peshtera Cave; Topolovgrad District (Sakar Mts.), 1 subadult ♂ of *Lithobius tiasnatensis* [Holotype], Mramor, Tyasnata propast Pot hole, 04.08.1970, P. Beron & V. Beshkov leg.; 1 subadult mutilated ♂ of *Lithobius hrissiae* [Holotype], Greece, Samothraki Island, Chora, 20.05.1984, P. Beron leg.

New records: Lovetch District, 2 ad. ♂♂, 2 ad. ♀♀, 1 subad. ♂, Devetaki, Devetashkata peshtera Cave, 15.08.1994, P. Beron & T. Ivanova leg.; 1 ad. ♂, 1 ad. ♀, 2 subad. ♂♂, same locality, guano, clay, 19.01.2000, B. Petrov & T. Ivanova leg.; 1 ad. ♂, Krushuna, Boninskata (Popskata) peshtera Cave, 19.07.1982, P. Beron leg.; 1 ad. ♀, 1 ad. ♂, 1 subad. ♀, 1 larva IV stadium, Karpachevo, Futyovskata peshtera Cave, 17.07.1982, P. Beron leg.

REDESCRIPTION: In an adult male from Devetashkata peshtera Cave, antennae and legs yellow, body red-brown, head and last tergite darker than other parts of body; body length 21 mm, width ca. 2 mm; head distinctly broader rather than long (Fig. 3A); antennae with 56–58 segments, ca. 13 mm long; ocelli: absent; Tömösvary's organ very large;

prosternum: 5+5 prosternal teeth with porodonts placed laterally to lateral tooth, free border laterally to porodont sloping steeply backward without formation of a shoulder (Fig. 3B); tergites 1, 3, 5 slightly emarginate, tergite 1 distinctly wider than head, posterior angles of tergites 2, 4, 6, 7 rounded, tergites 8, 10, 12 strongly emarginate, distinctly longer rather than broad; tergites 9, 11, 13 without projections, angles rounded; tergite 14 straight posteriorly (Fig. 3C); coxal pores: 4, 6, 6, 5-5, 6, 7, 5, large, elliptical; all medial (m) spines on pairs of legs 1–15 very long; 14th and 15th pairs comparatively long, flattened in medial aspect, with well-visible pore fields, 15th femur and tibia slightly enlarged compared to 14th; 13th pair of legs longer than principal legs, 14th and 15th accessory apical claw present, principal claw with a basal spine. Spinulation as in Tab. 6.

In a subadult male from Devetashkata peshtera Cave, colour white-yellow; body length ca. 6 mm; head longer rather than broad; antennae with 36–40 segments, terminal segment 3.5 longer than penultimate one; ocelli absent; Tömösvary's organ very large; prosternum: 3+3 prosternal teeth with porodonts placed laterally to lateral tooth; all tergites without distinct projections; coxal pores: 2–3, oval; 14th and 15th pairs of legs comparatively long, flattened in medial aspect, with well-visible pore fields, 15th accessory apical claw absent. Spinulation of last pairs of legs as follows:



C

Table 6. Spinulation pattern in *L. tiasnatensis*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1			mp	amp	m			p	ap	a
2			mp	amp	am			mp	ap	ap
3			mp	amp	am			mp	ap	ap
4			mp	amp	am			mp	ap	ap
5			missing					missing		
6			mp	amp	am			amp	ap	ap
7			mp	amp	am			amp	ap	ap
8			mp	amp	am			amp	ap	ap
9			mp	amp	am			amp	ap	ap
10			mp	amp	am			amp	ap	ap
11			amp	amp	am			amp	ap	ap
12			amp	amp	am			amp	ap	ap
13		m	amp	amp	am	a		amp	(a)p	ap
14		m	amp	amp	am	a		amp	p	p
15		m	amp	am	a	a		amp	p	p

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
14		m	amp	am	m			mp	p	p
15		m	amp	m	–			mp	–	–

In a larva IV stadium from Futyovskata peshtera Cave, body length ca. 5 mm; antennae with 24–26 segments; ocelli absent; prosternum: 3+3 prosternal teeth; Spinulation very feeble.

The following characters prove to be variable intraspecifically between populations and also age-related: number of

Tab. 7. Intraspecific age-related variability in *L. tiasnatensis*.

Age/Sex	Length (mm)	Prosternal teeth	Head	Antennal segments (+/-1)	15 th accessory apical claw	Coxal pores
Devetashkata peshtera Cave population						
ad. ♂	21	5+5	broader	56–58	Present	4665–5675
ad. ♂	–	5+5	–	52–53	1/2 present	4665–4655
ad. ♀	–	5+5	–	48–50	Present	4565–3555
ad. ♀	–	5+5	slightly longer ?	48	1/2 present	4555–4655
subad. ♂	6	3+3	slightly longer	36–40	Absent	2–3
Boninskata peshtera Cave population						
ad. ♂	15	4+6	longer (sic!)	52	Absent	–
Futyovskata peshtera Cave population						
ad. ♀	16	5+5	broader	40–50 (sic!)	Absent	4–5
ad. ♂	16	5+5	–	52–53	Absent	–
subad. ♀	11–12	4+4	–	48	Absent	–
larva IV	5	3+3	broader?	24–26	–	–
Matic's original description of <i>L. popovi</i>						
subad. ♀	11	4+3	length = width	46	Absent	3444
Matic's original description of <i>L. tiasnatensis</i>						
subad. ♂	12	5+5	longer	45	Absent	3432

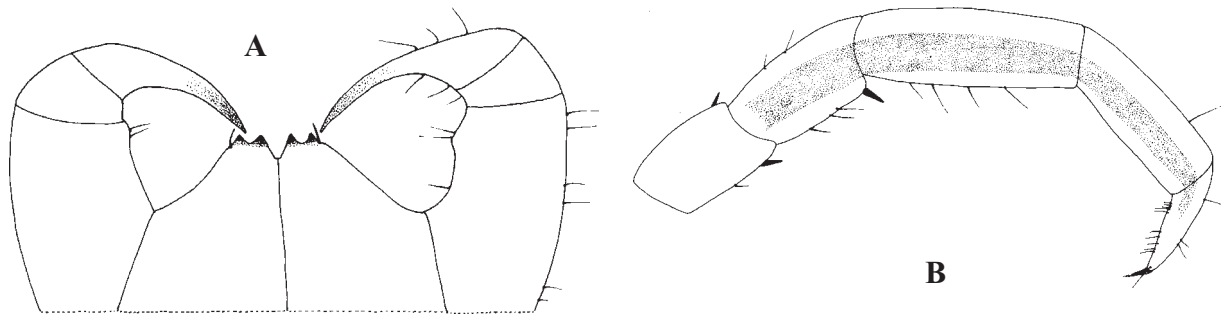


Fig. 4. *Lithobius* cf. *apfelbecki* Verhoeff, 1900. A — Prosternum, ventral view; B — 15th leg, medial view.

Рис. 4. *Lithobius* cf. *apfelbecki* Verhoeff, 1900. А — простернум, вид снизу; В — 15-я нога, вид изнутри.

prosternal teeth, presence of a 15th accessory apical claw, number of antennomeres and coxal pores, leg spinulation and probably head shape (see Tab. 7).

TAXONOMIC REMARKS: In his second work on Bulgarian cave centipedes, Matic [1973] described two eyeless cave lithobiids. The first one, *L. tiasnatensis*, was based on a subadult male from Tyasnata propast Pot hole, Sakar Mts., the second, *L. popovi*, on a probably subadult female from Devetashkata peshtera Cave in central Bulgaria. Neither species has since been recorded. Following a re-examination of topotypes of *L. popovi* and the holotype of *L. tiasnatensis* it becomes clear that both species are identical and all of the characters used by Matic for their separation are variable intraspecifically (see Tab. 7). Being described a couple of pages earlier than *popovi*, the name chosen as valid is *tiasnatensis*. In other words, *Lithobius popovi* Matic, 1973 is herewith proposed as a junior subjective synonym of *L. tiasnatensis* Matic, 1973, syn.n.

Stavropoulos & Matic [1990] described *L. hrissiae* based on one subadult male collected on Samothraki Island, Greece. Nothing about the striking similarity of *hrissiae* to *tiasnatensis* was mentioned in that paper. Following a re-examination of the holotype (see details in Stoev & Beron [2001]), it becomes clear that *hrissiae* is identical with *tiasnatensis*. Hence, the following formal synonymy is introduced: *Lithobius hrissiae* Stavropoulos et Matic, 1990 = *L. tiasnatensis* Matic, 1973, syn.n.

ECOLOGICAL AND ZOOGEOGRAPHICAL NOTES. *L. tiasnatensis* is a cavernicolous species currently known from a few caves in central Bulgaria and a pot hole in the Sakar Mts., southeastern Bulgaria as well as possibly endogean on Samothraki Island. I have tried twice to collect *tiasnatensis* in the Tyasnata propast Pot hole but both attempts failed. It seems rare at this locality, probably the same concerns Samothraki. On the other hand, *L. tiasnatensis* is quite frequent in some of the caves in central Bulgaria, inhabiting the very inner, dark parts of caves. Another troglobite found to share the same caves with *L. tiasnatensis* is *Trichoniscus tenebrarum* Verhoeff, 1926 (Isopoda, Oniscidea).

Lithobius (s. str.) *viriatius* Sselivanoff, 1878

Lithobius viriatius: Negrea, 1965: 92.

Lithobius piceus: Matic, 1973: 260.

Lithobius viriatius: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Elhovo District (Derventski Heights), Melnitsa, Kesadzhiitsa Cave; Vratsa District (Vrachanska planina Mts.), Reznyovete Pot hole.

New records: Elhovo District (Derventski Heights), 5 ♂♂, 1 juv., Melnitsa, Kesadzhiitsa Cave, 01.06.1982, P. Beron leg.; 1 ♀,

same locality, 08.09.1994, G. Seizov & B. Borisov leg.; 1 ad. ♂, same locality, 25.02.1997, T. Ivanova leg.; 1 ad. ♂, 2 subad. ♂♂, several juveniles, same locality, 01.07.2000, B. Petrov and P. Nikolov leg.

REMARKS: Although *L. viriatius* is rarely found in subterranean habitats, sometimes it maintains real cave populations. This is true for the Kesadzhiitsa Cave, where the species populates even in the innermost, highly isolated parts of the cave. This population has long been described and, for a period of nearly 40 years, it appears still to be extant.

Lithobius (s. str.) sp.

Lithobius sp.: Matic, 1967: 242.

LITERATURE RECORDS: Lovech District, Dalbokata propast Pot hole near Karlukovo.

New records: Lovech District, 1 juv., Karlukovo, Cave No. 4235, 18.03.1995, P. Stoev & T. Ivanova leg.

REMARKS: Because of its immature stage, this specimen could not be reliably identified.

Lithobius (*Monotarsobius*) *crassipes* L. Koch, 1862

Lithobius (*Monotarsobius*) *crassipes*: Verhoeff, 1928: 120.

Monotarsobius crassipes: Matic, 1973: 260.

Lithobius (*Monotarsobius*) *crassipes*: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Asenovgrad District (Western Rhodopi Mts.), Dobrostan, Topchika Cave; Yamata Pot hole; Elhovo District (Derventski Heights), Melnitsa, Dranchi douпка Pot hole; Gotse Delchev District, Petrovo, Rupata Cave; Ivaylovgrad District (Eastern Rhodopi Mts.), Doupkata Cave; Lovetch District, Karlukovo, Galabarnika Cave; Devetaki, Devetashkata Cave.

New records: Gotse Delchev District, 1 ♀, Gospodintsi, Zlatarskata Cave, 02.09.1994, B. Petrov leg.; Haskovo District (Eastern Rhodopi Mts.), 4 ad. ♂♂, 2 ad. ♀♀, Byal kladenetz, Kodja-In (Golyamata peshtera) Cave, guano, 12.06.1999, B. Petrov & B. Barov leg.; Ivaylovgrad District (Eastern Rhodopi Mts.), 6 ♀♀, Doupkata Cave, 23.04.1996, P. Stoev & B. Petrov leg.; 1 ♂, 2 ♀♀, same locality, clay, under stones, 23.04.1999, B. Petrov leg.; Lovetch District, 2 ♂♂, 4 ♀♀, Devetaki, Devetashkata Cave, 13.08.1994, P. Stoev & T. Ivanova leg.; Varna District, Black Sea Coast, 2 ad. ♂♂, Balgarevo, Kaliakra Cape, small limestone cave, under stones, 06.09.2000, B. Petrov leg.

REMARKS: This widespread eurytopic species is often found in artificial galleries and caves in the country.

Lithobius (*Sigibius*) cf. *apfelbecki* Verhoeff, 1900
Fig. 4.

New records: Haskovo District (Eastern Rhodopi Mts.), 1 ad. ♂, Dolno Cherkovishte, Zandana Cave, 21.04.1996, B. Petrov &

P. Stoev leg.; 1 ad. ♂, 1 ad. ♀, same locality, rotten log, 08.02.1998, B. Petrov leg.

DESCRIPTION: Colour bright yellowish-white; body length 5–6 mm; head slightly longer rather than broad; antennae with 24–28 segments; ocelli absent; Tömösvary's organ very large; prosternum: 2+2 small prosternal teeth (Fig. 4A); 15th basal claw without accessory apical claw but with a well-visible seta (Fig. 4B); male 15th prefemur, femur, tibia and tarsalia strongly enlarged; femur, tibia and tarsalia of 14th and 15th pairs medially flattened, with pore fields; coxal pores small: 2, 2, 2, 1-1, 2, 2, 2; long medioventral setae on coxae 13–15; female gonopods: two long and slender spurs and a tridentate claw; lateral denticle well-developed, distal one almost invisible. Spinulation as Tab. 8.

Table 8. Spinulation pattern in *L. cf. apfelbecki*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
14	–	–	amp	m	–	–	–	mp		
15		m	amp	m		a		mp		

REMARKS: *L. apfelbecki* has been described from Bosnia and never redescribed since. Further two species very close to *apfelbecki* have subsequently been added, both from Romania. So, presently the group includes at least three species. Still another candidate, the small eyeless species *L. reiseri* Verhoeff, 1900, has recently been recorded in Turkey [Zapparoli, 1999]. Until a profound revision of the group in the Balkans is made, the true identity of the above specimens is bound to remain rather dubious.

Lithobius (Sigibius) beroni Negrea, 1965

New records: Elhovo District (Derventski Heights), 2 ad. ♂♂, Krainovo, Dalbokata douпка Cave, 01.07.2000, B. Petrov & P. Nikolov leg.; Gotse Delchev District (Western Rhodopi Mts.), 1 ad.

♂, 1 ad. ♀, Pletena, Banyan Cave, alt. 950 m, clay, under stones, 07.06.1999, B. Petrov & B. Barov leg.; 1 ad. ♂, same locality, 02.06.2000, B. Petrov leg.; Krumovgrad District (Eastern Rhodopi Mts.), 1 ad. ♂, 1 ad. ♀, Oreshari, Karangin Cave, under stones in guano, 11.12.2000, B. Petrov, S. Beshkov & M. Langourov leg.; 1 ad. ♂, Egrek, Rupata Cave, alt. 500-550 m, under stones in guano, 11.12.2000, B. Petrov, S. Beshkov & M. Langourov leg.; Stara Zagora District (central Stara planina Mts.), 1 ad. ♂, 4 ad. ♀♀, Stoletov Peak, Stoletovskata peshtera Cave, 26.09.1973, P. Beron & S. Andreev leg.

REMARKS: This is a species widely distributed in Bulgaria, the above being the first records from caves. *L. beroni* has recently been discovered in caves in North Greece as well (P. Stoev, unpublished record).

Lithobius (Sigibius) bifidus (Matic, 1973)

Monotarsobius bifidus Matic, 1973: 260–262.

Lithobius (M.) sp. (*microps* A.A., nec Meinert, 1868, partim): Beron, 1994: 36.

LITERATURE RECORDS: Bourgas District (Strandzha Mts.), Mladezhko, Izvornata peshtera Cave; Kosti, Sarpiiskata peshtera Cave (sub *Lithobius* sp.).

New records: Bourgas District, 1 ♂, 2 ♀♀, Kosti, Stoyanovata peshtera Cave, 19.06.1980, P. Beron & S. Andreev leg.; numerous specimens of both sexes, same village, Sarpiiskata peshtera Cave, 26.06.1980, P. Beron & S. Andreev leg.; 1 subad. ♀, same village, Kirechnitsata Cave, 07.12.1963, P. Beron leg.; 2 ad. ♂♂, Stoilovo, Peshterata s dvata vhoda Cave, 24.06.1980, P. Beron & S. Andreev leg.

REMARKS: This species has originally been erected from Izvornata peshtera Cave in Strandzha Mts. The present records extend its range to a few more caves in the same region. The species might be expected to occur in similar habitats in European Turkey as well.

Lithobius (Sigibius) cf. micropodus Matic, 1980

New records: Gabrovo District, 1 ad. ♂, 1 ad. ♀, both damaged, cave near Shipka (central Stara planina Mts., altitude ca. 2,000 m), neither date nor collector; Gotse Delchev District

Table 9. Spinulation pattern in *L. (S.) cf. micropodus*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1			–	–	m				a	a
2			–	am	m				ap	ap
3			–	am	m				ap	ap
4			–	am	m				ap	ap
5			–	am	m				ap	ap
6			–	am	am				ap	ap
7			–	(a)m	m				ap	ap
8			–	am	m				ap	ap
9			–	am	am				ap	ap
10			–	amp	am				ap	ap
11			m	amp	am				p	ap
12			m	amp	am			p	p	ap
13		m	mp	amp	am			mp	p	–
14		m	amp	am	–	–		mp	p	–
15		m	amp	m	–	a		mp	–	–

(southern Pirin Mts.), 1 ad. ♂, 1 subad. ♂, Goleshevo, Starshelitsa Cave, alt. 900 m 16.05.1993, P. Stoev leg.; Lovetch District, numerous specimens of both sexes, Bezhanovo, Parnitsite Cave, clay, guano, 21.01.1995, B. Petrov & P. Stoev leg.; Sofia District (western Stara planina Mts.), 1 ad. ♀, Bov, Mechata douпка Cave, alt. 910 m, 30.01.1994, P. Stoev & B. Petrov leg.; Vratsa District (Vrachanska planina Mts.), 2 ad. ♂♂, 1 ad. ♀, Mutnishki Monastery, Cherniya izvor Cave, 03.04.1999, B. Petrov leg.

DESCRIPTION: In the adult male from Starshelitsa Cave, body yellowish-white; body length ca. 9 mm; head distinctly longer rather than broad; antennae with 28–29 segments; ocelli: 4 in two rows; Tömösvary's organ very large; prosternum: 2+2 prosternal teeth; prefemur moderately enlarged; principal legs with fused tarsalia; 14th and 15th pairs distinctly enlarged, with glandular pores in medial aspect on femur, tibia and tarsalia, 15th principal claw without accessory apical claw; coxal pores large and oval: 2, 2, 2, 2, separated from one another by one diameter. Spinulation as in Tab. 9.

In an adult male from Cherniya izvor Cave, body yellowish, antennae and head darker than body; length 6.5–7 mm; antennae with 32 segments; ocelli: 3 in a single row; Tömösvary's organ very large; 15th accessory apical claw absent. Spinulation as follows:

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
14		m	amp	m	–	–		mp	–	–
15		m	amp	m	–	a		mp	–	–

In the adult female from Cherniya izvor Cave, body yellow, antennae and head darker (brown) than body; body length 6.2 mm; antennae with 31 segments; 3 black ocelli arranged in a triangle; Tömösvary's organ very large; prosternum: 2+2 prosternal teeth; 15th accessory apical claw absent; last pairs of legs with pores in medial aspect. Female gonopods: two long unequal spurs and a tripartite claw, medial denticle being poorly developed, lateral one well distinct. Spinulation as follows:

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
14		m	amp	(a)m	–	–		mp	–	–
15	(a)?	m	amp	(a)m	–	a		mp	–	–

The adult female from the cave near Shipka with dark brown head and tergite 1, tergite 2 lighter than head and tergite 1, body brown; body length ca. 9 mm; antennae broken off, composed of more than 20 short segments (i.e., the subgenus *Sigibius*); prosternum: 2+2 prosternal teeth separated by a deep emargination, free border laterally to porodont sloping steeply backward without formation of a shoulder; prefemur of forcipules comparatively slender; ocelli: 3 (2+1) decolorate; principal legs with fused tarsalia; last pairs of legs badly damaged but visibly enlarged; female gonopods: 2+2 spurs and a bidentate claw; coxal pores small and oval, 2–3? Spinulation as follows:

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
14		m	amp	am	–	–		–	–	p
15		m	amp	m	–	–		mp	(p)	–

REMARKS: There are at least two more taxa in the same group of morphologically closely related species together with *L. micropodus* (= *L. microps* auct.) in the country, these being *L. proximus* Matic et Golemansky, 1967 and *L. totevi* Kaczmarek, 1975. Both so strongly resemble *micropodus* that perhaps they are nothing else but its synonyms or at best its geographical races/subspecies. Herewith, I use the name *micropodus* as a collective name for these three morphospecies.

Lithobius (Sigibius) microps Meinert, 1868

Lithobius (M.) microps: Beron, 1994: 36.

LITERATURE RECORDS: Stara Zagora District (central Stara planina Mts.), Stoletov Peak, Stoletovskata peshtera Cave.

New records: Belogradchik District (western Stara planina Mts.), 1 ♂, 1 ♀, Krachimir, Krachimirsko vrelo Cave, guano, clay, 25.02.2000, B. Petrov leg.

REMARKS: This is the second record of *L. microps* from a cave in Bulgaria. Three small “*Sigibius*” species have hitherto been reported from Stoletovskata peshtera Cave, of which *L. beroni* is the only taxon confirmed herewith. Only additional collecting could reveal whether *L. wardaranus* and/or *L. microps* occur there as well.

Lithobius (Sigibius) wardaranus Verhoeff, 1937

Lithobius (M.) burzenlandicus wardaranus: Beron, 1994: 36.

LITERATURE RECORDS: Stara Zagora District (central Stara planina Mts.), Stoletov Peak, Stoletovskata peshtera Cave; Veliko Tarnovo District, Lyaskovskata peshtera Cave.

REMARKS: This species has originally been described as a subspecies of *L. microps* auct. (= *L. micropodus* Matic) and later transferred to *L. burzenlandicus*. Until its true status is identified, I prefer to attribute to it a full species rank.

Lithobius (Sigibius) sp.

Lithobius (M.) sp. (microps A.A., nec Meinert, 1868): Beron, 1994: 36.

LITERATURE RECORDS: Sofia District, Lipnitsa, Yarkovets Cave.

New records: Vidin District, 1 ad. ♂, Oreshets, Mirizlivka Cave, 04.06.1973, P. Beron leg.; Veliko Tarnovo District, 1 juv., Troshana Cave, 02.04.1926, N. Radev leg.

DESCRIPTION: In the adult male from Mirizlivka Cave, body light yellowish; length ca. 4.5–5 mm; antennae with 26 (+/-1) short segments; ocelli: 2–3 in a single row; 15th accessory apical claw absent or indistinct; last pairs of legs strongly enlarged, metatarsus 2.5 times shorter than tarsus.

REMARKS: This single specimen from Mirizlivka Cave has been examined by Matic and the vial contains his label “n. sp.”. However, it seems to have never been published and, this being a mutilated specimen, I could not refer it to some of the already described species, nor did I give it a new name.

Harpolithobius anodus (Latzel, 1880)

Harpolithobius anodus: Negrea, 1965: 91.

LITERATURE RECORDS: Vratsa District, Chiren, Pono-ra Cave.

New records: Devin District (Western Rhodopi Mts.), 1 subad. ♀, length 7–8 mm, with 40 antennal segments, and last, 14th and 15th pairs of legs missing, Yagodina, Imamova douпка

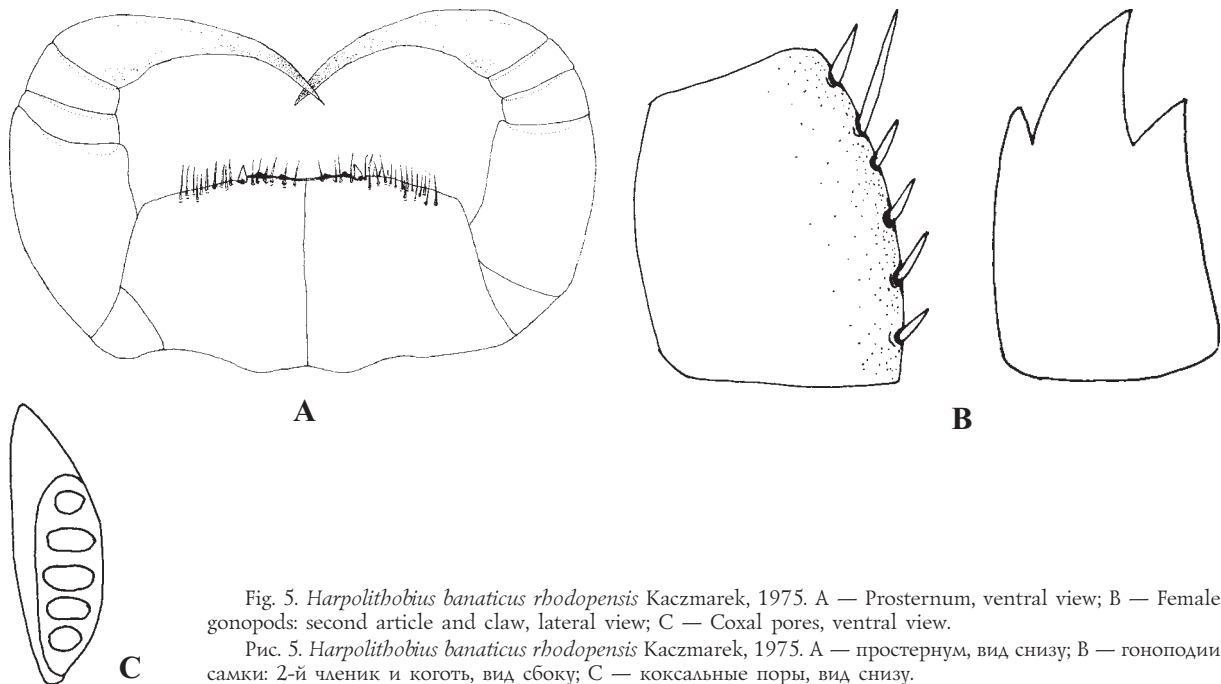


Fig. 5. *Harpolithobius banaticus rhodopensis* Kaczmarek, 1975. A — Prosternum, ventral view; B — Female gonopods: second article and claw, lateral view; C — Coxal pores, ventral view.

Рис. 5. *Harpolithobius banaticus rhodopensis* Kaczmarek, 1975. А — простернум, вид снизу; В — гоноподии самки: 2-й членик и коготь, вид сбоку; С — коксальные поры, вид снизу.

(= Yagodinskata peshtera) Cave, 28.06.1973, D. Raychev leg.; Sofia District (Ponor Mts.), 1 subad. ♂, Tserovo, Vodnata peshtera Cave, 09.05.1982, P. Beron leg.; 1 ♂, 2 ♀♀, same locality, rotten log and clay, 24.07.1997, B. Petrov & L. Prekrutov leg.; 1 subad. ♂, Berende izvor, Temnata douпка Cave, 18.09.1924, leg.?, Vratsa District (Vrachanska planina Mts.), 1 ♀, Reznovete Pot hole, 27.02.1988, R. Pandurska leg.; 1 ad. ♂, several subadults, Chiren, Ponor Cave, clay, 27.01.1998, B. Petrov & T. Ivanova leg.; 3 ad. ♂♂, 2 ad. ♀♀, Chiren, Zhabokreshka yama Pot hole, 01.10.1968, P. Beron leg.

REMARKS: This species is widespread in the country, often occurring in caves as well. Compared to what Matic [1966] recorded in the Romanian populations, the specimens from Vodnata peshtera Cave possess a little larger Tömösvary's organ while those from Zhabokreshka yama Pot hole usually have 50–52 antennomeres and a little bit shorter female gonopodial spurs.

Harpolithobius cf. dentatus Matic, 1957

Harpolithobius cf. dentatus: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Montana District, Prevala, cave in Pleshovo County.

REMARKS: This species has originally been described as a subspecies of *anodus*, only differing in the shape of the female gonopodial spurs and the number of antennomeres. It has been reported from Bulgaria by Ribarov [1992] and later by Stoev & Ribarov [1995]. Both records are based on insufficient material, some badly damaged. That is why the taxon still requires re-evaluation. So far, the species has been registered in Romania, Serbia, Bulgaria, Turkey? and Greece?

Harpolithobius folkmanovae Kaczmarek, 1975

Harpolithobius folkmanovae: Stoev & Ribarov, 1995: 94.

LITERATURE RECORDS: Elhovo District (Derventski Heights), Voden, Samardaala Pot hole.

REMARKS: This species has been described by Kaczmarek in southeastern Bulgaria and, later, reported by Ribarov from numerous localities in the region. Its discovery in a pot hole is probably due to it having accidentally fallen there.

Harpolithobius banaticus rhodopensis Kaczmarek, 1975

Fig. 5.

New records: Gotse Delchev District, 1 ad. ♀, Teplen, Teplenskata peshtera Cave, 1.08.1997, B. Petrov leg.; Haskovo District (Eastern Rhodopi Mts.), 1 ad. ♀, Dolno Cherkovishte, Zandana Cave, 21.04.1996, B. Petrov & P. Stoev leg.; Krumovgrad District (Eastern Rhodopi Mts.), 2 ad. ♂♂, 2 ad. ♀♀, 4 juv., Ribino, Aina-ini (Ogledalnata) Cave, guano, clay, 11.10.1995, P. Stoev & B. Petrov leg.; 1 ad. ♀, 1 subad. specimen, same locality, 10.02.1998, B. Petrov leg.

REDESCRIPTION: In an adult female from Aina-ini Cave, body bright yellowish to bright brown; length ca. 20 mm; antennae with 42–43 segments; Ocelli small, black, 17 in 3–4 rows; Tömösvary's organ larger than adjacent ocelli, generally large, situated below proximal edge of cephalic shield; prosternum: 2+2 stump teeth and very stout porodonts, latter placed laterally to lateral tooth (Fig. 5A); 15th basal claw with a well-developed accessory apical claw; coxal pores elliptical, 6, 5, 7, 6–7, 6, 6, 6; female gonopods: 2+2 spurs and a tripartite claw (Fig. 5B); segment 2 of gonopods with eight dorsal spines. Last pairs of legs in male: 14th femur and tibia with deep sulci, 2/3 of 15th tibia with a sulcus, dorsally flattened. Spinulation as in Tab. 10.

In the adult female from Teplenskata peshtera Cave, body bright brown; body length ca. 16 mm; antennae with 47 segments, as long as the middle of tergite 5; ocelli decolorate, 12–13 (1+2+3+4+3/2), arranged in 4 rows; Tömösvary's organ as big as adjacent ocelli, 15th basal claw with a well-developed accessory apical claw; coxal pores large, oval, 5, 5,

Table 10. Spinulation pattern in *H. banaticus rhodopensis*.

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1	–	–	m	m	m	–	–	–	a	a
2	–	–	mp	am	am	–	–	mp	ap	ap
3	–	–	mp	am	am	–	–	mp	ap	ap
4	–	–	mp	am	am	–	–	mp	ap	ap
5	–	–	mp	am	am	–	–	mp	ap	ap
6	–	–	mp	am	am	–	–	mp	ap	ap
7	–	–	mp	am	am	–	–	mp	ap	ap
8	–	–	mp	am	am	–	–	mp	ap	ap
9	–	–	mp	am	am	–	–	mp	ap	ap
10	–	–	mp	amp	am	–	–	mp	ap	ap
11	–	–	mp	amp	am	–	–	mp	ap	ap
12	–	–	mp	amp	am	–	–	mp	ap	ap
13	–	m	amp	amp	am	a	–	amp	ap	ap
14	–	m	amp	amp	am	a	–	amp	ap	ap
15	–	m	amp	amp	a	a	–	amp	p	–

6,5 (Fig. 5C); female gonopods: 2+2 spurs and a tripartite claw. Spinulation as follows:

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1	–	–	(p)	m	a/m	–	–	p	a	a
12	–	–	amp	amp	am	–	–	amp	ap	ap
14	–	m	amp	amp	am	a	–	amp	p	p
15	–	m	amp	amp	–	a	–	amp	p	–

REMARKS: This is the second record of this species since Kaczmarek [1975] and the first from caves. The genus *Harpolithobius* encompasses about twenty taxa; as most of them are poorly diagnosed, a general revision is strongly needed.

Harpolithobius sp.

New records: Kotel District 1 ad. ♀, 3 juv., Ledenitsata Cave, 29.09.1924, N. Radev leg.; Vratsa District 1 ad. mutilated ♀ (cf. *anodus*), cave above Bistritsa, 21.11.1937, R. Rachev leg.

REMARKS: The specimens from Ledenitsata Cave are morphologically quite distinct from the other *Harpolithobius* spp. found in Bulgarian caves. The highly mutilated female from near Bistritsa is probably *H. anodus*, although this identification is mostly intuitive.

Pleuroolithobius patriarchalis (Berlese, 1894)

Pleuroolithobius patriarchalis: Stoev & Ribarov, 1995: 93.

LITERATURE RECORDS: Elhovo District, Leyarovo, Mecha doupka Cave.

New records: Ivaylovgrad District (Eastern Rhodopi Mts.), 1 ♂, Dolno Lukovo, Prilepova doupka Cave, clay, guano, under

stones, 23.04.1999, B. Petrov leg.; 1 ad. ♂, 1 ad. ♀, Belopolyane, Zmiyarnika Cave, 25.04.1995, B. Petrov & B. Barov leg.

REMARKS: This is a species common in the southern regions of the country, sometimes also found in caves. Being based on females only, the record in Mecha doupka Cave deserves a more detailed study in the future.

Eupolybothrus (s. str.) *andreevi* (Matic, 1964)

Eupolybothrus andreevi: Matic, 1964: 507–510.

LITERATURE RECORDS: Sofia District (Ponor Mts.), Tserovo, Vodnata peshtera Cave.

REMARKS: There are only two eyeless *Eupolybothrus* species: *E. andreevi* Matic, 1964, from NW Bulgaria, and *E. obrovensis* (Verhoeff, 1930), from Slovenia and NE Italy. Since its original description *E. andreevi* has never been recollected, therefore it seems to rarely occur in caves. Although not mentioned in the original paper, the type specimen was taken about 1,000 m inside the cave (S. Andreev, personal communication).

Eupolybothrus (s. str.) *gloriastygis* (Absolon, 1916), subsp.n.?

Fig. 6.

Eupolybothrus sp.: Stoev & Ribarov, 1995: 92.

LITERATURE RECORDS: Sofia District, 1 juv. ♂, Breze, Tsarkvishte (Tsarkveto) Cave, alt. 800–900 m, clay, 14.11.1992, B. Petrov leg.

New records: Sofia District, 1 subad. ♀, Breze, Tsarkvishte (Tsarkveto) Cave, 24.07.1999, B. Petrov & L. Prekrutov leg.; Vidin District, 1 ad. ♀, Dolni Lom, Vodni pech Cave, 14.06.1973, P. Beron leg.

DESCRIPTION: In the juvenile male from Tsarkvishte Cave, body length 8 mm; both antennae with 32 segments, as long as tergite 8, last antennomere twice longer than penulti-

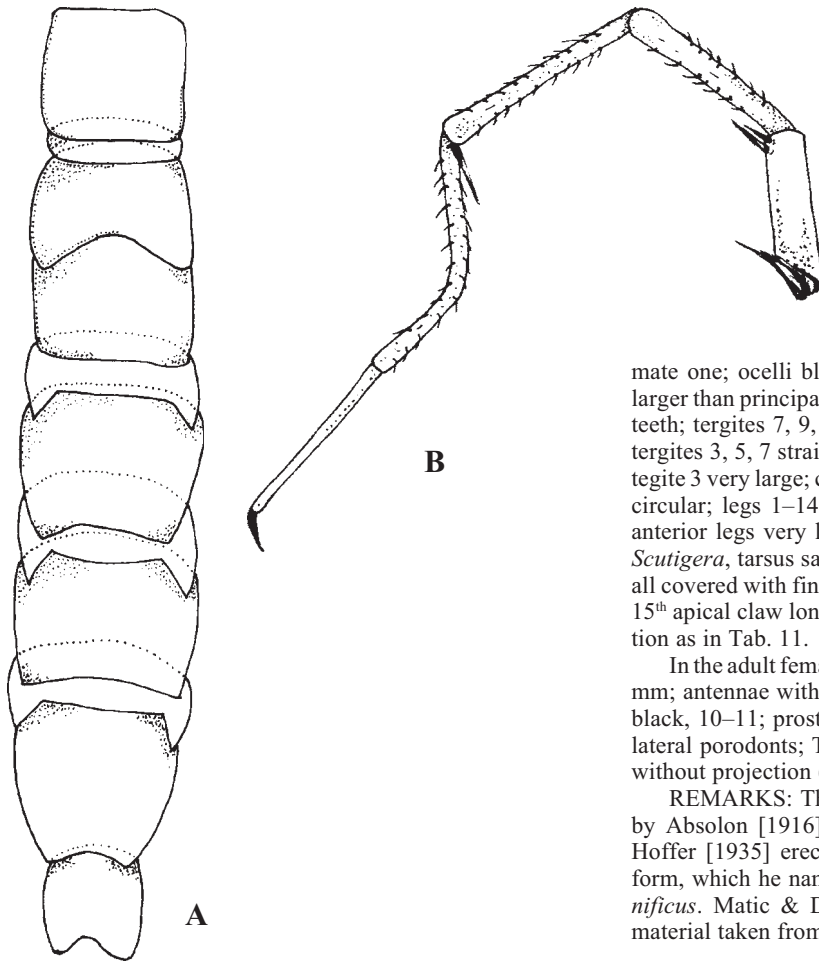


Fig. 6. *Eupolybothrus gloriastygis* (Absolon, 1916) subsp.n.?. A — Tergites, dorsal view; B — 15th leg, lateral view.

Рис. 6. *Eupolybothrus gloriastygis* (Absolon, 1916) subsp.n.?. A — тергиты, вид сверху; B — 15-я нога, вид сбоку.

mate one; ocelli black, 5 in 1–2 rows; Tömösvary's organ larger than principal ocelli; prosternum: 4+5 black prosternal teeth; tergites 7, 9, 11, 13 with well-developed projections; tergites 3, 5, 7 straight posteriorly, tergite 2 almost reduced, tergite 3 very large; coxal pores: 2, 2, 3, 2-2, 2, 2, 2, small and circular; legs 1–14 with accessory apical and basal claws; anterior legs very long and slender, resembling the legs of *Scutigera*, tarsus same in length as tibia, metatarsus shorter, all covered with fine setae and trichomes, especially tarsalia; 15th apical claw long, slender and curved (Fig. 6B). Spinulation as in Tab. 11.

In the adult female from Vodni pech Cave, body length 15 mm; antennae with 31 segments, as long as tergite 5; ocelli black, 10–11; prosternum: 10–11 prosternal teeth and stout lateral porodonts; Tergites 7, 9, 11, 13 with projections; 6th without projection (Fig. 6A).

REMARKS: This species has originally been described by Absolon [1916] from a cave in Herzegovina and later Hoffer [1935] erected from a neighbouring cave a sibling form, which he named *Bothopolys* (= *Eupolybothrus*) *magnificus*. Matic & Darabantu [1968], having at hand some material taken from two caves in Montenegro, proposed the

Table 11. Spinulation pattern in *E. gloriastygis* subsp.n.?

Legs	VENTRAL					DORSAL				
	Cx	Tr	Pf	F	Ti	Cx	Tr	Pf	F	Ti
1			m	m	m			–	a?	a
2			m	m	m			–	a	a
3			m	m	m			mp	a	a
4			m	m	m			mp	a	a
5			m	m	m			mp	a	a
6			m	am	m			mp	a	a
7			m	am	m			mp	ap	a
8			m	am	m			mp	ap	ap
9			m	am	am			mp	ap	ap
10			m	am	m			mp	ap	ap
11			m(p)	am	(a)m			mp	ap	ap
12			m(p)	am	m			mp	ap	ap
13			amp	am	m			mp	ap	ap
14		m	amp	am	m			amp	p	p
15		m	amp	m	m	a		amp	–	–

synonymisation of *gloriastygis* under *magnificus*. Stoev [1997] resurrected *gloriastygis* as the older available name.

The new material (two juveniles and one probably adult female) derives from two caves situated in the western Stara planina Mts. Although strongly resembling *E. gloriastygis*, the above samples differ evidently in the less numerous antennomeres, the lack of an accessory apical claw on the 15th pair of legs, and the 6th tergite lacking a projection. If these characters prove to be sufficiently stable in the Bulgarian populations of the species, a new taxon would seem warranted to name them. A species formally new to the country's fauna.

Eupolybothrus (s. str.) *litoralis* (L. Koch, 1867)

Eupolybothrus litoralis: Stoev & Ribarov, 1995: 92.

LITERATURE RECORDS: Elhovo District (Derventski Heights), Voden, Samardaala Pot hole; Golyam Dervent, Dalbokata douпка Cave.

REMARKS: As this species is common in southeastern Bulgaria, its discovery in two small caves in the region is not surprising. The female from the Samardaala Pot hole is abnormal in having three ventral setae on the 14th tarsus instead of one as given by Eason [1970]. In spite of this, there is no doubt that we witness a *litoralis*.

Eupolybothrus (*Mesobothrus*) *transsylvanicus* (Latzel, 1882)

Eupolybothrus transsylvanicus: Beron, 1994: 36.

LITERATURE RECORDS: Sofia District (Vrachanska planina Mts.), Lakatnik, Zidanka Cave; Velingrad District (Western Rhodopi Mts.), Dupcheto Cave.

New records: Belogradchik District (western Stara planina Mts.), 1 ad. ♀, Krachimir, Krachimirskoto vrelo Cave, guano, clay, 26.02.2000, B. Petrov leg.; Blagoevgrad District, 1 subad. ♀, Stanke Lisichkovo, Boichovata peshtera Cave (in a quarry), 14.09.1994, B. Petrov leg.; Devin District (Western Rhodopi Mts.), 1 ad. ♀, Yagodina, Trite douпки Cave, alt. 1,350 m, 24.07.1982, D. Raychev leg.; Haskovo District (Eastern Rhodopi Mts.), 1 ad. ♀, Dolno Cherkovishhte, Zandana Cave, 21.04.1996, B. Petrov & P. Stoev leg.; Kardzhali District (Eastern Rhodopi Mts.), 1 ad. ♀, Sredna Arda, Yarasa Ini Cave, 20.10.1995, T. Ivanova leg.; Kyustendil District, 1 ad. ♀, Gorna Rakovitsa, Cave in Valchi dol, date?, R. Radushev leg.; Krumovgrad District (Eastern Rhodopi Mts.), 1 subad. ♂, Beli dol, Mechkina douпка Cave, under stones in guano, 15.04.1998, B. Petrov & B. Barov leg.; Sofia District (Ponor Mts.), 1 ad. ♀, Tserovo, Vodnata peshtera Cave, 09.05.1982, P. Beron leg.; 1 badly damaged ad. ♂, Lakatnik, Malkata peshtera do Temnata douпка (= Zidanka Cave), 08.07.1948, P. Tranteev leg.; Vratsa District (Vrachanska planina Mts.), 1 ad. ♂, ca. 36 mm length, Cherepish, Studenata peshtera Cave, bottom, 50 m from entrance, 05.06.1960, P. Beron & T. Michev leg. (Z. Matic det., in collection).

REMARKS: This is a very common eurytopic species, often found in caves too.

Eupolybothrus (*Leptopolybothrus*) *tridentinus* (Fanzago, 1874)

Eupolybothrus sp.: Matic, 1967: 235.

Eupolybothrus tridentinus: Beron, 1994: 36.

LITERATURE RECORDS: Vidin District, Dolni Lom, Vodni pech Cave.

New records: Sofia District, 1 ♀, Gintsi, Pepina douпка Cave, 20.07.1963, A. Popov leg.

REMARKS: This species occurs but occasionally in Bulgarian caves. The record of Beron [1994] from Vodni pech Cave might be based on *E. gloriastygis* n. subsp?, which is also found there.

Eupolybothrus sp.

LITERATURE RECORDS: Smolyan District, Peshterata Cave near Polkovnik Serafimovo.

New records: Belogradchik District, 1 ♂, Salash, nameless small cave near road, 05.09.1998, B. Petrov leg.; Devin District (Western Rhodopi Mts.), 1 subad. damaged ♂ with 14th and 15th pairs of legs missing, Trigrad, Suhiya dol, Suhodolska 2 Cave, alt. 1,350 m, under stones, sand, 03.06.2000, B. Petrov leg.; Lovetch District, 1 ad. ♂, 1 larva, 3 km from Polaten towards Cherni vit, nameless cave on road, clay, 03.07.1999, B. Petrov & K. Ruskov leg.; Kardzhali District (Eastern Rhodopi Mts.), 1 larva IV stadium (10 pairs of legs), Madrets, Maarata Cave, 12.10.1996, B. Petrov & P. Stoev leg.; Krumovgrad District, 1 ad. ♂, Egrek, Rupata Cave, alt. 500–550 m, under stones in guano, 11.12.2000, B. Petrov, S. Beshkov, M. Langourov leg.

REMARKS: As all of these specimens are either highly mutilated or juvenile, none could be reliably identified. The specimen from Salash shows the diagnostic characters of *Eupolybothrus tridentinus*: medium size, 7+7 prosternal teeth, 40 antennal segments and Tergites 6, 7, 9, 11, 13 with projections, but the last pairs of legs are missing. The specimen from Maarata Cave has 4+4 prosternal teeth, antennae with 16 or 21 segments, 3 ocelli in a single row, Tömösvary's organ smaller than adjacent ocelli, 6th and 7th tergites with small projections; 9th tergite with a developed projection.

SCUTIGEROMORPHA

Family Scutigeridae

Scutigera coleoptrata (Linnaeus, 1758)

Scutigera coleoptrata: Guéorguiev & Beron, 1962: 302.

Scutigera coleoptrata: Beron & Guéorguiev, 1967: 161.

Scutigera coleoptrata: Matic, 1973: 262.

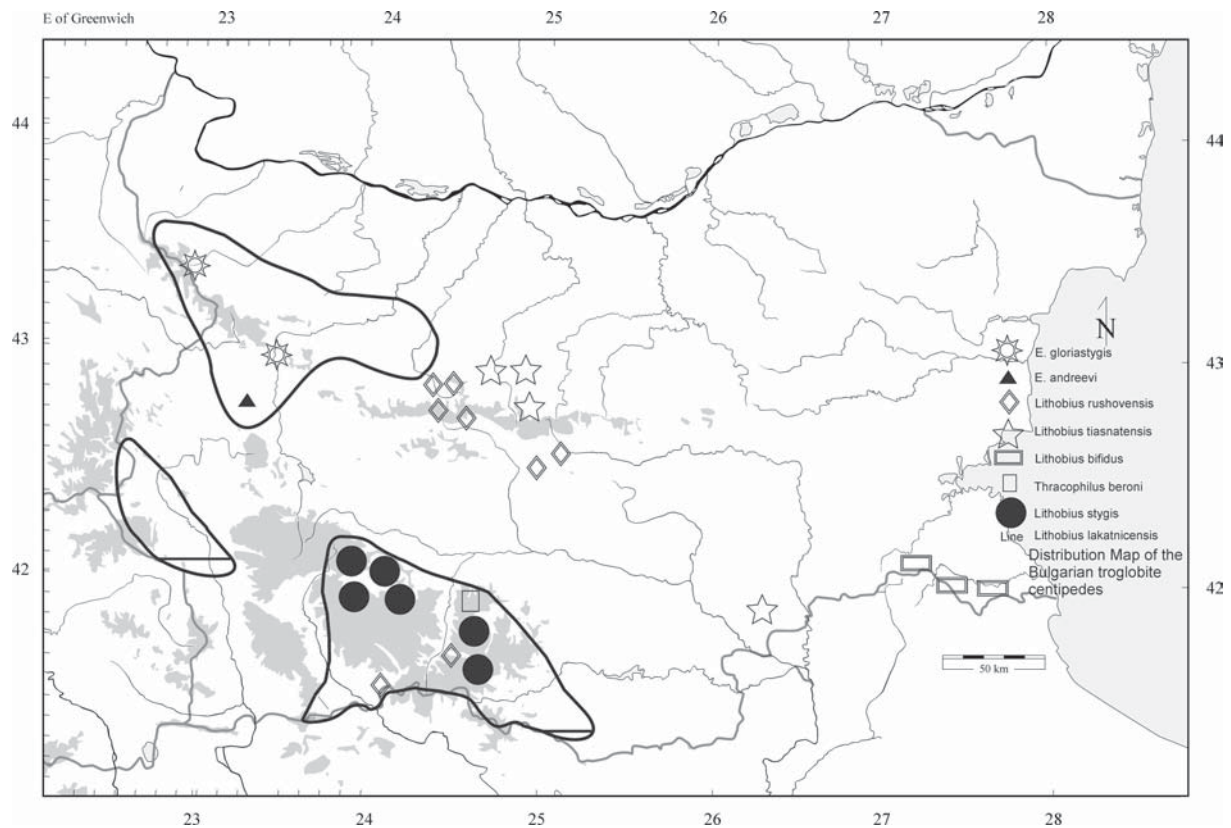
Scutigera coleoptrata: Beron, 1994: 36.

Scutigera coleoptrata: Stoev & Ribarov, 1995: 94.

LITERATURE RECORDS: Pleven District, Deventsi, Haidushkata peshtera Cave; Plovdiv District, Izbegli, Fidyafkinata douпка Cave; Rousse District, Pepelina, Orlova chuka Cave; Stara Zagora District, Ostra mogila, Labirinta (Tsepnatinata) Cave; Topolovgrad District (Sakar Mts.), Ustrem, Stara Sveta Troitsa Cave; Tyasnata propast (= Propast-ta) Pot hole; Mramor, Dranchi douпка Pot hole; cave near Reservoir; Novata Cave; Veliko Tarnovo District, Troshana Cave; Belyakovets, Golyama Podlistska Cave; Vidin District, Rabisha, Magura 2 Cave.

New records: Dobrich District 1 ad. ♂, 1 ad. ♀, Ognyanovo, Temnata peshtera Cave, 18.04.1999, N. Simov leg.; 2 ad. ♀♀, Balik, Asar Kale, Sarkaya Cave, 19.04.1999, N. Simov leg.; Elhovo District (Dervetski Heights), 1 ♀, Melnitsa, Kesadzhiitsa Cave, 08.09.1994, G. Seizov & B. Borisov leg.; Lovech District 1 ad. ♀, Karlukovo, Haidushkata douпка Cave, 03.03.1936, N. Atanasov leg.; 1 ad. specimen, same locality, 17.08.1966, C. Deltchev leg.; Veliko Tarnovo District, 2 ad. ♀♀, Arbanasi, Kalugerova douпка Cave, 21.02.1926, N. Radev & Chr. Morov leg.; Vidin District, 1 specimen, Vartop, Prileparnika Cave (No. 2471), August 1994, P. Stoev & T. Ivanova observ.; Vratsa District, 4 specimens, Kunino, Shipochinata Cave (No. 1186), 26.11.1994, P. Stoev & T. Ivanova leg.; 1 specimen, between Kunino and Karlukovo, Cave No. 293, 12.01.1992, P. Stoev & S. Stoyanov observ.

REMARKS: Originally a Mediterranean species, *S. coleoptrata* has been introduced in several regions of the world, including North and South America, South Africa, St. Helena Island, etc. In Bulgaria, it is known to exist in caves and artificial galleries and rarely under stones and logs. It is most often to be found in buildings.



Map.
Kapra.

Conclusions

Fourty-three centipedes have hitherto been discovered in Bulgarian caves. Out of them, eight species have been found in cave environments only, thus probably representing troglobites (see Map). In spite of the extensive collecting effort, very little is known yet about the Bulgarian subterranean fauna. This is also true for centipedes, especially in terms of their taxonomy, life-style and habitat preferences. At least five further morphospecies have been recognized among the available material but, either due to scarcity of the samples or their bad preservation, these were left aside for a future, more detailed consideration. A unique co-existence of two troglobitic lithobiomorph centipedes has been revealed in a cave in the Rhodopi Mts., this discovery requiring a more profound study in the future. For a better understanding of the composition, distribution and ecology of the cave centipedes in the Balkans, further research in the caves of Bulgaria and the neighbouring Greece, the Republic of Macedonia, Turkey and Serbia is mandatory.

The present-day picture of the fauna and distribution of Chilopoda in Bulgaria's caves is summarised in Tab. 12.

List of Bulgaria's centipedes found only in caves (presumed troglobites)

Eupolybothrus (s.str.) *anreevi*, *Eupolybothrus* (s.str.) *gloriastygis* subsp.n.?, *Lithobius* (s.str.) *lakatnicensis*,

Lithobius (s.str.) *stygius*, ?*Lithobius* (s.str.) *tiasnatisensis*, *Lithobius* (s.str.) *rushovensis*, *Lithobius* (*Sigibius*) *bifidus* and *Thracophilus beroni*.

List of Bulgaria's non-troglobitic but regular cave-inhabiting Chilopoda (troglolithes, regular troglonexes)

Lithobius (s.str.) sp. *schuleri* group, *Lithobius* (*Monotarsobius*) *crassipes*, *Harpolithobius anodus*, *Eupolybothrus* (*Mesobothrus*) *transsylvanicus* and *Scutigera coleoptrata*.

List of Bulgaria's centipedes not typical of caves (troglonexes)

Thracophilus bulgaricus, *Strigamia crassipes*, *S. transsylvanica*, *Henia illyrica*, *Clinopodes flavidus*, *C. trebevicensis*, *Cryptops anomalans*, *C. croaticus*, *C. hortensis*, *C. parisi*, *C. rucneri*, *Lithobius* (s.str.) *agilis*, *L. (s. str.) forficatus*, *L. (s. str.) mutabilis*, *L. (s. str.) muticus*, *L. (s. str.) nigripalpis*, *L. (s. str.) parietum*, *L. (s. str.) viriatus*, *L. (Sigibius) cf. apfelbecki*, *L. (S.) beroni*, *L. (S.) microps*, *L. (S.) micropodus*, *Harpolithobius banaticus rhodopensis*, *H. folkmanovae*, *H. cf. dentatus*, *Pleuroolithobius patriarchalis*, *Eupolybothrus* (s.str.) *litoralis*, *E. (Leptopolybothrus) tridentinus*.

ACKNOWLEDGMENTS. I am especially grateful to Mr. Boyan Petrov, who has collected much of the studied myria-

Table 12. Bulgarian caves known to harbour centipedes.

CAVE	NEAREST LOCALITY	SPECIES
Aina-ini (Ogledalnata) Cave	Ribino	<i>Harpolithobius banaticus rhodopensis</i>
Asandelia Cave	Gorna Koznitsa	<i>Lithobius lakatnicensis</i>
Bankovitsa Cave	Karlukovo	<i>Lithobius cf. nigripalpis</i>
Banyan Cave	Pletena	<i>Lithobius rushovensis</i> <i>Lithobius beroni</i>
Bezimenna Pot hole	Krainovo	<i>Lithobius nigripalpis</i>
Boboshevskata peshtera Cave	Boboshevo	<i>Lithobius lakatnicensis</i>
Boevskata peshtera Cave	Rudozem	<i>Lithobius lakatnicensis</i>
Boichovata peshtera Cave	Stanke Lisichkovo	<i>Eupolybothrus transsylvanicus</i>
Boninskata peshtera Cave	Krushuna	<i>Lithobius tiasnatensis</i>
Cave above Bistritsa	Bistritsa	<i>Harpolithobius sp.</i>
Cave in Pleshovo County	Prevala	<i>Harpolithobius cf. dentatus</i>
Cave in Valchi dol	Gorna Rakovitsa	<i>Eupolybothrus transsylvanicus</i>
Cave near Ladzhene	Ladzhene = Malchika	<i>Lithobius forficatus</i>
Cave near Reservoir	Mramor	<i>Scutigera coleoptrata</i>
Cave near Shipka	Shipka Monument	<i>Lithobius cf. micropodus</i>
Cave near Zelenigrad	Zelenigrad	<i>Lithobius lakatnicensis</i>
Cheleveshnitsa Cave	Orehovo	<i>Clinopodes trebevicensis</i> <i>Lithobius lakatnicensis</i>
Chelovecha doupka Cave	Kunino	<i>Lithobius sp. schuleri</i> group
Cherniya izvor Cave	Mutnishky Monastery	<i>Lithobius cf. micropodus</i>
Dalbokata doupka Cave	Golyam Dervent	<i>Eupolybothrus litoralis</i>
Dalbokata doupka Cave	Krainovo	<i>Lithobius beroni</i>
Dalbokata doupka Pot hole	Karlukovo	<i>Lithobius sp.</i>
Devetashkata Cave	Devetaki	<i>Henia illyrica</i> <i>Lithobius parietum</i> <i>Lithobius tiasnatensis</i> <i>Lithobius crassipes</i>

CAVE	NEAREST LOCALITY	SPECIES
Dyado Draganovata peshtera Cave	Teteven	<i>Lithobius agilis</i>
Dranchi doupka Pot hole	Melnitsa	<i>Lithobius crassipes</i>
Dranchi doupka Pot hole	Mramor	<i>Scutigera coleoptrata</i>
Dupcheto Cave	Velingrad	<i>Eupolybothrus transsylvanicus</i> <i>Lithobius stygius</i>
Doupkata Cave	Ivaylovgrad	<i>Cryptops parisi</i> <i>Lithobius crassipes</i>
Doupkata Cave	Stubel	<i>Lithobius lakatnicensis</i>
Dyavolskoto garlo Cave	Trigrad	<i>Lithobius agilis</i>
Fidyafkinata doupka Cave	Izbegli	<i>Scutigera coleoptrata</i>
Futyovskata peshtera Cave	Karpachevo	<i>Lithobius tiasnatensis</i>
Galabamika Cave	Karlukovo	<i>Lithobius crassipes</i>
Gergitsovata peshtera Cave	Bezhanovo	<i>Lithobius lakatnicensis</i>
Golyama Podlistsa Cave	Belyakovets	<i>Scutigera coleoptrata</i>
Grebenyo Pot hole	Dolno Ozirovo	<i>Lithobius lakatnicensis</i>
Haidushkata doupka Cave	Karlukovo	<i>Cryptops hortensis</i> <i>Scutigera coleoptrata</i>
Haidushkata peshtera Cave	Deventsii	<i>Cryptops hortensis</i> <i>Scutigera coleoptrata</i>
Han maara Cave	Rai Chalet	<i>Lithobius agilis</i>
Hralupa Cave	Dobrostan	<i>Thracophilus beroni</i>
Imamova doupka	Yagodina	<i>Harpolithobius anodus</i>
Izvomata peshtera Cave	Mladezhko	<i>Lithobius bifidus</i>
Kalugerova doupka Cave	Arbanasi	<i>Scutigera coleoptrata</i>
Karangin Cave	Oreshari	<i>Lithobius beroni</i>
Kesadzhiitsa Cave	Melnitsa	<i>Lithobius viriatus</i> <i>Scutigera coleoptrata</i>
Kirechnitsata Cave	Kosti	<i>Lithobius bifidus</i>
Kodja-In Cave	Byal kladenets	<i>Lithobius crassipes</i>
Krachimirs-koto vrelo Cave	Krachimir	<i>Cryptops sp.</i> <i>Eupolybothrus transsylvanicus</i> <i>Lithobius microps</i>
Kraiputnata Cave	Smilyan	<i>Lithobius lakatnicensis</i>
Kremenskata peshtera Cave	Kremen	<i>Lithobius lakatnicensis</i>

Table 12 (continuation).
Таблица 12 (продолжение).

CAVE	NEAREST LOCALITY	SPECIES
Labirinta Cave	Ostra mogila	<i>Scutigera coleoptrata</i>
Ledenika Cave	Vratsa	<i>Strigamia crassipes</i>
Ledenitsata Cave	Chudnite Mostove	<i>Strigamia crassipes</i>
Ledenitsata Cave	Kotel	<i>Cryptops parisi</i> <i>Harpolithobius</i> sp.
Lednitsata Cave	Gela	<i>Lithobius stygius</i>
Lednitsata Pot hole	Medven	<i>Lithobius mutabilis</i>
Lepenitsa Cave	Velinograd	<i>Lithobius stygius</i>
Lyaskovskata peshtera Cave	Veliko Tarnovo	<i>Lithobius wardaranus</i>
Maarata Cave	Madrets	<i>Eupolybothrus</i> sp.
Magura Cave	Rabisha	<i>Lithobius nigripalpis</i>
Magura 2 Cave	Rabisha	<i>Scutigera coleoptrata</i>
Mandrata Cave	Chavdarts	<i>Lithobius forficatus</i>
Mazata Cave	Christo Danovo	<i>Lithobius rushovens</i>
Mecha doupka Cave	Kozhintsi	<i>Lithobius lakatnicensis</i>
Mecha doupka Cave	Leyarovo	<i>Pleuroolithobius patriarchalis</i>
Mechata doupka Cave	Bov	<i>Lithobius lakatnicensis</i> <i>Lithobius</i> cf. <i>micropodus</i>
Mechata doupka Cave	Salash	<i>Strigamia crassipes</i>
Mechkina doupka Cave	Beli dol	<i>Clinopodes flavidus</i> Schendyla sp. <i>Eupolybothrus transsylvanicus</i>
Medenik Cave	Plakalnitsa Mine	<i>Cryptops anomalans</i>
Mirizlivka Cave	Oreshets	<i>Lithobius (Sigibius)</i> sp.
Mladezhka Pot hole	Mramor	<i>Lithobius</i> cf. <i>nigripalpis</i>
Modarskata peshtera Cave	Modar Peak	<i>Lithobius stygius</i>
Nahodka 13 Cave	Shoumen	<i>Cryptops parisi</i> <i>Lithobius mutabilis</i> <i>Lithobius</i> cf. <i>nigripalpis</i>

CAVE	NEAREST LOCALITY	SPECIES
Nameless cave	Balgarevo	<i>Lithobius forficatus</i> <i>Lithobius crassipes</i>
Nameless cave on the road	Polaten	<i>Lithobius rushovens</i> <i>Eupolybothrus</i> sp.
Novata Cave	Mramor	<i>Scutigera coleoptrata</i>
Novata peshtera Cave	Peshtera	<i>Lithobius lakatnicensis</i>
Ochilata Cave	Aglen	<i>Lithobius agilis</i>
Orlova chuka Cave	Pepelina	<i>Scutigera coleoptrata</i>
Padezh Pot hole	Breze	<i>Lithobius</i> sp. <i>schuleri</i> group
Parnak Cave	Oreshets	<i>Lithobius lakatnicensis</i>
Parnitsite Cave	Bezhanovo	<i>Lithobius</i> cf. <i>micropodus</i>
Pepina doupka Cave	Gintsi	<i>Eupolybothrus tridentinus</i>
Peshketo Cave	Lilyache	<i>Cryptops rucneri</i>
Peshterata Cave	Bankya	<i>Lithobius lakatnicensis</i>
Peshterata Cave	Belovo	<i>Thracophilus bulgaricus</i>
Peshterata Cave	Polkovnik Serafimovo	<i>Eupolybothrus</i> sp.
Peshterata s dvata vhoda Cave	Stoilovo	<i>Lithobius bifidus</i>
Peshterata v Selishte Cave	Chereshovitsa	<i>Lithobius lakatnicensis</i>
Planinets Cave	Glozhene	<i>Lithobius rushovens</i>
Ponora Cave	Chiren	<i>Harpolithobius anodus</i>
Prilepamika Cave	Vartop	<i>Scutigera coleoptrata</i>
Prilepova doupka Cave	Dolno Lukovo	<i>Pleuroolithobius patriarchalis</i>
Prolazkata peshtera Cave	Prolaz	<i>Cryptops croaticus</i>
Reznyovete Pot hole	Vratsa	<i>Lithobius agilis</i> <i>Lithobius viriatus</i> <i>Harpolithobius anodus</i>
Rizovitsa Cave	Poprelka	<i>Lithobius lakatnicensis</i>
Rupata Cave	Egrek	<i>Cryptops hortensis</i> <i>Lithobius beroni</i> <i>Eupolybothrus</i> sp.
Rupata Cave	Petrovo	<i>Lithobius crassipes</i>

Table 12 (continuation).
Таблица 12 (продолжение).

CAVE	NEAREST LOCALITY	SPECIES
Rushovata peshtera Cave	Gradeshnitsa	<i>Lithobius rushovensis</i>
Salievata peshtera Cave	Gospodintsi	<i>Schendyla</i> sp. <i>Lithobius lakatnicensis</i>
Samardaala Pot hole	Voden	<i>Harpolithobius folkmanovae</i> <i>Eupolybothrus litoralis</i>
Sarkaya Cave	Balik	<i>Scutigera coleoptrata</i>
Sarpiiskata peshtera Cave	Kosti	<i>Lithobius bifidus</i>
Serapionovata Cave	Cherepish	<i>Lithobius</i> sp. <i>schuleri</i> group
Sestrinskata propast Pot hole	Karpachevo	<i>Strigamia transsilvanica</i>
Shipochinata Cave	Kunino	<i>Cryptops croaticus</i> <i>Scutigera coleoptrata</i>
Small nameless cave	Salash	<i>Eupolybothrus</i> sp.
Stara Sveta Troitsa Cave	Ustrem	<i>Scutigera coleoptrata</i>
Starshelitsa Cave	Goleshevo	<i>Lithobius lakatnicensis</i> <i>Lithobius</i> cf. <i>micropodus</i>
Stoyanovata peshtera Cave	Kosti	<i>Lithobius bifidus</i>
Stoletovskata peshtera Cave	Stoletov Peak	<i>Strigamia transsilvanica</i> <i>Lithobius microps</i> <i>Lithobius wardaranus</i> <i>Lithobius beroni</i>
Studenata peshtera Cave	Cherepish	<i>Eupolybothrus transsylvanicus</i>
Suhata Cave	Velingrad	<i>Lithobius stygius</i>
Suhodolska 1 Cave	Trigrad	<i>Lithobius lakatnicensis</i>
Suhodolska 2 Cave	Trigrad	<i>Lithobius agilis</i> <i>Eupolybothrus</i> sp.
Svinskata douпка Cave	Lakatnik	<i>Lithobius lakatnicensis</i>
Temnata douпка Cave	Berende izvor	<i>Lithobius lucifugus</i> <i>Lithobius mutabilis</i> <i>Harpolithobius anodus</i>
Temnata douпка Cave	Lakatnik	<i>Henia illyrica</i> <i>Lithobius lakatnicensis</i>
Temnata peshtera Cave	Ognyanovo	<i>Scutigera coleoptrata</i>
Teplenskata peshtera Cave	Teplen	<i>Harpolithobius banaticus rhodopensis</i>
Tyasnata propast Pot hole	Mramor	<i>Lithobius tiasnatensis</i> <i>Scutigera coleoptrata</i>

CAVE	NEAREST LOCALITY	SPECIES
Tilki-ini Cave	Ostrovitsa	<i>Schendyla</i> sp. <i>Cryptops</i> cf. <i>hortensis</i>
Topchika Cave	Dobrostan	<i>Lithobius crassipes</i>
Toplya Cave	Golyama Zelyazna	<i>Lithobius muticus</i> <i>Lithobius rushovensis</i>
Toshova douпка Cave	Botunya	<i>Lithobius lakatnicensis</i>
Trite douпки Cave	Yagodina	<i>Eupolybothrus transsylvanicus</i>
Troshana Cave	Veliko Tarnovo	<i>Lithobius (Sigibius)</i> sp. <i>Scutigera coleoptrata</i>
Tsarkvishte Cave	Iskrets	<i>Eupolybothrus gloriastygis</i> subsp. n.?
Uske Cave	Chetirtsi	<i>Lithobius lakatnicensis</i>
Vaklite douпки Cave	Zabardo	<i>Lithobius rushovensis</i>
Vodnata peshtera Cave	Tserovo	<i>Eupolybothrus andreevi</i> <i>Eupolybothrus transsylvanicus</i> <i>Harpolithobius anodus</i>
Vodnata Velchovska peshtera Cave	Stanchov han	<i>Lithobius agilis</i>
Vodni pech Cave	Dolni Lom	<i>Eupolybothrus tridentinus</i> <i>Eupolybothrus gloriastygis</i> subsp.n.?
Yalovitza Cave	Golyama Zelyazna	<i>Lithobius mutabilis</i>
Yamata Pot hole	Dobrostan	<i>Lithobius lakatnicensis</i> <i>Lithobius crassipes</i>
Yarasa Ini Cave	Sredna Arda	<i>Eupolybothrus transsylvanicus</i>
Yarkovets Cave	Lipnitsa	<i>Lithobius</i> sp.
Yubileina Cave	Peshtera	<i>Lithobius lakatnicensis</i> <i>Lithobius stygius</i>
Zandana Cave	Dolno Cherkovishte	<i>Lithobius</i> cf. <i>apfelbecki</i> <i>Eupolybothrus transsylvanicus</i> <i>Harpolithobius banaticus rhodopensis</i>
Zhabokreshka yama Pot hole	Chiren	<i>Harpolithobius anodus</i>
Zidanka Cave	Lakatnik	<i>Lithobius lakatnicensis</i> <i>Eupolybothrus transsylvanicus</i>
Zlatarskata Cave	Gospodintsi	<i>Lithobius crassipes</i>
Zlatnata peshtera Cave	Christo Danovo	<i>Lithobius rushovensis</i>
Zmeyovi douпки Cave	Sliven	<i>Cryptops</i> cf. <i>parisi</i>

Table 12 (continuation).
Таблица 12 (продолжение).

CAVE	NEAREST LOCALITY	SPECIES
Zmiyamika Cave	Belopolyane	<i>Cryptops hortensis</i> <i>Pleuroolithobius patriarchalis</i>
Cave Nr 293	Kunino/ Karlukovo	<i>Scutigera coleoptrata</i>
Cave Nr 294	Kunino/ Karlukovo	<i>Lithobius</i> sp. <i>schuleri</i> group
Cave Nr 4235	Karlukovo	<i>Lithobius</i> sp.

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