

The Spiders (Araneae) in the Caves of the Western Rhodope Mountains (Bulgaria)

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Abstract: A total of 37 species from 12 families found in 87 (30 newly established) underground localities (caves and artificial galleries) of the Western Rhodopes are reported. Three species are new to the Bulgarian cave spider fauna and 9 are new to the caves of the Western Rhodopes. This number represents 37% from all species found in Bulgarian caves (100 species). The percentage of the endemics is comparatively high (27%). *Histopona tranteevi* DELTSHEV, 1978 is discussed from a taxonomic point of view, the description of unknown male is also presented. The names “*Diplocephalus cristatus*” (= *foraminifer*) and “*Histopona myops*” (= *tranteevi*) are deleted from the list of Bulgarian spider fauna.

Key words: Cave spiders, taxonomy, fauna, Western Rhodopes, Bulgaria

Introduction

The first report about the spiders living in the caves of the Western Rhodope Mts. comes from DRENSKY (1931) and concerns only 3 caves. More recent information can be found in the papers of DUMITRESCU, ORGIDAN (1969), DUMITRESCO (1971), DELTSHEV (1970, 1972a, b, 1973a, b, 1975a, b, 1977, 1978, 1980, 1982, 1988, 1993, 1996), DELTSHEV *et al.* (2003), HAZELTON (1970). Majority of these records were summarized by GUEORGUIEV, BERON (1962) and BERON (1972, 1994).

The aim of this study is to review the diversity of spiders living in caves of the Western Rhodopes. It is a critical assemblage of available literature data and unpublished samples collected in the last 20 years.

Study Area and Materials

The Western Rhodopes are the largest mountain within the Rilo-Rhodopean massive. The mountain covers 8732 sq. km of which 8061 sq. km belong to

Bulgaria and 671 sq. km are in Greece. The highest point reaches 2191 m a.s.l in Bulgaria (Golyam Perelik Summit). More than half of the mountain (53.6%) is considered montane land (800-1400 m). There are more than 690 caves known in the mountain after the main map index of the Bulgarian Federation of Speleology. Seven caving regions are recognized in the Western Rhodopes (POPOV 1976, www.hinko.org, Table 1).

The examined material comes from 87 underground localities (caves and mine galleries) in the Western Rhodopes (Tables 2 and 3). Elevation of the caves was taken by Garmin GPS receivers (Table 2). About 1/3 of the new material presented in this study was collected between the years 2000 and 2006. The field studies on the cave fauna in 2005 and 2006 were funded by research grants from the UNDP “RODOPE” project (www.rodope.org).

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Table 1. Cave regions in the Western Rhodopes.

Region	Number of caves	Investigated caves
1. Dabrash Cave region (404)	12	2 (17%)
2. Velingrad Cave region (405)	7	3 (43%)
3. Peshtera Cave region (406)	32	4 (13%)
4. Dobrostan Cave region (407)	>400	28 (>7%)
5. Trigrad Cave region (408)	>170	20 (>12%)
6. Chepelare Cave region (409)	26	5 (19%)
7. Smolyan Cave region (410)	43	15 (35%)
Total	>690	77 (11%)

The spiders were collected by hand under stones or on the walls. All samples were identified by the senior author and arranged taxonomically after PLATNICK (2007). The material is deposited in the arachnological collections of the National Museum of Natural History (NMNH) and the Institute of Zoology in Sofia.

The names of the principal collectors who provided material for this study are as follows: Petar Beron (P.B.), Ivailo Borissov (I.B.), Christo Deltshev (C.D.), Delyan Delchev, (D.D.), Svilen Delchev (S.D), Teodora Ivanova (T.I.), Boyan Petrov (B.P.), Dimitar Raichev (D.R.), Nikolay Simov (N.S.), Pavel Stoev (P.S.) and Tihomir Stoyanov (T.S).

Results and Discussion

Species composition

The study comprises 37 species from 12 families: Pholcidae – 1, Dysderidae – 1, Nesticidae – 3, Theridiidae – 1, Linyphiidae – 17, Tetragnathidae – 3, Araneidae – 1, Agelenidae – 3, Cybaeidae – 1, Amaurobiidae – 3, Liocranidae – 2, Gnaphosidae – 1 (Table 3).

Three species are new to the Bulgarian cave dwelling spider fauna (marked in the list with **), nine species are new to the cave spider fauna of the Western Rhodopes (marked in the list with *) (Table 3).

The number of the species is high and represents about 32% of the spiders found in Bulgarian caves. Most characteristic are the families: Linyphiidae (45.7%); Tetragnathidae (8.5%);

Agelenidae (8.5 %); Nesticidae (5.7 %). The genera with the largest number of species are *Centromerus* (4), *Lepthyphantes* (2), *Nesticus* (3), *Paliduphantes* (2), *Troglohyphantes* (2), *Tegenaria* (2). The most widespread and common spiders in the caves are: *Meta menardi* (LATREILLE, 1804), *Metellina merianae* (SCOPOLI, 1736), *Nesticus cellulanus* (CLERCK, 1757), *Porrhomma convexum* (WESTRING, 1851), *Lepthyphantes centromeroides* KULCZYNSKI, 1914 and *Palliduphantes istrianus* KULCZYNSKI, 1914. The local endemics are *Troglohyphantes drenskii* DELTSHEV, 1973, *Troglohyphantes bureschianus* DELTSHEV, 1975 and *Nesticus beroni* DELTSHEV, 1977. Since the discovery of the latter in a small cave in the Dobrostan Cave region, it has never been found in other caves in the area nor its type locality is precisely known. The new records include discoveries of some interesting species:

Centromerus bulgarianus DRENSKY, 1931 – hitherto known only from 4 caves in the Western Stara Planina Mts. in NW Bulgaria (DELTSHEV 1972a; BERON 1994). The species is a true, eyeless troglobite and it can be considered as a preglacial relict with wider range during the Tertiary. Its occurrence in the caves of the Western Rhodope Mts. is striking considering the large distance to its original range in Western Stara Planina Mts.

Centromerus milleri DELTSHEV, 1974 – hitherto known only from 10 caves in the Eastern Rhodope Mts. (DELTSHEV *et al.* 2004; BERON *et al.* 2004). The species can be considered a troglobitic element, which appears in some populations with different stage of reduction of eyes. The new locality broadens the species' range with ca. 110 km to the west.

Table 2. List of the localities with sampling or reference data.

N	Locality	Altitude	Date	Legator or publication
1.	Ademova dupka Cave, Yagodina vill. (distr. Smolyan)	-	9.07.1982	D.R.
2.	Ahmetyova dupka Pot, Dobrostan vill. (distr. Plovdiv)	1350 m		DELTSHEV, 1982
3.	Artificial gallery close to Devin town	750 m	20.12.2004	B.P.
4.	Artificial gallery, 6 km S of Mihalkovo vill. (distr. Devin)	700 m		DELTSHEV <i>et al.</i> 2003
5.	Banyan Cave, Pletena vill. (distr. Satovcha)	845 m		DELTSHEV <i>et al.</i> 2003
6.	Barzibogovata peshtera Cave, Dryanovo vill. (distr. Laki)	1100 m	20.10.2005	I.B.
7.	Bekir Salievata Cave, vill. Gospodintsi (distr. G. Delchev)	630 m	25.05.2006	P.S.
8.	Boevskata peshtera, Boevo vill. (distr. Rudozem)	1065 m		DELTSHEV, 1972a
9.	Borikovska peshtera, Borikovo (distr. Smolyan)	1105 m		DELTSHEV, 1982
10.	Borovska vodna peshtera Cave, Mostovo vill. (distr. Assenovgrad)	-		DELTSHEV, 1970; DELTSHEV <i>et al.</i> 2003
11.	Byala reka Cave, Mogilitsa vill. (distr. Smolyan)	1050 m	20.07.2005	T.I., I.B.
12.	Cheloveshka peshtera Cave, Orehovo vill. (distr. Chepelare)	-		DELTSHEV <i>et al.</i> 2003
13.	Dzhurkovskata peshtera Cave, Dzhurkovo vill. (distr. Laki)	1155 m	8.10.2005	B.P., T.I., I.B.
14.	Dolna Karanska dupka Cave, Yagodina vill. (distr. Devin)	1005 m		DELTSHEV, 1972b
15.	Druzha Pot, Dobrostan vill. (distr. Assenovgrad)	1375 m		DELTSHEV <i>et al.</i> 2003
16.	Dupcheto Cave, Velingrad town (distr. Pazardzhik)	965 m		DELTSHEV, 1972b, 1982
17.	Dupkata Pot, Dobrostan vill. (distr. Assenovgrad)	-		DELTSHEV, 1977
18.	Dyavolskoto garlo Cave, Trigrad vill. (distr. Devin)	1085 m		DELTSHEV, 1980
19.	Erkyupriya Cave, Mostovo vill. (distr. Assenovgrad)	815 m		DELTSHEV <i>et al.</i> 2003
20.	Erkyupriya Cave, Zaburdo vill. (distr. Chepelare)	1420 m		DELTSHEV, 1980
21.	Forgovo 1 Cave, Kesten vill. (distr. Devin)	1350 m		DELTSHEV <i>et al.</i> 2003
22.	Gargina dupka Cave, Mostovo vill. (distr. Assenovgrad)	905 m		DELTSHEV, 1970
23.	Gargini dupki Pot, Dobrostan vill. (distr. Assenovgrad)	1365 m	23.05.2005	P.S., D.D
24.	Godumskata peshtera Cave, Nedelino vill. (distr. Kardzhali)	655 m	20.10.2006	B.P., T.S.
25.	Goloboitsa № 1 Cave, Mogilitsa vill. (distr. Smolyan),	815 m	19.07.2005	T.I., I.B.
26.	Goloboitsa № 2 Cave, Mogilitsa vill. (distr. Smolyan)	805 m	19.07.2005	T.I., I.B.
27.	Gorna Karanska dupka Cave, Yagodina vill. (distr. Devin)	1080 m		DELTSHEV, 1972a
28.	Gorni Razh № 1 Cave, Trigrad vill. (distr. Devin)	1280 m	3.08.2005	N.S., S.D.
29.	Gorni Razh № 3 Cave, Trigrad vill. (distr. Devin)	1235 m	3.08.2005	N.S., S.D.
30.	Haidushkata dupka Cave, Trigrad vill. (distr. Devin)	-		DELTSHEV, 1972a
31.	Handaka Pot, Mogilitsa vill. (distr. Smolyan)	-		DELTSHEV, 1972b
32.	Hralupa Cave, Dobrostan vill. (distr. Plovdiv)	-		DELTSHEV, 1980
33.	Ivanova voda, Dobrostan vill. (distr. Plovdiv)	1320 m		HAZELTON, 1970
34.	Karnata peshtera Cave Yagodina vill. (distr. Smolyan)	-	1.03.1982	D.R.
35.	Kraipatna peshtera Cave, Polkovnik Serafimovo vill. (distr. Smolyan)	1075 m	24.07.2005 14.07.2006	T.I., I.B. B.P.
36.	Kraipatnata peshtera Cave, Smilyan vill (distr. Smolyan)	780 m		DELTSHEV <i>et al.</i> 2003
37.	Kremenskata peshtera Cave, Kremene vill. (distr. Smolyan)	1115 m	21.07.2005	T.I., I.B., B.P.

Table 2. Continued.

N	Locality	Altitude	Date	Legator or publication
38.	Lepenitsa Cave, Velingrad town	975 m		DRENSKY, 1931
39.	Leshtaka Cave, Lisek area, Dryanovo vill. (distr. Laki)	1140 m	24.10.2005	I.B.
40.	Malkata peshtera Cave, Borikovo vill. (distr. Smolyan)	-		DELTSHEV, 1970
41.	Malkata peshtera Cave, Orehovo vill. (distr. Chepelare)	-		DELTSHEV <i>et al.</i> 2003
42.	Manuilovata peshtera Cave, Ribnovo vill (distr. G. Delchev)	1155 m	18.11.2006	B.P.
43.	Mashiva dupka Cave, Yagodina vill. (distr. Devin)	-	04.04.1985	D.R.
44.	Mecha dupka Cave, Levochevo vill. (distr. Smolyan)	-		DELTSHEV, 1970
45.	Mecha dupka Cave, Pamporovo area (distr. Smolyan)	1560 m	19.10.2006	B.P., T.S.
46.	Mechata dupka Cave, Kochan vill. (distr. Satovcha)	1045 m	18.06.2006	B.P., P.S.
47.	Modarskata peshtera Cave, Orehovo vill. (distr. Chepelare)	1635 m	19.06.2005	P.B., P.S.
48.	Mogilata Cave, Dryanovo vill. (distr. Laki)	1200 m	23.10.2005	I.B.
49.	Nadarskata peshtera Cave, Nadartsi vill. (distr. Smolyan)	1177 m	21.07.2005	T.I., I.B.
50.	Nameless pestera Cave, Orehovo vill. (distr. Chepelare)	-		DELTSHEV <i>et al.</i> 2003
51.	Novata peshtera Cave, Peshtera town (distr. Pazardzhik)	540 m		DELTSHEV <i>et al.</i> 2003
52.	Pavla Cave, Ravnogor vill. (distr. Peshtera)	1320 m	8.04.2006 1.07.2006	BERON, 1994 B.P., B.P., P.S.
53.	Peshtera Cave, Progled vill. (distr. Smolyan)	-		DRENSKY, 1931
54.	Pichova dupka Cave, Lisek area, Dryanovo vill. (distr. Laki)	1065 m	24.10.2005	I.B.
55.	Potoka Cave, vill. Dolno Vlahovo (distr. Smolyan)	1150 m	16.07.2006 19.10.2006	B.P. B.P., T.S.
56.	Prikazna Cave, Dryanovo vill. (distr. Laki)	1120 m	9.10.2005	B.P.I.B., T.I.
57.	Prilepskata peshtera Cave, Orehovo vill. (distr. Chepelare)	-		DELTSHEV <i>et al.</i> 2003
58.	Ramadanova dupka Cave, Mugla vill. (distr. Smolyan)	-		DELTSHEV, 1970
59.	Ribnovskata peshtera Cave, Ribnovo vill. (distr. G. Delchev)	1025 m	18.11.2006	B.P.
60.	Rizovitsa Cave, Mogilitsa vill. (distr. Smolyan)	-		DELTSHEV, 1972b
61.	Samurska dupka Cave, Chepelare town (distr. Smolyan)	-		DELTSHEV <i>et al.</i> 2003
62.	Sanchova dupka Cave, Yagodina vill. (distr. Devin)	990 m		DELTSHEV, 1972b
63.	Sbirkovata peshtera Cave, Chepelare town (distr. Smolyan)	1430 m		DELTSHEV, 1972a
64.	Shepran dupka Cave, Belitsa vill. (distr. Laki)	880 m	8.10.2005	B.P, I.B., T.I.
65.	Skoka Cave, Ribnovo vill. (distr. G. Delchev)	1100 m	18.11.2006	B.P.
66.	Small Cave near Gorni Rai № 1, vill. Trigrad (distr. Devin)		3.08.2005	N.S., S.D
67.	Snezhanka Cave, Dryanovo vill. (distr. Laki)	1120 m	9.10.2005	B.P., T.I., I.B.
68.	Snezhanka Cave, Peshtera town	860 m	17.06.2005, 18.09.2005	P.B., P.S.
69.	Stapalkata Cave, vill. Slashten (distr. G. Delchev)	650 m	17.06.2006	P.S., B.P
70.	Suhata peshtera Cave, Velingrad town (distr. Velingrad)	890 m		DRENSKY, 1931 DELTSHEV, 1973b
71.	Suhodolska № 1 Cave, Trigrad vill. (distr. Smolyan)	1405 m	1.08.2005	N.S., S.D.
72.	Suhodolska № 3 Cave, Trigrad vill. (distr. Smolyan)	1430 m	1.08.2005	N.S., S.D.
73.	Svredela Cave, Trigrad vill. (distr. Devin)	1070 m	1.08.2005	N.S., S.D.

Table 2. Continued.

N	Locality	Altitude	Date	Legator or publication
74.	Tipitseto Cave, Potoka vill. (distr. Smolyan)	1310 m	20.07.2005	T.I., I.B.
75.	Trite dupki Cave, Yagodina vill. (distr. Devin)	-	2.08.1982	D.R.
76.	Tsankalieva dupka Cave, Assenovgrad town (distr. Plovdiv)	-		DELTSHEV, 1980
77.	Tyovnata dupka Cave, Ziburdo vill. (distr. Chepelare)	1250 m	20.03.2004	B.P., T.S.
78.	Ulcata Cave (=Uhlovitsa), Mogilitsa vill. (distr. Smolyan)	1040 m		DELTSHEV, 1980
79.	Unnamed Cave on the road, Ustovo area, Smolyan town	830 m	13.07.2006	B.P.
80.	Ushatovi dupki Cave, Peshtera town (distr. Pazardzhik)	765 m	8.04.2006	B.P.
81.	Vaklite dupki Cave, Ziburdo vill. (distr. Chepelare)	-		DELTSHEV, 1970
82.	Vodnata peshtera Cave, Peshtera town (distr. Pazardzhik)	880 m	02.07.2006	B.P., P.S.
83.	Yagodinska peshtera Cave, Yagodina vill. (distr. Devin)	1015 m		DELTSHEV, 1980
84.	Yamata Cave, Dobrostan vill. (distr. Plovdiv)	-		DELTSHEV, 1980
85.	Yubileina Cave, Peshtera town (distr. Pazardzhik)	580 m		
86.	Zlatarska peshtera Cave, Gospodintsi vill. (distr. G. Delchev)	670 m	17.11.2006	B.P.
87.	Zmeini (= Zmiin) borun Cave, Mostovo vill. (distr. Assenovgrad)	-		DELTSHEV, 1975a, 1978

Table 3. Species composition and distribution of spiders in caves of the Western Rhodopes
 Ecological categories: tx – troglaxene; retx – regular troglaxene; tph - troglophile; tb – troglobite;
 Endemics: Rho – Rhodopean; Bg – Bulgarian; Bp – Balkan.

№	Taxa	Locality (sex)	Class
	PHOLCIDAE		
1.	<i>Pholcus opilionoides</i> (SCHRANK, 1781)	30, 53, 79 (1m, 1 f)	retx
	DYSDERIDAE		
2.	<i>Harpactea babori</i> (NOSEK, 1905)	4	tx
	NESTICIDAE		
3.	<i>Nesticus beroni</i> DELTSHEV 1973	17	tb, Rho
4.	<i>Nesticus cellulanus</i> (CLERCK, 1757)	5, 7, 18, 19 (3 mm, 3 ff), 24, 36 (5 jj), 37, 46 (1 m), 49, 65 (1 f), 79 (1 j), 86 (13 mm, 2 ff, 4 jj)	tph,
5.	* <i>Nesticus eremita</i> SIMON 1879	69 (1 mm, 2 ff)	tph
	THERIDIIDAE		
6.	** <i>Episinus maculipes</i> CAVANNA, 1876	66 (2 ff)	tx
	LINYPHIIDAE		
7.	<i>Antrohyphantes rhodopensis</i> (DRENSKY, 1931)	42, 45, 53, 60, 82 (1 msa)	tph, Bg
8.	* <i>Centromerus bulgarianus</i> (DRENSKY, 1931)	6 (1 f, 1 j), 54 (1 m), 56 (2 mm, 3 ff)	tb, Bg
9.	<i>Centromerus cavernarum</i> (L.KOCH, 1872)	67 (1 m, 2 ff)	tph
10.	<i>Centromerus lakatnikensis</i> (DRENSKY y, 1931)	8, 12, 38, 87	tph, Bp
11.	* <i>Centromerus milleri</i> DELTSHEV, 1974	12, 54 (1 m, 1f)	tb, Bp

Table 3. Continued.

№	Taxa	Locality (sex)	Class
12.	* <i>Diplocephalus foraminifer</i> (O.P.-CAMBRIDGE, 1875)	38, 22 (1 f)	tph
13.	<i>Diplostyla concolor</i> (WIDER, 1834)	79, (1 f)	tx
14.	<i>Lepthyphantes centromeroides</i> KULCZYŃSKI, 1914	1 (1 f), 2, 8, 9, 14, 21, 31, 33, 36 (1 f), 38, 54 (1 m), 56 (4 mm, 4 ff), 62, 63, 70, 83 (1 f)	tph, Bp
15.	<i>Lepthyphantes leprosus</i> (OHLERT, 18)	1 (1 m, 1 f), 6 (1 j), 8, 29 (1 j), 32, 48 (1 f), 75 (1 f)	retx
16.	* <i>Oedothorax apicatus</i> (BLACKWALL, 1850)	19 (1 f)	tx
17.	<i>Palliduphantes istrianus</i> (KULCZYŃSKI, 1914)	8, 12, 21, 23 (1 f), 26 (1 f), 32, 51 (2 ff), 68 (4 ff), 76, 78, 84	tph, Bp
18.	<i>Palliduphantes spelaeorum</i> KULCZYŃSKI, 1914	16, 27 (1 f), 75 (1 f), 83	tph, Bp
19.	<i>Porrhomma convexum</i> (WESTRING, 1851)	10, 15, 20, 21, 22 (4 mm, 8 ff), 23, (2 mm, 2 ff), 33, 36, 51, 55 (2 ff), 83 (2 ff), 87	tph,
20.	<i>Tenuiphantes zimmermanni</i> (BERTKAU, 1890)	16	tx
21.	<i>Troglohyphantes bureschianus</i> DELTSHEV, 1975	87	tph, Rho
22.	<i>Troglohyphantes drenskii</i> DELTSHEV, 1973	70	tb, Rho
23.	** <i>Walckenaeria simplex</i> CHIZER, 1894	64 (1 f)	tx
TETRAGNATHIDAE			
24.	<i>Meta menardi</i> (LATREILLE, 1804)	1 (2 ff), 3 (1j), 5, 9, 10, 11, (2 ff), 13 (1 m), 14 (1 m), 21 (1 m), 22 (1 m), 25 (1 j), 26 (1 m, 1 j), 27, 28 (5 jj), 29 (1 f), 32, 34 (1 f), 35 (1 j), 37 (2 ff), 38, 39 (3 jj), 40, 41, 43 (1 f), 44, 47 (2 ff), 48 (1 f, 3 jj), 51, 54 (2 jj), 57 58, 62, 66 (6 jj), 70, 71 (5 jj), 72 (4 jj), 73 (2 jj), 74 (2 ff), 75 (1 f), 77 (1 f), 81, 83, 84	tph
25.	<i>Metellina merianae</i> (SCOPOLI, 1763)	1 (2 ff), 3 (1 m), 16 (1 m, 1 f), 19, 20 (1 m, 3 jj), 22, 37 (1 f), 39 (1 j), 41, 48 (1 f), 54 (1 j)	tph,
26.	* <i>Metellina segmentata</i> (CLERCK, 1757)	36 (1 f)	tx
ARANEIDAE			
27.	<i>Araniella alpica</i> (L.KOCH, 1869)	38	tx
AGELENIDAE			
28.	<i>Histopona tranteevi</i> DELTSHEV, 1978	9, 64 (1 f), 83 (1 m, 1f), 87	tph
29.	<i>Tegenaria ferruginea</i> (PANZER, 1804)	27	retx
30.	<i>Tegenaria silvestris</i> L. KOCH, 1872	1 (1 m), 6 (1 m, 1 j), 8, 16, 41, 51	retx
CYBAEIDAE			
31.	<i>Cybaeus angustiarum</i> L. KOCH, 1868	61	tx

Table 3. Continued.

№	Taxa	Locality (sex)	Class
	AMAUROBIIDAE		
32.	<i>Calobius claustrarius</i> (HAHN, 1831)	83	tx
33.	<i>Calobius claustrarius balcanicus</i> (DRENSKY, 1940)	83	tx
34.	<i>Coelotes inermis</i> (L. KOCH, 1855)	70	tx
	LIOCRAVIDAE		
35. *	* <i>Liocranum rupicola</i> (WALCKENAER, 1830)	56 (1 m), 83 (1 m)	retx
	CORINIDAE		
36. **	** <i>Phrurolithus festivus</i> (L. KOCH, 1835)	23 (1 m)	tx
	GNAPHOSIDAE		
37.	<i>Scotophaeus blackwalli</i> (THORELL, 1871)	16	tx

Nesticus eremita SIMON 1879 – the range of the species includes caves in France, Italy, the Dalmatian Coast, Greece and Turkey. In Bulgaria it was known only from a cave near the town of Shumen (DELTSHEV 1972a). The new record from a cave of the Western Rhodopes expands the knowledge of its range in the North Mediterranean.

Episinus maculipes CAVANNA, 1876 – in Bulgaria hitherto known only from Sashtinska Sredna Gora Mts. (LAZAROV *et al.* 2001). The new locality widens its range in Bulgaria. The species was not known as a cave-dweller.

Walckenaeria simplex CHIZER, 1894 – The species was hitherto known only from Sashtinska Sredna Gora Mts. (LAZAROV *et al.* 2001). The species is not a cavernicolous element.

Phrurolithus festivus (C.L.KOCH, 1835) – It is a rare species, which occurs in all regions of Bulgaria – not a cavernicolous element.

In taxonomic respect some of the species need discussion.

Diplocephalus foraminifer (O.P.-CAMBRIDGE, 1875)

Diplocephalus connectens KULCZYNSKI: DRENSKY, 1931 (misidentification): 34; *Hybocoptus corrugis* O. P. C.-CAMBRIDGE: DRENSKY, 1931 (misidentification): 34; *D. cristatus* (BLACKWALL): DELTSHEV, 1982: 101.

DRENSKY (1931) announced the species *Diplocephalus connectens* and *Hybocoptus corrugis* from two caves of the Western Rhodopes and Western Stara Planina. DELTSHEV (1982) revised this material and established that according to GEORGESCO (1969) the deposited materials concern the group *foraminifer* of the species *Diplocephalus cristatus*. In Bulgaria, the species was hitherto found at high altitudes and caves (DELTSHEV 1982, 1995, 1998; DELTSHEV, BLAGOEV 1997; DELTSHEV *et al.* 2003).

Histopona tranteevi DELTSHEV, 1978 (Figs. 1-3)

H. myops: DELTSHEV *et al.* 2000 (misidentification): 314, 316, 528.

The species was described by DELTSHEV (1978) only after a female collected in the cave Zmeini (= Zmiin) Burun near Mostovo vill. (Dobrostan Cave region). Another female was found later in the Borikovskata peshtera Cave (DELTSHEV 1982). Now we present the description of the unknown male and report three previously unknown localities.

Material examined: Bulgaria, Western Rhodope Mts., Yagodina vill., Distr. Devin, Yagodinska peshtera Cave, 1 m, 1 f, 11.10.1980 (leg. C. D.); Belitsa vill., Distr. Laki, Shepran dupka Cave, 1 f, 8.10.2005 (leg. B.P, T.I., I.B.); Dolno Vlahovo vill., Distr. Smolyan, Potoka Cave, 1 m, 19.10.2006 (leg. B.P, T.S.).

Description of the male: Body length 4.12 mm; cephalothorax, length 2.25 mm, width 1.50

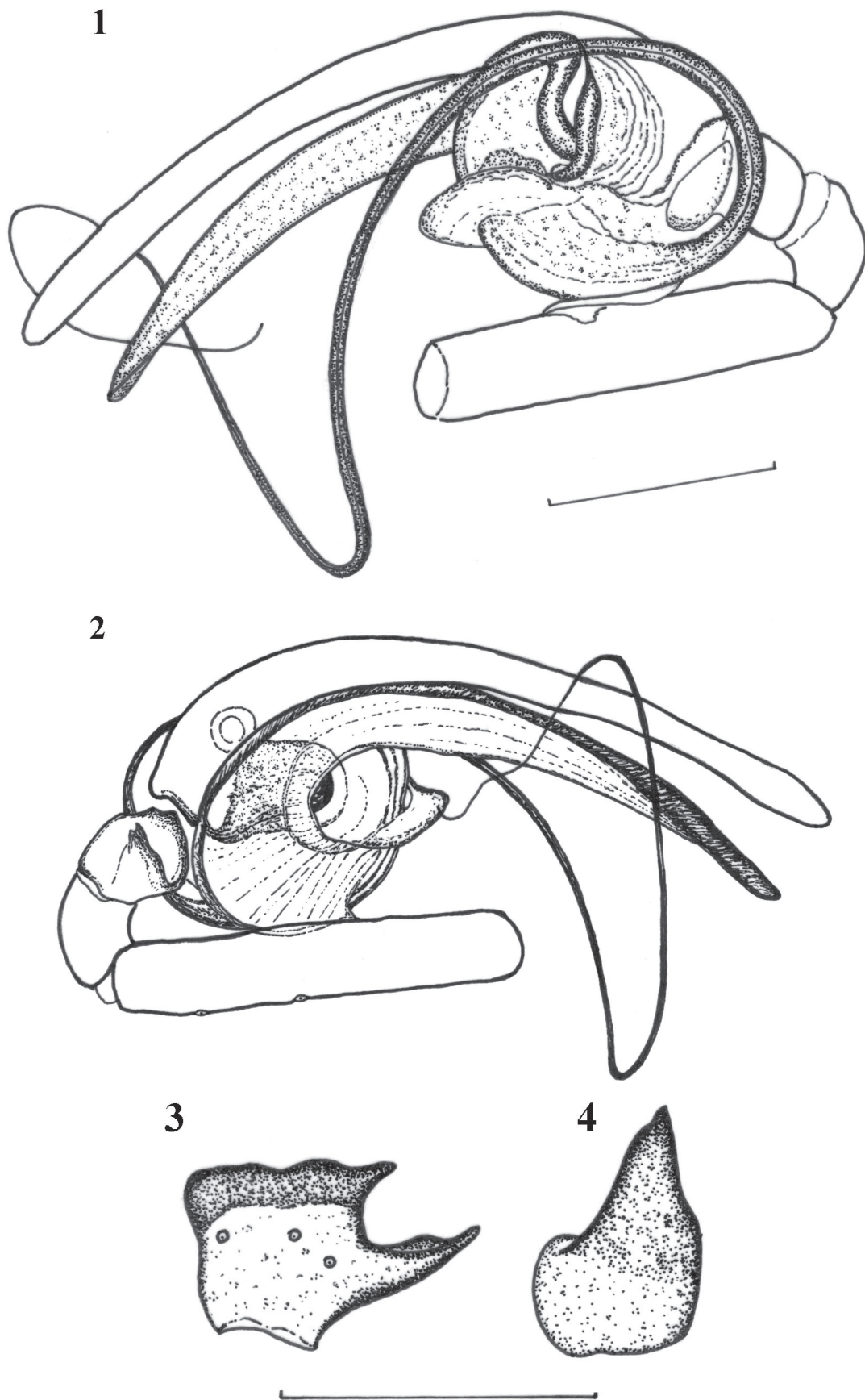


Fig. 1-3. *Histopona tranteevi* DELTSHEV, 1978: 1 – male palp, prolateral view; 2 – male palp, retrolateral view; 3, 4 – tibial apophysis dorsal and retrolateral view. Scale line 0.4 mm.

mm; sternum length 1.20 mm, width 1.05 mm; abdomen, length 1.87 mm. Eyes well-developed, surrounded by a black strip. Posterior row with eyes of equal size and nearly equidistant. Chelicerae yellow-brown, armed with 4 teeth on the inner row. Cephalothorax is yellow to yellow-brown. Sternum, yellow to yellow-grey. Abdomen, grey to dark grey. Legs uniformly yellow. All tibiae with 2 dorsal and 2 ventral spines. Metatarsi II-IV with 5 large spines on apical half. Leg measurements:

Legs	Fe	Pt	Tb	Mt	Ta	Total
I	2.25	0.75	2.25	2.17	1.50	8.95
II	2.02	0.75	1.87	1.95	1.35	7.94
III	2.02	0.67	1.87	1.02	1.12	6.70
IV	2.62	0.75	2.47	2.85	1.50	10.19

Male palp (Figs. 1-3): femur with 3 dorsal spines, patella with two dorsal spines, tibia with four dorsal spines. Patellar apophysis is as long as the whole segment. Cymbium and conductor are very elongated. The embolus is with a thick basal part.

Discussion: *H. tranteevi* resembles *H. thaleri* GASPARO, 2005 and *H. hauseri* (BRIGNOLI, 1972). These species belong to the *myops* group of the genus *Histopona* on the Balkan Peninsula. All are very similar in appearance, occur in discrete ranges and probably represent descendants of a common ancestor.

Conclusions

Caves in Bulgaria were known to shelter 96 species of spiders (DELTSHEV *et al.* 2003). Together with the newly reported 3 species, this number is raised to 99 species, which is about 10% of the 989 species found in the country (BLAGOEV *et al.* 2002). The number of species found in caves of the Western Rhodopes represents about 36 % of the spiders found in Bulgarian caves. In caves of the hilly Eastern Rhodope Mts. only 12 species (12%) were found (DELTSHEV *et al.*, 2004). The share of endemic complex in the Western Rhodopes is relatively high – 10 species, of which three are Rhodopean endemics, three are Bulgarian and four are Balkan endemics. In comparison, the diversity of the cave-dwelling spider fauna of the Eastern Rhodope Mts. is rather low – only three

Balkan endemics are present (*Centromerus lakatnikensis*, *Centromerus milleri* and *Palliduphantes istrianus*). The endemic species emphasize the local character of the fauna and their high percentage (30 %) suggests an important process of speciation.

Considering that spiders were collected in ca. 13% 87 of the 690 caves known in the Western Rhodopes, the presumption is that further discoveries of new cave-dwelling species are to be expected. The potential for discoveries is higher in the poorly studied areas as Dabrash Cave region, Peshtera cave region and along the Bulgarian-Greek border in Smolyan Cave region (see also Table 1).

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References

- BERON P. 1972. Essai sur la faune cavernicole de Bulgarie. III. Résultats des recherches biospéologiques de 1966 à 1970. – *Int. J. Speleol.*, 4: 285-349.
- BERON P. 1994. Résultat des recherches biospéologiques en Bulgarie de 1971 à 1994 et a liste des animaux cavernicoles bulgares. – *Tranteeva, Sofia*, 1: 1-137.
- BERON P., B. PETROV, P. STOEV 2004. The invertebrate cave fauna of the Eastern Rhodopes (Bulgaria and Greece). – In: Beron P., A. Popov (eds.): Biodiversity of Bulgaria. 2. Biodiversity of Eastern Rhodopes (Bulgaria and Greece). Sofia, Pensoft & Nat. Mus. Natur. Hist., 791-822.
- BLAGOEV G., DELTSHEV, C., S. LAZAROV 2002. The Spiders (Araneae) of Bulgaria. Institute of Zoology, Bulgarian Academy of Sciences, online at <http://cl.bas.bg/bulgarianspiders/>
- DELTSHEV C. 1970. Neue Daten über die Verbreitung der Gattung *Meta* (Araneae, Araneidae) in bulgarischen Höhlen. – *Bulletin de l'Institut de Zoologie et Musée*, 32: 89-92. (In Bulgarian, Germany summary).
- DELTSHEV C. 1972. A contribution to the study of spiders (Araneae) from the caves in Bulgaria. – *Bulletin de l'Institut de Zoologie et Musée*, 34: 171-175. (In Bulgarian, English summary).
- DELTSHEV C. 1972b. A contribution to the study of spiders (Araneae) from the caves in Bulgaria. II. Genus *Lepthyphantes* in Bulgarian caves. – *Bulletin de l'Institut de Zoologie et Musée*, 36: 137-147.
- DELTSHEV C. 1973a. A contribution to the study (Araneae) of spiders from the caves of Bulgaria. III. Ecological notes on spiders (Araneae) from the entrance parts of the caves. – *Bulletin de l'Institut de Zoologie et Musée*, 38: 39-47. (In Bulgarian, English summary).
- DELTSHEV C. 1973b. A new *Troglohyphantes* from Bulgarian caves (Araneae, Linyphiidae). – *International Journal of Speleology*, 5: 103-109.
- DELTSHEV C. 1975a. A new species (*Troglohyphantes bureschianus* n. sp., Araneae, Linyphiidae) from Bulgarian caves. – *Acta zoologica bulgarica*, 3: 99-104.

- DELTSHEV C. 1975b. The genus *Lepthyphantes* in Bulgarian caves. – Proceedings of 6th International Arachnological Congress, Amsterdam, 210-213.
- DELTSHEV C. 1977. Genus *Nesticus* (Nesticidae, Araneae) from Bulgarian caves. – In: V. Panoš (ed.): Proceedings of 6th International Congress of Speleology, Olomouc, **5**: 73-78.
- DELTSHEV C. 1978. A new *Histopona* (Araneae, Agelenidae) from Bulgarian caves. – *Acta zoologica bulgarica*, **10**: 57-59.
- DELTSHEV C. 1980. A contribution to the taxonomical study of *palidus* group of the genus *Lepthyphantes* Menge (Araneae, Linyphiidae) in Bulgaria. – *Acta zoologica bulgarica*, **16**: 44-56.
- DELTSHEV C. 1982. New data on the distribution of cave spiders (Araneae) in Bulgaria. – *Acta zoologica bulgarica*, **19**: 100-104.
- DELTSHEV C. 1988. The genus *Fageiella* Kratochvil and the genus *Antrohyphantes* Dumitresco (Araneae, Linyphiidae, Lepthyphanteae) in the caves of Balkan Peninsula. – In: J. Haupt (Ed.): TUB-Dokumentation, Berlin, **38**: 293-299.
- DELTSHEV C. 1993. The genus *Tegenaria* Latreille in Bulgaria: A critical review with description of two sibling species (Arachnida, Araneae: Agelenidae). – *Berichte naturwissenschaftlich-medizinischen Vereins in Innsbruck*, **80**: 167-174.
- DELTSHEV C. 1996. The origin, formation and zoogeography of endemic spiders of Bulgaria (Araneae). – *Revue suisse de Zoologie*, vol. hors série, **1**: 141-151.
- DELTSHEV C., P. BERON, G. BLAGOEV, V. GOLEMANSKY, V. NAIDENOV, V. PENEVA, P. STOEVA, M. TODOROV, Z. HUBENOV 2000. Faunistic diversity of invertebrates (non Insecta) in Central Balkan National Park. – In: Sakalian, M. (Ed.): Biological diversity of the Central Balkan National Park, 289-317. USAID, Sofia.
- DELTSHEV C., S. LAZAROV, B. PETROV 2003. A contribution to the study of spiders (Araneae) from the caves of Bulgaria. – *Acta Zoologica Bulgarica*, **55** (2): 9-28.
- DELTSHEV C., S. LAZAROV, G. BLAGOEV 2004. Spiders (Araneae) from the Eastern Rhodopes (Bulgaria and Greece). – In: Beron P., A. Popov (eds.): Biodiversity of Bulgaria. 2. Biodiversity of Eastern Rhodopes (Bulgaria and Greece). Pensoft & Nat. Mus. Natur. Hist., Sofia, 181-198.
- DRENSKY P. 1931. [Höhlen-Spinnen aus Bulgarien]. – *Spisanie na Bulgarska Akademia na Naukite*, **44**: 1-50.
- DUMITRESCO M. 1971. Une araignée nouvelle des grottes de Bulgarie, *Antrohyphantes rodopicus* n. g., n. sp. (fam. Linyphiidae, sous-fam. Linyphiinae, série de genres Lepthyphanteae). – *Travaux de l'Institut de Spéologie "Emile Racovitza"*, **10**: 167-174.
- DUMITRESCU M., T. ORGHIDAN 1969. Nouvelles données obtenues dans l'étude de la faune lithoclasticole. – *Travaux de l'Institut de Spéologie "Emile Racovitza"*, **8**: 55-71.
- GEORGESCU M. 1969. Contribution à l'étude des espèces appartenant au genre *Diplocephalus* Bertk. (Micriphantidae). – *Acta zool. cracov.*, **14** (10): 204-215.
- GUEORGUIEV V. P. BERON 1962. Essai sur la faune cavernicole de Bulgarie. – *Annales de Spéléologie*, **17**: 285-411.
- HAZELTON M. 1970. Fauna from some caves in Bulgaria and one in Yugoslavia. – *Transcript Cave Research Group Great Britain*, **12**: 33-37.
- LAZAROV S., C. DELTSHEV, G. BLAGOEV 2001. Spiders (Araneae) of Sashtinska Sredna Gora Mountain, Bulgaria. – *Acta zoologica bulgarica*, **53**: 3-28.
- PLATNICK N. 2007. The world spider catalog, version 8.0. American Museum of Natural History, online at: <http://research.amnh.org/entomology/spiders/catalog81-87/index.html>
- ПОПОВ V. 1976. Regioning of caves in PR of Bulgaria. – *Problems of Geography*, **2** (2): 14-24.

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Паяци (Araneae) от пещерите на Западните Родопи (България)

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(Резюме)

Установени са 37 вида от 12 семейства, намерени в 87 (30 новоустановени) подземни находища (пещери и изкуствени галерии) в Западни Родопи. 3 вида са нови за пещерите, а 9 са нови за пещерите на Родопите. Този брой представлява 37 % от всички паяци установени в българските пещери (100 вида). Процентът на ендемитите е относително висок (27 %) и показва локалния характер на фауната. *Historopona tranteevi* DELTSHEV, 1978 е дискутиран в таксономично отношение, като е описан и неизвестният досега мъжки. Името на вида "*Diplocephalus cristatus*" (= foraminifer) и "*Histopona miops*" (= *tranteevi*) са премахнати от списъка на българската аранеофауна.