

Neobisium boreense sp. n. (Pseudoscorpiones: Neobisiidae), a New Endemic Species from East Serbia

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Abstract: The cave-dwelling forms of the genus *Neobisium* Chamberlin in Serbia belong to many phyletic lines, some less specialized and others highly adapted to cave life. In this study, a description of the troglomorphic *N. boreense* sp. n., from a cave in Stol Mt. (East Serbia), has been presented, with some details on its morphology, biogeographic traits, and interrelationships with phenetically close species.

Key words: Pseudoscorpiones, Neobisiidae, *Neobisium boreense* sp. n., evolution, biogeography, biospeleology, Mt. Stol, East Serbia

Introduction

The Carpathian Karst is closely associated to the great range of Balkan Mt., which occupies the central part of the Balkan Peninsula. The organized biological study of the Carpathian caves and their inhabitants started only in the 1930s uncovering an extraordinary wealth of endemic pseudoscorpions, greater than in many European regions. This abundance is unique in Europe and comparable only to that of tropical rain forests (ĆURČIĆ 1974, 1988, 2002, ĆURČIĆ *et al.* 2004, ĆURČIĆ & DIMITRIJEVIĆ 1984, 1986).

Systematic Part

Neobisiidae J.C. CHAMBERLIN, 1930

***Neobisium* J.C. CHAMBERLIN, 1930**

***Neobisium boreense*, new species**

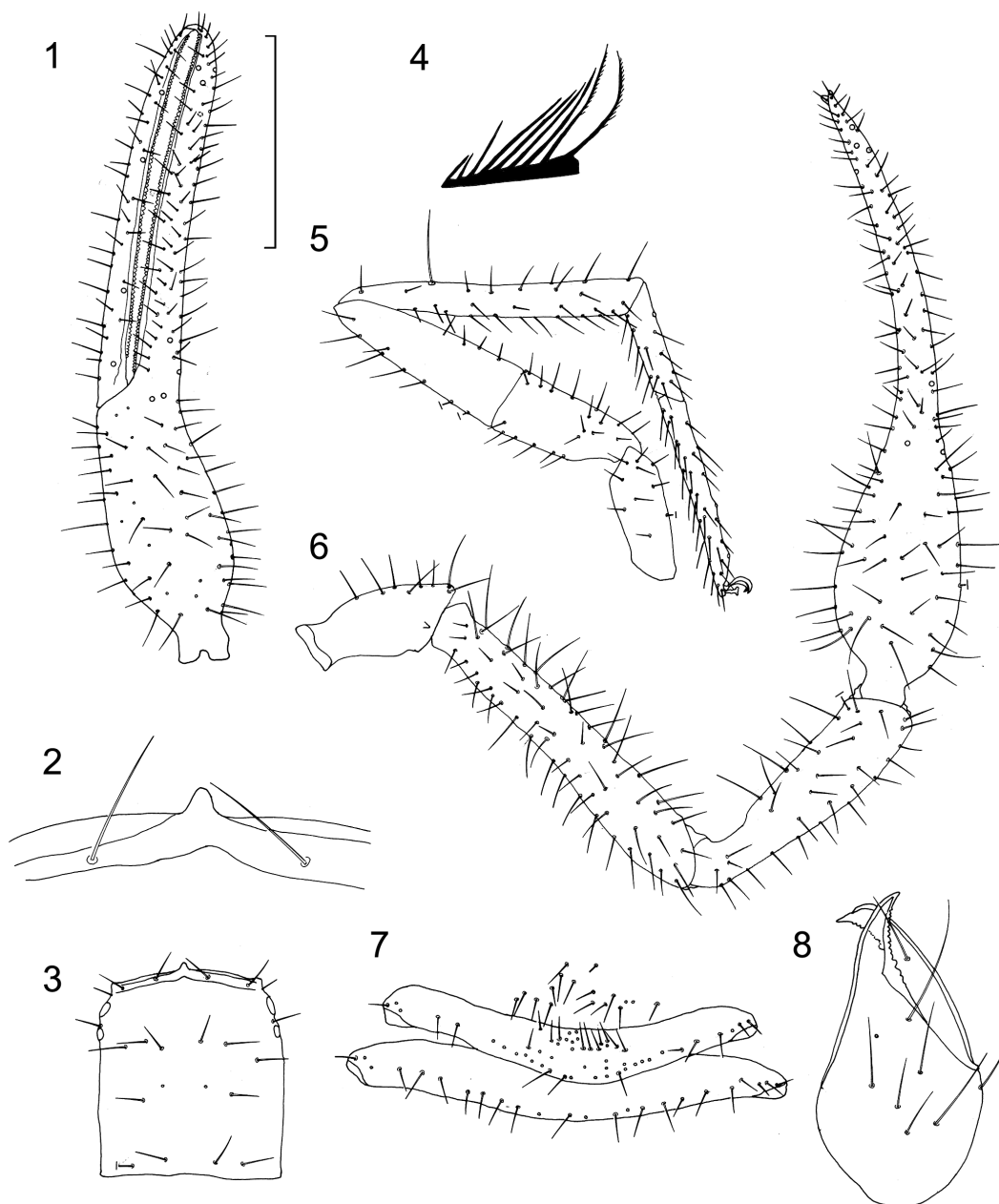
(Figs. 1-8; Table 1)

Etymology. After the town of Bor, otherwise the type locality of the new taxon (a cave in Stol Mt., near the mountain house).

Material examined. Holotype male, from a cave in Stol Mt., nr. Bor, East Serbia; 26 July 1984; collector unknown.

Description. Carapace reticulate throughout; epistome small, triangular, and apically rounded (Figs. 2 and 3). Anterior eyes are slightly larger than the posteriors (Fig. 3). A preocular microseta is carried on either carapacial side (Fig. 3). Setal carapacial formula: 4 + 8 + 4 + 4 = 20.

Tergites I-X and sternites IV-X uniseriate, smooth, and entire. Setal formula of tergites I-X is 6-7-10-10-10-11-10-10-9-9. Number of posterior carapacial setae is smaller than the same character on either of the tergites I-IV. Male genital area: sternite II with 16 posterior and median setae; sternite III with 25 anterior setae, 22 posterior setae, and three suprastigmatic microsetae on either side, sternite IV with 18 posterior setae and three small setae along each of the stigma (Fig. 7); sternites V-X with 16-16-14-14-15-13 posterior setae. Twelfth abdominal



Figs. 1-8. *Neobisium borensis* sp. n., holotype male, from Stol Mt. (near Bor), East Serbia. 1 – pedipalpal chela; 2 – epistome; 3 – carapace; 4 – flagellum; 5 – leg IV; 6 – pedipalpal chela; 7 – male genital area; 8 – chelicera. Scales = 0.50 mm (Figs. 1, 3, 5, and 6) and 0.25 mm (Figs. 2, 4, 7, and 8).

segment with two pairs of small setae. Pleural membranes granulostriate.

Cheliceral galea low and rounded. Movable cheliceral finger with one seta, cheliceral palm with eight setae. Galeal seta inserted almost at the upper third of the movable finger. Fixed cheliceral finger with 15 small and close-set teeth, irregularly shaped and of unequal size. Movable cheliceral finger with one larger tooth distally, followed by 10 small teeth, which merge into a distal lamella (Fig. 8). Flagellum eight- or nine-bladed; only two distalmost blades

are pinnate anteriorly. Other blades are smooth and acute and diminish proximally (Fig. 4).

Apex of pedipalpal coxa bears five long setae. Trochanter with one small and rounded tubercle, pedipalpal articles smooth and attenuated, femur and tibia somewhat dilated distally (Fig. 6). Chelal palm ovate (Figs. 1 and 6). Fixed chelal finger with 103 small and contiguous teeth, which are triangular and apically pointed (Fig. 1). The teeth of the fixed finger reach the level of the trichobothrium *ib* (Fig. 1). Movable chelal finger with 93 small teeth; dis-

Table 1. Linear measurements (in mm) and morphometric ratios in *Neobisium boreense* sp. n., *N. rajkodimitrijevi*, and *N. deltshevi* from some caves in Serbia. Abbreviation: ♂(♂) = male(s). Distinct characters are marked in bold.

	<i>N. boreense</i>	<i>N. rajkodimitrijevi</i>	<i>N. deltshevi</i>
Character	♂	♂	♂♂
Body			
Length (1)	3.68	2.90	2.31-2.37
Cephalothorax			
Length (2)	1.00	0.68	0.52-0.56
Breadth (2a)	0.835	0.59	0.49-0.51
Ratio 2/2a	1.18	1.12	-
Abdomen			
Length	2.68	2.22	1.79-1.81
Chelicerae			
Length (3)	0.71	0.53	0.40-0.44
Breadth (4)	0.35	0.23	0.21-0.22
Length of movable finger (5)	0.46	0.315	0.25-0.26
Ratio 3/5	1.54	1.68	1.60-1.76
Ratio 3/4	2.03	2.12	1.90-2.00
Pedipalps			
Length with coxa (6)	7.53	4.96	3.535-3.735
Ratio 6/1	2.05	1.71	1.53-1.775
Length of coxa	0.88	0.63	0.52-0.55
Length of trochanter	0.77	0.52	0.39-0.41
Length of femur (7)	1.75	1.08	0.73-0.75
Breadth of femur (8)	0.295	0.20	0.17-0.18
Ratio 7/8	5.93	5.40	4.17-4.29
Ratio 7/2	1.75	1.59	1.34-1.40
Length of patella (tibia) (9)	1.09	0.76	0.53-0.54
Breadth of patella (tibia) (10)	0.34	0.24	0.20-0.21
Ratio 9/10	3.205	3.17	2.52-2.70
Length of chela (11)	3.04	1.97	1.355-1.495
Breadth of chela (12)	0.59	0.38	0.315-0.33
Ratio 11/12	5.15	5.18	4.30-4.53
Length of chelal palm (13)	1.18	0.77	0.54-0.68
Ratio 13/12	2.00	2.03	1.71-2.06
Length of chelal finger (14)	1.86	1.20	0.815
Ratio 14/13	1.58	1.56	1.20-1.51
Leg IV			
Total length	5.805	3.41	2.515-2.575
Length of coxa	0.61	0.42	0.34
Length of trochanter (15)	0.68	0.40	0.305
Breadth of trochanter (16)	0.24	0.16	0.13-0.14
Ratio 15/16	2.83	2.50	2.18-2.35
Length of femur + patella (17)	1.59	0.94	0.68-0.70
Breadth of femur + patella (18)	0.305	0.22	0.20
Ratio 17/18	5.21	4.27	2.85-3.50

Table 1. Continued.

	<i>N. borensis</i>	<i>N. rajkodimitrijevići</i>	<i>N. deltshevi</i>
Length of tibia (19)	1.365	0.78	0.54-0.59
Breadth of tibia (20)	0.16	0.11	0.10
Ratio 19/20	8.53	7.09	5.40-5.90
Length of metatarsus (21)	0.59	0.37	0.25
Breadth of metatarsus (22)	0.13	0.09	0.07
Ratio 21/22	4.54	4.11	3.57
Length of tarsus (23)	0.97	0.50	0.38-0.40
Breadth of tarsus (24)	0.10	0.08	0.06
Ratio 23/24	9.70	6.25	6.33-6.67
TS ratio - tibia IV	0.33	0.35	0.41-0.45
TS ratio - metatarsus IV	0.175	0.15	0.175-0.20
TS ratio - tarsus IV	0.25	0.39	0.35-0.36

tal members are triangular and low; basal teeth not reaching the level of *b*. Chelal fingers considerably longer than chelal palm (Table 1).

Disposition of trichobothria: *eb*, *esb*, *ib*, and *isb* on finger base, *et*, *it*, and *est* on the top of the finger; *ist* much closer to *est* than to *isb*. Setae *b* and *sb* in proximal, and *st* and *t* in distal finger half (Fig. 1).

Anterior and median rim of coxa I with small chitinous points; trochanteral foramen slightly elongate and apically transparent. Tibia IV, basitarsus IV, and telotarsus IV each with a single sensitive seta (Fig. 5). Subterminal tarsal setae furcate, each branch with few pinnules. Morphometric ratios and measurements are presented in Table 1.

Differential diagnosis. From its phenetically close congeners, *N. rajkodimitrijevići* ĆURČIĆ and *N. deltshevi* B. ĆURČIĆ, DIMITRIJEVIĆ & N. ĆURČIĆ from East Serbia, the new species is easily distinguished by many ratios and morphometric measurements (Table 1; the distinctions are designated by bold figures).

Distribution. East Serbia, Stol Mt., near Bor, in a cave.

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Remarks. This species seems to be endemic and confined to the Carpathian belt (Stol Mt.) in East Serbia only.

The colonization of the Carpathian subterranean habitats in Serbia must have begun a long time ago and has passed through successive stages during different geological times, together with the development of karstic phenomena (ĆURČIĆ 1988). Very little is known about this process as yet, hence its interpretation would be more or less hypothetical. It is evident, therefore, that the Carpathian Karst was not developed at a time, and therefore its colonization must have occurred progressively throughout its life span.

The study of cave pseudoscorpions inhabiting East Serbia (which belongs to the Carpatho-Balkan Arch) offers further proof of their great age and probably different origin (ĆURČIĆ *et al.* 2004).

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