

New and little-known cavernicolous species of Chthoniidae and Neobisiidae (Pseudoscorpiones, Arachnida) from Serbia

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Abstract

The pseudoscorpions of the genera *Chthonius* C.L. Koch, 1843 (Chthoniidae) and *Roncus* L. Koch, 1873 (Neobisiidae) from caves in Serbia, Yugoslavia, have been studied. Three new species, *Chthonius (Globochthonius) purgo*, *Chthonius (Ephippiochthonius) kemza*, and *Roncus talason* are described. A re-analysis of the type material of three subspecies of *Chthonius* and *Roncus* from Serbian caves has supported their elevation to full specific rank: *Chthonius (Globochthonius) pancici* Ćurčić, 1972, *Roncus remesianensis* Ćurčić, 1981, and *R. timacensis* Ćurčić, 1981. All species studied are considered endemics of the Balkan Peninsula. Diagnostic characters of the analysed taxa are thoroughly described or figured. Taxonomic interrelationships and geographical distribution are briefly discussed.

Résumé

Les Pseudoscorpions des genres *Chthonius* C.L. Koch, 1843 (Chthoniidae) et *Roncus* L. Koch, 1873 (Neobisiidae) provenant de grottes en Serbie, Yougoslavie, sont étudiés. Trois nouvelles espèces, *Chthonius (Globochthonius) purgo*, *Chthonius (Ephippiochthonius) kemza*, et *Roncus talason* sont décrites. Une nouvelle analyse du matériel typique de trois sous-espèces de *Chthonius* et *Roncus* provenant de grottes en Serbie va en faveur de leur élévation à un niveau spécifique à part entière: *Chthonius (Globochthonius) pancici* Ćurčić, 1972, *Roncus remesianensis* Ćurčić, 1981, et *R. timacensis* Ćurčić, 1981. Toutes les espèces étudiées sont considérées comme endémiques à la Péninsule des Balkans. Les caractères diagnostiques des taxa analysés sont décrites ou illustrées de façon détaillée. Les relations taxonomiques et la répartition géographique sont brièvement décrites.

Introduction

Only a single epigeal species of *Chthonius* C.L. Koch, 1843 (subgenus *Globochthonius* Beier, 1931) (Chthoniidae) is presently known from Serbia, Yugoslavia, viz. *C. (G.) polychaetus* Hadži, 1937. It lives in an epigeal habitat in Kovačevac, near Kačanik (Hadži, 1937). Furthermore, a cavernicolous subspecies, *C. (G.) polychaetus pancici* Ćurčić, 1972, has been described from a cave in Perućac, eastern Serbia (Ćurčić, 1972).

To date, only two pseudoscorpions of *Chthonius* (*Ephippiochthonius* Beier, 1931) are known to inhabit underground habitats in Serbia. These are *C. (E.) bidentatus* Beier, 1939 from the Petnica Cave and *C. (E.) tetrachelatus* (Preysler, 1790) from a cave in the village of Pričević, both in western Serbia, Yugoslavia. The latter species is an accidental cave inhabitant (Beier, 1963; Ćurčić, 1972).

Eight cavernicolous representatives of *Roncus* L. Koch, 1873 (Neobisiidae), are presently known in Serbia (cf. Ćurčić, 1992): *Roncus* aff. *lubricus* L. Koch, 1873; *R. parablothroides* Hadži, 1937; *R. pljakici* Ćurčić, 1973; *R. pljakici remesianensis* Ćurčić, 1981*; *R. pljakici timacensis* Ćurčić, 1981*; *R. sotirovi* Ćurčić, 1982; *R. svanteviti* Ćurčić, 1992; and *R. bauk* Ćurčić, 1991. All species are allopatric and inhabit different caves in eastern Serbia.

In the present study, material from two samples

* Mention of these two forms without the specific name *pljakici* (Ćurčić, 1992) was a lapsus calami.

of pseudoscorpions collected in 1990 has been examined. The first sample from the “Pećina u Kožuvarskoj Glami” Cave, near Minićevo, Serbia, contained two new taxa: *Chthonius* (*Globochthonius*) *purgo* n. sp. and *Chthonius* (*Ephipiochthonius*) *kemza* n. sp. The second sample from the Vaskova Dupka Cave, near Svrljig, Serbia, consisted of a previously undescribed species: *Roncus talason* n. sp. To complete the study of Serbian *Chthonius* and *Roncus* species from caves, the type material of *C. (G.) polychaetus pancici*, *R. pljakici remesianensis*, and *R. pljakici timacensis* were restudied in order to define their precise taxonomic rank.

The new species described in this paper are probably endemic forms, inhabiting caves in the eastern part of Serbia, Yugoslavia.

Descriptive part

Family CHTHONIIDAE Daday, 1888

Chthonius (*Globochthonius*) *pancici* Ćurčić, 1972, new rank

Syn.: *Chthonius* (*Globochthonius*) *polychaetus pancici* Ćurčić, 1972: 148.

Material examined. – Holotype ♀ and 2 paratype ♀♀, from the “Pećina iznad Perućakog vrela” Cave, village of Perućac, near Bajina Bašta, western Serbia, Yugoslavia; 21 July 1970; collected by B.P.M. Ćurčić. These type specimens are kept in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

Remarks. – *C. (G.) pancici* differs from the phenetically most similar species, *C. (G.) polychaetus*, from southern Serbia, in many important respects (characteristics of *C. polychaetus* in parentheses): smaller body size (vs. larger), carapace wider than long (vs. longer than wide), 20 setae on carapace (vs. 22), 6 setae on cheliceral palm (vs. 7), 10–14 teeth on the movable chelal finger (vs. 6), intermediary denticles present on the fixed chelal finger (vs. absent), 5–10 spines on coxae II (vs. 14), pedipalpal length 2.10–2.25 mm (vs. 2.51 mm; see Ćurčić, 1972), and anterior eyes with prominent

lenses, posterior ones spot-like (vs. both anterior and posterior eyes with distinct lenses). In addition, *C. (G.) polychaetus* lives in an epigeal habitat, while *C. (G.) pancici* is a cave-dwelling form.

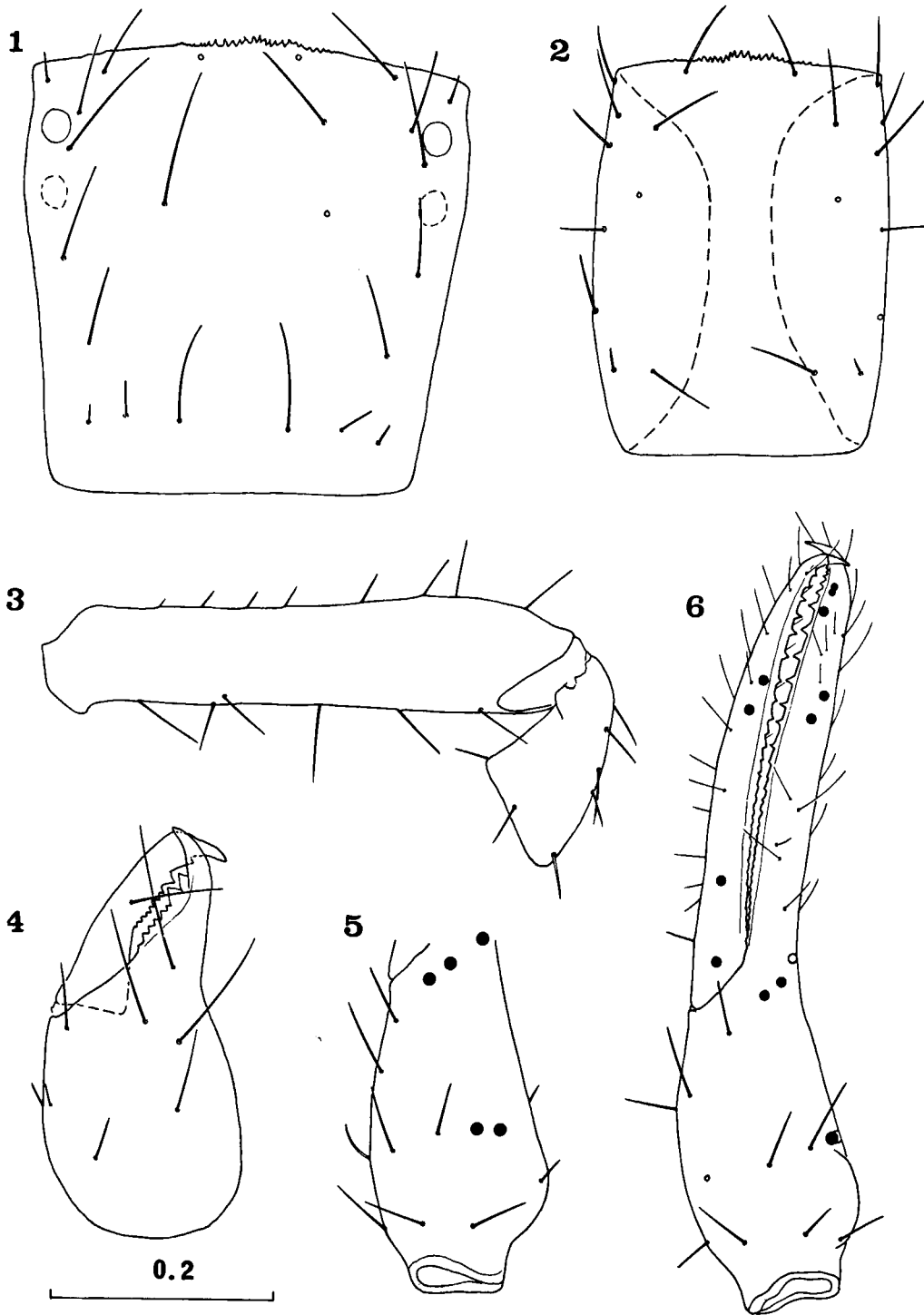
Chthonius (*Globochthonius*) *purgo* n. sp.
(Figs. 1–7; Table I)

Material examined. – Holotype ♀ and paratype tritonymph, from the “Pećina u Kožuvarskoj Glami” Cave, village Novo Korito, near Minićevo (Knjaževac), eastern Serbia, Yugoslavia; 5 July 1990; collected by B.P.M. Ćurčić, R.N. Dimitrijević, and O.S. Karamata. These type specimens have been deposited in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

Description. – Epistome not developed; small denticulations on anterior margin of carapace between the two median and anterior setae (Fig. 1). Four eye-spots, pale yellowish in colour (adult) or no eye spots (tritonymph). Carapace longer than broad (Table I); 4 setae along anterior margin of carapace, 6 (tritonymph) or 7 setae (adult) in the ocular row, 4 in the combined median and intermediary rows, and 4 (tritonymph) to 6 setae (adult) in the posterior row. Of the posterior setae, 2 (tritonymph) or 4 lateral setae (adult) considerably smaller than the median setae. One microseta in each preocular recess. Setal formulae: 4 + 6 + 4 + 4 = 18 (tritonymph) and 4 + 7 + 4 + 6 = 21 (adult).

Abdominal tergites I–X with 4 – 4 – 4 – 4 – 6 – 6 – 6 – 6 – 6 – 4 setae. Male genital area unknown. Female genital area: sternite II with 10 setae in the form of a triangle; sternite III with 7 posterior setae and 3 suprastigmatic microsetae on each side; sternite IV with 6 marginal setae and 3 small setae along each stigma. Sternites V–X each with 6 (rarely 7) setae. Tritonymph: sternite II with 5 setae in the form of an irregular triangle; sternite III with 7 setae and 3 microsetae along each stigma; sternite IV with 5 marginal setae and 2 or 3 suprastigmatic microsetae on each side, sternites V–X each with 6 (rarely 7) setae.

Galea a low convexity on movable cheliceral finger (Fig. 4); 6 long setae on cheliceral palm, and 1 long seta on movable finger; 2 microsetae on



Figs. 1–6. *Chthonius (Globochthonius) purgo* n. sp., from the “Pećina u Kožuvarskoj Glami” Cave, Yugoslavia: 1, carapace, holotype ♀; 2, carapace, paratype tritonymph; 3, pedipalpal femur and tibia, holotype ♀; 4, chelicera, holotype ♀; 5, chelal palm (dorsolateral view), holotype ♀; 6, pedipalpal chela, holotype ♀. Scale in mm.

lateral part of cheliceral palm. Flagellum with 10 or 11 blades. Cheliceral dentition as in Fig. 4 (movable finger with a distal isolated tooth); teeth on both fingers diminish in size proximally.

Apex of pedipalpal coxa with 2 long setae. Fixed chelal finger with total of 31 (tritonymph) or 37 teeth (adult); distal teeth triangular and interspaced, proximal teeth asymmetrical or rounded, low, and closely set. Movable chelal finger with 26 (tritonymph) or 27 teeth (adult); distal ones triangular and interspaced, proximal teeth resemble basal teeth of fixed finger. Proximal teeth of both fingers merge into basal lamellae (Fig. 6). Three or 4 denticles distal to *ds* (distal setae; all other abbreviations of setal names according to Beier, 1963). Shape of pedipalpal femur and tibia presented in Fig. 3, and basal protuberance on chelal palm, characteristic of the subgenus *Globochthonius*, illustrated in Figs. 5 and 6.

Trichobothriotaxy (female) (Fig. 6): *ib* and *isb* on middle of chelal palm on dorsal side. A rounded convexity dorsoventrally on chelal palm, between *ib-isb* and the finger base (Figs. 5 and 6). Setae *et-est-it* in distal finger half, *ist-esb-eb* on finger base; *it* slightly proximal to *t*, *est* at the level of *st*. Chelal fingers almost straight and of nearly equal length (Fig. 6).

Coxa II with 4 or 5 (tritonymph) or 5 spines (adult); coxa III with 3 or 4 (tritonymph) or 4 spines (adult). Intercoxal tubercle with 2 small setae. Leg IV: tibia, basitarsus, and telotarsus each with a long tactile seta (Fig. 7).

For morphometric ratios and linear measurements of various structures, see Table I.

Distribution. – Eastern Serbia, Yugoslavia (in caves).

Remarks. – *C. (G.) purgo* n. sp. differs distinctly from *C. (G.) pancici*, the phenetically most similar species, also a cave inhabitant, in the form of the eyes (4 eye-spots vs. 2 well-developed anterior eyes and 2 posterior eye-spots), the number of teeth on the fixed chelal finger (37 vs. 21), the presence/absence of intermediary teeth on the fixed chelal finger (absent vs. present), the number of denticles distal to *ds* (3 or 4 vs. 1), the ratio of pedipalpal

femur length to breadth (4.70 vs. 5.82–6.09), the pedipalpal length (1.845 mm vs. 2.51 mm), and the pedipalpal chela length (0.68 mm vs. 0.89–0.92 mm). Furthermore, *C. (G.) pancici* inhabits western Serbia, while *C. (G.) purgo* n. sp. is known from eastern Serbia.

The new species is quite distinct from *C. (G.) polychaetus*, the other known representative of the subgenus *Globochthonius*, from southern Serbia. The differences between the two species are manifested in the form and structure of the eyes (4 eye-spots vs. 4 well-developed eyes), the number of setae on the carapace (21 vs. 18), the number of denticles distal to *ds* (3 or 4 vs. 1), the setation of abdominal tergites I–X (4 – 4 – 4 – 4 – 6 – 6 – 6 – 6 – 4 vs. 4 – 4 – 4 – 4 – 6 – 6 – 6 – 6 – 6), the size of the body (larger in *C. polychaetus*), the number of spines on coxae II (5 vs. 14), the ratio of pedipalpal femur length to breadth (4.70 vs. 7.00), the pedipalpal length (1.845 mm vs. 2.51 mm), the chelal finger length (0.41 mm vs. 0.60 mm), and the pedipalpal chela length (0.68 mm vs. 1.00 mm; cf. Table I; see also Ćurčić, 1972). In addition, *C. (G.) polychaetus* is an epigeal form and *C. (G.) purgo* n. sp. is cave-dwelling. To date, the new species is known only from the type locality.

Etymology. – In Serbian mythology, Purgo is the god of thunderstorm (Kulišić et al., 1970).

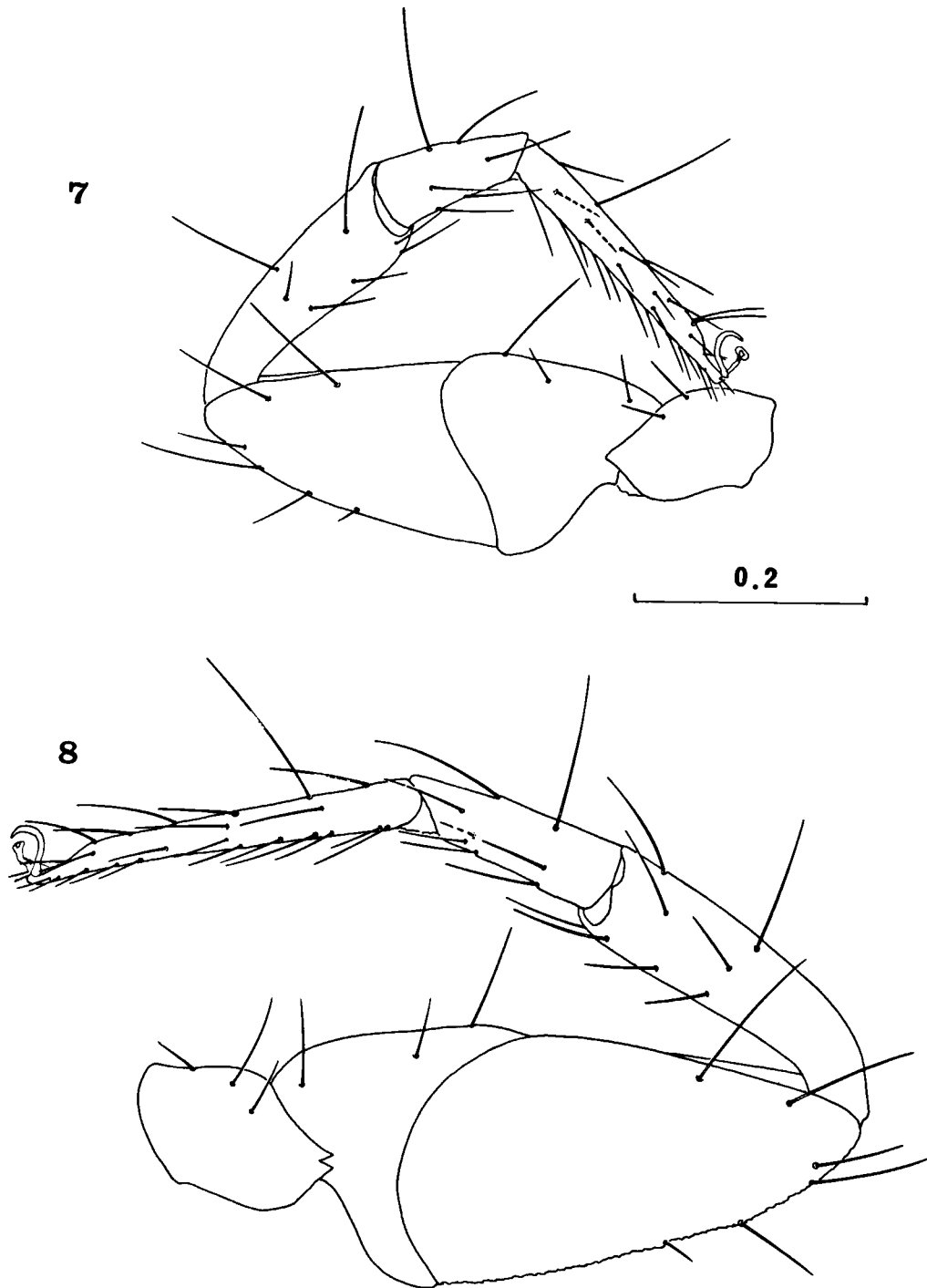
Chthonius (Ephippiochthonius) kemza n. sp.
(Figs. 8–12; Table I)

Material examined. – Holotype ♂ from the “Pećina u Kožuvarskoj Glami” Cave, village Novo Korito, near Minićevo (Knjaževac), eastern Serbia, Yugoslavia; 5 July 1990; collected by B.P.M. Ćurčić, R.N. Dimitrijević, and O.S. Karamata. The type specimen has been deposited in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

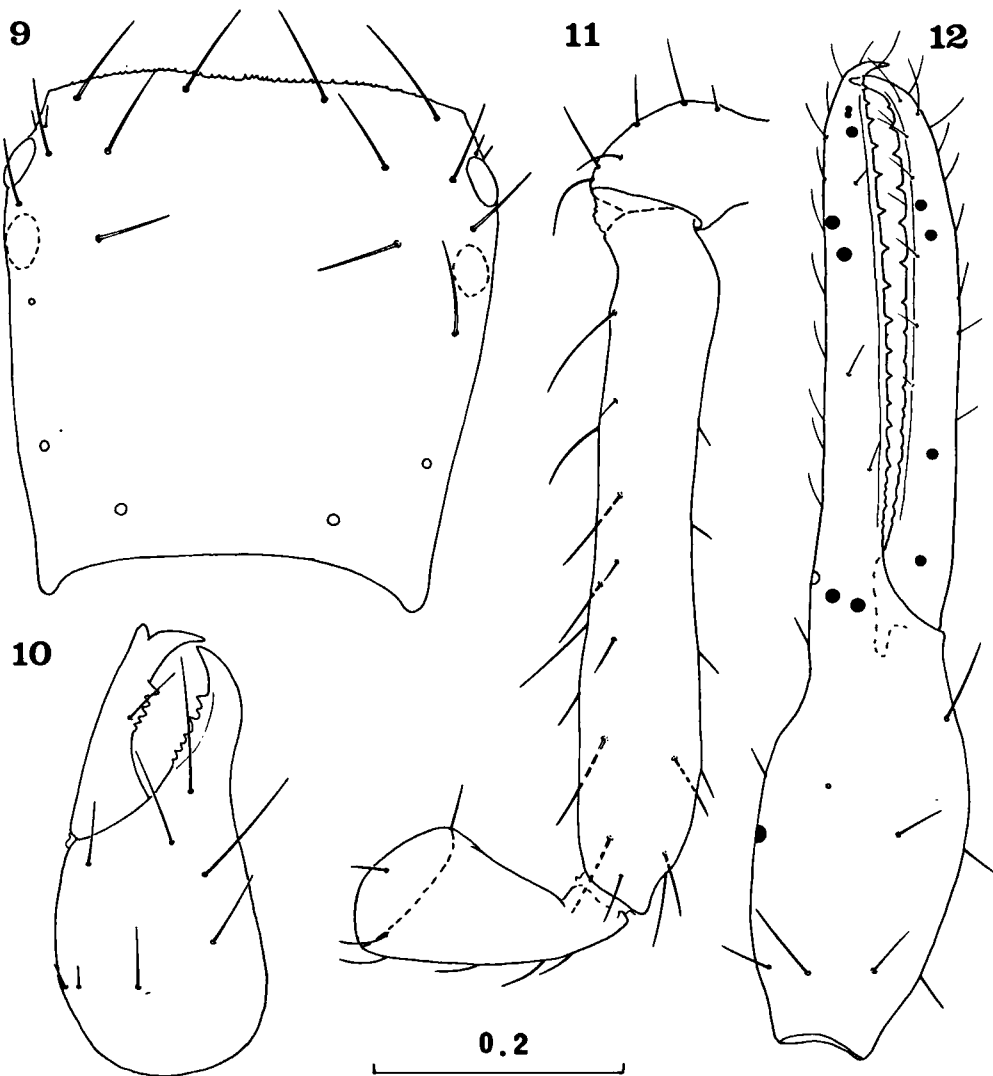
Description. – Epistome absent; small sclerotized points on anterior margin of carapace, between two median and anterior setae (Fig. 9). Anterior eyes with flattened lenses, posterior eyes spot-like (Fig. 9). Carapace longer than broad (Table I); 4 setae

Table I. Measurements (mm) of various structures, together with selected ratios, in *Chthonius* (*Globochthonius*) *purgo* n. sp., *Chthonius* (*Ephippiochthonius*) *kemza* n. sp., and *Roncus talason* n. sp. Abbreviations: trito. = tritonymph; TS = tactile seta.

Character	<i>C. purgo</i>		<i>C. kemza</i>	<i>R. talason</i>
	♀	trito.	♂	♂
Body				
Length (1)	1.60	1.25	1.67	3.40
Cephalothorax				
Length (2)	0.43	0.36	0.40	1.00
Breadth	0.41	0.315	0.39	0.74
Abdomen				
Length	1.17	0.89	1.27	2.40
Breadth	0.69	0.535	0.63	1.23
Chelicerae				
Length (3)	0.36	0.28	0.40	0.57
Breadth (4)	0.17	0.15	0.16	0.24
Movable finger length (5)	0.195	0.15	0.17	0.36
Ratio 3/5	1.85	1.87	2.35	1.58
Ratio 3/4	2.12	1.87	2.50	2.375
Length of galea	0.01	0.01	0.015	–
Pedipalps				
Length with coxa (6)	1.845	1.375	2.125	6.00
Ratio 6/1	1.15	1.10	1.27	1.76
Length of coxa	0.34	0.29	0.38	0.82
Length of trochanter	0.15	0.13	0.17	0.69
Length of femur (7)	0.47	0.28	0.57	1.30
Breadth of femur (8)	0.10	0.08	0.10	0.25
Ratio 7/8	4.70	3.50	5.70	5.20
Ratio 7/2	1.09	0.78	1.425	1.30
Length of tibia (9)	0.205	0.16	0.22	1.08
Breadth of tibia (10)	0.11	0.09	0.12	0.32
Ratio 9/10	1.86	1.78	1.83	3.375
Length of chela (11)	0.68	0.515	0.785	2.11
Breadth of chela (12)	0.15	0.11	0.16	0.435
Ratio 11/12	4.53	4.68	4.91	4.85
Chelal palm length (13)	0.27	0.21	0.34	0.93
Ratio 13/12	1.80	1.91	2.125	2.14
Chelal finger length (14)	0.41	0.305	0.445	1.18
Ratio 14/13	1.52	1.45	1.31	1.27
Leg IV				
Total length	1.68	1.08	1.845	3.83
Length of coxa	0.38	0.20	0.315	0.55
Length of trochanter (15)	0.22	0.12	0.18	0.46
Breadth of trochanter (16)	0.10	0.08	0.10	0.18
Ratio 15/16	2.20	1.50	1.80	2.555
Length of femur (17)	0.41	0.29	0.51	1.01
Breadth of femur (18)	0.18	0.13	0.22	0.29
Ratio 17/18	2.28	2.23	2.32	3.48
Length of tibia (19)	0.26	0.18	0.31	0.94
Breadth of tibia (20)	0.075	0.06	0.08	0.15
Ratio 19/20	3.47	3.00	3.875	6.27
Basitarsal length (21)	0.14	0.10	0.19	0.315
Basitarsal breadth (22)	0.065	0.05	0.06	0.11
Ratio 21/22	2.15	2.00	3.17	2.86
Telotarsal length (23)	0.27	0.19	0.34	0.555
Telotarsal breadth (24)	0.03	0.03	0.03	0.10
Ratio 23/24	9.00	6.33	11.33	5.55
TS ratio – tibia IV	0.50	0.55	0.51	0.605
TS ratio – basitarsus IV	0.33	0.45	0.33	0.18
TS ratio – telotarsus IV	0.31	0.285	0.24	0.42



Figs. 7–8. *Chthonius (Globochthonius) purgo* n. sp. (7), and *Chthonius (Ephippiochthonius) kemza* n. sp. (8), both from the “Pećina u Kožuvarskoj Glami” Cave, Yugoslavia: 7, leg IV, holotype ♀; 8, leg IV, holotype ♂. Scale in mm.



Figs. 9–12. *Chthonius (Ephippiochthonius) kemza* n. sp., holotype ♂, from the “Pećina u Kožuvarskoj Glami” Cave, Yugoslavia: 9, carapace; 10, chelicera; 11, pedipalpal femur and tibia; 12, pedipalpal chela. Scale in mm.

along anterior border of carapace; 6 setae in the ocular row; 6 setae in the combined median and intermediary rows; and 2 setae along posterior border of carapace. Setal formula: 4 + 6 + 4 + 2 + 2 = 18.

Abdominal tergites I–X with 4 – 4 – 4 – 4 – 6 – 6 – 6 – 6 – 6 – 4 setae. Male genital area: sternite II with 11 setae in the form of a triangle (of these, 4 setae along posterior margin); sternite III with 3 suprastigmatic microsetae on each side, 8 posterior setae, and 9 setae along each side of a me-

dian groove. Sternite IV with 7 setae and 3 suprastigmatic microsetae on each side; sternite V with 8 setae; sternites VI–X each with 6 or 7 setae.

Galea conspicuous, tubercular; 6 long setae on fixed and 1 long seta on movable finger, 2 small accessory setae laterally. Flagellum with 10 blades. Cheliceral dentition as in Fig. 10. No isolated distal tooth on movable cheliceral finger.

Apex of pedipalpal coxa with 2 long setae. Fixed chelal finger with 24 teeth; distal teeth triangular and interspaced; proximal teeth small, closely set,

and rounded. Movable finger with 16–18 teeth; distal and median teeth triangular and interspaced; proximal ones small, closely set, and rounded. Only 2 denticles distal to *ds* (Fig. 12).

Trichobothrial pattern (Fig. 12): *ib* and *isb* on middle of chelal palm on dorsal side. A prominent depression on dorsum of chelal hand, between *ib-isb* and finger base. Setae *et-est-it* in distal finger half, *ist-esb-eb* on finger base; *it* slightly proximal to *t*, *est* proximal to *st*. Chelal fingers of nearly equal length (Fig. 12). Shape of pedipalpal femur, tibia, and trochanter as illustrated in Fig. 11.

Coxa II with 6 or 7, and coxa III with 5 or 6 spines. Intercoxal tubercle with 2 small setae. Leg IV: tibia, basitarsus, and telotarsus each with a long tactile seta (Fig. 8).

For morphometric ratios and linear measurements of various structures, see Table I.

Distribution. – Eastern Serbia, Yugoslavia (in caves).

Remarks. – The new species is easily distinguished from the phenetically similar *C. (E.) tetrachelatus* (from western Serbia) in the form of the eyes (anterior eyes with flat lenses and posterior ones spot-like vs. anterior eyes with prominent lenses and posterior ones with flattened lenses), in the number of teeth on the fixed (24 vs. 18–20) and movable chelal fingers (16–18 vs. 11 or 12), in the number of spines on coxa III (5 or 6 vs. 8–10), in the ratio of pedipalpal femur length to breadth (5.70 vs. 4.78–5.00), in the ratio of pedipalpal length to breadth (4.91 vs. 5.67–5.91), and in the pedipalpal length (2.125 mm vs. 1.61–1.70 mm; cf. Table I; see also Ćurčić, 1972).

C. (E.) kemza n. sp. differs from *C. (E.) serbicus* Hadži, 1937, in many important respects, such as the eye form and structure (anterior eyes have flattened lenses, and posterior eyes are spot-like; whereas in *C. serbicus*, anterior eyes have prominent lenses, and posterior eyes have flattened lenses), the number of teeth on the fixed (24 vs. 18) and movable chelal fingers (16–18 vs. 8), the size of the body (larger in *C. serbicus*), the ratio of the pedipalpal femur length to breadth (5.70 vs. 6.60–7.80), the chelal length (0.785 mm vs.

0.92–1.02 mm), and the chelal finger length (0.445 mm vs. 0.56–0.60 mm; cf. Table I; see also Hadži, 1937). The two species differ also in their habitat preferences: *C. (E.) kemza* is cavernicolous, and *C. (E.) serbicus* is epigeal. The new species is known only from the type locality, which is also the type locality of *Chthonius (Globochthonius) purgo* n. sp. and of *Roncus svanteviti* Ćurčić, 1992 (cf. Ćurčić, 1992).

Etymology. – In Serbian mythology, Kemza is the water demon (Bandić, 1991).

Family NEOBISIIDAE Chamberlin, 1930

Roncus timacensis Ćurčić, 1981, new rank

Syn.: *Roncus pljakici timacensis* Ćurčić, 1981: 105.

Material examined. – Holotype ♀, allotype ♂, and 2 paratype ♀♀, from the “Pećina Božja Vrata” Cave, village Beloinje, near Svrlijig, southeastern Serbia, Yugoslavia; 24 July 1980; collected by B.P.M. Ćurčić and P.S. Petrović. These type specimens are kept in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

Remarks. – The present study of the type specimens of *R. pljakici* Ćurčić and *R. pljakici timacensis* Ćurčić has revealed considerable differences between the two taxa. Therefore, we now consider *R. timacensis* as a full species. *R. timacensis* differs from *R. pljakici* by the form of the pedipalpal tibia (more attenuated in *R. timacensis*), the degree of pedipalpal granulation (inconspicuous vs. well-developed), the setation of the carapace (24 vs. 22 setae), the number of teeth on the fixed chelal finger (89–96 vs. 76–79), the position of the trichobothrium *ist* (closer to *est* than to *isb* vs. closer to *isb* than to *est*), the length of the pedipalpal tibia (3.17–3.27 mm vs. 2.63–2.74 mm), and the ratio of the pedipalpal chela length to breadth (4.61–5.38 vs. 4.02–4.26; cf. Table I; see also Ćurčić, 1981).

R. timacensis differs from *R. remesianensis*, its phenetically most similar species, by the more attenuated pedipalpal femur and chelal palm, the inconspicuously granulated pedipalpal femur (vs. prominently granulated), the position of the tri-

chobothrium *ist* (closer to *est* than to *isb* vs. equidistant from *est* and *isb*), the smaller body size, and the ratio of the pedipalpal tibia length to breadth (3.17–3.27 vs. 2.65–3.03; see Ćurčić, 1981). Currently, *R. timacensis* is known only from the type locality.

***Roncus remesianensis* Ćurčić, 1981, new rank**

Syn.: *Roncus pljakici remesianensis* Ćurčić, 1981: 107.

Material examined. – Holotype ♀, allotype ♂, and 3 paratype ♀♀ from the Govedja Pećina Cave, village of Crnoklište, near Bela Palanka, southeastern Serbia, Yugoslavia; 22 July 1980; B.P.M. Ćurčić and P.S. Petrović coll. The type specimens are kept in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

Remarks. – The present analysis of diagnostic characters of *R. pljakici remesianensis* has shown that this taxon should be given specific rank. *R. pljakici* can be distinguished from *remesianensis*, respectively, by the setation of the carapace (22 vs. 24 setae), the granulation of the pedipalpal femur (less conspicuous vs. prominent), the position of the trichobothrium *ist* (closer to *isb* than to *est* vs. equidistant from *isb* and *est*), the number of teeth on the fixed chelal finger (76–79 vs. 80–92), and the pedipalpal length (5.295–5.755 mm vs. 5.855–6.02 mm; see Ćurčić, 1981).

For a comparison between *R. remesianensis* and that species, see *R. timacensis* (Remarks). Likewise, *R. remesianensis* is known only from the type locality.

***Roncus talason* n. sp.**
(Figs. 13–18; Table I)

Material examined. – Holotype ♂ from the Vaskova Dupka Cave, village Lozan, near Svrlijig, southeastern Serbia, Yugoslavia; 9 July 1991; R.N. Dimitrijević and O.S. Karamata coll. The type specimen has been deposited in the collection of the Institute of Zoology, Faculty of Science (Biology), University of Belgrade, Belgrade.

Description. – Epistome small and triangular; neither eyes nor eye-spots developed (Figs. 13 and 14). Preocular microsetae absent. Setal formula: 4 + 6 + 2 + 6 + 6 = 24.

Abdominal tergites I–X with 6 – 7 – 10 – 11 – 11 – 11 – 11 – 11 – 10 setae. Male genital area: sternite II with 19 setae (of these, 9 along posterior sternal border); sternite III with 4 anterior and 10 posterior setae, and 3 suprastigmatic microsetae on each side; sternite IV with 10 marginal setae and 3 microsetae along each stigma. Sternites V–X each with 12 or 13 setae.

Galea absent. Fixed cheliceral finger with 6 setae, movable finger with 1 seta. Cheliceral dentition as in Fig. 15. Flagellum eight-bladed, all blades serrate anteriorly.

Apex of pedipalpal coxa with 4 long setae. Femur and chelal hand granulated (Fig. 16), other pedipalpal podomeres smooth. Fixed chelal finger with 92 and movable finger with 83 closely set teeth. Trichobothriotaxy as in Fig. 17.

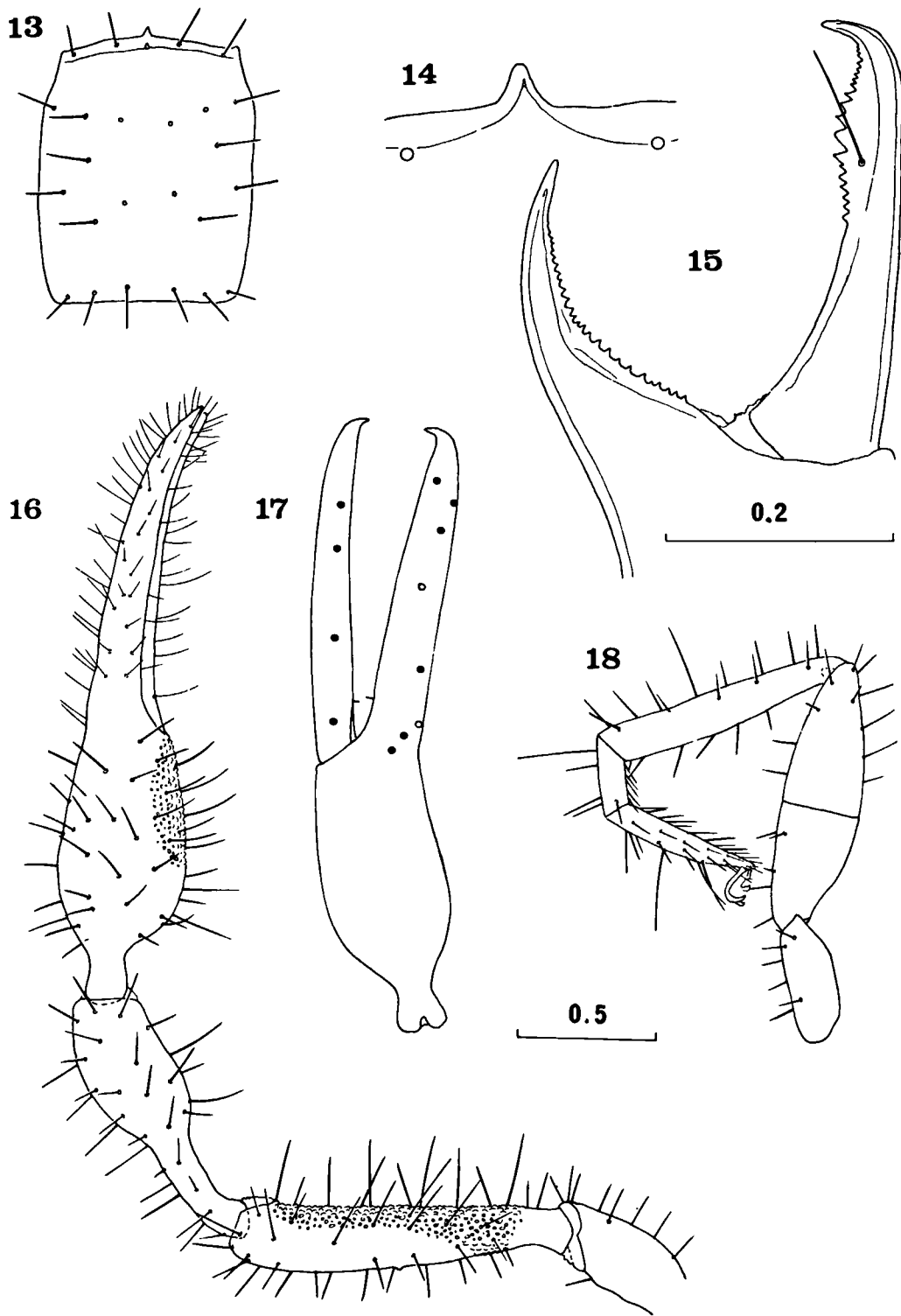
Leg IV: tibia, basitarsus, and telotarsus each with a long tactile seta (Fig. 18). For morphometric ratios and linear measurements, see Table I.

Distribution. – Southeastern Serbia, Yugoslavia (in caves).

Remarks. – This new species differs from *R. pljakici* in many important respects: in the granulation of the pedipalpal femur (less conspicuous in *R. pljakici*, more prominent in *R. talason*), in the form of the chelal palm (ovate vs. elongated), in the number of teeth on the fixed (76–79 vs. 92) and movable chelal fingers (68–77 vs. 83), in the disposition of the trichobothrium *ist* (closer to *isb* than to *est* vs. closer to *est* than to *isb*), in the ratio of the pedipalpal chela length to breadth (4.26 vs. 4.85), and in the male pedipalpal length (5.295 mm vs. 6.00 mm).

R. talason n. sp. is quite distinct from *R. remesianensis* by the stouter (vs. elongate) chelal palm and pedipalpal femur, the less conspicuous (vs. prominent) granulation of the pedipalpal femur, the position of the trichobothrium *ist* being closer to *est* than to *isb* (vs. equidistant from *est* and *isb*), the ratio of the pedipalpal femur length to breadth (5.20 vs. 4.24), the ratio of the chelal palm length to breadth (2.14 vs. 1.79), and the ratio of the pedipalpal chela length to breadth (4.85 vs. 3.91).

R. talason can be easily distinguished from the phenetically similar species, *R. timacensis*, by the



Figs. 13–18. *Roncus talason* n. sp., holotype ♂, from the Vaskova Dupka Cave, Yugoslavia: 13, carapace; 14, epistome; 15, cheliceral fingers; 16, pedipalp (trichobothria omitted); 17, pedipalpal chela (trichobothrial pattern); 18, leg IV. Scales in mm.

prominent (vs. less conspicuous) granulations of the pedipalpal femur, the less (vs. more) attenuated pedipalpal tibia and chela, the ratio of the pedipalpal chela length to breadth (4.85 vs. 5.38), the ratio of the pedal tibia IV length to breadth (6.27 vs. 5.87), the length of leg IV (3.83 mm vs. 3.53 mm), and the tactile seta ratio of tibia IV (0.605 vs. 0.48).

Etymology. – According to Serbian mythology, Talason is the demon guarding houses (Bandić, 1991).

Concluding remarks

Among the principal causes of the extraordinary diversity of the cave pseudoscorpion fauna of the Carpatho-Balkan Arch in Serbia, one should mention: the varied epigeal fauna of pseudoscorpions inhabiting the Balkanic land in the past, the continuity of the continental phase in different areas in Serbia, the evolution of the underground karst relief, the succession of climatic conditions favouring colonization of the underground domain, and the pronounced radiation of pseudoscorpion taxa in numerous isolated subterranean habitats (Ćurčić, 1988a; 1988b).

The distribution of *C. (G.) purgo* n. sp. in the Carpatho-Balkan Arch fits well with the dry land area in Serbia during the mid-Tertiary (Ćurčić, 1975; 1988b). According to the present distribution of *Globochthonius*, it is probable that its divergent differentiation took place simultaneously with the process of the great Alpine orogeny (Ćurčić, 1975). The majority of representatives of this subgenus are autochthonous to the Balkan Peninsula and therefore represent both endemic and relict forms. Furthermore, the distribution of *Globochthonius* in the Balkan area offers proof that both the radiation of this subgenus and the process of karstification took place simultaneously.

The majority of species of *Globochthonius* are found in the Dinaric and Carpatho-Balkan Karst (Ćurčić, 1988b). Therefore, it is probable that the most intensive differentiation of this subgenus took place during the mid-Tertiary, in the eastern parts of the Alpine Arch. However, the radiation of the

subgenus *Ephippiochthonius* probably took place simultaneously with that of *Globochthonius*, though in western parts of the Alpine Arch. The newly described representative of *Chthonius* (*Ephippiochthonius*), *C. (E.) kemza* n. sp., although with reduced eyes, is probably a troglonec cave inhabitant. A number of features (loss of pigment, attenuated appendages, and delicate appearance) strengthen the assumption that this species is in a phase of actively colonizing underground habitats.

The phenetical similarity of *Roncus talason* n. sp. and some related species (e.g., *R. timacensis* and *R. remesianensis*) from the area studied confirms that they all belong to the "*R. parablothroides*"-group (whose members lack microsetae proximal to *eb* and *esb*). In addition, the diversity of *Roncus* species, and especially of cave-dwelling forms, points to the fact that the intensive radiation of this genus occurred in the karstic regions of the Balkan Peninsula. This process was probably accompanied by the evolution of the underground karst relief and the subsequent colonization of caves and potholes (Ćurčić, 1988a, 1988b).

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