

LIST OF CROATIAN PSEUDOSCORPION FAUNA (ARACHNIDA, PSEUDOSCORPIONES)

ROMAN OZIMEC

Croatian Biospeleological Society, Demetrova 1, HR-10 000 Zagreb, Croatia

Ozimec, R.: List of Croatian pseudoscorpion fauna (Arachnida, Pseudoscorpiones). Nat. Croat., Vol. 13, No. 4, 381–394, 2004, Zagreb

On the basis of literature references, information from other arachnologists, as well as redetermination of pseudoscorpions from the Croatian Natural History Museum Collection and the author's collection, 109 taxa of pseudoscorpions have been established for the Croatian fauna, comprising 99 species and 10 subspecies, 26 genera, 10 families. Ten species are new for Croatia. Their rough distribution is outlined according to the geographical macroregions of Croatia.

Key words: checklist, pseudoscorpions, arachnids, Croatia, distribution

Ozimec, R.: Popis faune lažištipavaca (Arachnida, Pseudoscorpiones) Hrvatske. Nat. Croat., Vol. 13, No. 4, 381–394, 2004, Zagreb

Na osnovi literaturnih podataka, podataka drugih specijalista, te taksonomske revizije materijala iz Zbirke lažištipavaca Hrvatskoga prirodoslovnog muzeja i vlastite zbirke, za faunu Hrvatske utvrđeno je 10 porodica i 26 rodova s 99 vrsta i 10 podvrsta, ukupno 109 svojiti. Deset vrsta je prvi put navedeno za faunu Hrvatske. Opća rasprostranjenost je prikazana prema geografskim makroregijama Hrvatske.

Ključne riječi: popis vrsta, lažištipavci, paučnjaci, Hrvatska, rasprostranjenost

SHORT HISTORICAL REVIEW

Research into pseudoscorpions in Croatia can be divided into four periods. In the *first period* (until 1900) the exact locations of findings are mentioned very rarely, determinations are dubious and consequently some specified taxa certainly not belong to the Croatian fauna. The first data about pseudoscorpions in Croatia were published in the book *La Dalmazia descritta* in 1846 in Zadar, edited by **Francesco Carrara**, an archaeologist from Split, determined by Austrian arachnologist A. Rossi. Subsequently, there are works produced by an Austrian arachnologist STECKER (1875) and a French arachnologist SIMON (1880; 1885). Next, the Hungarian arachnologists **Odon Tömösvary** and **Jeno Daday** worked on material from Croatia (TÖMÖSVARY,

1884; HORVATH, 1887; DADAY, 1888a, 1888b, 1889) and there are nine species quoted for Croatia. The first Croatian biologist who started to work on pseudoscorpion fauna was a teacher from Varaždin, **Eugen Adolf Jurinac** (JURINAC, 1886; 1887a; 1887b; BABIĆ, 1928). In *Prilog k dalmatinskoj fauni (Isopoda-Myriopoda-Arachnida)* published in Split by **Rikard Gasperini** (1892), five species are mentioned from Dalmatia.

In the second period (1900–1945) there were many Croatian collectors of pseudoscorpions, exclusively from speleological objects: **V. Stiller**, **S. Plančić**, **J. Poljak**, **I. Hochetlinger**, **A. Langhoffer** (OZIMEC, 2001; 2002b). Findings of cave-dwelling specimens are partially presented by Croatian biologist **August Langhoffer** in *Fauna hrvatskih pećina (špilja) II* (LANGHOFFER, 1915). During investigation of the Pseudoscorpion collection of the Zoological Museum in Berlin (Kgl. Zoologisches Museum Berlin), five species from Croatia were specified by ELLINGSEN (1910). In a synthesis of Balkan fauna, 14 Dalmatian pseudoscorpions were established (REDIKORZEV, 1928). Systematic work on pseudoscorpions in Croatia started with the Austrian arachnologist **Max Beier**. In analyses of the Pseudoscorpion Collection of the Natural History Museum in Vienna (Naturhistorisches Museum Wien) many new data for Croatia were established (BEIER, 1928; 1929; 1932). The first cave-dwelling taxa were described from Croatia (BEIER, 1931; ROEWER, 1931; J. MÜLLER, 1931). In the period from 1925 to 1928 the Croatian Academy of Sciences and Arts (then JAZU) carried out research on the Adriatic islands of Dugi otok and Kornati, and some new taxa were described (HADŽI, 1930). Some new species were described from the Kvarner and Dalmatian region too (HADŽI, 1933). *Chthonius (C.) subterraneus* was established for Istria (PAX, 1938). Very rich pseudoscorpion material from the Collection *Biospeleologica balcanica* formed by Czech **Karel Absolon** during thirty years of research in the Dinarids, was outlined first in a preliminary paper (BEIER, 1938) and later in the famous monograph *Die Höhlenpseudoscorpionen der Balkanhalbinsel* (BEIER, 1939). In this monograph, 22 new taxa from Croatia were described. As well as by Absolon, pseudoscorpion material was collected by **L. Biro**, **L. Mader**, **R. Meusel**, **M. Padewieth** (= **F. Dobijaš**), **E. Reitter**, **P. Remy**, **H. J. Stammer** and **V. Stiller**.

In the third period (1945–1990) cave-dwelling pseudoscorpions were collected by many Slovene biospeleologists, particularly in the period from 1962 to 1967 (MATJAŠIĆ & SKET, 1969). This material was surveyed by the arachnologist **Jovan Hadži** from Ljubljana, but the results were not published (OZIMEC, 2002 b). From 1961 to 1965 the Croatian ornithologists and biocenologists **Renata** and **Dragutin Rucner** collected invertebrate fauna from the region of Kvarner, Hrvatsko zagorje and Mt Velebit, five species being quoted by **J. Hadži** (RUCNER, 1971). The research continued from 1969 to 1972 in the regions of Slavonija, Hrvatsko zagorje, Central Croatia, Lika, Kvarner, Istra and Dalmatia. The Serbian arachnologist **B. P. M. Čurčić** surveyed this material and quoted 8 species (RUCNER, 1995). In the period from 1963 to 1977 in the karstic part of Croatia the Dutch arachnologist **Christa Deeleman Reinhold** collected pseudoscorpion fauna, including cave-dwelling fauna. In this material, surveyed by arachnologists **Max Beier**, **Volker Mahnert** and **Wolfgang Schawaller**, 15 taxa are quoted (P. R. DEELEMEN, 1975; 1985a; 1985b; 1985c) and the genus *Acanthocreagris* was cited for the first time for the Croatian fauna. In the

Pseudoscorpion Catalogue of ex-Yugoslavia (ĆURČIĆ, 1974) 73 taxa were adduced for Croatia, some of them currently not valid. Single new findings of pseudoscorpions are quoted in different regions of Croatia (DI CAPORACCO, 1949; MAHNERT, 1974; ĆURČIĆ, 1975; KORUNIĆ, 1975; CALLAINI, 1986). From 1977 to 1981 the cave-dwelling fauna of two caves on the island of Krk was surveyed by the Slovene and Austrian biologists **F. Potočnik** and **E. Christian** and the pseudoscorpion material was analysed by the Swiss arachnologist **Volker Mahnert** (MAHNERT, 1980; CHRISTIAN & POTOČNIK, 1985). Endemism, relicts and genesis of the Croatian cave-dwelling pseudoscorpions have been frequent objects of interest (ĆURČIĆ & DIMITRIJEVIĆ, 1984; ĆURČIĆ, 1984; 1988b; 1988c). For the island of Vis, the monotypic genus *Insulocreagris* was established (ĆURČIĆ, 1987). Pseudoscorpions collected by the Croatian biospeleologists **Branko Jalžić** and **Tonči Rađa** were presented in the monograph *Cave-dwelling Pseudo-scorpions of the Dinaric Karst* (ĆURČIĆ, 1988a), and some of the Croatian 26 taxa were newly established for science. At the end of this period the present author started to collect cave-dwelling pseudoscorpions.

The fourth period (1991 to the present time) has been marked by the intensive work of biospeleologists from the Croatian Biospeleological Society, established in 1996. Along with the already mentioned **B. Jalžić**, **T. Rađa** and **R. Ozimec**, this most recent phase includes **J. Bedek**, **H. Cvitanović**, **M. Franičević**, **G. Polić** and **T. Rubinić**, as well as many young biospeleologists.

The pseudoscorpions collected from the Croatian karstic regions, especially from Žumberak, Kordun, Gorski kotar, Istra, Velebit Mt, Biokovo Mt, the islands of Cres, Hvar, Brač, Korčula and Mljet, the Neretva Valley, Dubrovnik and Konavle area have been surveyed by the author, in conjunction with the epigeic fauna from Mt Medvednica, Mt Risnjak, Mljet Island and Mt Biokovo. Some new species have been established for the Croatian fauna: *C. (C.) raridentatus*, *C. (C.) trebinjensis*, *C. (C.) cf. abnormis* and *Neobisium (B.) caecum* (OZIMEC, 1999a), and there is also many new bio-geographic data. The first records of cave-dwelling pseudoscorpions for the islands of Hvar and Korčula have been established (OZIMEC & POLIĆ, 1998a, 1998b; OZIMEC *et al.*, 2000a, 2000b; OZIMEC, 2004a), an new cave localities have been established: on the islands of Vis (JALŽIĆ *et al.*, 2003) and Mljet and the Pelješac peninsula (OZIMEC, 2003b); the Kordun region (OZIMEC, 1999a; CVITANOVIĆ & OZIMEC, 1999; OZIMEC, 2003a), North Velebit (OZIMEC & CVITANOVIĆ, 1999), South Velebit (OZIMEC, 2004b), the Lika region (JALŽIĆ, 2001) and Medvednica (OZIMEC *et al.*, 2003)

From 1989 to 1996 in the regions of Istra, Kvarner and Gorski kotar, cave-dwelling fauna was collected by an Italian arachnologist, **Fulvio Gasparo** from Trieste, and surveyed by the Italian arachnologist **Giulio Gardini** (Gasparo, in letter), but only one species has been published (GASPARO, 1999). Through systematic biospeleological research in the Žumberak & Samoborsko gorje and Biokovo Nature Parks, rich cave-dwelling pseudoscorpion fauna has been found, even taxa new to science, but not as yet described (RUBINIĆ & OZIMEC, 1999; OZIMEC & RUBINIĆ, 2003; OZIMEC & JALŽIĆ, 1999, 2003).

The relict genus *Troglochthonius* has been found for the first time for Croatia, with both known species *T. mirabilis* and *T. doratodactylus* (OZIMEC, 2002a). The first review of Croatian cave-dwelling pseudoscorpions was published in the third volume

of *Encyclopaedia Biospeologica* (OZIMEC, 2001). In *An Overview of the Cave and Interstitial Biota of Croatia*, and also in the book *Raznolikost i ugroženost podzemne faune Hrvatske*, 60 cavernicolous pseudoscorpion taxa are outlined (GOTTSTEIN MATOČEC *et al.*, 2002; OZIMEC, 2002b) 40 of which are strictly endemic to Croatian fauna with endemic higher taxa: genus *Microchthonius*, *Insulocreagris*, *Protoneobisium* and subgenus *Neobisium* (*Pennobisium*) (OZIMEC, 2004c).

The most recent new species, the cave-dwelling pseudoscorpion *Neobisium* (*B.*) *chaimweizmanni*, was described by ČURČIĆ *et al.* (2004). The species *Chthonius* (*C.*) *rhodochelatus*, described by J. Hadži in 1933, recognised by M. Beier as synonym of *C. (C.) ischnocheles*, has been revalidated (GARDINI, 2004).

CHECKLIST COMMENTS

A checklist of the Croatian pseudoscorpion fauna has been composed from all available published and unpublished references, lists, personal contacts and a systematic taxonomical survey of the rich material from more than 250 speleological locations and 30 epigeic localities. This material is located in two collections; a minor part in the Croatian Natural History Museum in Zagreb (CNHM) and the majority in the author's personal collection (ROC) belonging to the Croatian Biospeleological Society Collection. In those collections, the 1104 specimens collected up to the end of 2003 have been surveyed, 1008 of them from caves and 96 from epigeic localities. This material was surveyed by the author for his master thesis work *Fauna and Ecology of Croatian Pseudoscorpions*, written for the Zoological Department, Faculty of Science at the University of Zagreb. Determinations are made on the basis of the key for the European taxa made by BEIER (1963), including later published works with descriptions of new taxa from Croatia (ČURČIĆ, 1987; 1988; ČURČIĆ *et al.*, 2002), references about species *Troglochthonius doratodactylus* (HELVERSEN, 1968; MAHNERT, 1980), and also reviews of the genus *Roncus* (GARDINI, 1983; GARDINI & RIZZERIO, 1985; 1986; ČURČIĆ *et al.*, 1992; ČURČIĆ *et al.*, 1995) and the genus *Acanthocreagris* (GARDINI, 1998). In the systematic review, taxa are put in the order according to HARVEY (1990; 1992).

The bio-geographic data are outlined after ROGIĆ, 1961 according to a modification of the model for the Croatian geographic macroregions (NIKOLIĆ *et al.*, 1998): **A.** Mediterranean macroregion; **B.** Mountain macroregion; **C.** West Pannonian macroregion; **D.** East Pannonian macroregion. If the findings in the regions are frequent, they are marked with bold, and if the findings are single, rare, or only in one region, they are not marked. A dubious appearance in Croatia is marked with the symbol »?«. Taxa noted for the first time for Croatian fauna are marked with the symbol »*«.

From more than 250 speleological sites and thirty epigeic localities 109 taxa have established, six of which are dubious, belonging to twenty-six genera: *Chthonius* (25), *Microchthonius* (2), *Paraliochthonius* (1), *Troglochthonius* (2), *Garypus* (1), *Geogarypus* (1), *Garypinus* (1), *Olpium* (1), *Acanthocreagris* (2), *Insulocreagris* (1), *Neobisium* (46), *Protoneobisium* (1), *Roncus* (10), *Cheiridium* (1), *Atemnus* (1), *Chelifer* (1),

Dactylochelifera (1), *Hysterochelifera* (1), *Rhacochelifera* (3), *Allochernes* (1), *Chernes* (1), *Dendrochernes* (1), *Dinocheirus* (1), *Lamprochernes* (1), *Pselaphochernes* (1) and *Withius* (1); then families: *Chthonidae* (4), *Garypidae* (1), *Geogarypidae* (1), *Olpididae* (2), *Neobisiidae* (5), *Cheiridiidae* (1), *Atemnidae* (1), *Cheliferidae* (4), *Chernetidae* (6) and *Withidae* (1); and five superfamilies: *Chthonioidea* (1), *Garypoidea* (3), *Neobisioidea* (1), *Cheiridioidea* (1) and *Cheliferoidea* (4). Also, seven subgenera, three for the genus *Chthonius* and four for the genus *Neobisium* have been established. Ten taxa have been recorded for the first time for Croatian fauna.

In the Mediterranean macroregion (A) 96 taxa are established, four of them dubious for this region; in the Mountain macroregion (B) 37 taxa, with 9 dubious ones; in the West Pannonian macroregion (C) 28 taxa, with 3 dubious, and finally in the East Pannonian macroregion (D) only 4 species. Only a few pseudoscorpion taxa occur in all regions, the majority occurring only in the Mediterranean. It can be postulated that the diversity of pseudoscorpions is much higher in the Mediterranean region, but this difference might also to some extent reflect the lack of knowledge and research in the continental part of Croatia.

CHECKLIST

Ordo Pseudoscorpionida de Geer, 1778

1. Superfamilia **Chthonioidea** Daday, 1888

1. Familia Chthonidae Daday, 1888

1. Genus Chthonius C. L. Koch, 1843

1. Subgenus Chthonius C. L. Koch, 1843

1. *Chthonius* (C.) *absoloni* Beier, 1939; A
2. *Chthonius* (C.) *dalmatinus* Hadži, 1930; A
3. *Chthonius* (C.) *elingseni* Beier, 1939; C
4. *Chthonius* (C.) *exarmatus* Beier, 1939*; A
5. *Chthonius* (C.) *ischnocheles* (Hermann, 1804); A, B, C, D
- 5a. *Chthonius* (C.) *ischnocheles reductus* Beier, 1939; A
6. *Chthonius* (C.) *jalzici* Ćurčić, 1988; C
7. *Chthonius* (C.) *litoralis* Hadži, 1933; A
8. *Chthonius* (C.) *magnificus* Beier, 1939; A
9. *Chthonius* (C.) *occultus* Beier, 1939*; A
10. *Chthonius* (C.) *orthodactylus* (Leach, 1817); A,?B
11. *Chthonius* (C.) *radjai* Ćurčić, 1988; A,?B
12. *Chthonius* (C.) *raridentatus* Hadži, 1930; ?A, B, C
13. *Chthonius* (C.) *rhodochelatus* Hadži, 1933; A
14. *Chthonius* (C.) *subterraneus* Beier, 1931; A
- 14a. *Chthonius* (C.) *subterraneus meuseli* Beier, 1939; A, B, C
15. *Chthonius* (C.) *trebinjensis* Beier, 1939; A

2. Subgenus Ehippochthonius Beier, 1930
 16. *Chthonius* (E.) *boldorii* Beier, 1934; A
 17. *Chthonius* (E.) *insularis* Beier, 1939; A
 18. *Chthonius* (E.) *tetrachelatus* (Preyssler, 1790); A, ?B, C
3. Subgenus Globochthonius Beier, 1931
 - 19.? *Chthonius* (G.) *abnormis* Beier, 1939; B
 20. *Chthonius* (G.) *caligatus* Beier, 1939*; A
 21. *Chthonius* (G.) *simplex* Beier, 1939; A
 22. *Chthonius* (G.) *spelaeophilus* Hadži, 1930*; B,C
 - 22a. *Chthonius* (G.) *spelaeophilus histicus* Beier, 1931; A
2. Genus Microchthonius Hadži, 1933
 23. *Microchthonius karamani* Hadži, 1933; A
 24. *Microchthonius rogatus* Beier, 1938; A
3. Genus Paraliochthonius Beier, 1956
 - 25.? *Paraliochthonius singularis* (Menozzi, 1924); A
4. Genus Trogllochthonius Beier, 1939
 26. *Trogllochthonius doratodactylus* Helversen, 1968; A
 27. *Trogllochthonius mirabilis* Beier, 1939; A
2. Superfamilia Garypoidea E. Simon, 1879
 1. Familia Garypidae E. Simon, 1879
 1. Genus Garypus L. Koch, 1873
 28. *Garypus beauvoisii* (Audouin, 1826); A
 2. Familia Geogarypidae J. C. Chamberlin, 1930
 1. Genus *Geogarypus* J. C. Chamberlin, 1930
 29. *Geogarypus minor* (L. Koch, 1873); A
 3. Familia Olpiidae Banks, 1895
 1. Genus Garypinus Daday, 1888
 30. *Garypinus dimidiatus* (L. Koch, 1873); A
 2. Genus Olpium C. L. Koch, 1873
 31. *Olpium pallipes* (Lucas, 1849); A
3. Superfamilia Neobisioidea J. C. Chamberlin, 1930
 1. Familia Neobisiidae J. C. Chamberlin, 1930
 1. Genus Acanthocreagris Mahnert, 1974
 - 32.? *Acanthocreagris italica* (Beier, 1958)*; A
 - 33.? *Acanthocreagris ruffoi* (Lazzeroni, 1969); A
 2. Genus Insulocreagris Ćurčić, 1987
 34. *Insulocreagris reginae* Ćurčić, 1987; A

3. Genus *Neobisium* Chamberlin, 19301. Subgenus *Neobisium* Chamberlin, 1930

35. *Neobisium* (N.) *blothroides* (Tömösvary, 1882); A
36. *Neobisium* (N.) *carcinoides* (Hermann, 1804); A, B, C, D
37. *Neobisium* (N.) *carsicum* Hadži, 1933; A, B, C
38. *Neobisium* (N.) *cephalonicum* (Daday, 1888); A,?B
39. *Neobisium* (N.) *distinctum* (Beier, 1928); A
40. *Neobisium* (N.) *doderoi* (E. Simon, 1896); A, B, C
41. *Neobisium* (N.) *dolycodactylum* (Canestrini, 1874); A, B, C
42. *Neobisium* (N.) *elegans* Beier, 1939; B
43. *Neobisium* (N.) *erythrodactylum* (L. Koch, 1873); A, B, C
44. *Neobisium* (N.) *fuscimanum* (C. L. Koch, 1843); A, B, C
45. *Neobisium* (N.) *gentile* Beier, 1939*; A
- 45a.? *Neobisium* (N.) *gentile alternum* Beier, 1939; A
- 45b. *Neobisium* (N.) *gentile flavum* Beier, 1939; A
- 45c. *Neobisium* (N.) *gentile giganteum* Beier, 1939; A
46. *Neobisium* (N.) *macroactylum* Daday, 1887; A, B
47. *Neobisium* (N.) *praecipuum* (E. Simon, 1879); A,?B, C
48. *Neobisium* (N.) *simile* (L. Koch, 1873); A,?B, C
49. *Neobisium* (N.) *speluncarium* Beier, 1928; B
50. *Neobisium* (N.) *sylvaticum* (C. L. Koch, 1835); A,?B, C
51. *Neobisium* (N.) *usudi* Ćurčić, 1988; A
52. *Neobisium* (N.) *validum* (L. Koch, 1873); B, C, D

2. Subgenus *Blothrus* Schiödte, 1847

53. *Neobisium* (B.) *caecum* Beier, 1939; A
54. *Neobisium* (B.) *chaimweizmanni* Ćurčić & Dimitrijević, 2002; A
55. *Neobisium* (B.) *dalmatinum* Beier, 1939; A
56. *Neobisium* (B.) *dinaricum* Hadži, 1933*; A
57. *Neobisium* (B.) *hadžii* Beier, 1939; A
58. *Neobisium* (B.) *heros* Beier, 1938*; A
59. *Neobisium* (B.) *insulare* Beier, 1939; A,?C
60. *Neobisium* (B.) *lethaeum* Beier, 1938; A
- 60a. *Neobisium* (B.) *lethaeum parvum* Beier, 1938; A
- 60b. *Neobisium* (B.) *lethaeum superbum* Beier, 1938; A
61. *Neobisium* (B.) *maderi* Beier, 1939; A
62. *Neobisium* (B.) *peruni* Ćurčić, 1988; A
63. *Neobisium* (B.) *pusillum* Beier, 1939*; B
64. *Neobisium* (B.) *reimoseri* (Beier, 1929); A, B
- 64a. *Neobisium* (B.) *reimoseri croaticum* Beier, 1939; B
65. *Neobisium* (B.) *spelaeum* (Schiödte, 1847); ?A,?B, C
- 65a. *Neobisium* (B.) *spelaeum istriacum* Müller, 1931; A
66. *Neobisium* (B.) *stygium* Beier, 1931; A, B, C
67. *Neobisium* (B.) *svetovidii* Ćurčić, 1988; B

- 68. *Neobisium* (B.) *tantaleum* Beier, 1939; A
- 69. *Neobisium* (B.) *vachoni* Beier, 1939*; A
- 70. *Neobisium* (B.) *velebiticum* Beier, 1939; B
- 3. Subgenus *Ommatoblothrus* Beier, 1956
 - 71. *Neobisium* (O.) *staudacheri* Hadži, 1933; A
- 4. Subgenus *Pennobisium* Ćurčić, 1988
 - 72. *Neobisium* (P.) *simargli* Ćurčić, 1988; A, B
 - 73. *Neobisium* (P.) *stribogi* Ćurčić, 1988; A, B
- 4. Genus *Protoneobisium* Ćurčić, 1988
 - 74. *Protoneobisium* *biocovense* Müller, 1931; A
- 5. Genus *Roncus* L. Koch, 1873
 - 75. *Roncus* *anophthalmus* (Ellingsen, 1910); A
 - 76. *Roncus* *dalmatinus* Hadži 1933; A
 - 77. *Roncus* *insularis* Beier, 1939; A
 - 78. *Roncus* *italicus* (Simon, 1896); A, C
 - 79. *Roncus* *lubricus* L. Koch, 1873; ?A, B, C
 - 80. *Roncus* *podaga* Ćurčić, 1988; A
 - 81. *Roncus* *pripegala* Ćurčić, 1988; A
 - 82. *Roncus* *stussineri* (E. Simon, 1881); B, C
 - 83. *Roncus* *tenuis* Hadži, 1933; A
 - 84. *Roncus* *trojanicus* Ćurčić, 1988; A
- 4. Superfamilia *Cheiridioidea* H. J. Hansen, 1893
 - 1. Familia *Cheiridiidae* H. J. Hansen, 1893
 - 1. Genus *Cheiridium* Menge, 1855
 - 85. *Cheiridium* *museorum* (Leach, 1817); A
- 5. Superfamilia *Cheliferoidea* Risso, 1826
 - 1. Familia *Atemnidae* J. C. Chamberlin, 1931
 - 1. Genus *Atemnus* Canestrini, 1883
 - 86. *Atemnus* *politus* (E. Simon, 1878); A
 - 2. Familia *Cheliferidae* Risso, 1826
 - 1. Genus *Chelifer* Geoffroy, 1762
 - 87. *Chelifer* *cancroides* (Linnaeus, 1758); A, B, C
 - 2. Genus *Dactylochelifer* Beier, 1932
 - 88. *Dactylochelifer* *latreillei* (Leach, 1817); A
 - 3. Genus *Hysterochelifer* J. C. Chamberlin, 1932
 - 89. *Hysterochelifer* *tuberculatus* (Lucas, 1849); A, B
 - 4. Genus *Rhacochelifer* Beier, 1932
 - 90. *Rhacochelifer* *corcyrensis* (Beier, 1930); A
 - 91. *Rhacochelifer* *maculatus* (L. Koch, 1873); A
 - 92. *Rhacochelifer* *peculiaris* (L. Koch, 1873); A, ?B, ?C, D

3. Familia Chernetidae Menge, 1855
 1. Genus Allochernes Beier, 1932
 93. *Allochernes powelli* (Kew, 1916); C
 2. Genus Chernes Menge 1855
 94. *Chernes cimicoides* (Fabricius, 1793); A, B, C
 3. Genus Dendrochernes Beier, 1932
 95. *Dendrochernes cyrneus* (L. Koch, 1873); A
 4. Genus Dinocheirus J. C. Chamberlin, 1929
 96. *Dinocheirus panzeri* (C. L. Koch, 1837); A
 5. Genus Lamprochernes Tömösvary, 1882
 - 97.? *Lamprochernes chyzeri* (Tömösvary, 1882); A
 6. Genus Pselaphochernes Beier, 1932
 98. *Pselaphochernes litoralis* Beier, 1956; A
4. Familia Withidae J.C. Chamberlin, 1931
 1. Genus Withius Kew, 1911
 99. *Withius piger* (E. Simon, 1878); A

ACKNOWLEDGEMENTS

First of all, I would like to thank my friends, biospeleologists and speleologists, who helped me while I was collecting cave-dwelling fauna; all my colleagues: S. Ćurčić, C. Deeleman Reinhold, G. Gardini, F. Gasparo, J. Gruber, P. Hlavač, I. Karaman, I. Kos, A. Mock, D. Pavičević, W. Schawaller, R. Slapnik, N. Tvrtković and D. Ubick who supported me with literature and advice; my mentor, M. Kerovec, who bestowed on me a little of his understanding and knowledge; and especially to my friend, B. Jalžić, who gave me full support throughout this long period of research.

Received October 20, 2004

REFERENCES

- BABIĆ, K., 1928: Hrvatska fauna i važniji radovi oko nje. Glas. Hrv. Prir. Dr. 39/40, 134–170.
- BEIER, M., 1928: Die Pseudoskorpione des Wiener Naturhistorischen Museums I. Hemictenodactyli. Ann. naturhist. Mus. Wien 42, 285–314.
- BEIER, M., 1929: Die Pseudoskorpione des Wiener Naturhistorischen Museums II. Panctenodactyli. Ann. naturhist. Mus. Wien 43, 341–367.
- BEIER, M., 1931: Zur Kenntnis der troglobionten Neobisien (Pseudoscorp.). EOS 7, 9–23.
- BEIER, M., 1932a: Pseudoscorpionidea I, Subord. Chthoniinea et Neobisiinea. Das Tierreich. Prus. Akad. Wiss. Berlin 57, 1–258.
- BEIER, M., 1932b: Pseudoscorpionidea I, Subord. C. Cheliferinea. Das Tierreich, Prus. Akad. Wiss. Berlin 58, 1–294.

- BEIER, M., 1938: Vorläufige Mitteilung über neue Höhlenpseudoscorpione der Balkanhalbinsel. Stud. Allg. Karstf., Biol. Ser. 3, 1–8.
- BEIER, M., 1939: Die Höhlenpseudoscorpione der Balkanhalbinsel. Stud. Allg. Karstf., Biol. Ser. 4, 1–83.
- BEIER, M., 1963: Ordnung Pseudoscorpionidea (Afterscorpione). Bestimmungsbucher zur Bod fauna Europas 1, 1–313, Berlin.
- CALLAINI, G., 1987: Su alcune specie di Cheliferidae delle regione mediterranea (Arachnida, Pseudoscorpionida)(Notulae Chernetologicae. XXII). Boll. Mus. Civ. St. Nat. Verona 13 (1986), 273–294.
- CAPORIACCO, L. DI, 1949: Aracnidi della Venezia Giulia. Atti Mus. Civ. Stor. Natur. Trieste 17(11), 137–151.
- CARRARA, F., 1846: La Dalmazia descritta, Zadar.
- CHRISTIAN, E. & POTOČNIK, F., 1985: Ein Beitrag zur Kenntnis der Höhlenfauna der Insel Krk (Prispevek k poznavanju jamske faune otoka Krka). Biol. Vest. 33(1), 13–20.
- CVITANOVIĆ, H. & OZIMEC, R., 1999: Preliminary report of Karlovac parish biospeleological research, Abstr. 14th Int. Sym. Biosp. Makarska, 99–100.
- ĆURČIĆ, B. P. M., 1974: Pseudoscorpiones. Catalogus faunae Jugoslaviae 3(4), 1–35.
- ĆURČIĆ, B. P. M., 1984: O porijeklu i genezi nekih rodova pseudoskorpija u Evroaziji. Proc. 9. Jug. Spel. Kongr., 521–527.
- ĆURČIĆ, B. P. M., 1987: *Insulocreagris*, a new genus of pseudoscorpions from the Balkan Peninsula (Pseudoscorpiones, Neobisiidae). Rev. Arachn. 7(1), 47–57.
- ĆURČIĆ, B. P. M., 1988a: Cave-dwelling pseudoscorpions of the dinaric karst. SAZU. Class. IV 26, 1–191, Ljubljana.
- ĆURČIĆ, B. P. M., 1988b: O poreklu i evoluciji nekih pećinskih pseudoskorpija dinarskog i karpato-balkanskog karsta. Zbornik radova odbora za kras i speleologiju 3, 167–177.
- ĆURČIĆ, B. P. M., 1988c: Les Pseudoscorpions cavernicoles de la Yougoslavie: developpement historique et implications biogeographiques. Rev. Arach. 7, 163–174.
- ĆURČIĆ, B. P. M., ĆURČIĆ, S. B. & MAKAROV, S. E., 1995: On the identity of some cave representatives of *Roncus* L. Koch, 1873, from the Balkan Peninsula (Chelicerata: Pseudoscorpiones: Neobisiidae). Ann. Naturhist. Mus. Wien 97b, 131–138.
- ĆURČIĆ, B. P. M. & DIMITRIJEVIĆ, R. N., 1984: Endemični i reliktni rodovi pseudoskorpija u Jugoslaviji. Proc. 9. Jug. Spel. Kongr., 529–534.
- ĆURČIĆ, B. P. M., DIMITRIJEVIĆ, R. N., ĆURČIĆ, S. B., TOMIĆ, V. T. & ĆURČIĆ, N. B., 2004: On some new high altitude, cave, and endemic Pseudoscorpions (Pseudoscorpiones, Arachnida) from Croatia and Montenegro. Acta Ent. Serb. 7. 1/2 (2002), 83–110.
- ĆURČIĆ, B. P. M., DIMITRIJEVIĆ, R. N. & KARAMATA, O. S., 1992: A revision of some species of *Roncus* L. Koch (Neobisiidae, Pseudoscorpiones) from North America and South Europe. Journ. Arachn. 20, 114–128.
- DADAY, J., 1888a: A Magyar nemzeti Muzeum alszkorpoinak attekintese. Termesz. Füz., 11 (3–4), 111–136.
- DADAY, E., 1888b: Übersicht der Chernetiden des Ungarischen Nationalmuseums in Budapest, Termesz. Füz. 11(3–4), 165–192.
- DADAY, J., 1889: Adatok a Balkan-felsziget alszkorpio-faunajanak ismeretehez (Data ad cognitionem Pseudoscorpionum peninsulae balcanicae). Termesz. Füz. 12, 80–84.
- DEELEMAN, p. r., 1975: Coll. Deeleman – Pseudoscorpiones, Jugoslawien, Liste 1, manuscript, Ossendrecht.

- DEELEMEN, p. r., 1985a: Coll. Deeleman – Pseudoscorpiones, Jugoslavien, Liste 2, manuscript, Ossendrecht.
- DEELEMEN, p. r., 1985b: Coll. Deeleman – Pseudoscorpiones, Jugoslavien, Liste 3, manuscript, Ossendrecht.
- DEELEMEN, p. r., 1985c: Coll. Deeleman – Pseudoscorpiones, Jugoslavien, Liste 4, manuscript, Ossendrecht.
- ELLINGSEN, e., 1910: Die Pseudoskorpione des Berliner Museums. Mitteilungen aus dem Zoologischen Museum in Berlin 4, 356–423.
- GARDINI, G., 1983: Redescription of *Roncus lubricus* L. Koch, 1873, type-species of the genus *Roncus* L. Koch, 1873 (Pseudoscorpionida, Neobisiidae). Bull. Br. arachnol. Soc. 6(2), 78–82.
- GARDINI, G., 1998: Il genere *Acanthocreagris* in Italia (Pseudoscorpionida, Neobisiidae). Fragm. Entolom. 30(1), 1–73.
- GARDINI, G., 2004: Note faunistiche e tassonomiche sugli Pseudoscorpioni (Arachnida) epigei (Pseudoscorpioni d'Italia XXXV). Il Monte Pastello. Mem. Mus. Civ. Stor. Nat. Verona 2. Ser. Monograf. Nat. 1, 123–133.
- GARDINI, G. & RIZZERIO, R., 1985: Materiali per una revisione del genere *Roncus* L. Koch, 1873. I. Ridescrizione dei tipi di alcune specie italiane non cavernicole (Pseudoscorpionida, Neobisiidae). Fragm. Entolom. 18(1), 47–79.
- GARDINI, G. & RIZZERIO, R., 1986: Materiali per una revisione del genere *Roncus* L. Koch, 1873. II. Ridescrizione dei tipi delle specie parablothroidi alpine e appenniniche (Pseudoscorpionida, Neobisiidae). Fragm. Entolom. 19(1), 1–56.
- GASPARO, F., 1999: *Stalita comottii* n.sp., un nuovo ragno cavernicolo della Dalmazia centrale (Araneae, Dysderidae). Atti e Mem. Comm. Grotte E. Boegan 36(1998), 17–25.
- GASPERINI, R., 1892: prilog k dalmatinskoj fauni (Isopoda-Myriopoda-Arachnida). God. Izvj. c. k. vel. Real. Split. Šk. God. 1891/1892, 1–22.
- GOTTSTEIN MATOČEC, S., OZIMEC, R., JALŽIĆ, B., KEROVEC, M. & BAKRAN-PETRICIOLI, T., 2002: Raznolikost i ugroženost podzemne faune Hrvatske. MZOPU RH, Zagreb.
- HADŽI, J., 1930a: Prirodoslovna istraživanja sjevernodalmatinskoga otočja. I Dugi i Kornati. Pseudoscorpiones. Prirod. Istraž. Kralj. Jug., JAZU 16, 65–79.
- HADŽI, J., 1930b: Contribution a la connaissance des Pseudoscorpions cavernicoles. Glas Srpske Kraljevske Akademije Nauka 67, 113–148.
- HADŽI, J., 1933: Prinos poznavanju pseudoskopijske faune Primorja. Prirod. Istraž. Kralj. Jug., JAZU 18, 125–192.
- HARVEY, M. S., 1990: Catalogue of the Pseudoscorpiones. Manch. Univ. Press (ed. V. Mahner), Manchester and New York.
- HARVEY, M. S., 1992: The Phylogeny and Classification of the Pseudoscorpionida (Chelicerata: Arachnida). Invertebr. Taxon. 6, 1373–1435.
- HELVERSEN, O., 1968: *Troglochthonius doratodactylus* n. sp., ein troglobionter Chthoniidae. Senck. Biol 49(1), 59–65.
- HORVATH, G., 1887: Izlet u Podsused u zagrebačkoj okolici. Glas. Hrv. Narav. Druž. 2(4–6), 267–274.
- JALŽIĆ, B., 2001: The first finding of a live stygobiont bivalve *Congerina* in the Lika region, Croatia. Natura Croatica 10(3), 213–220.
- JALŽIĆ, B., GABRIĆ, G. & OZIMEC, R., 2003: Špilje-rudnici kvarcnog pijeska na otoku Visu. Speleolog 48/49, 54–61.
- JURINAC, A. E., 1886: Faunistični pabirci po okolini krapinskoj. Glas. Hrv. Narav. Druž. 1, 145–153.

- JURINAC, A. E., 1887a: Turistično faunistični izlet na Ivančicu. Glas. Hrv. Narav. Druž. 2(1–3), 18–20.
- JURINAC, A. E., 1887b: Prilog fauni zapadne Slavonije. Glas. Hrv. Narav. Druž. 2(1–3), 22–34.
- KORUNIĆ, Z., 1975: Fauna insekata, grinja i pseudoškorpiona utvrđena u skladištima SR Hrvatske u razdoblju od 1971. do 1974. godine. Zaštita bilja 26(133), 219–227.
- LANGHOFFER, A., 1915b: Fauna hrvatskih pećina (spilja) (Fauna cavernarum Croatiae) II. Prirod. Istraž. Hrv. i Slav., JAZU. 7, 1–22.
- MAHNERT, V., 1974: Über höhlenbewohnende Pseudoskorpione (Neobisiidae, Pseudoscorpiones) aus Süd- und Osteuropa. Rev. Suis. Zool. 81(1), 205–218.
- MAHNERT, V., 1980: Höhlenpseudoskorpione aus Norditalien und der Dalmatinischen Insel Krk. Att. Mem. 20, 95–100.
- MATJAŠIČ, J. & SKET, B., 1969: Biospeleološka raziskovanja Jugoslavije v obdobju 1962. do 1967. v okviru Inštituta za Biologijo Univerze v Ljubljani. Biol. Vest. 17, 167–171.
- MÜLLER, G., 1931: Nuovi Pseudoscorpioni cavernicoli appartenenti al sottogenere *Blothrus* Schiödte. Boll. Soc. ent. Ital. 63, 125–127.
- NIKOLIĆ, T., BUKOVEC, D., ŠOPF, J. & JELASKA, D., 1998: Kartiranje flore Hrvatske – Mogućnosti i standardi. Nat. Croat. 7 (Suppl. 1), 1–62.
- OZIMEC, R., 1999a: Cave-dwelling pseudoscorpions, recently findings for Croatian fauna. Abstr. 14th Int. Sym. Biosp. Makarska, 101–102.
- OZIMEC, R., 1999b: Biospeleološka istraživanja Karlovačke županije (Biospeleological research of Karlovac region). Speleozin 11, 24–28.
- OZIMEC, R., 2001: Pseudoscorpiones. In GOTSTEIN MATOČEC, S. *et al.* (eds.), Croatia. pp. 2237–2287. In: Juberthie, C. & V. Decu (eds.), Encyclopaedia Biospeologica. III. Soc. Biosp., Moulis.
- OZIMEC, R., 2002a: Review of genus *Troglochthonius* Beier, 1939 (Arachnida, Pseudoscorpiones, Chthoniidae), Abstr. 16th Int. Symp. Biosp. Verona Italy, 56–57.
- OZIMEC, R., 2002b: Pseudoscorpiones. In GOTSTEIN MATOČEC, S. *et al.* (eds.): An overview of the cave and interstitial biota of Croatia, Nat. Croat. 11(Suppl. 1), 1–112.
- OZIMEC, R., 2003a: Biospeleologija Baračevih špilja. In KOVAČEVIĆ, T.: Baračeve špilje. Turistička zajednica općine Rakovica, Rakovica.
- OZIMEC, R., 2003b: Otok Mljet – preliminarni speleološko-biospeleološki prikaz otoka. Subterranea Croatica 1, 30–38.
- OZIMEC, R., 2004a: Špilja Samograd na otoku Korčuli. Speleolog 50/51, 38–47.
- OZIMEC, R., 2004b: Pregled faune lažištipavaca (Pseudoscorpiones) NP Paklenica i šireg područja južnog i jugoistočnog Velebita. Paklenički Zbornik 2, 75–81.
- OZIMEC, R., 2004c: Cave dwelling pseudoscorpiones of Croatia. Abstr. 17th Int. Symp. Biosp. Raipur India, 51.
- OZIMEC, R., BEDEK, J. & HAMIDOVIĆ, D., 2003: Nužnost speleološke studije za planiranje upravljanja turističkom špiljom – primjer Veternice kraj Zagreba (Necessity of speleological elaborate for touristic caves management – example Veternica cave near Zagreb. Zbor. Saž. 8. Hrv. Biol. Kongr. Zagreb, 404–405.
- OZIMEC, R. & CVITANOVIĆ, H., 1999: Novija biospeleološka istraživanja Sjevernog Velebita. Speleozin 12, 7–10.
- OZIMEC, R., FRANIČEVIĆ, M. & POLIĆ, G., 2000a: Fauna Kraljevske jame na Gulišini, Zavala, otok Hvar, Dalmacija (Fauna of King pit on Gulišina, Zavala, island Hvar, Dalmatia). Zbor. Saž. 7. Hrv. Biol. Kongr. Hvar, 372–373.

- OZIMEC, R., FRANIČEVIĆ, M. & POLIĆ, G., 2000b: Subterana kavernikolna fauna otoka Hvara, Dalmacija (Subterranean cavernicolous fauna of island Hvar, Dalmatia), Zbor. Saž. 7. Hrv. Biol. Kongr. Hvar, 373–374.
- OZIMEC, R. & JALŽIĆ, B., 1999: Cave dwelling fauna of Mt. Biokovo, M. Dalmatia, Croatia, Abstr. 14 th Int. Symp. Biospel. Makarska, 93–94.
- OZIMEC, R. & JALŽIĆ, B., 2003: Špiljska fauna Parka prirode Biokovo (Cave-dwelling fauna of the Natural Park Biokovo). Zbor. Saž. 8. Hrv. Biol. Kongr. Zagreb, 228–229.
- OZIMEC, R. & POLIĆ, G., 1998a: Hvar 96 – Izvješće o speleološkom istraživanju otoka Hvara u razdoblju od 14.09 – 20.09 1996 (Hvar 96 – Report of speleological research on island Hvar from September 14th till September 20th 1996), Speleozin 8/9, 17–21.
- OZIMEC, R. & POLIĆ, G., 1998b: Hvar 97 – Izvješće o speleološkom istraživanju otoka Hvara u razdoblju od 05.08 – 09.08 1997 (Hvar 97 – Report of speleological research on island Hvar from August 05th till August 09th 1997). Speleozin 8/9, 22–27.
- OZIMEC, R. & RUBINIĆ, T., 2003: Špiljska fauna Parka prirode Žumberak-Samoborsko gorje (Cave-dwelling fauna of the Natural Park Žumberak-Samoborsko gorje). Zbor. Saž. 8. Hrv. Biol. Kongr. Zagreb, 257–258.
- PAX, F., 1938: Beitrag zur Kenntnis der Höhlenfauna von Leme. Mitt. Höhl.-Karstf., 113–119.
- REDIKORZEV, V., 1928: Beitrage zur kenntnis der Pseudoscorpionenfauna Bulgariens. Mitt. Konigl. Naturwiss. Inst. Sofia-Bulg. 1, 119–141.
- ROEWER, C. F., 1931: Arachnoiden aus südostalpinenhöhlen, gesammelt von Herrn Karl Stras-ser in den Jahren 1928 und 1930. Mitt. Höhl.- Karstf., 40–46.
- ROGIĆ, V., 1961: Fizionomska i funkcionalna regionalizacija Hrvatske. Zbor. 6. Kongr. Geogr. FNRJ Ljubljana, 279–288.
- RUBINIĆ, T. & OZIMEC, R., 1999: Preliminary report of Žumberak region biospeleological research. Abstr. 14 th Int. Symp. Biospel. Makarska, 104.
- RUCNER, D. & RUCNER, R., 1971: Contribution to the study of the fauna of certain Forest communities in Croatia. *Larus* 23(1969), 129–201.
- RUCNER, D. & RUCNER, R., 1995: Beitrag zur Kenntnis einiger Arthropoden (Scorpiones, Pseudoscorpiones, Araneae, Acari, Diplopoda und Chilopoda) in den Waldassoziationen Kroatiens. *Nat. Croat.* 4(4), 185–225.
- SIMON, E., 1880: Sur les Arachnides recuellis a Sebenico, en Dalmatie, par A. Munier-Chalmas. *Ann. Soc. Ent. France* 5(10), 35–36.
- SIMON, E., 1885: Matériaux pour servir á la faune des Arachnides de la Greece. *Ann. Soc. Ent. France* 6(4), 303–356.
- STECKER, A., 1875: Über die geographische Verbreitung der europäischen Chernetiden. *Arch. Naturgesch.* 41, 157–182.
- TÖMÖSVÁRY, O., 1884: Adatok az Alskorpiok ismeretehez (Data ad cognitionem Pseudoscorpionum). *Termesz. Füz.* 8, 16–27.

S A Ž E T A K

Popis faune lažištipavaca (Arachnida, Pseudoscorpiones)

R. Ozimec

Prva istraživanja lažištipavaca Hrvatske započinju pisanim podatkom s područja Hrvatske iz 1842. i traju tijekom 19. stoljeća. U njima se ističu Mađari O. Tömösvary i J. Daday, te prvi domaći istraživač lažištipavaca E. A. Jurinac. U drugom razdoblju, do kraja 2. svjetskog rata, pojavljuje se veliki broj domaćih i stranih sakupljača u speleološkim objektima, među kojima posebno mjesto zauzima Čeh K. Absolon. Za početak sustavnog znanstvenog istraživanja lažištipavaca zaslužni su M. Beier i J. Hadži. U trećem razdoblju ističe se srpski arahnolog B. P. M. Ćurčić, koji obrađuje špiljske lažištipavce koje su sakupili hrvatski biospeleolozi B. Jalžić i T. Rađa, te epigejski materijal sakupljen od biocenologa D. i R. Rucner. Opsežan materijal špiljskih i epigejskih lažištipavaca sakuplja nizozemska arahnologinja C. Deeleman Reinhold, a obradili su ga M. Beier, V. Mahnert i W. Schawaller. U četvrtom razdoblju koje započinje osamostaljenjem Hrvatske, u okviru Hrvatskog biospeleološkog društva brojni biospeleolozi sakupljaju prvenstveno špiljske lažištipavce koje obrađuje R. Ozimec. Sakupljena je dosad najveća kolekcija lažištipavaca Hrvatske, prvenstveno iz špilja, te su utvrđene brojne vrste nove za faunu Hrvatske.

Prema dostupnim publiciranim i nepubliciranim literaturnim podacima, informacijama od drugih arahnologa, te redeterminacijom lažištipavaca iz više od 250 špiljskih i 30 epigejskih nalazišta iz Zbirke Hrvatskoga prirodoslovnog muzeja i vlastite zbirke (ROC), za faunu Hrvatske utvrđeno je 99 vrsta i 10 podvrsta, odnosno 109 svojti iz 26 rodova i 10 porodica. Deset svojti registrirano je po prvi puta za faunu Hrvatske. Na području Mediteranske makroregije utvrđeno je 96 svojti od čega je prisutnost njih četiri upitna; Planinske makroregije 37 svojti od čega devet upitnih; Zapadno-panonske makroregije 28 svojti s tri upitne, a za Istočno-panonsku makroregiju utvrđene su svega četiri svojte. Dakle, broj svojti lažištipavaca izrazito opada od Mediteranske prema Istočno-panonskoj makroregiji. Ovakav geografski gradijent brojnosti svojti može se objasniti daleko većim biodiverzitetom skupine na Mediteranu, ali i nedovoljnom istraženošću kontinentalnog dijela Hrvatske. Samo nekoliko svojti lažištipavaca nađeno je u sve četiri makroregije, nešto veći broj u tri ili dvije, a daleko najveći broj samo u jednoj makroregiji, Mediteranskoj, što je donekle razumljivo zbog specifične krške geomorfologije (izoliranost staništa) i postojanja utočišta (refugija) za vrijeme ledenih doba, a time i izrazite endemičnosti vrsta.