

NEW DATA ON THE PSEUDOSCORPION FAUNA OF SĂLAJ COUNTY, ROMANIA (ARACHNIDA: PSEUDOSCORPIONES)

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ABSTRACT: A survey was carried out on the pseudoscorpion fauna of Sălaj County, Romania. Ten pseudoscorpion species from three families were found, eight of them are new for the area. Consequently, the number of pseudoscorpion species recorded for the studied area has raised from eight to sixteen. The pseudoscorpion species known from Sălaj County are listed and discussed.

Keywords: pseudoscorpions, Romania, faunistic data, Sălaj County, soil zoology.

INTRODUCTION:

The first pseudoscorpion data from the territory of present Romania was published by Frivaldszky in 1865 (Frivaldszky, 1865), followed by other remarkable publications (Tömösváry, 1882; Daday, 1889).

In the first half of the XX. century Beier gave numerous data on pseudoscorpions from Romania, describing several new species for the science from the Southern Carpathians and from Transylvania (Beier, 1928, 1935, 1939).

In the second half of the last century Dumitresco and Orghidan presented publications with valuable data on the pseudoscorpion fauna of Romania (Dumitresco & Orghidan, 1964, 1969, 1970). Afterwards further authors gave some sporadic data or results of investigations on specific regions of the country, in some cases alongside with descriptions of new species (Cîrdei, Bulimar and Malcoci, 1970; Decou & Negrea, 1969; Georgescu & Capuse, 1996; and Čurčić et al. 1993, 2006).

The latest version of Harvey's online catalogue lists 72 species from Romania. However, with the border changes of the 20th century many historical data (Frivaldszky, 1865; Tömösváry, 1882; Daday, 1889) became ambiguous, resulting incorrect faunistic data in the subsequent literature (Beier, 1932, 1963; Harvey, 1991, 2013). During the reevaluation of these old literature, it became clear, that the old records of *Neobisium seminudum* (Daday, 1880) and *Roncus euchirus* (Simin, 1879) (Tömösváry, 1882) also falls within the borders of modern Romania (Novák, 2012).

However, due to the lack of comprehensive investigations, the pseudoscorpion fauna of Romania is still understudied.

Sălaj (Szilágy) County is situated in the North-Western part of Romania. More than a century ago, in 1882 Ödön Tömösváry in his significant work reported seven species from the area (Tömösváry, 1882): *Neobisium carcinoides* (Hermann, 1804) (as *Obisium carcinoides* Hermann, 1804), *Neobisium sylvaticum* (C. L. Koch, 1835) (as *Obisium sylvaticum*, C. Koch, 1837), *Neobisium erythroductylum* (L. Koch, 1873) (as *Obisium erythroductylum* L. Koch, 1873), *Roncus lubricus* L. Koch, 1873, *Chelifer cancrroides* (Linnaeus, 1758), *Chernes cimicoides* (Fabricius, 1793) and *Lamprochernes chyzeri* (Tömösváry, 1882) (as *Chernes chyzeri*). Some years later Jenő Daday added *Chthonius orthodactylus* (Leach, 1817) to the species

list of the region (Daday, 1889). Since then, there was no investigations carried out on pseudoscorpions in Sălaj County.

The aim of this paper is to summarize the results of elaboration of the pseudoscorpion material collected during the collaboration between Vasile Goldiș University (Arad, Romania) and the Hungarian Natural History Museum (Budapest, Hungary), and to contribute to our knowledge on the pseudoscorpion fauna of the region.

MATERIALS AND METHODS:

The specimens were collected by various methods in 2014 and 2015. Acronymes of the collectors are the following: AG – Attila Grabant; CK – Csaba Kutasi; DM – Dávid Murányi; GK – Gergő Katona; GM – György Makranczy; LD – László Dányi; OM – Ottó Merkl; VS – Viktória Szőke; ZB – Zsolt Bálint. The material was examined by using stereo microscope and biological microscope. The specimens were cleared in lactic acid and deposited at the Hungarian National History Museum, in 70% ethanol. Each item is accompanied with an inventory number („HNHM Pseud-Nr.”).

RESULTS:

Chthoniidae Daday, 1888

Chthonius (*Ephippiochthonius*) *tetrachelatus* (Preysler, 1790)

Localities: Tusa (Tuszatelke), Ponor N47°00.572', E22°43.385', 878m, beech forest, from moss and from the soil, leg: ZB, LD, GK, DM (HNHM Pseud-1865, 2 ex.); Tusa (Tuszatelke), Ponor N47°00.572', E22°43.385', 878m, beech forest, leaf litter (sifted) 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1865, 2 ex.).

Remarks: new for the area. This species is widespread across all Europe, and it is also known from Romania (Harvey, 2013).

Chthonius (*Ephippiochthonius*) *romanicus* Beier, 1935

Locality: Iaz (Krasznajáz) valley of the Iaz Stream, N47°05.219', E22°39.066', 380m, beech forest with stream, moss from edge of the stream 30.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1860, 1 ex.).

Remarks: new for the area. The species was reported until now from Greece, Romania, Iran and from Turkey (Harvey, 2013).

Chthonius (Chthonius) heterodactylus Tömösváry, 1882

Localities: Goruna Mare, 2km SE Cliț streambed in Valea Corbului, temporarily unflooded, shaded flats, N47°17'03", E23°26'49", 220m, rocky soil, sparse fern roots, soil-washing 20cm deep, 29.04.2015, leg: GM (HNHM Pseud-1859, 1 ex.); Tusa (Tuszatelke), Ponor N47°01.158', E22°41.979', 805m, spruce forest with a pond, leaf litter and decaying wood (sifted), 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1860, 4 ex.); Treznea (Ördögkút) main valley of the Treznea Stream, N47°06.603', E23°03.866', 377m, beech forest and pasture, leaf litter, 29.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1863, 5 ex.); Tusa (Tuszatelke), Ponor N47°01.158', E22°41.979', 805m, spruce forest with a pond, leaf litter and decaying wood (sifted) 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1866, 1 ex.); Tusa (Tuszatelke), Ponor N47°00.572', E22°43.385', 878m, beech forest, leaf litter (sifted) 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1867, 7 ex.).

Remarks: *C. heterodactylus* occurs from the Western Sudetes to the Southern Carpathians, and has data from the Czech Republic, Germany, Hungary, Romania and Slovakia (Gardini, 2014). New species for the studied area.

Neobisiidae Chamberlin, 1930

Neobisium biharicum Beier, 1939

Localities: Tihău (Tihó), N47.232°, E23.316°, Valea Almaș, streamside, hand collecting, 11.05.2015, leg: AG, OM, VS (HNHM Pseud-1023, 1 ♂); Tusa (Tuszatelke), Ponor, Izvoarele Barcăului, N47°01.219', E22°44.925', 752m, edge of beech forest and pasture with spring and stream, netting, hand collecting, beating, soil sample, 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1153, 1 ex.); Tusa (Tuszatelke), valley of the Barcăului stream (Berettyó), N47°02.846', E22°45.048', 417m, edge of beech forest and pasture with spring and stream, hand collecting, beating, 02.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1154, 1 ♀); Iaz (Krasznajáz), valley of the Iaz Stream, N47°05.219', E22°39.066', 380m, beech forest with stream, netting, hand collecting, beating, soil sample, 30.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1155, 3 ex.).

Remarks: new species for the area. *N. biharicum* mainly occurs in the Western Transylvanian Mts, the Eastern and Northeastern Carpathians. Several data shows that outside the above mentioned areas this species is restricted to cavernicolous habitats (Ćurčić *et al.* 1993; Novák, 2013). *N. biharicum* is known from Romania (Beier, 1939; Ćurčić *et al.* 1993), Ukraine (Szent-Ivány, 1941) and from Hungary (Novák, 2013).

Neobisium brevidigitatum (Beier, 1928)

Locality: SE of Poarta Sălajului (Vaskapu) N47°04.452' E23°12.232', 320m, oak forest, leaf litter

(sifted), 01.10.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1858; 1 ♀).

Remarks: the species is new for the investigated area. It is known from Georgia, Romania and Slovakia (Harvey, 2013) and it was recently reported from Hungary (Novák, 2015).

Neobisium crassifemoratum (Beier, 1928)

Locality: W of Aghireș (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland, forest edge and orchard, soil sample, light trap, 30.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1840, 1 ♀).

Remarks: *N. crassifemoratum* is known from the Carpathian Basin, the Balkan Peninsula, from Turkey and from the Caucasian region (Harvey, 2013). New for the fauna of Sălaj County.

Neobisium erythroductylus (L. Koch, 1873)

Locality: Mlastina de la Iaz (Krasznajáz) bog, alder forest, N47°6'38.34", E22°39'40.53" 21.05.2014, leg: ZB, LD, GK, DM (HNHM Pseud-958, 1 ♀).

Remarks: the species is widespread across Europe and the Near East region of Asia (Harvey, 2013). The species has been reported earlier from Sălaj County (Tömösváry, 1882).

Neobisium macroductylus (Daday, 1888)

Locality: Poic, alder forest, sifting, N46°58'45.3", E22°22'40.53", 22.05.2014, leg: CK (HNHM Pseud-949, 1 ex.).

Remarks: *N. macroductylus* occurs in the Carpathian Basin, the Balkan Peninsula and in the Caucasian region (Harvey, 2013). New pseudoscorpion species for the studied area.

Neobisium sylvaticum (C. L. Koch, 1835)

Locality: Varsolc, N47°10'41.62", E22°53'24.79", 20.05.2014, leg: CK (HNHM Pseud-1013, 1 ♀).

Remarks: *N. sylvaticum* has been reported earlier from Sălaj County (Tömösváry, 1882). This species occurs in all Europe, Turkey and in the Caucasian region (Harvey, 2013).

Chernetidae Menge, 1855

Pselaphochernes scorpioides (Hermann, 1804)

Localities: Treznea (Ördögkút) main valley of the Treznea Stream, N47°06.603', E23°03.866', 377m, beech forest and pasture, leaf litter, 29.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1862, 2 ex.); Iaz (Krasznajáz) valley of the Iaz Stream, N47°05.219', E22°39.066', 380m, beech forest with stream, leaf litter (sifted) 30.09.2014, leg: ZB, LD, GK, DM (HNHM Pseud-1869, 1 ex.).

Remarks: this species is new for the fauna of the studied area. *P. scorpioides* is reported from several countries of Europe, Asia and North Africa (Harvey, 2013).

DISCUSSION:

During the present investigation altogether ten pseudoscorpion species were found in several collection sites of Sălaj County. Consequently, the

number of pseudoscorpion species recorded for the studied area has raised from eight to sixteen. Six of the earlier reported taxa (*C. orthodactylus*, *N. carcinoides*, *R. lubricus*, *C. cancroides*, *C. montigenus* and *L. chyzeri*) have not been found during the elaboration of the collected material. From zoogeographical point of view, the presence of *C. heterodactylus* and *N. biharicum* shows well the Carpathian influence on the area. However, this species list is far not complete, the presence of additional pseudoscorpion species is expected in the investigated area. Furthermore, the pseudoscorpion fauna of large areas still remained understudied in Romania, which indicates the necessity of further investigations on this animal group in the country.

ACKNOWLEDGEMENTS:

The author is grateful to Dr. László Dányi for making the collected pseudoscorpion material accessible. I am especially grateful to Laura Kovács and Tímea Szederjesi for their linguistic help on the manuscript. Investigations on pseudoscorpion type materials in the Natural History Museum of Vienna was a great help for the identification of the species, thus special thank belongs to Christoph Hörweg and the "Ernst Mach Grant – worldwide" scholarship of the OeAD. The author would like to thank all collectors of the material.

REFERENCES:

- Beier M, Die Pseudoscorpione des Wiener Naturhistorischen Museums. I. Hemictenodactyli. Annales des Naturhistorischen Museums in Wien, 42: 285–314, 1928.
- Beier M, Pseudoscorpionidea I. Subord. Chthoniinea et Neobisiinea. Tierreich, 57, I–XX, 1–258, 1932.
- Beier M, Drei neue Pseudoscorpione aus Rumänien. Bulletin de la Section Scientifique de l'Académie Roumaine, 17: 31–34, 1935.
- Beier M, Pseudoscorpionidea de Roumanie. Bulletin du Musée Royal d'Histoire Naturelle de Belgique, 15 (39), 1–21, 1939.
- Beier M, Ordnung Pseudoscorpionidea (Afterscorpione). Bestimmungsbücher zur Bodenfauna Europas, 1. Akademie-Verlag, Berlin, 313 pp, 1963.
- Cîrdei F, Bulimar F, Malcoci E, Contribuții la studiul pseudoscorpionidelor (ord. Pseudoscorpionidea) din Carpații orientali (Rarău). Comunicări de Zoologie, București 9: 7–16, 1970.
- Ćurčić BPM, Poinar Jr GO, Sarbu SM, New and little-known species of Chthoniidae and Neobisiidae (Pseudoscorpiones, Arachnida) from the Movile Cave in southern Dobrogea, Romania. Bijdragen tot de Dierkunde 63: 221–241, 1993.
- Ćurčić BPM, Decu V, Dimitrijević RN, *Neobisium blothroides* (Tömösváry, 1882) (Neobisiidae, Pseudoscorpiones): an endemic species from Romania. Travaux de l'Institut de Spéologie "Émile Racovitza" 43–44: 109–118, 2006.
- Decou VG, Negrea St, Aperçu zoogéographique sur la faune cavernicole terrestre de Roumanie. Acta Zoologica Cracoviensia 14: 471–546, 1969.
- Dumitresco M, Orghidan T, Contribution a la connaissance des Pseudoscorpions de la Dobroudja. Ire note. – Ann. Spéol., 19: 599–630, 1964.
- Dumitresco M, Orghidan T, Sur deux espèces nouvelles de Pseudoscorpions (Arachnides) lithoclasicoles de Roumanie: *Diplothemnus vachoni* (Atemnidae) et *Dactylochelifera marlausicolus*. Bulletin du Muséum National d'Histoire Naturelle, Paris (2) 41:675–687, 1969.
- Dumitresco M, Orghidan T, Contribution à la connaissance des Pseudoscorpions souterrains de Roumanie. Travaux de l'Institut de Spéologie "Émile Racovitza" 9: 97–111, 1970.
- Gardini G, The species of the *Chthonius heterodactylus* group (Arachnida, Pseudoscorpiones, Chthoniidae) from the eastern Alps and the Carpathians. Zootaxa 3887 (2): 101–137, 2014.
- Georgescu M, Capuse I, Description d'une nouvelle espèce d'*Allochernes* (*A. mahnerti* n. sp.) et cas de phorésie chez *Lamprochernes nodosus* (Schrank) (Pseudoscorpionidea, Chernetidae). Mémoires de Biospéologie 23: 115–120, 1996.
- Daday E, Ujabb adatok a magyar-fauna álskorpióinak ismeretéhez. Természettudományi Füzetek 12: 25–28, 1889.
- Frivaldszky, J. (1865) Adatok a magyarhoni barlangok faunájához. Matematikai és Természettudományi Közlemények, Vonatkozólag a Hazai Viszonyokra, 3, 17–53.
- Harvey MS, Catalogue of the Pseudoscorpionida. Manchester University Press, Manchester and New York, 726 pp, 1991.
- Harvey MS, Pseudoscorpions of the World, version 3.0. Western Australian Museum, Perth. <http://museum.wa.gov.au/catalogues-beta/pseudoscorpions>, 2013 (accessed 02 November 2015).
- Novák J, New records of pseudoscorpions for the fauna of Bükk Mts., Northeast Hungary (Arachnida: Pseudoscorpiones). Opuscula Zoologica, 43(1): 57–65, 2012.
- Novák J, Adatok Magyarország álskorpió-faunájához. Állattani közlemények, 98 (1–2): 121–129, 2013.
- Novák J, New records for the pseudoscorpion-fauna of the Bakony Mts, Hungary (Arachnida: Pseudoscorpiones). Opuscula Zoologica, 46(2): 153–158, 2015.
- Szent-Ivány J, Neue Angaben zur Verbreitung der Pseudoscorpione im Karpatenbecken. Fragmenta Faunistica Hungarica, 4 (1–4): 85–90, 1941.
- Tömösváry Ö, A Magyar fauna álskorpiói. Magyar Tudományos Akadémia Matematikai és Természettudományi Közlemények, 18: 135–256, 1882.