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Authors: Červená, Martina, Gardini, Giulio, and Christophoryová, Jana

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New contributions to the knowledge of pseudoscorpion diversity (Arachnida, Pseudoscorpiones) of Moldova after more than 30 years

Martina Červená, Giulio Gardini & Jana Christophoryová

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Abstract. During a study on pseudoscorpions in 2019, a total of 74 individuals from four species and four families was collected in Moldova. The species *Ephippiochthonius sarmaticus* Kolesnikov, Turbanov & Gongalsky, 2019, *Chelifer cancroides* (Linnaeus, 1758) and *Withius hispanus* (L. Koch, 1873), as well as the families Cheliferidae and Withiidae, are reported for the first time in Moldova. The finding of *E. sarmaticus* represents the second known country for its distribution within Europe. With the present results, the number of Moldavian pseudoscorpions increased to seven species, five genera and five families.

Keywords: distribution, Eastern Europe, taxonomy, zoogeography

Zusammenfassung. Neue Beiträge zur Kenntnis der Vielfalt der Pseudoskorpione (Arachnida, Pseudoscorpiones) der Republik Moldau nach mehr als 30 Jahren. Bei einer Untersuchung der Pseudoskorpione im Jahr 2019 in Moldawien wurden insgesamt 74 Individuen aus vier Familien und vier Arten gesammelt. Die Arten *Ephippiochthonius sarmaticus* Kolesnikov, Turbanov & Gongalsky, 2019, *Chelifer cancroides* (Linnaeus, 1758) und *Withius hispanus* (L. Koch, 1873) sowie die Familien Cheliferidae und Withiidae werden erstmals für die Republik Moldau gemeldet. Der Fund von *E. sarmaticus* stellt erst den zweiten Ländernachweis der Art in Europa dar. Die vorliegenden Ergebnisse erhöhen die bekannte Zahl der Pseudoskorpione Moldawiens auf sieben Arten, fünf Gattungen und fünf Familien.

Within Europe, there are still countries or regions where the pseudoscorpion fauna has not been studied at all, or for which only scarce data on pseudoscorpion diversity and distribution have been published (Harvey 2013). This is true for Moldova, a small country located in the eastern part of Europe between Romania and Ukraine. Knowledge about the pseudoscorpion fauna of Moldova is limited, despite progress in research on pseudoscorpions in the eastern and southern part of Europe and the relatively well-known diversity of pseudoscorpions in countries surrounding Moldova (26 species from Ukraine and 74 from Romania) (Harvey 2013, Ćurčić et al. 2014, Gardini 2014, Novák 2014, 2017, Novák & Harvey 2015, Novák & Hörweg 2017, Novák et al. 2019). The first and only records of pseudoscorpions from Moldova were by Schawaller (1989) over 30 years ago, who documented *Ephippiochthonius tetrachelatus* (Preyssler, 1790), *Neobisium sylvaticum* (C. L. Koch, 1835), *Neobisium validum* (L. Koch, 1873) and *Chernes hahnii* (C. L. Koch, 1839). No research on Moldovan pseudoscorpions was done subsequently (Harvey 2013). The aim of this study is to present new findings of pseudoscorpions and summarize knowledge about the pseudoscorpion fauna of Moldova.

Material and methods

During a field trip in 2019, the third author collected 74 pseudoscorpions at five localities in Moldova (Tab. 1, Fig. 1). Specimens were collected in natural biotopes as well as in biotopes with anthropic intervention, and from three microhabitats: tree bark, a tree hollow and under stones. Pseudoscorpions under tree bark and stones were collected individually using forceps. The sample of wood-mould from a tree hollow was sifted first and the specimens were then collected individually. This collecting method was similar to that described in Bedoya Roqueme & Tizo-Pedroso (2020).

Pseudoscorpions were preserved in 95% ethanol and studied as temporary slide mounts using lactic acid for clearing. After the study, they were first rinsed in tap water and after that returned to 75% ethanol. Some specimens remained in 95% ethanol without mounting. All specimens were examined using a Zeiss Stemi 2000 stereomicroscope. Digital photographs were taken using a Canon EOS 5D Mark II camera attached to a Zeiss Axio Zoom V16 stereomicroscope. Image stacks were produced manually, combined using the Zerene Stacker software, and subsequently edited in Adobe Photoshop CC. For identification, the keys in Beier (1963a), Christophoryová et al. (2011) and Kolesnikov et al. (2019) were used. The order of families is according to Benavides et al. (2019) while the species in each family are ordered alphabetically. Nomenclature for all species follows Harvey (2013) and Zaragoza (2017). Specimens are deposited in the zoological collection of the Department of Zoology, Comenius University in Bratislava, Slovakia.

A list of Moldavian pseudoscorpions given below is compiled from available published records (Schawaller 1989) and newly collected material. The new records for Moldova are marked with a black circle (●). The following information is provided for each new record: locality code (listed in Tab. 1), habitat, sampling method, sampling date and number of developmental stages. The same information (if available) is provided for published records with the addition of collector name and reference, together with approximate geographic coordinates.

Results

In the present study, 74 specimens from four species, four genera and four families were collected. The species *Ephippiochthonius sarmaticus*, *Chelifer cancroides* and *Withius hispanus* as well as the families Cheliferidae and Withiidae, were recorded for the first time in Moldova (Fig. 2). Moldova represents the second known country for the distribution of *E. sarmaticus* within Europe. All specimens were collected under tree bark and in a tree hollow, except for two chthoniid specimens

Martina ČERVENÁ, Jana CHRISTOPHORYOVÁ, Department of Zoology, Faculty of Natural Sciences, Comenius University in Bratislava, Mlynská dolina, Ilkovičova 6, SK 842 15 Bratislava, Slovakia; E-mails: martinacervena.lr@gmail.com, christophoryova@gmail.com
Giulio GARDINI, Via Monte Corno 12/1, I-16166 Genova, Italy; E-mail: giuliogardini@libero.it

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Tab. 1: List of the studied localities in Moldova. An asterisk (*) indicates new localities; unmarked locality is from Schawaller (1989). Abbreviations: E – longitude, N – latitude, a.s.l. – above sea level (m)

Code	Locality	N	E	a.s.l.	Biotope
1	Chisinau*	47.02653	28.82709	198	city park
2	Criuleni, Mănăstirile rupestre din Orheiul Vechi*	47.30055	28.97705	203	rocky cliff
3	Curchi, Curchi Monastery*	47.33260	28.65570	177	trees by the lake
4	Curchi, Curchi Monastery*	47.33361	28.65529	177	trees by the lake
5	Lozovo, Codru Reserve	47.06666	28.50000	300–500	oak forest
6	Tiraspol*	46.83472	29.60625	85	riverbank



Fig. 1: Map of the studied localities in Moldova. White stars indicate new data, black circle indicates published data (Schawaller 1989). For locality codes see Tab. 1. The map was created using the QGIS Geographic Information System

which were found under stones. Up to 88% of specimens were collected from plane tree bark. *Withius hispanus*, with more than 75% of the total specimen number, was the most common species in the whole material. Together with the published data, there are seven pseudoscorpion species belonging to five genera and five families in Moldova.

Chthoniidae Daday, 1889

• ***Ephippiochthonius sarmaticus*** Kolesnikov, Turbanov & Gongalsky, 2019 (Figs 1, 2a)

New data. Loc. **2**: under stones, individual sampling, 23. Jun. 2019, 2 ♂♂.

European distribution. Russia, Krasnodar Region (Kolesnikov et al. 2019).

Ephippiochthonius tetrachelatus (Preyssler, 1790) (Fig. 1)

Published data. Loc. **5**: 7.–9. Jun. 1988, 4 specimens, leg. S. Golovatch & L. Penev (Schawaller 1989).

European distribution. Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom (Harvey 2013).

Neobisiidae Chamberlin, 1930

Neobisium sylvaticum (C. L. Koch, 1835) (Fig. 1)

Published data. Loc. **5**: 7.–9. Jun. 1988, 2 specimens, leg. S. Golovatch & L. Penev (Schawaller 1989).

European distribution. Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Montenegro, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine (Henderickx & Vets 2005, Harvey 2013).

Neobisium validum (L. Koch, 1873) (Fig. 1)

Published data. Loc. **5**: 7.–9. Jun. 1988, 2 specimens, leg. S. Golovatch & L. Penev (Schawaller 1989).

European distribution. Croatia, Greece, Hungary, Ukraine (Harvey 2013).

Cheliferidae Risso, 1827

• ***Chelifer cancroides*** (Linnaeus, 1758) (Figs 1, 2b)

New data. Loc. **4**: under pear tree bark, individual sampling, 24. Jul. 2019, 1 ♂, 1 tritonymph.

European distribution. Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, United Kingdom (Harvey 2013, Krajčovičová et al. 2018, Ostrovsky 2020).

Chernetidae Menge, 1855

Chernes hahnii (C. L. Koch, 1839) (Figs 1, 2c)

Published data. Loc. **5**: 7.–9. Jun. 1988, 7 specimens, leg. S. Golovatch & L. Penev (Schawaller 1989).

New data. Loc. **1**: under plane tree bark, individual sampling, 23. Jul. 2019, 4 ♂♂, 1 ♀, 3 tritonymphs; Loc. **3**: wood-mould from a willow tree hollow, sifting and individual sampling, 24. Jul. 2019, 3 ♂♂, 1 ♀, 1 deutonymph.

European distribution. Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Czech Republic, France, Germany, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Poland, Russia, Slovakia, Switzerland, Ukraine, United Kingdom (Harvey 2013, Christophoryová et al. 2018, Krajčovičová et al. 2018, Ostrovsky 2020).

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Withiidae Chamberlin, 1931
● ***Withius hispanus*** (L. Koch, 1873) (Figs 1, 2d)
New data. Loc. **6**: under plane tree bark, individual sampling, 25. Jul. 2019, 14 ♀♀, 43 protonymphs.

European distribution. Austria, Bosnia and Herzegovina, Bulgaria, France, Italy, Montenegro, Portugal, Russia, Slovakia, Spain, Switzerland (Christophoryová et al. 2012, Harvey 2013).

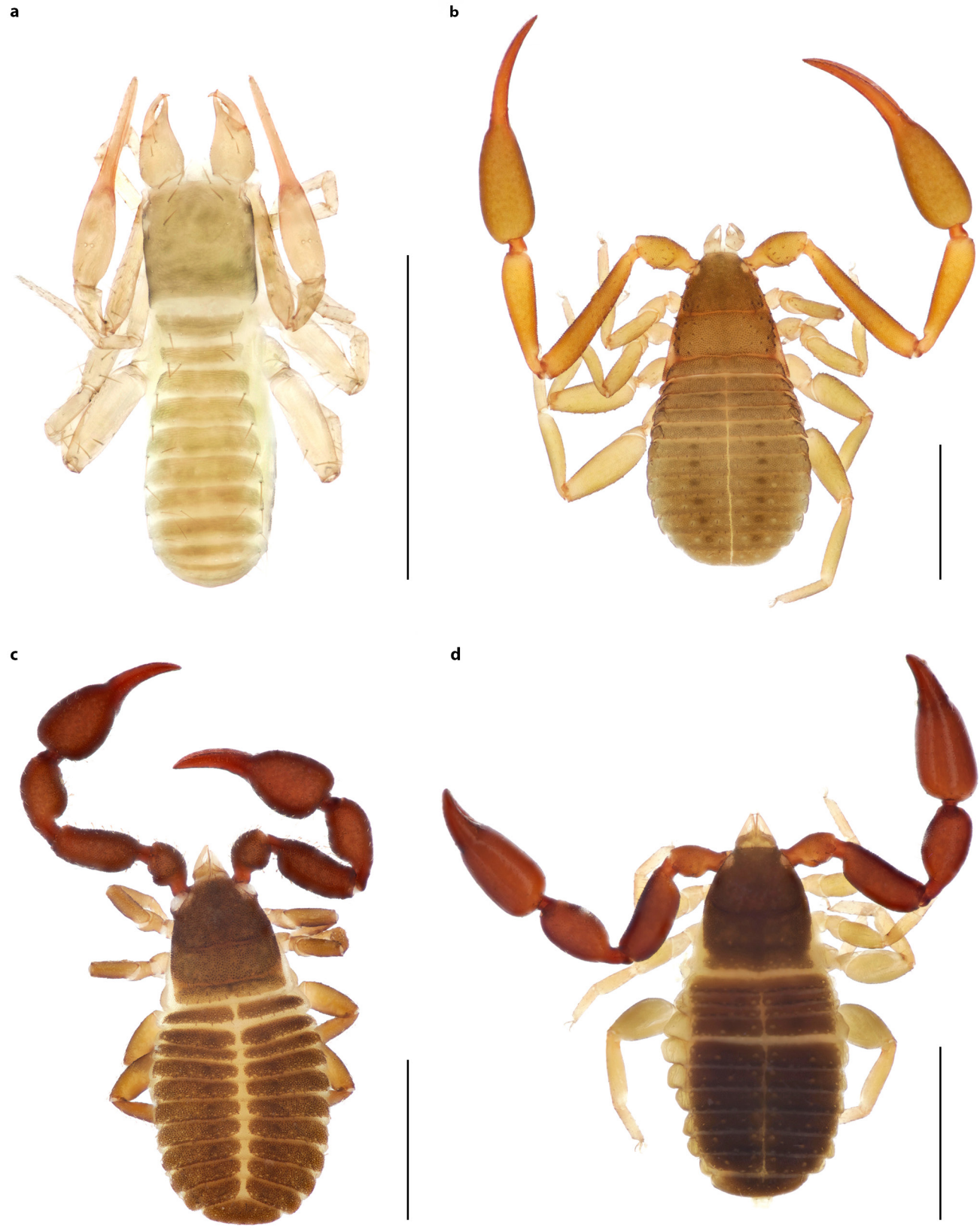


Fig. 2: Pseudoscorpions collected in Moldova. **a.** *Ephippiochthonius sarmaticus*, male; **b.** *Chelifer cancroides*, male; **c.** *Chernes hahnii*, male; **d.** *Withius hispanus*, female. Scale bars: 1 mm

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Discussion

The pseudoscorpion fauna of Moldova is mostly represented by species widely distributed across Europe and in several Asian countries. Moreover, the species *C. cancroides* and *E. tetrachelatus* could be considered as cosmopolitan (Harvey 2013). Of the three newly recorded species, the discovery of *E. sarmaticus* is the most interesting because it was recently described from the Krasnodar region in Russia by Kolesnikov et al. (2019) based on three males collected on bunds between drained rice paddies. The two males from Moldova share the main morphological and morphometric characters reported in the original description of *E. sarmaticus*, i.e. carapace without epistome, with one or two preocular microsetae and two posterior macrosetae (all macrosetae thick); movable cheliceral finger with an isolated subapical tooth (di) and with prominent spinneret; cheliceral palm with two lateral microsetae; palpal chela (length/depth) 0.66/0.11, hand (length) 0.29, movable finger (length) 0.38 mm. With respect to the geographic distribution of this species, there are 750 km between the type locality of *E. sarmaticus* and the locality of the new find from Moldova. It should be noted that the area in question has been glacialized in the Quaternary past and is currently flat and homogeneous (with the exception of Crimea), with low specific diversity, so nothing prevents the two populations from being conspecific.

Another species newly recorded for Moldova, *W. hispanus*, lives mainly under the bark and on stumps of different trees (Beier 1963a, 1967, Ducháč 1999, Zaragoza 2007). Occasionally, the species was collected under stones (Dashdamirov 1999), with pitfall traps (Christophoryová et al. 2012) or Malaise traps (Iorio 2018). The present findings of *W. hispanus* correspond with the previous findings from tree microhabitats.

Chelifer cancroides is most frequently found in human dwellings, outbuildings, bird nests, and tree hollows (Beier 1963a, Legg & Jones 1988, Turienzo et al. 2010, Harvey 2014, Krajčovičová & Christophoryová 2014, Christophoryová et al. 2017). In this study, it was collected under pear tree bark, which is uncommon for this species, as *C. cancroides* was collected only occasionally under tree bark (e.g. Beier 1963b, von Helversen 1966, Krajčovičová & Christophoryová 2014). The species shows low abundance in tree microhabitats and its occurrence there is probably only accidental (Šťáhlavský 2001, Krajčovičová & Christophoryová 2014).

Based on two newly discovered localities presented in this work, the presence of *C. hahnii* in Moldova (Schawaller 1989) is confirmed. *Chernes hahnii* is a typical inhabitant of tree bark and tree hollows, which is also proved by the present study and many findings from other European countries (Beier 1963a, Drogla & Lippold 2004, Krajčovičová & Christophoryová 2014, Christophoryová et al. 2018, Novák et al. 2019).

Our research represents the first contribution to the knowledge of pseudoscorpion diversity in Moldova since the publication by Schawaller (1989), increasing the number of the known species and adding new localities.

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References

Bedoya Roqueme E & Tizo-Pedroso E 2020 Techniques for collection and sampling of pseudoscorpions (Arthropoda: Arachnida). In: Santos JC & Fernandes GW (eds) Measuring arthropod biodiversity: a handbook of sampling methods. Springer, Cham. pp. 341-363 – doi: 10.1007/978-3-030-53226-0_14

Beier M 1963a Ordnung Pseudoscorpionidea (Afterskorpione). Bestimmungsbücher zur Bodenfauna Europas. Akademie-Verlag, Berlin. 313 pp.

Beier M 1963b Pseudoskorpione aus Anatolien. – Annalen des Naturhistorischen Museums in Wien 66: 267-277

Beier M 1967 Ergebnisse zoologischer Sammelreisen in der Türkei. Pseudoscorpionidea. – Annalen des Naturhistorischen Museums in Wien 70: 301-323

Benavides LR, Cosgrove JG, Harvey MS & Giribet G 2019 Phylogenomic interrogation resolves the backbone of the Pseudoscorpiones tree of life. – Molecular Phylogenetics and Evolution 139: 1-14 – doi: 10.1016/j.ympev.2019.05.023

Christophoryová J, Červená M & Krajčovičová K 2018 Confirmed record of the genus *Chernes* in Bosnia and Herzegovina (Pseudoscorpiones: Chernetidae). – Natura Croatica 27: 233-237 – doi: 10.20302/NC.2018.27.13

Christophoryová J, Gardini G & Énekesová E 2012 *Withius hispanus* new to the fauna of Slovakia (Pseudoscorpiones: Withiidae). – Arachnologische Mitteilungen 44: 10-13 – doi: 10.5431/aramit4403

Christophoryová J, Gruľa D & Krajčovičová K 2017 New records of pseudoscorpions (Arachnida: Pseudoscorpiones) associated with animals and human habitats in Slovakia and the Czech Republic. – Arachnologische Mitteilungen 53: 67-76 – doi: 10.5431/aramit5311

Christophoryová J, Šťáhlavský F & Fedor P 2011 An updated identification key to the pseudoscorpions (Arachnida: Pseudoscorpiones) of the Czech Republic and Slovakia. – Zootaxa 2876: 35-48 – doi: 10.11646/zootaxa.2876.1.4

Ćurčić BPM, Sarbu SM, Dimitrijević RN & Ćurčić SB 2014 A new cave pseudoscorpion from the region of Mangalia (Romania): *Chthonius* (*Ephippiochthonius*) *borissketi* n. sp. (Chthoniidae, Pseudoscorpiones). – Archives of Biological Sciences, Belgrade 66: 955-961 – doi: 10.2298/ABS1402955C

Dashdamirov S 1999 New records of false scorpions in the Caucasus (Arachnida: Pseudoscorpiones). – Arthropoda Selecta 8: 79-87

Drogla R & Lippold K 2004 Zur Kenntnis der Pseudoskorpion-Fauna von Ostdeutschland (Arachnida, Pseudoscorpiones). – Arachnologische Mitteilungen 27/28: 1-54 – doi: 10.5431/aramit2701

Ducháč V 1999 Fund der Art *Withius hispanus* (L. Koch 1873) in Südbulgarien (Pseudoscorpiones, Withiidae). – Entomologische Zeitschrift 109: 496-498

Gardini G 2014 The species of the *Chthonius heterodactylus* group (Arachnida, Pseudoscorpiones, Chthoniidae) from the eastern Alps and the Carpathians. – Zootaxa 3887: 101-137 – doi: 10.11646/zootaxa.3887.2.1

Harvey MS 2013 Pseudoscorpions of the World. Version 3.0. Western Australian Museum Perth, Australia. – Internet: http://museum.wa.gov.au/catalogues-beta/pseudoscorpions (27. Oct. 2020)

Harvey MS 2014 A review and redescription of the cosmopolitan pseudoscorpion *Chelifer cancroides* (Pseudoscorpiones: Cheliferidae). – Journal of Arachnology 42: 86-104 – doi: 10.1636/K13-57.1

Helversen O von 1966 Pseudoskorpione aus dem Rhein-Main-Gebiet. – Senckenbergiana Biologica 47: 131-150

Henderickx H & Vets V 2005 *Neobisium sylvaticum* (C. L. Koch) (Arachnida, Pseudoscorpiones), een nieuwe pseudoschorpioen voor de Belgische fauna [*Neobisium sylvaticum* (C. L. Koch) (Arachnida, Pseudoscorpiones), a new pseudoscorpion for the Belgian fauna]. – Entomo-Info 16: 26 [in Dutch, with English summary]

Iorio E 2018 Découverte de *Withius hispanus* (L. Koch, 1873) (Pseudoscorpiones, Withiidae) dans le Massif armoricain et autres données nouvelles sur les pseudoscorpions des pays de la Loire. – Revue Arachnologique (2) 5: 38-49

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Kolesnikov VB, Turbanov IS & Gongalsky KB 2019 Two new species false scorpion genus *Ephippiochthonius* Beier, 1930 (Arachnida: Pseudoscorpiones: Chthoniidae) from the Western Ciscaucasia, Russia. – Arthropoda Selecta 28: 73-82 – doi: 10.15298/arthsel.28.1.06

Krajčovičová K & Christophoryová J 2014 Faunistic survey of pseudoscorpions (Arachnida: Pseudoscorpiones) collected from trees and using Malaise traps in Slovakia and the Czech Republic. – Klapalekiana 50: 167-180

Krajčovičová K, Tamutis V, Ivinskis P, Machač O & Christophoryová J 2018 First records of pseudoscorpions (Arachnida: Pseudoscorpiones) from Lithuania. – Entomologica Fennica 29: 49-53 – doi: 10.33338/ef.71011

Legg G & Jones RE 1988 Pseudoscorpions (Arthropoda; Arachnida). Keys and notes for the identification of the species. Synopses of the British Fauna (New Series), No. 40. Brill/Backhuys, Leiden. 159 pp.

Novák J 2014 Notes on two species of the cavernicolous subgenus *Neobisium* (*Blothrus*) Schiödte, 1874 (Arachnida: Pseudoscorpiones) from Transylvania (Romania), with a key to the species of the Carpathian Mountains. – Zootaxa 3796: 394-400 – doi: 10.11646/zootaxa.3796.2.11.1138

Novák J 2017 *Neobisium* (*N.*) *tothi* sp. nov., a new species from Hungary and Romania, and first records of *Neobisium* (*N.*) *noricum* Beier, 1939 from Hungary (Pseudoscorpiones: Neobisiidae). – Turkish Journal of Zoology 41: 416-423 – doi: 10.3906/zoo-1607-19

Novák J & Harvey MS 2015 The identity of pseudoscorpions of the genus *Diplotemnus* (Pseudoscorpiones: Atemnidae) from Europe and Asia. – North-Western Journal of Zoology 11: 316-323

Novák J & Hörweg C 2017 Redescriptions of three species of the genus *Neobisium* from the Balkans and the Carpathians (Arachnida: Pseudoscorpiones). – Acta Zoologica Academiae Scientiarum Hungaricae 63: 277-292. – doi: 10.17109/AZH.63.3.277.2017. 1148

Novák J, Jablonski D & Christophoryová J 2019 Contribution to the pseudoscorpion fauna of Transylvania and the Eastern and Southern Carpathians, Romania (Arachnida: Pseudoscorpiones). – North-Western Journal of Zoology 15: 127-134

Ostrovsky AM 2020 On the fauna of false scorpions (Arachnida: Pseudoscorpiones) of south-eastern Belarus. – Ecosystem Transformation 3 (2): 11-21 – doi: 10.23859/estr-200312

Schawaller W 1989 Pseudoskorpione aus der Sowjetunion, Teil 3 (Arachnida: Pseudoscorpiones). – Stuttgarter Beiträge zur Naturkunde A 440: 1-30

Šťáhlavský F 2001 Štírci (Arachnida: Pseudoscorpiones) Prahy [Pseudoscorpions (Arachnida: Pseudoscorpiones) of Prague]. – Klapalekiana 37: 73-121 [in Czech, with English abstract and summary]

Turienzo P, Iorio O & Mahnert V 2010 Global checklist of pseudoscorpions (Arachnida) found in birds' nests. – Revue suisse de Zoologie 117: 557-598

Zaragoza JA 2007 Catálogo de los Pseudoescorpiones de la Península Ibérica e Islas Baleares (Arachnida: Pseudoscorpiones). – Revista Ibérica de Aracnologia 13: 3-91

Zaragoza JA 2017 Revision of the *Ephippiochthonius* complex in the Iberian Peninsula, Balearic Islands and Macaronesia, with proposed changes to the status of the *Chthonius* subgenera (Pseudoscorpiones, Chthoniidae). – Zootaxa 4246: 1-221 – doi: 10.11646/zootaxa.4246.1.1

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