

New records of pseudoscorpions for the fauna of the Bükk Mts., Northeast Hungary (Arachnida: Pseudoscorpiones)

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Abstract. A research was carried out to explore the pseudoscorpion species composition of the Bükk Mts., Northeast Hungary. During the survey seventeen species were recorded of which twelve are new to the area and four species [*Chthonius* (*Chthonius*) *carinthiacus* Beier, 1951, *Chthonius* (*C.*) *diophthalmus* Daday, 1888, *Mundochthonius carpaticus* Rafalski, 1948, *Chernes similis* (Beier, 1932)] are new to the fauna of Hungary. Five species, *Microbisium manicatum* (L. Koch, 1873), *Neobisium* (*Neobisium*) *seminudum* (Daday and Tömösváry, 1880), *Neobisium* (*Blothrus*) *minutum* (Tömösváry, 1882), *Roncus euchirus* (Simon, 1879) and *Rhacochelifer quadrimaculatus* (Tömösváry, 1882) were removed from the list of the Hungarian pseudoscorpion fauna.

Keywords. Pseudoscorpions, Hungary, Carpathian elements, Bükk Mountains.

INTRODUCTION

Pseudoscorpiones are one of the four meso-diverse orders of Arachnida (Harvey 2002). Europe is the most investigated continent from pseudoscorpions' point of view, having a long tradition of taxonomical and faunistical researches (Harvey 2007). The highest number of taxa is recorded from the Mediterranean countries due to their climatic factors and biogeographical history (Harvey 2007). However, several parts of Europe are still understudied with only a few published faunistic data (Petrov 2007).

The first summarizing work on the pseudoscorpion fauna of Hungary was presented by Tömösváry (1882a), followed by other remarkable publications on this animal group (Tömösváry 1882b, 1884, Daday 1888, 1889, 1918, Pillich 1914). In his significant work, Chamberlin (1930) has described a new species *Neobisium* (*Neobisium*) *inaeqale* Chamberlin, 1930 from Hungary. Later Szent-Ivány (1941) also has published some sporadic data from the Carpathian Basin, mostly from Hungary and Szalay (1968) presented an identification key to the Hungarian species.

In the second half of the 20th century, Loksa (1966) and Mahnert (1983, 1990) reported some new species to the fauna of the country, and Mahnert (1980) has described the new species

Chthonius (*Chthonius*) *hungaricus* Mahnert, 1980 from Hungary. Recently, Murányi and Kontschán (2002), Kárpáthegyi and Kontschán (2005), Kárpáthegyi (2005, 2006, 2007), Farkas *et al.* (2009) and Novák (2011) published new occurrences including several newly recorded species for the Hungarian fauna.

The persistent growing in the number of pseudoscorpion taxa recorded for Hungary indicates the necessity of further investigations in this field. From most of the Hungarian national parks we have none or only a few data regarding pseudoscorpions (Murányi and Kontschán 2002, Kárpáthegyi 2007). It is true for the Bükk National Park (BNP) as well, which was established in 1976 in the inner region of the Bükk Mts., Northeast Hungary, and represents the largest forested national park in the country.

The Bükk Mts. covers 431 km², and it is one of the highest mountains in Hungary. According to the earlier published data five species of pseudoscorpions have been recorded from the area, *Chthonius* (*Ephippiochthonius*) *tetrachelatus* (Preysler, 1790), *Roncus lubricus* L. Koch, 1873, *Neobisium* (*N.*) *carcinoides* (Hermann, 1804), *Neobisium* (*N.*) *erythroductylum* (L. Koch, 1873) and *Neobisium* (*N.*) *sylvaticum* (C. L. Koch, 1835) (Szent-Ivány 1941, Loksa 1966). The fact that in the Bükk Mts. has not been carried out any comp-

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rehensive investigation on the pseudoscorpions has inspired the author to carry out researches and summarize the pseudoscorpion fauna of this area.

MATERIAL AND METHODS

The specimens were collected by individual sampling, sifting and using pitfall traps. The material deposited in the Collections of Soil Zoology of the Hungarian Natural History Museum (HNHM) was studied and there was also additional material collected by the author. The material was examined using a stereomicroscope and light microscope; the specimens were cleared in lactic acid. Drawings were made with the aid of a Bresser LCD microscope. The specimens were identified using the publications of Beier (1963), Szalay (1968), Mahnert (2004) and Christophoryová *et al.* (2011c) and deposited in the Hungarian National History Museum, in 70% ethanol. The collecting localities are listed below according to the settlements in the alphabetical order.

List of the collecting sites (Fig. 1)

- Bélapátfalva, Ravasz-lyuk, 680 m a.s.l. (48°02'58"N, 20°23'20"E), 04.07.1981, leg. László Ádám.
- Bükkszentkereszt, Kerek Hill, 610 m a.s.l. (48°04'44"N, 20°37'38"E), 28.08.2010, leg. János Novák.
- Bükkszentkereszt, Rókafarm, 585 m a.s.l. (48°03'42"N, 20°36'01"E), 05.08.2010, leg. János Novák.
- Bükkszentkereszt, Nagy-Som Valley, 574 m a.s.l. (48°02'47"N, 20°38'19"E), 05.08.2010, leg. János Novák.
- Bükkszentkereszt, 594 m a.s.l. (48°03'31"N, 20°37'56"E), 05.08.2010, leg. János Novák.
- Bükkszentkereszt, Hollósetető, Hollós Valley, 515 m a.s.l. (48°04'21"N, 20°36'16"E), 12.08.2010, leg. János Novák.
- Bükkszentkereszt, Hollósetető, Nagy-dél, 741 m a.s.l. (48°04'31"N, 20°34'20"E), 12.08.2010, 21.08.2010, leg. János Novák.
- Bükkszentkereszt, Vivrát Hill, 653 m a.s.l. (48°03'27"N, 20°36'33"E), 05.08.2010, leg. János Novák.
- Bükkszérc, Hosszú Valley, 345 m a.s.l. (48°00'36"N, 20°30'30"E), 26.05.1982, leg. Pál Holló.
- Cserépfalu, Hór Valley, Oszla, 255 m a.s.l. (47°57'45"N, 20°31'54"E), 26.05.1982, leg. Pál Holló.
- Cserépváralja, Karud Hillside, 291 m a.s.l. (47°55'29"N, 20°35'51"E), 19.08.2010, leg. János Novák.
- Dédestapolcsány, 269 m a.s.l. (48°10'24"N, 20°28'42"E), 02.08.2010, leg. János Novák.
- Eger, Sik Hill, 250 m a.s.l. (47°54'40"N, 20°25'25"E), 26.08.2010, leg. János Novák.
- Felsőtárkány, Tar-kő, 942 m a.s.l. (48°03'26"N, 20°27'38"E), 02.07.1981, 13.07.1983, leg. László Ádám.
- Miskolc, Savós Valley, 410 m a.s.l. (48°06'35"N, 20°36'32"E), 31.07.2010, 21.08.2010, leg. János Novák.
- Miskolc, Sebes, 643 m a.s.l. (48°06'19"N, 20°34'07"E), 21.08.2010, leg. János Novák.
- Miskolc, Jávor Hill, 583 m a.s.l. (48°05'07"N, 20°37'57"E), 28.08.2010, leg. János Novák.
- Miskolc, Felsőhámor, Lencsés Hillside, 362 m a.s.l. (48°06'31"N, 20°37'03"E), 08.08.2010, leg. János Novák.
- Miskolc, Jávorkút, 712 m a.s.l. (48°05'55"N, 20°31'40"E), 31.07.2010, leg. János Novák.
- Miskolc, Lillafüred, 334 m a.s.l. (48°06'03"N, 20°37'21"E), 29.07.2010, 30.07.2010, 12.08.2010, leg. János Novák.
- Miskolc, Lillafüred, Fehérkő-lápa, 539 m a.s.l. (48°05'47"N, 20°37'39"E), 28.08.2010, leg. János Novák.
- Miskolc, Fény és Kő Valley, 318 m a.s.l. (48°05'55"N, 20°40'05"E), 28.08.2010, leg. János Novák.
- Miskolc, Forrás Valley, 299 m a.s.l. (48°07'02"N, 20°38'10"E), 26.07.1981, leg. László Ádám.
- Miskolc, Hegyes Hilltop, 593 m a.s.l. (48°05'26"N, 20°38'28"E), 28.08.2010, leg. János Novák.
- Miskolc, Lyukas Ridge, 905 m a.s.l. (48°05'42"N, 20°29'23"E), 04.07.1981, leg. László Ádám.
- Miskolc, Vaskapu, 553 m a.s.l. (48°05'22"N, 20°39'28"E), 28.08.2010, leg. János Novák.
- Miskolc, Ómassa, 490 m a.s.l. (48°06'35"N, 20°31'55"E), 21.05.1926, leg. Lajos Méhely.
- Miskolc, Sebesvíz Valley, 519 m a.s.l. (48°06'31"N, 20°33'15"E), 30.03.1967, leg. Sándor Mahunka.
- Miskolc, Kurta Crag, 802 m a.s.l. (48°05'11"N, 20°33'33"E), 21.08.2010, leg. János Novák.
- Miskolc, Nagy-hárs Hill, 815 m a.s.l. (48°05'23"N, 20°32'39"E), 21.08.2010, leg. János Novák.
- Nagyvisnyó, Bánkút, 917 m a.s.l. (48°05'52"N, 20°28'23"E), 06.10.1988, leg. Zoltán Korsós, 31.07.2010, leg. János Novák.
- Nagyvisnyó, Ablakos-kő Valley, 494 m a.s.l. (48°06'17"N, 20°27'05"E), 14.07.1983, leg. László Ádám.
- Nagyvisnyó, Youth camp, 283 m a.s.l. (48°08'48"N, 20°27'17"E), 27.08.2010, leg. János Novák.
- Nagyvisnyó, Leány Valley, 501 m a.s.l. (48°05'42"N, 20°26'12"E), 01.11.1989, leg. Zoltán Korsós.
- Parasznya, mouth of Csókás-forrási Cave, 492 m a.s.l. (48°07'21"N, 20°35'01"E), 19.06.1963, leg. Imre Loksa.
- Parasznya, Dolka Ridge, 451 m a.s.l. (40°07'03"N, 20°36'38"E), 08.08.2010, leg. János Novák.
- Parasznya, mouth of Udvarkő Cave, 452 m a.s.l. (48°07'50"N, 20°36'00"E), 08.10.1963, 24.03.1964, leg. Imre Loksa.
- Répáshuta, Nagy-mező (Big Field), 788 m a.s.l. (48°04'43"N, 20°29'57"E), 07.06.1957, leg. Imre Loksa.
- Répáshuta, Tebe-puszta, 385 m a.s.l. (48°01'58"N, 20°33'25"E), 03.11.1982, leg. Pál Holló.

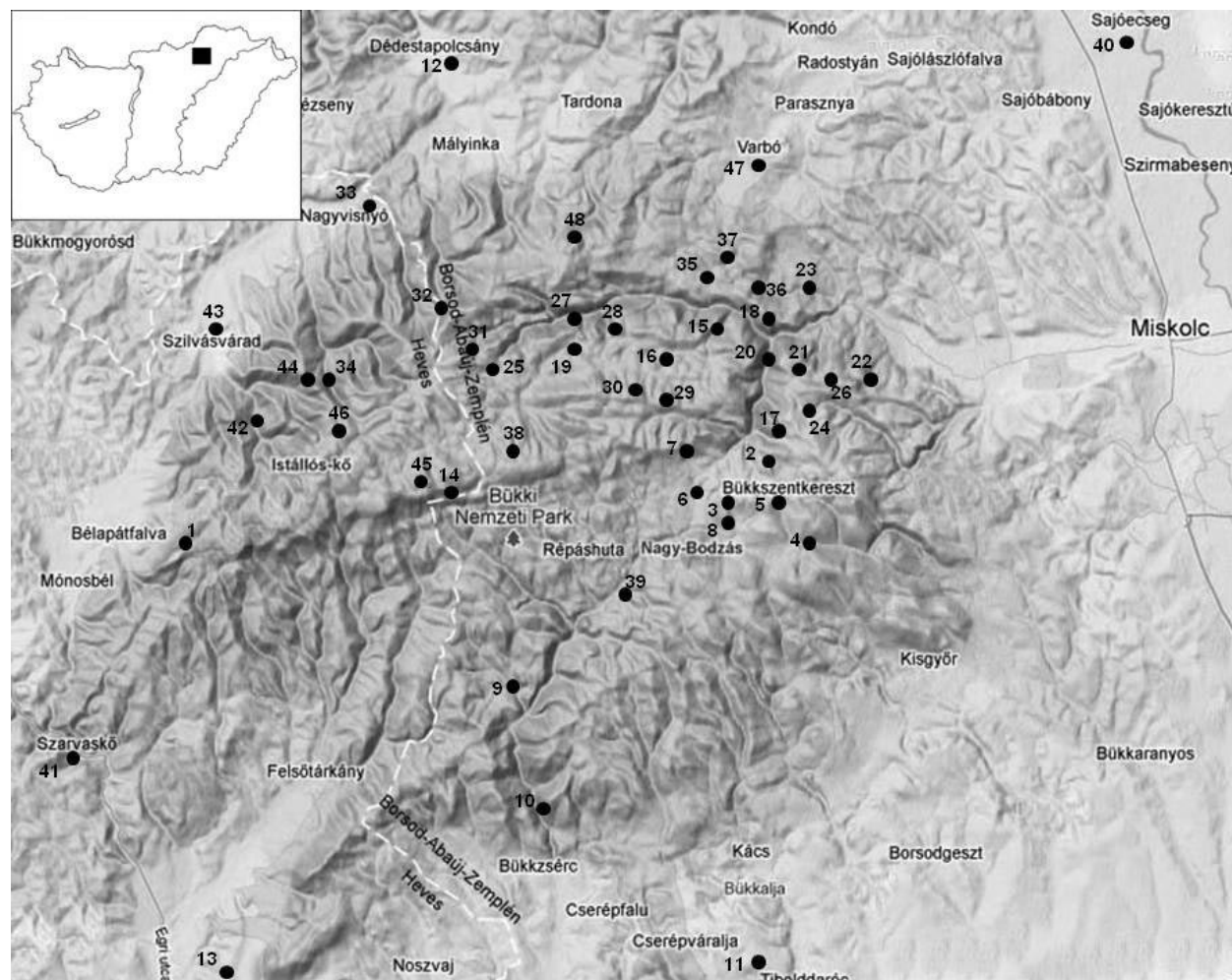


Figure 1. Sampling localities marked by numbers given in the Material and methods section

40. Sajóecseg, 118 m a.s.l. (48°11'55"N, 20°46'20"E), 17.08.2010, leg. János Novák.
 41. Szarvaskő, 235 m a.s.l. (47°59'13"N, 20°19'53"E), 30.04.1982, leg. Pál Holló.
 42. Szilvásvárad, Szalajka Valley, 435 m a.s.l. (48°05'31"N, 20°24'25"E), 27.06.1951, leg. Edit Somfai.
 43. Szilvásvárad, 363 m a.s.l. (48°06'16"N, 20°23'30"E), 26.06.1951, leg. Edit Somfai.
 44. Szilvásvárad, Geremavár, 732 m a.s.l. (48°05'23"N, 20°25'53"E), 13.07.1983, leg. László Ádám.
 45. Szilvásvárad, Óserdő (Virgin Forest), 853 m a.s.l. (48°03'35"N, 20°26'39"E), October, 1975, leg. Rita Szonntag.
 46. Szilvásvárad, Köves Ridge, 653 m a.s.l. (48°04'46"N, 20°25'20"E), 02.07.1981, 24.09.1981, leg. László Ádám.
 47. Varbó, 189 m a.s.l. (48°09'35"N, 20°37'11"E), 1964, leg. Imre Loksa.
 48. Varbó, Örvény-kő, 767 m a.s.l. (48°07'45"N, 20°32'16"E), 29.03.1967, leg. Sándor Mahunka.

RESULTS

CHTHONIIDAE Daday, 1888

Chthonius (Chthonius) carinthiacus Beier, 1951

(Figures 2B and 2I)

Localities. No. 23, No. 35, No. 39, No. 44.

Short description. Carapace, chelicerae and chelal hands darker brown than the other parts of the body. Carapace with 18 setae, 2 of them located on the posterior carapace margin (Fig. 2I). Two pairs of eyes present on carapace, anterior pair well-developed with lenses, posterior pair flattened, epistome small and serrated. Palps (Fig.

2B) slight, fixed chelal finger with 33–37 peaked, countinuous teeth and with 8 trichobothria, movable chelal finger with similar 20 teeth on the distal part of the finger, and with flattened basal teeth, and with 4 trichobothria. Number of coxal spines: 4–10 on pedal coxae II, 1–6 on pedal coxae III. Body length: 1.3–1.5 mm.

Remarks. This species is recorded for the first time in Hungary. It occurs also in Slovenia (Harvey 2011), Austria (Mahnert 2004), the Czech Republic, Slovakia (Christophoryová *et al.* 2011b), and Italy (Harvey 2011). The specimens collected in the Bükk Mts. are from mixed linden and ash forests and from moss.

***Chthonius (C.) diophthalmus* Daday, 1888**

(Figures 2A and 2H)

Locality. No. 34.

Short description. Carapace (Fig. 2H) with 20 setae, 2 longer and 2 shorter of them located on the posterior carapace margin. Two pairs of eyes present, anterior pair well-developed with lenses, posterior pair flattened, epistome small and serrated. Fixed chelal finger with 28–40 straight and mostly clearly separated teeth, movable chelal finger with triangular teeth on its distal half, proximal part with blunt and flattened teeth (Fig. 2A). Number of coxal spines: 5–7 on pedal coxae II, 4–5 on pedal coxae III. Body length: 1.3–1.6 mm.

Remarks. New species for the fauna of Hungary. Its occurrence in Hungary is not surprising, because this species is listed in Romania, the Czech Republic, Germany, and Greece (Harvey 2011).

***Chthonius (C.) heterodactylus* Tömösváry, 1882**

Localities. No. 23, No. 34.

Remarks. New to the fauna of the Bükk Mts. So far this species was known only from the Zemplén Mountains (Kárpát-hegyi 2006), so the Bükk Mts. is the second known locality of *C. (C.) heterodactylus* in Hungary.

***Chthonius (C.) hungaricus* Mahnert, 1980**

Localities. No. 7, No. 11, No. 15, No. 16, No. 19, No. 20, No. 35, No. 36, No. 47, No. 48.

Remarks. New to the fauna of the Bükk Mts. Until now, the species was known only from the Hortobágy NP, Hungary (Mahnert 1980) and from Slovakia (Christophoryová *et al.* 2011a). As the Bükk Mts. is situated between the two above mentioned localities, the occurrence of the species was expected in the studied area. *C. (C.) hungaricus* is reported from the altitude of 85 m

(Újszentmargita, Hungary, type locality) to 712 m a.s.l. (Jávorkút, Hungary). The present specimens were found in oak and in beech forests, in decaying wood and mostly in leaf litter.

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

Localities. No. 13, No. 20.

Remarks. Loksa (1966) has already reported this species from the Bükk Mts. It occurs all across the country (Kárpát-hegyi 2007). Specimens were collected in oak and beech forests.

***Chthonius (E.) tuberculatus* Hadži, 1937**

Locality. No. 11.

Remarks. New to the fauna of the Bükk Mts. The species was recently found in Slovakia for the first time (Christophoryová *et al.* 2011b) and after the Hortobágy National Park (Mahnert 1983) this is the second record of *C. (E.) tuberculatus* in Hungary. The single specimen was collected in an oak forest.

***Mundochthonius carpaticus* Rafalski, 1948**

(Figures 2C, 2F, 2J and 2K)

Locality. No. 37.

Short description. Carapace (Fig. 2J) with 18 setae, 2 of them located on posterior carapace margin. Two well developed eyes with lenses

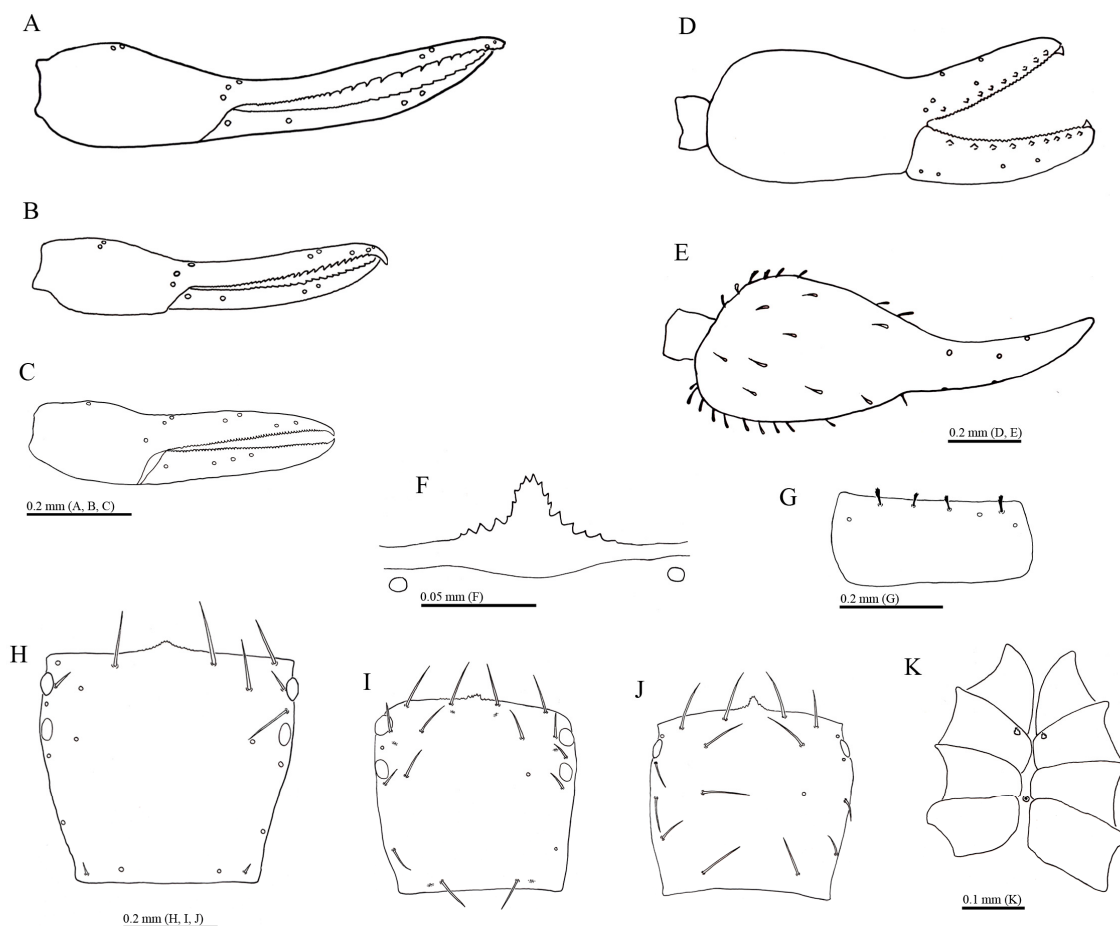


Figure 2. A = Pedipalp of *Chthonius diophthalmus*, B = Pedipalp of *Chthonius carinthiacus*, C = Pedipalp of *Mundochthonius carpaticus*, D = Pedipalp of *Chernes similis*, E = Pedipalp of *Chernes similis* dorsal view, F = Epistome of *Mundochthonius carpaticus*, G = Sternite IX of *Chernes similis*, H = Carapace of *Chthonius diophthalmus*, I = Carapace of *Chthonius carinthiacus*, J = Carapace of *Mundochthonius carpaticus*, K = Pedal coxae I–IV of *Mundochthonius carpaticus*

present, epistome triangular and serrated (Fig. 2F). Fixed chelal finger with 53, movable with 55 small blunt and continuous teeth (Fig. 2C). Coxal spines present only on pedal coxae II (Fig. 2K). Body length: 1.25 mm.

Remarks. New to the fauna of Hungary. *M. carpaticus* was originally described by Rafalski (1948) from Poland but later, it was reported from the neighbouring countries Slovakia (Christophoryová *et al.* 2011c) and Ukraine (Schawaller 1989) as well. All specimens were collected from moss.

NEOBISIIDAE Chamberlin, 1930

Neobisium (Neobisium) carcinoides (Hermann, 1804)

Localities. No. 3, No. 4, No. 5, No. 7, No. 11, No. 13, No. 15, No. 17, No. 19, No. 23, No. 25, No. 29, No. 30, No. 33, No. 37, No. 41, No. 45.

Remarks. *N. (N.) carcinoides* is one of the most common species in Hungary (Kárpáthegeyi 2007). Szent-Iványi (1941) has already reported it from the studied region. Specimens were collected in beech and oak forests.

***Neobisium (N.) crassifemoratum* (Beier, 1928)**

Localities. No. 2, No. 16, No. 18, No. 27, No. 30, No. 31.

Remarks. *N. (N.) crassifemoratum* is recorded for the first time in the Bükk Mts. It was collected mostly on the Bükk Plateau, the central higher region of the mountains. Beier (1963) reported this species from East-Hungary but without mentioning closer locality data. The present specimens were collected in beech forest.

***Neobisium (N.) erythroductylum* (L. Koch, 1873)**

Localities. No. 7, No. 8, No. 15, No. 16, No. 20, No. 26, No. 27, No. 31, No. 33, No. 38.

Remarks. This species is quite common in Hungary and has already been recorded from several regions of the country (Kárpáthe gyi 2007) including the Bükk Mts. as well (Loksa 1966). The specimens were collected in beech forests and mixed linden and ash forests.

***Neobisium (N.) sylvaticum* (C. L. Koch, 1835)**

Localities. No. 7, No. 8, No. 14, No. 32, No. 42, No. 43, No. 48.

Remarks. *N. (N.) sylvaticum* is a common species in Hungary (Kárpáthe gyi 2007) and Loksa (1966) has already reported it from the Bükk Mts. Specimens were collected in beech forests and mixed linden and ash forests.

***Roncus lubricus* L. Koch, 1873**

Localities. No. 1, No. 2, No. 4, No. 5, No. 6, No. 7, No. 9, No. 10, No. 11, No. 12, No. 15, No. 16, No. 17, No. 18, No. 19, No. 20, No. 21, No. 22, No. 23, No. 24, No. 26, No. 27, No. 29, No. 30, No. 32, No. 33, No. 35, No. 38, No. 42, No. 46, No. 48.

Remarks. The species is known all over the country (Kárpáthe gyi 2007) and Loksa (1966) has already found it in the Bükk Mts. In the present samples *R. lubricus* proved to be the most numerous species present in oak, beech and mixed linden - ash forests as well.

CHELIFERIDAE Risso, 1826

***Chelifer cancroides* (Linnaeus, 1758)**

Locality. No. 40.

Remarks. New species for the fauna of the Bükk Mts. The only specimen was collected synanthropically inside a house. The author observed *C. cancroides* also in beehives in Sajóecseg.

***Dactylochelifer latreillii* (Leach, 1817)**

Locality. No. 23.

Remarks. The species has already been recorded for Hungary (Kárpáthe gyi 2007). During the present survey a single juvenile specimen was recorded which represents a new record for the region studied.

CHERNETIDAE Menge, 1855

***Chernes similis* (Beier, 1932)**

(Figures 2D, 2E and 2G)

Locality. No. 48.

Short description. Carapace longer than broad and finely granulated, with two distinct transverse furrows, eyes absent. Abdominal tergites divided, with 6–8 setae on a hemitergite. Tergite XI without a pair of tactile setae. Sternite IX bearing mainly clavate setae (Fig. 2G). Pedipalps (Fig. 2D, E) granulated. Femur 2.5–2.7x, tibia 2.1–2.3x, hand 1.4–1.6x, fixed chelal finger 2.9–3.0x longer than broad. Fixed chelal finger with 33–38 teeth and medially with 4–6 accessory teeth, movable with 37–39 teeth and medially with 2–4 accessory teeth. Laterally both of the fingers bear 8–9 accessory teeth, venom apparatus developed in both of them. Body length: 1.7–2 mm.

Remarks. New species to the Hungarian fauna. *C. similis* has already been reported from several neighbouring countries e.g. Austria (Mahnert, 2004), Romania (Beier 1932), the Czech Republic and Slovakia (Christophoryová *et al.* 2011c), thus

its occurrence in Hungary was not unexpected. The present specimens were collected in mixed linden and ash forest, and in meadow.

***Allochernes powelli* (Kew, 1916)**

Locality. No. 11.

Remarks. New species for the fauna of Bükk Mts. Until now, *A. powelli* was known only from the Bátorliget Nature Reserve (Mahnert 1990), thus the Bükk Mts. are the second known locality of the species in Hungary. The only specimen was found in decaying wood in an oak forest.

***Pselaphochernes scorpioides* (Hermann, 1804)**

Localities. No. 5, No. 11.

Remarks. There are many data on the presence of this species in several regions of Hungary (Mahnert 1983, 1990, Murányi & Kontschán 2002, Kárpáthegyi 2007, Novák 2011) however, our present data represent new record to the fauna of Bükk Mts. The specimens were found in oak and beech forests.

DISCUSSION

During the research, 17 pseudoscorpion species was found in the area of the Bükk Mts. 12 of which were recorded for the first time in the studied region and four species [*Chthonius* (*C.*) *carinthiacus*, *C. (C.) diophthalmus*, *Mundochthonius carpaticus* and *Chernes similis*] proved to be new for the Hungarian fauna. There are several other species [*Chthonius* (*C.*) *pygmaeus* Beier, 1934, *Neobisium* (*N.*) *fuscimanum* (C. L. Koch, 1843), *Chernes hahnii* (C. L. Koch, 1839), *Chernes cimicoides* (Fabricius, 1793), *Dendrochernes cyrneus* (L. Koch, 1873), *Withius piger* (E. Simon, 1878), *Rhacochelifer peculiaris* (L. Koch, 1873)] which, according to their distribution in the neighbouring areas in Hungary (Kárpáthegyi 2007) might also be present in the Bükk Mountains.

In accordance with the zoogeographical division of Varga (1964), the Bükk Plateau is considered as part of the *Carpathicum* fauna region, while the remaining parts of the Bükk Mountains

belong to the *Matricum* region. The presence of some Carpathian elements, such as *M. carpaticus*, *C. (C.) diophthalmus* or *C. (C.) heterodactylus* shows well the Carpathian influence in the Bükk Mts which can be observed in other soil-dweller groups as well. Mountain species with Carpathian affinities are represented e.g. by the earthworm species *Fitzingeria platyura montana* (Černosvitov, 1932) and *Eisenia lucens* (Waga, 1857) (Csuzdi & Zicsi 2003), the woodlice *Hyloniscus transsylvanicus* (Verhoeff, 1901) and *Porcellium consperum* (C. L. Koch, 1841) (Kontschán *et. al.* 2006), and the oribatid mites *Conchogneta dalecarlica* (Forsslund, 1947) and *Gammazetes alpestris* (Willmann, 1929) (Mahunka & Mahunka-Papp 2004).

After the border changes in the first part of the 20th century many historical data appeared ambiguous. This situation resulted in incorrect faunistic records in the world checklists, catalogues and keys (Beier 1932, 1963, Harvey 2011). Therefore the late 19th and early 20th century records needed to be carefully reevaluated. This work resulted in exclusion of some pseudoscorpion species from the list of Hungarian fauna. The localities of *Neobisium* (*Blothrus*) *minutum* (Tömösváry 1882) and *Roncus euchirus* (Simon 1879) are actually situated in Mehádia, Romania (Tömösváry 1882a). The only known locality of *Rhacochelifer quadrimaculatus* (Tömösváry, 1882) is Humenné (Homonna) now in Slovakia (Tömösváry 1882b). The records of *Microbisium manicatum* (L. Koch, 1873) and *Neobisium* (*N.*) *seminudum* (Daday & Tömösváry, 1880) also fall within the borders of the present Romania (Daday 1918, Tömösváry 1882a). Consequently, the number of pseudoscorpion species recorded for Hungary by Harvey (2011) has dropped to 45.

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