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New data on the pseudoscorpion fauna of Hungary (Arachnida: Pseudoscorpiones)

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Abstract. The species of pseudoscorpions in two protected areas in Hungary were studied, and two additional species new for the country from other parts of Hungary are also reported. From the Aggtelek Karst, Northeast Hungary, 18 species are reported, 15 of them new for this area. Sixteen species were recorded for the Zemplén Mts, ten of them are new for this area, and one of them, *Neobisium cf. minimum* (Beier, 1928) is new for Hungary. *Ephippiochthonius fuscimanus* Simon, 1900 from the Pilis Mts and *Chthonius pusillus* Beier, 1947 from the Őrség National Park are also reported from Hungary for the first time. Consequently, the number of species of pseudoscorpions recorded for Hungary is now 54.

Key words. Distribution, New records, soil zoology, Pseudoscorpiones, *Neobisium minimum*, *Chthonius pusillus, Ephippiochthonius fuscimanus,* Hungary.

INTRODUCTION

Investigations on pseudoscorpions (Arachnida: Pseudoscorpiones) have a long tradition in Hungary. The first summarizing work on the pseudoscorpion fauna of Hungary was presented by Tömösváry (1882), followed by numerous remarkable publications (Daday 1889, Mahnert 1980, 1983, Kárpáthegyi 2006, 2007, Novák 2012, Novák & Kutasi 2014) on more species, which proved to be new for the Hungarian fauna. Consequently, until recently 51 species of pseudoscorpions were recorded for the country (Novák 2012, 2015, 2017, Novák & Harvey 2015, Harvey et al. 2018). However, from most of the Hungarian national parks we have none or only a few species and great areas still remain totally or partly undiscovered regarding this group of animals (Szalay 1968, Kárpáthegyi 2007).

The Aggtelek National Park (Fig. 1A), which includes the Aggtelek Karst and some neighbouring areas, and the Zemplén Mountains (Fig. 1B), which is also a protected area, are located in the north-east of Hungary. Both of them belong biogeographically to the Carpaticum faunal region. As they represent the southernmost projections of the Northern Carpathians, they are both geographically and biogeographically a transitional zone between the higher mountains of the Carpathians and the lowlands and hilly regions in the Carpathian Basin. As a result of this transitional position, they represent an overlapping area of several different biogeographical components and reflect a Carpathian influence (Varga 1964, 1999).

Ten species were previously reported from the Zemplén Mts in the north-east of Hungary: *Chthonius heterodactylus* Tömösváry, 1882; *Neobisium fuscimanum* (Koch, 1843); *N. sylvaticum* (Koch, 1835); *N. carcinoides* (Hermann, 1804); *N. erythrodactylum* (Koch, 1873); *Larca lata* (Hansen, 1884) [as *Geogarypus hungaricus* (Tömösváry, 1882), synonymized by Harvey et al.

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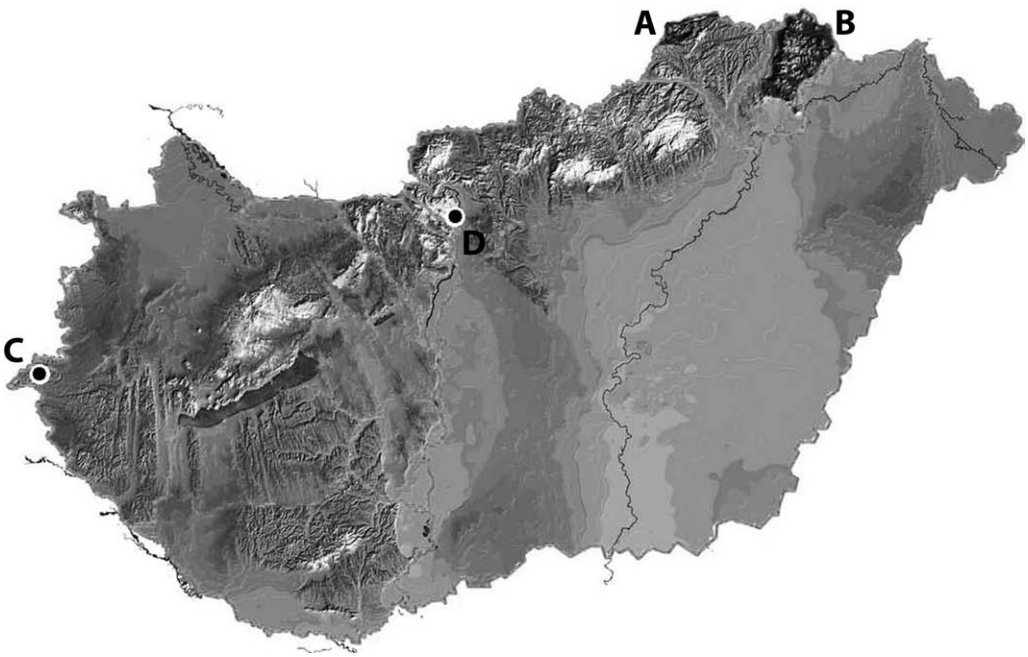

Fig. 1. Sampling localities and areas studied in Hungary. A – Aggtelek National Park. B – Zemplén Mountains. C – Szakonyfalu. D – Tahitótfalu.

2018]; *Allochernes peregrinus* Lohmander, 1939; *Chernes cimicoides* (Fabricius, 1793); *Withius piger* (Simon, 1878); and *Rhacochelifer peculiaris* (Koch, 1873), and five from Aggtelek National Park (ANP): *Chthonius pygmaeus* Beier, 1934; *Neobisium carcinoides*; *N. erythrodactylum*; *N. sylvaticum*; and *N. slovacum* Gulička, 1977 (Kárpáthegyi 2007). The aim of this study is to provide an up to date account on the species of pseudoscorpions in the Zemplén Mts and ANPand data on two further species new for Hungary from other parts of the country (Fig. 1C–D).

MATERIAL AND METHODS

During the present investigation unidentified pseudoscorpions in the Hungarian Natural History Museum (Budapest, Hungary) and in the Kazinczy Ferenc Museum (Sátoraljaújhely, Hungary) and those collected by the author were studied. The specimens were collected by individual sampling, using pitfall traps, Berlese-funnels, and by sifting. Acronyms for the collectors: AB – Attila Bankovits; AP – Attila Podlussány; GH – Gábor Hegyessy; GS – György Sziráki; IF – Imre Fürjes; IL – Imre Loksa; JN – János Novák; JV – József Vágvölgyi; LÁ – László Ádám; LB – Lajos Bíró; OM – Ottó Merkl; SH – Sándor Hegyessy; ZKa – Zoltán Kaszab; ZKo – Zoltán Korsós. The material was examined using a stereomicroscope and biological microscope. The specimens were cleared in lactic acid. Drawings and measurements were made with the aid of a Zeiss Axioskop 2 microscope. The specimens in 70% ethanol are deposited in the Hungarian National History Museum and in the Kazinczy Ferenc Museum. Each item has an inventory number ("HNHM Pseud-Nr." in the case of the Hungarian National History Museum and "KFM Pseud-Nr." in the case of Kazinczy Ferenc Museum).

RESULTS

List of species collected from the Aggtelek National Park and the Zemplén Mountains

Chthoniidae

Chthonius carinthiacus Beier, 1951

Material examined. **Aggtelek National Park**: Aggtelek, Veres Lake (E-side), oak forest, sifting, 21 September 1953 ZKa (2 ♀♀, HMHM Pseud-1459); Jósvafő, Farkaslyuk (E-side), rock face with beech trees, sifting, 23 September 1953 (1 ♂, 2 ♀♀, HNHM Pseud-1478); Jósvafő, Tengerszem, sieving, 20 June 1990, OM (1 ♂, 1 ♀, HMHM Pseud-1476). **Zemplén Mts**: Mikóháza, Fekete Hill, beech forest, sifting, 22 October 2012, JN (1 ♀, HNHM Pseud-1329).

Remarks. This species is new for the fauna of both of the regions studied. In addition to the Bükk Mts (Novák 2012) *C. carinthiacus* in Hungary only occurs in the Aggtelek National Park and Zemplén Mts.

Chthonius heterodactylus Tömösváry, 1882

Material examined. **Aggtelek National Park**: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (1 ♀, HNHM Pseud-1463); Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 22 September 1953, JV (1 ♂, HNHM Pseud-1449); Jósvafő, Farkaslyuk (E-side), rock face with beech trees, sieving, 23 September 1953 (1 ♀, HNHM Pseud-1477); Szin, Háló Halley, oak-hornbeam forest, sifting, 28 September 1988, ZKo&OM (1 ♂, HNHM Pseud-1470). **Zemplén Mts**: Mikóháza, Fekete Hill, beech forest, sifting, 22 October 2012, JN (1 ♀, HNHM Pseud-1327; 1♀ HNHM Pseud-1328; 1♀ HNHM Pseud-1330; 1♀ HNHM Pseud-1331; 1 ♀, HNHM Pseud-1332; 1 ♀, HNHM Pseud-1350).

Remarks. This species is only recorded in the lower mountains in the north-western region of Hungary (Kárpáthegyi 2006, Novák 2012, 2013). Previously published data on *Chthonius diophthalmus* from the Bükk Mts, the ANP and the Heves-Borsodi Hills also belong to *C. heterodactylus*, since *C. diophthalmus* was recently proposed as a synonym of *C. heterodactylus* (Gardini 2014).

Chthonius hungaricus Mahnert, 1981

Material examined. **Aggtelek National Park**: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (1 ♂, 1 ♀, HNHM Pseud-1471); Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 23 September 1953, ZKa (3 ♀♀, HNHM Pseud-1436); Szögliget, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 16 November 1989, OM (1 ♂, HMHM Pseud-1468). **Zemplén Mts**: Mád, Becsek, 5 July 2006, Leg. GH (1 ad, KFM Pseud-0001).

Remarks. *Chthonius hungaricus* is reported from Hungary, Romania and Slovakia (Gardini 2014). Up to now this species in Hungary was recorded only in the Hortobágy National Park (Mahnert 1980), which is part of the Great Hungarian Plate, and the Bükk Mts (Novák 2012). This species is new for the ANP and Zemplén Mts.

Ephippiochthonius tetrachelatus (Preyssler, 1790)

Material examined. **Zemplén Mts**: Monok, Csörgő Hill, 9 June 2006, GH (1 ♀, KFM Pseud-0032; 1 ♂, KFM Pseud-0033), 5 July 2006 (1 ♀, KFM Pseud-0034).

Remarks. This species is widespread in Hungary (Kárpáthegyi 2007).

Mundochthonius carpaticus Rafalski, 1948

Material examined. **Aggtelek National Park**: Szögliget, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 16 November 1989, OM (1 ♂, 2 ♀♀, HMHM Pseud-1469).

Remarks. *Mundochthonius carpaticus* is reported from the ANP as a new species for the fauna of the region. This species also occurs in the neighbouring Bükk Mts (Novák 2012) and in the Heves-Borsod Hills (Novák 2013) in Hungary. *Mundochthonius carpaticus* also occurs in Poland (Rafalski 1948), Slovakia (Christophoryová et al. 2011) and Ukraine (Schawaller 1989).

Neobisiidae

Neobisium brevidigitatum (Beier, 1928)

Material examined. Aggtelek National Park: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (1 ♀, HNHM Pseud-1461); Aggtelek, Veres Lake (E-side), oak forest, sifting, 21 September 1953 ZKa (1 ♂, HMHM Pseud-1457); Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 23 September 1953, ZKa (4 ♂♂, 5 ♀♀, HNHM Pseud-1444); Jósvafő, Tengerszem, sieving, 20 June 1990, OM (1 ♂, HMHM Pseud-1475); Jósvafő, Valley of Kecső Brook, 28 April 1989, IF (1 ♀, HNHM Pseud-1440); Szinpetri, Szőlő Hill, 24 May 1999, ZKo (1 ♀, HNHM Pseud-1439). **Zemplén Mts**: Mikóháza, Fekete Hill, beech forest, sifting, 22 October 2012, JN (1 ♀, HNHM Pseud-1333; 1 ♀, HNHM Pseud-1334; 1 ♀, HNHM Pseud-1335; 1 ♂, HNHM Pseud-1336; 1 ♂, HNHM Pseud-1337; 1 ♂, HNHM Pseud-1338; 1 ♀, HNHM Pseud-1339); Sátoraljaújhely, Berecki-híd, 25 March 2006, GH (1 ♀, KFM Pseud-0008); Sátoraljaújhely, 27 December 1891, LB (1 ♂, HNHM Pseud-1345); Sátoraljaújhely, Magas Hill, 2 January 1994, GH (1 ♀, KFM Pseud-0049).

Remarks. *Neobisium brevidigitatum* was recently reported for the first time from Hungary, in the Bakony Mts (Novák 2015). This species also occurs in Georgia, Poland, Slovakia, and Romania (Harvey 2013). It is new for the fauna of the ANP and the Zemplén Mts.

Neobisium carcinoides (Hermann, 1804)

Material examined. **Aggtelek National Park**: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (1 ♀, HNHM Pseud-1462; 1 ♂, 1 ♀, HNHM Pseud-1479); Aggtelek, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 21 March 1989, OM (1 ♂, HMHM Pseud-1453); Aggtelek, Veres Lake (E-side), oak forest, sifting, 21 September 1953 ZKa (1 ♂, 1 ♀, HMHM Pseud-1458); Jósvafő, Valley of Tohonya Brook, 7 March 1989, AB (1 ♂, HMHM Pseud-1484); Martonyi, Nagy-Rednek Valley, 7 June 2007, GH (1 ♀, KFM Pseud-0011); Szalonna, Köszvényeskút, 7 June 2007, GH (1 ♂, 2 ♀♀, KFM Pseud-0004); Szin, Háló Valley, sifting, 20 June 1990, OM (1 ♂, HMHM Pseud-1454); Szinpetri, Szőlő Hill, 24 May 1999, ZKo (1 ♂, HNHM Pseud-1432); Szögliget, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 16 November 1989, OM (2 ♂♂, 1 ♀, HMHM Pseud-1464); Szögliget, Ménes Valley, oak forest, sifting, 16 October 2012, JN (3 ♂♂, 4 ♀♀, HMHM Pseud-1488); Szögliget, Szádvár, in moss, Berlese-funnel, 16 October 2012, JN (1 ♂, 2 ♀♀, HMHM Pseud-1485). **Zemplén Mts**: Monok, Csörgő Hill, 9 June 2006, GH (1 ♀, KFM Pseud-0030; 1 ♀, KFM Pseud-0031); Sátoraljaújhely, Sátor Hill, beech forest, sifting, 19 October 2012, JN (1 ♀, HNHM Pseud-1325).

Remarks. Common species in Hungary, it was reported previously from both the areas studied (Kárpáthegyi 2007).

Neobisium crassifemoratum (Beier, 1928)

Material examined: **Aggtelek National Park**: Alsótelekes, Telekes Valley, 26 April 1989, IF (1 ♀, HNHM Pseud-1455). **Zemplén Mts**: Monok, Csörgő Hill, 9 June 2006, GH (1 ♀, KFM Pseud-0029); Tarcal, Ördög-bánya, 30 September 1999, GH (1 ♀, KFM Pseud-0048).

Remarks. This species is new for the fauna of the ANP and Zemplén Mts.

Neobisium erythrodactylum (Koch, 1873)

Material examined. **Aggtelek National Park**: Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 22 September 1953, JV (2 ♀♀, HNHM Pseud-1449); Martonyi, Nagy-Rednek Valley, 7 June 2007, GH (1 ♂, KFM Pseud-0010); Szin, Szelcepuszta, 1 November 1989, ZKo (3 ♂♂, 1 ♀, HNHM Pseud-1455); Szin, Szelcepuszta, sifting, 25 April 1990, OM (3 ♂♂, 2 ♀♀, HNHM Pseud-1472); Szin, Szelcepuszta, oak-hornbeam forest, 1 November 1989, GS (1 ♀, HNHM

Pseud-1483); Szögliget, Ménes Valley, oak forest, sifting, 16 October 2012, JN (1 ♂, 1 ♀, HMHM Pseud-1487); Tornaszentandrás, Mile Valley, 12 July 2007, GH (1 ♂, 2 ♀♀, KFM Pseud-0009). **Zemplén Mts**: Abaújszántó, Kassai-szőlő, 30 June 1999, GH (1 ♀, KFM Pseud-0042; 1 ♀, KFM Pseud-0046; 1 ♀, KFM Pseud-0061); 15 June 1999, GH (1 ♀, KFM Pseud-0057; 1 ♀, KFM Pseud-0058); Boldogkőváralja, Csorgó spring, sifting, 9 July 1998, ZK (1 ♀, HNHM Pseud-1346; 1 ♂, HNHM Pseud-1347; 1 ♂, HNHM Pseud-1348); Monok, Csörgő Hill, 9 June 2006, GH (1 ♀, KFM Pseud-0027; 1 ♀, KFM Pseud-0028), 5 July 2006 (1 ad., KFM Pseud-0035); Pusztafalu, behing the gardens, 7 June 2005, GH (1 ♂, HNHM Pseud-1340); Sátoraljaújhely, Boda-dűlő, 30 June 1999, GH (1 ♂, KFM Pseud-0041).

Remarks. *Neobisum erythrodactylum* is a widespread species in Hungary, and was previously reported from the ANP and the Zemplén Mts (Kárpáthegyi 2007).

Neobisium fuscimanum (Koch, 1843)

Material examined. **Aggtelek National Park**: Aggtelek, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 21 March 1989, OM (1 ♀, HMHM Pseud-1452); Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 23 September 1953, ZKa (1 ♂, HNHM Pseud-1444); Perkupa, Rahozna, 26 June 2006, GH (1 ♀, KFM Pseud-0001). **Zemplén Mts**: Telkibánya, Cser Hill, 9 June 2009, GH&SH (1 ♂, KFM Pseud-0044); Telkibánya, Kis-Farkas Hill, 30 July 2009, GH (1 ♂, KFM Pseud-0047; 1 ♀, KFM Pseud-0050); Telkibánya, well of King Matthias, 19 August 2000, GH (1 ad., KFM Pseud-0064).

Remarks. This species was reported from Hungary for the first time by Kárpáthegyi & Kontshán (2005) from the Zemplén Mts. *Neobisium fuscimanum* was also found in the Zemplén Mts, as well as in ANP.

Neobisium cf. *minimum* (Beier, 1928) (Fig. 2A–B)

Material examined. **Zemplén Mts**: Rudabányácska, Tarda Valley, 6 March 1994, GH (1 ♂, KFM Pseud-0053); Sátoraljaújhely, Sátor-hegyek, bükkös, 19 October 2012, JN (1 ♂, HNHM Pseud-1326).

Remarks. *Neobisum minimum* was reported from the neighbouring Austria, Romania and Slovenia, and from France and Italy as well (Harvey 2013). The specimens were identified with the help

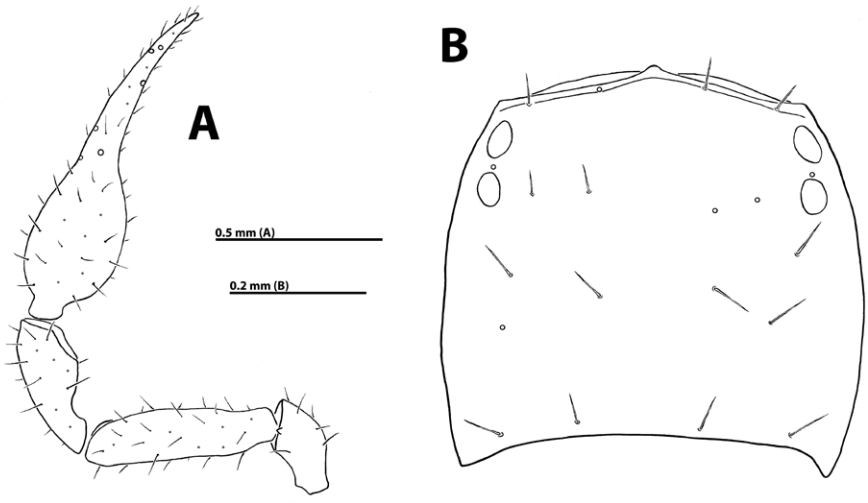

Fig. 2. *Neobisium minimum*, male. A – left pedipalp, dorsal view. B – carapace.

of earlier literature (Beier 1928, Mahnert 1988, 2004). The most important differences between *N. minimum* and *N. carcinoides* are in the length of palpal femora (maximum 0.57 mm in *N. minimum* and at least 0.64 mm in *N. carcinoides*) and in the chelal dentation (50 teeth on fixed and 40 on movable finger in *N. minimum* and 70 on fixed and 55 on movable in *N. carcinoides*) (Beier 1928, Mahnert 1988, 2004). Typically in the specimens of *N.* cf. *minimum* collected, there are about 1–3 smaller teeth between two large teeth on the fixed chelal finger. However, the total number of chelal teeth is intermediate between the values for the chelal dentition of *N. minimum* and *N. carcinoides*: 58–60 teeth on fixed and 40–50 teeth on movable chelal finger. As in case of *N. carcinoides* there are populations with different diploid numbers, the taxonomical relationship between these two species will only be resolved by DNA sequencing or karyotype analysis (Mahnert 1988, Šťáhlavský et al. 2003).

Measurements (in mm) and ratios (in brackets). Body length: 1.5–2.2; carapace: 0.50–0.51/0.46-0.51 (0.97–1.11×). Chelicera: 0.29–0.35/0.16–0.18; movable finger: 0.18–0.22. Pedipalpal femur: 0.54–0.57/0.14–0.16 (3.56–3.86×); patella: 0.37–0.44/0.16–0.19 (2.31–2.32×). Chela length: 0.98–1.04; finger length: 0.55–0.60; hand: 0.43–0.44/0.24–0.28 (1.40–1.57×).

Neobisium sylvaticum (Koch, 1835)

Material examined. **Aggtelek National Park**: Szalonna, Köszvényeskút, 7 June 2007, GH (1 ♀, KFM Pseud-0003); Szögliget, Ménes Valley, 19 October 1990, OM (1 ♀, HMHM Pseud-1434); Szögliget, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 16 November 1989, OM (1 ♂, HMHM Pseud-1465); Szögliget, Ménes Valley, oak forest, sifting, 16 October 2012, JN (1 ♂, HMHM Pseud-1486). **Zemplén Mts**: Sátoraljaújhely, 27 December 1891, LB (1 ♀, HNHM Pseud-1342; 1 ad. HNHM Pseud-1343); Sátoraljaújhely, Boda-dűlő, 7 April 2000, GH (1 ♀, KFM Pseud-0056); Sátoraljaújhely, Esztáva, 23 March 2005, GH (1 ♀, HNHM Pseud-1341), 5 March 1994, GH (1 ♀, KFM Pseud-0052); Sátoraljaújhely, Májuskút-fenyves, 15 October 1999, GH (1 ♀, KFM Pseud-0060).

Remarks. This species is widespread in Hungary. *Neobisium sylvaticum* was previously reported from both studied areas (Kárpáthegyi 2007).

Cheiridiidae

Cheiridium museorum (Leach, 1817)

Material examined. **Aggtelek National Park**: Szin, Szelcepuszta, horse stable, sifting, 12 May 1987, OM (1 ♀, HMHM Pseud-1473).

Remarks. *Cheiridium museorum* is reported from several parts of the country (Novák 2013). It was found in the ANP and is a new species for this region.

Cheliferidae

Dactylochelifer latreillii (Leach, 1817)

Material examined. **Aggtelek National Park**: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (1 ♀, HNHM Pseud-1480); Jósvafő, Farkaslyuk (E-side), beech-hornbeam forest, sifting, 23 September 1953, ZKa (1 ♀, HNHM Pseud-1435). **Zemplén Mts**: Füzérkajata, Pap-rét-gazda, 11 May 2009, GH&SH (1 ♀, KFM Pseud-0051); Sárospatak, near to Eastern Backwater of River Bodrog, 7 October 2006, GH&AP (1 ♀, KFM Pseud-0038; 4 ♂♂, 5 ♀♀, 3 juv. KFM Pseud-0040; 1 ♀, HNHM Pseud-1344); Sátoraljaújhely, Rudabányácska, Lőtér, 22 June 2009, GH (1 ♂, KFM Pseud-0045); Sátoraljaújhely, Tarda-völgy, 30 March 2001, LA&GH (1 ♂, KFM Pseud-0054).

Remarks. This species is new for the fauna of both the areas studied.

Chernetidae

Allochernes peregrinus (Lohmander, 1939)

Material examined. **Zemplén Mts**: Monok, Ingvár, 5 July 2006, GH (1 ♀, KFM Pseud-0020; 1 ♂, KFM Pseud-0065).

Remarks. This species was found in the Zemplén Mts, from where it was reported earlier (Szalay 1968).

Allochernes powelli (Kew, 1916)

Material examined. **Aggtelek National Park**: Szin, Szelcepuszta, sifting of debris from horse stable, 12 May 1987 OM (2 ♂♂, 18 ♀♀, HMHM Pseud-1474); 18 September 1988, OM (1 ♂, HMHM Pseud-1443).

Remarks. *Allochernes powelli* is reported from the ANP, it is a new species for this region. Information on this species was published earlier from the country based on material from the Bátorliget Nature Reserve (Mahnert 1990) and the Bükk Mts (Novák 2012).

Chernes cimicoides (Fabricius, 1793)

Material examined. **Aggtelek National Park**: Aggtelek, Mihály-láza, 13 May 1987, ZK (1 ♂, HMHM Pseud-1482).

Remarks. It was found in the ANP and is a new species for this region.

Chernes hahnii (Koch, 1839)

Material examined. **Aggtelek National Park**: Aggtelek, Bíbic Dolina (E-side), sifting, 22 September 1953, JV (3 ♂♂, 4 ♀♀, HNHM Pseud-1481); Szin, Szelcepuszta, sifting of debris from horse stable, 18 September 1988, OM (1 ♂, HMHM Pseud-1442). **Zemplén Mts**: Monok, Ingvár, 9 June 2006, GH (1 ♂, KFM Pseud-0005); Sátoraljaújhely, Bibérc, 5 October 2006 GH&AP (1 ♂, KFM Pseud-0013).

Remarks. *Chernes hahnii* was found in the ANP and Zemplén Mts as well. Up till now, it was recorded in Hungary only from the Hortobágy National Park (Mahnert 1983) and Bátorliget Nature reserve (Mahnert 1990).

Dinocheirus panzeri (Koch, 1837)

Material examined. **Aggtelek National Park**: Szin, Szelcepuszta, sifting of debris from horse stable, 18 September 1988, OM (10 ad., HMHM Pseud-1441). **Zemplén Mts**: Füzérradvány, Arboretum, from hole in platan tree, 8 June 2012, GH (1 ♀, KFM Pseud-0062); Sátoraljaújhely, Tarda Valley, 30 March 2001, LÁ&GH (1 ♂, KFM Pseud-0063).

Remarks. This species is new for the ANP and Zemplén Mts as well. There are some eralier information on the occurrence of this species in Hungary (Kárpáthegyi 2007, Novák 2013).

Lamprochernes chyzeri (Tömösváry, 1882)

Material examined. **Aggtelek National Park**: Aggtelek, Haragistya, 22 July 1988, ZKo (3 ♂♂, 1 ♀, HNHM Pseud-1460). **Zemplén Mts**: Sárospatak, near to Southern Backwater of River Bodrog, 15 June 2007, GH (1 ♀, KFM Pseud-0016; 1 ♂, KFM Pseud-0017; 1 ♀, KFM Pseud-0018).

Remarks. *Lamprochernes chyzeri* is a new species for the pseudoscorpion fauna of the ANP and Zemplén Mts. This species occurs in several other regions of the country (Kárpáthegyi 2007, Novák 2013).

Pselaphochernes scorpioides (Hermann, 1804)

Material examined. **Aggtelek National Park**: Szögliget, Ménes Valley, alder forest (Aegopodio-Alnetum), sifting, 16 November 1989, OM (1 ♀, HMHM Pseud-1466).

Remarks. This species was found in the ANP, and is a new record for this region. There are numerous records of *P. scorpioides* occurring in Hungary (Kárpáthegyi 2007, Novák 2013).

Species from other parts of Hungary

Chthonius pusillus Beier, 1947 (Fig. 3A–C)

Material examined. Szakonyfalu, November 1951, IL (1 ♀, HNHM Pseud-1636).

Remarks. *Chthonius pusillus* was previously only known from Austria and Slovenia (Gardini 2014). The new specimen was found near to the Austrian border, in the Őrség National Park (Fig. 1C). The measurements and characters of the female specimen found correspond well with previously published data (Beier 1947, Gardini 2014): carapace without epistome and with one praeocular microseta on each side; fixed chelal finger with a weakly enlarged and sinuous distal

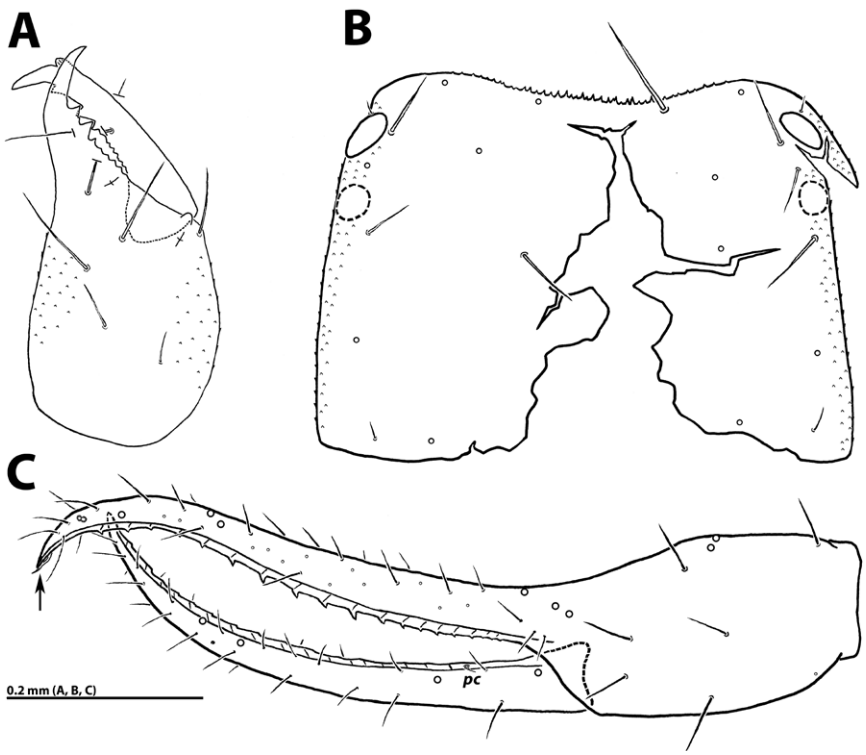

Fig. 3. *Chthonius pusillus*, female. A – right chelicera, dorsal view. B – carapace. C – left chela, lateral view.

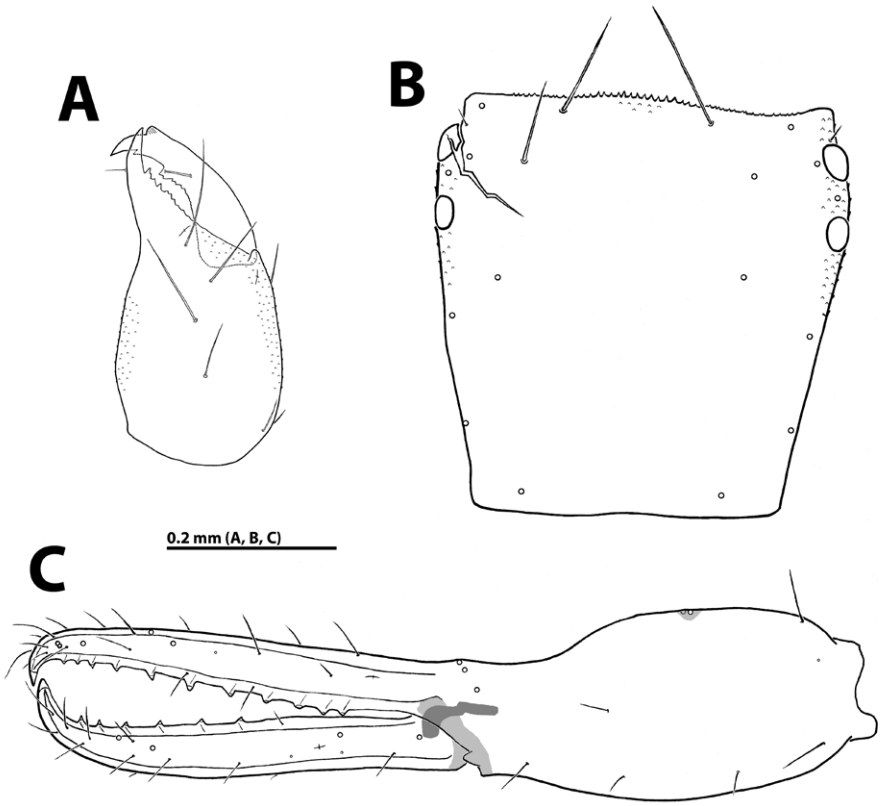

Fig. 4. *Ephippiochthonius fuscimanus*, male. A – right chelicera, dorsal view. B – carapace. C – left chela, lateral view.

paraxial seta; coupled sensilla *pc* on the movable chelal finger situated between trichobothria *sb* and *b*; fixed chelal finger with 18 and movable finger with 17 teeth.

Measurements (in mm) and ratios (in brackets). Body length 1.31; carapace: 0.44/0.43 (anterior width). Chelicera: 0.39/0.18; movable finger: 0.22. Pedipalpal femur: 0.55/0.10 (5.51×); patella: 0.24/0.12 (2.05×). Chela length: 0.84; movable finger length: 0.51; hand with pedicel: 0.29/0.17.

***Ephippiochthonius fuscimanus* Simon, 1900** (Fig. 4A–C)

Material examined. Tahitótfalu, Ábrahám-bükk, beech forest, sifting, 18 January 1990, OM (3 ♂♂, 1 ♀, HNHM Pseud-1504).

Remarks. This species occurs in Austria, the Czech Republic, Georgia, Germany, Italy, and Turkey (Harvey 2013). In Hungary *E. fuscimanus* was found near to the Pilis Mts (Fig. 1D). The main taxonomical characters and measurements correspond with the descriptions of Beier (1963) and Gardini (2013): isolated subapical tooth on movable cheliceral finger; chelal hand with a dorsal depression distal to trichobotria *ib-isb*, but without a hump at this level; fixed chelal finger with

10–12 and the movable finger of the pedipalp with 5–7 triangular teeth and with a marginal lamina on its proximal half.

Measurements (in mm) and ratios (in brackets). Male. Body length: 1.9; carapace: 0.50–0.52/0.56–0.59 (anterior breadth), 0.34–0.47 (posterior width). Chelicera: 0.40–0.46/0.20–0.23; movable finger: 0.21–0.25. Pedipalpal femur: 0.66–0.79/0.10–0.13 (5.38–6.60×); patella: 0.27/0.15 (1.82×). Chela length: 0.99–1.10; movable finger: 0.56–0.60; hand with pedicel: 0.42–0.51/0.19–0.21.

Female. Body length: 2.00; carapace: 0.50/0.50 (anterior width), 0.40 (posterior width). Chelicera: 0.48/0.26; movable finger: 0.24. Pedipalpal femur: due to damage it could not be measured, patella: 0.33/0.16 (2.06×). Chela length: 1.14; movable finger: 0.62; hand with pedicel: 0.52/0.25.

DISCUSSION

During the present study 16 species are reported from the Zemplén Mts, 10 of which are new for the area, and one of them, *Neobisium* cf. *minimum* (Beier, 1928), is new for the Hungarian fauna. For the ANP 18 species of pseudoscorpions are recorded, of which 15 are new for the area. In accordance with the zoogeographical division proposed by Varga (1964), the Zemplén Mts and the Aggtelek Karst belong to the *Carpathicum* faunal region. The presence of some Carpathian elements, like *Mundochthonius carpaticus,* and *Chthonius heterodactylus* clearly indicate the Carpathian influence on these areas.

From other parts of Hungary two species are reported for the first time from the country, *C. pusillus* Beier, 1948 and *Ephippiochthonius fuscimanus* Simon, 1900. Consequently, the number of pseudoscorpion species recorded for Hungary has risen to 54.

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