

PSEUDOSCORPIONS (ARACHNIDA: PSEUDOSCORPIONES) OF MALÁ FATRA NATIONAL PARK, STRÁŽOVSKÉ VRCHY PROTECTED LANDSCAPE AREA AND ŽILINSKÁ KOTLINA BASIN (SLOVAKIA)

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Abstract:

Faunistic data on pseudoscorpions from Malá Fatra National Park, Strážovské vrchy Protected Landscape Area and Žilinská kotlina Basin were summarized for the first time. A total of 11 species from four families were found during 2004–2015. Pseudoscorpions from Chthoniidae and Neobisiidae families were sifted from organic material or collected using pitfall traps. Only one species of the family Cheliferidae, collected by beating branches, was found. Chernetid pseudoscorpions were mostly sifted from compost heaps, garden waste and rotten hay. The most abundant was epigeal species *Neobisium erythroductylum* (L. Koch, 1873), majority of specimens were collected using pitfall traps in wetland area in Šujské rašelinisko Nature Reserve. In the study area, species *Lamprochernes nodosus* (Schrank, 1803) occurred in high abundance as well, all specimens were found in composts and rotten hay.

Key words: Central Europe, faunistics, peatbog, Pseudoscorpiones, Slovakia, wetland.

INTRODUCTION

Pseudoscorpions are small arachnids inhabiting almost all terrestrial habitats (BEIER 1963). According to CHRISTOPHORYOVÁ et al. (2011a, c; 2012a, b) the Slovak pseudoscorpion fauna was represented by 55 species belonging to eight families. GARDINI (2014) in his latest revision of *Chthonius heterodactylus* group synonymized species

C. heterodactylus Tömösváry, 1882 with *C. diophthalmus* Daday, 1888. Taken this revision into account, the Slovak pseudoscorpion fauna currently includes 54 species from eight families. More intensive research of this arachnid order began in Slovakia in the latter half of the 20th century. For that reason, the knowledge of pseudoscorpion diversity and distribution is still fragmentary. Only



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a few areas have been systematically investigated: Gaderská dolina Valley of Veľká Fatra National Park (KRUMPÁL 1980), Poloniny National Park (KRUMPÁL & KRUMPÁLOVÁ 2003), Cerová vrchovina Protected Landscape Area (CHRISTOPHORYOVÁ 2009) and Burda Nature Reserve (CHRISTOPHORYOVÁ et al. 2014). Malé Karpaty Protected Landscape Area and Trnavská pahorkatina Hills represent the best-documented regions in Slovakia, through the systematic long-term research (CHRISTOPHORYOVÁ & KRUMPÁL 2005, 2007; CHRISTOPHORYOVÁ & HOLECOVÁ 2012; CHRISTOPHORYOVÁ 2013). The attention was also paid to the pseudoscorpion fauna of smaller areas: a several years accumulated material from Šúr Nature Reserve was published by CHRISTOPHORYOVÁ & KRUMPÁL (2010) and pseudoscorpion material from Malaise traps and pitfall traps from Ostrov Kopáč Nature Reserve was published by KRUMPÁL & CHRISTOPHORYOVÁ (2007). During the years 1974–1976 KRUMPÁL (1980) carried out the research in Gaderská dolina, valley of Veľká Fatra NP, which is closest to the current studied area (Veľká Fatra NP borders Malá Fatra NP). Altogether 13 species from three families were found in Gaderská dolina using pitfall traps, sifting and individual collecting. Four species of them, concretely *Neobisium brevidigitatum* (Beier, 1928), *N. carpaticum* Beier, 1935, *N. macrodactylum* (Daday, 1888) and *Chernes similis* (Beier, 1932) were recorded for the first time in Slovakia. The pseudoscorpions

Neobisium sp. and *Pselaphochernes* sp. listed in the paper were never identified on species level. The rare species *Neobisium beieri* Verner, 1958 described from Veľká Fatra NP was confirmed by KRUMPÁL (1980). STUDNIČKOVÁ (1968) mentioned record of *N. beieri* in her thesis from Malá Fatra NP as well, but this record has never been published. The findings of *C. heterodactylus* represent the only published data about pseudoscorpions from Malá Fatra NP (KRUMPÁL & KIEFER 1981, DUCHÁČ 1989). There are no published records about pseudoscorpions from Strážovské vrchy Protected Landscape Area and Žilinská kotlina Basin.

Each faunistic study of a new area could improve the knowledge about pseudoscorpion diversity in Slovakia. The aim of the current paper was to give new report of pseudoscorpion species from Malá Fatra NP, Strážovské vrchy PLA and Žilinská kotlina Basin.

MATERIAL AND METHODS

The study area is located in northern Slovakia (Fig. 1). The altitude varies from 371 to 840 m above sea level. Malá Fatra NP forests are represented mainly by mixed beech forests at higher elevations by fir and spruce. Limestone beech forests dominate in the whole area of Strážovské vrchy PLA. The material presented in this paper was collected during 2004 – 2015. The majority of specimens was

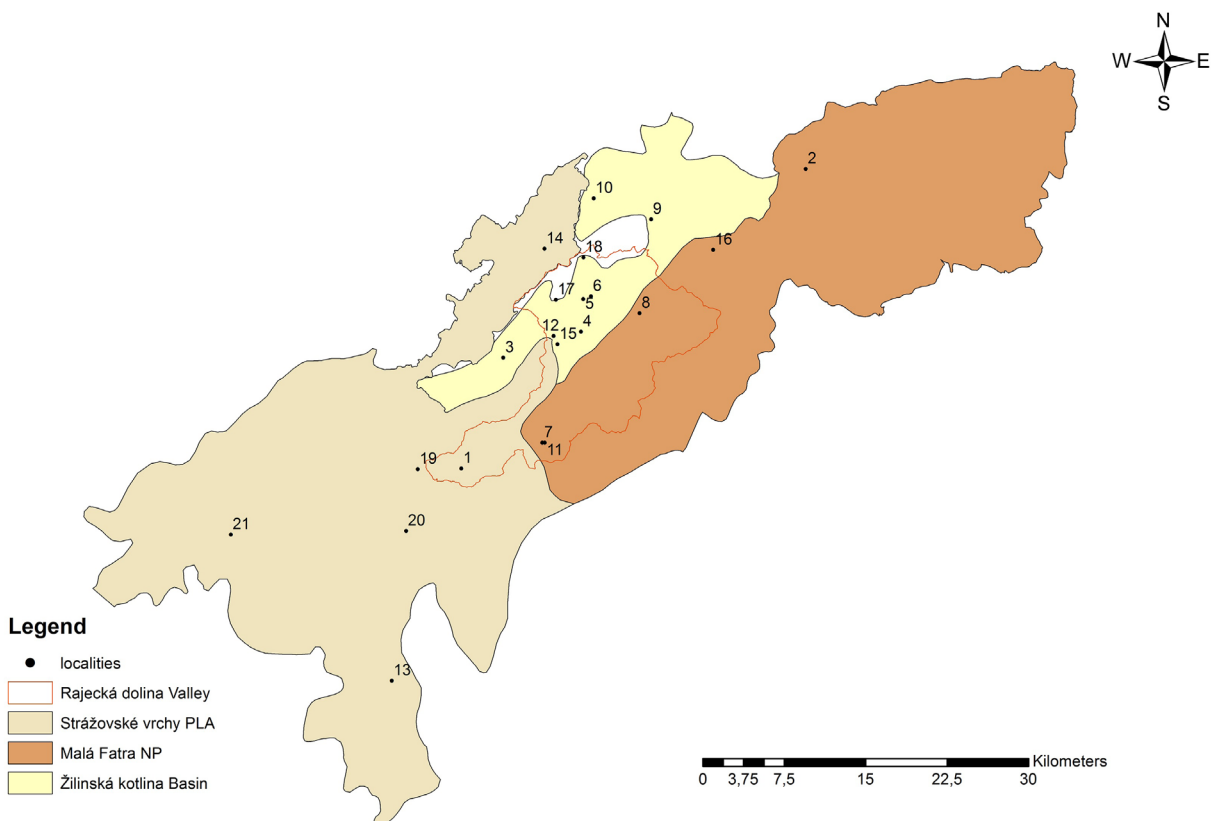


Figure 1. Map of localities situated in Malá Fatra National Park, Strážovské vrchy Protected Landscape Area and Žilinská kotlina Basin (Slovakia); with locality codes listed in list of localities (see Material and Methods).

collected randomly by different collectors. Systematic research was carried out in Šujské rašelinisko Nature Reserve, where formaldehyde pitfall traps with two weeks sampling intervals were exposed during 2013 – 2015; exposure time: 14. 4. – 1. 11. 2013, 24. 3. – 5. 10. 2014, in 2015 the pitfall traps were exposed randomly. Šujské rašelinisko NR located in Malá Fatra NP is an important wetland area of Slovakia classified to the 4th level of nature protection.

A part of the pseudoscorpion material was studied as permanent slide mounts using Leica DM1000 microscope. A part of the material was deposited in ethanol and studied using Zeiss Stemi 2000-C stereomicroscope. All specimens were identified using identification keys CHRISTOPHORYOVÁ et al. (2011d) and GARDINI (2013, 2014) (det. Jana Frisová Christophoryová, K. Krajčovičová). Nomenclature for all taxa follows HARVEY (2013) and GARDINI (2014). The whole material is deposited in the zoological collection of the Comenius University, Bratislava.

List of studied localities including sampling methods (alphabetized list): (Fig. 1)

[1A] Čičmany: 48°57'07" N, 18°30'36" W, 665 m a.s.l., marsh, sifting of organic material, leg. R. Blažek; **[1B] Čičmany:** 48°57'09" N, 18°30'51" W, 658 m a.s.l., marsh, sifting under the willows, leg. R. Blažek; **[1C] Čičmany:** 48°57'54" N, 18°32'31" W, 731 m a.s.l., marsh, sifting under the willows, leg. R. Blažek; **[2A] Dolná Tižina:** 49°13'19" N, 18°54'45" W, 420 m a.s.l., stream bank with willow vegetation, sifting of organic material, leg. R. Blažek; **[2B] Dolná Tižina:** 49°12'38" N, 18°55'17" W, 474 m a.s.l., stream bank, sifting of moss, leg. R. Blažek; **[3] Domaniža:** 49°02'47" N, 18°33'04" W, 371 m a.s.l., stream bank, sifting of compost containing mainly garden waste, leg. R. Blažek; **[4] Ďurčiná:** 49°04'23" N, 18°38'46" W, 481 m a.s.l., stream bank with willow vegetation, sifting of organic material, leg. R. Blažek; **[5] Kamenná Poruba:** 49°06'00" N, 18°38'44" W, 438 m a.s.l., river bank with willow vegetation, sifting of organic material, leg. R. Blažek; **[6] Kľače:** 49°06'10" N, 18°39'18" W, 458 m a.s.l., marsh, sifting of organic material, leg. R. Blažek; **[7] Klak:** 48°58'44" N, 18°36'32" W, 633 m a.s.l., hill, spruce forest, sifting of organic material, leg. R. Blažek; **[8A] Kunerad:** 49°05'32" N, 18°43'04" W, 553 m a.s.l., stream bank in spruce forest, sifting of moss, leg. R. Blažek; **[8B] Kunerad:** 49°05'32" N, 18°42'44" W, 591 m a.s.l., spruce forest, sifting of moss, leg. R. Blažek; **[9] Lietavská Lúčka:** 49°11'02" N, 18°40'22" W, 397 m a.s.l., the forest edge, sifting of organic material, leg. R. Blažek; **[10A] Lietavská Závadka:** 49°11'02" N, 18°38'54" W, 461 m a.s.l., stream bank, sifting of organic material, leg. R. Blažek; **[10B] Lietavská Závadka:** 49°11'07" N, 18°38'07" W, 492 m a.s.l., meadow, sifting of rotten hay, leg. R. Blažek; **[11]**

Martinské hole: 48°58'44" N, 18°36'43" W, 656 m a.s.l., meadow, sifting under the hazel vegetation, leg. R. Blažek; **[12A] Rajec:** 49°04'58" N, 18°37'42" W, 494 m a.s.l., city gardens, sifting of garden waste, leg. R. Blažek; **[12B] Rajec:** 49°04'02" N, 18°36'18" W, 500 m a.s.l., stream bank, sifting under the alder vegetation, leg. R. Blažek; **[13] Rokoš Nature Reserve:** 48°46'20" N, 18°26'43" W, 747 m a.s.l., deciduous forest, sifting of leaf litter, leg. L. Černecká; **[14A] Súľov-Hradná:** 49°08'20" N, 18°35'30" W, 444 m a.s.l., stream bank, sifting of compost containing mainly garden waste, leg. R. Blažek; **[14B] Súľov-Hradná:** 49°08'12" N, 18°35'14" W, 444 m a.s.l., stream bank, sifting of compost containing mainly garden waste, leg. R. Blažek; **[15A] Šujské rašelinisko Nature Reserve:** 49°03'40" N, 18°37'05" W, 479 m a.s.l., peatbog, pitfall trap, leg. E. Igondová, O. Majzlan; **[15B] Šujské rašelinisko NR:** 49°03'37" N, 18°37'02" W, 480 m a.s.l., playground (mowed meadow), pitfall trap, leg. E. Igondová, O. Majzlan; **[15C] Šujské rašelinisko NR:** 49°03'40" N, 18°36'57" W, 493 m a.s.l., dry pine forest, pitfall trap, leg. E. Igondová, O. Majzlan; **[15D] Šujské rašelinisko NR:** 49°03'44" N, 18°37'05" W, 479 m a.s.l., reed, *Phragmites australis*, pitfall trap, leg. O. Majzlan; **[15E] Šujské rašelinisko NR:** 49°03'46" N, 18°37'09" W, 479 m a.s.l., *Salix* sp., *Rubus* sp. vegetation in peat area, pitfall trap, leg. E. Igondová, O. Majzlan; **[15F] Šujské rašelinisko NR:** 49°03'42" N, 18°37'05" W, 478 m a.s.l., gravel bars, pitfall trap, leg. E. Igondová, O. Majzlan; **[15G] Šujské rašelinisko NR:** 49°03'36" N, 18°37'18" W, 477 m a.s.l., meadow–arable field edge, pitfall trap, leg. E. Igondová, O. Majzlan; **[15H] Šujské rašelinisko NR:** 49°03'48" N, 18°37'19" W, 474 m a.s.l., river bank, pitfall trap, leg. E. Igondová, O. Majzlan; **[16] Višňové:** 49°08'57" N, 18°48'14" W, 578 m a.s.l., spruce forest, sifting of moss, leg. R. Blažek; **[17A] Vojtová dolina Valley:** 49°05'21" N, 18°36'52" W, 480 m a.s.l., marsh, sifting of deadwood, leg. R. Blažek; **[17B] Vojtová dolina Valley:** 49°05'57" N, 18°36'35" W, 514 m a.s.l., marsh, sifting of deadwood, leg. R. Blažek; **[17C] Vojtová dolina Valley:** 49°05'52" N, 18°36'41" W, 523 m a.s.l., stream bank, sifting under the spruce vegetation, leg. R. Blažek; **[18] Zbyňov:** 49°08'04" N, 18°38'29" W, 528 m a.s.l., forest–meadow edge, sifting of grass, leg. R. Blažek; **[19A] Zliechov:** 48°56'55" N, 18°27'20" W, 840 m a.s.l., beech forest, sifting of leaf litter, leg. M. Holecová; **[19B] Zliechov:** 48°57'08" N, 18°25'33" W, 608 m a.s.l., stream bank, sifting of rotten hay, leg. R. Blažek; **[20] Zliechovská dolina Valley:** 48°53'48" N, 18°26'51" W, 451 m a.s.l., stream bank, sifting of leaf litter, leg. R. Blažek; **[21A] Žihľavník Nature Reserve:** 48°52'53" N, 18°13'43" W, 659 m a.s.l., oak–beech forest, beating branches, leg. S. Korenko; **[21B] Žihľavník NR:** 48°52'53" N, 18°13'43" W, 659 m a.s.l., oak–beech forest, pitfall trap, leg. S. Korenko.

RESULTS AND DISCUSSION

Altogether 243 specimens of 11 pseudoscorpion species from four families were identified from the studied area (Tab. 1). Most species were recorded from Neobisiidae family (four of them). The most abundant species were *Neobisium erythro-dactylum* (L. Koch, 1873) and *Lamprochernes nodosus* (Schränk, 1803). Pseudoscorpions from Chthoniidae and Neobisiidae families were sifted from organic material or collected using pitfall traps. Cheliferidae specimens were collected using beating branches. Chernetid pseudoscorpions were mostly sifted from compost heaps, garden waste and rotten hay (Tab. 1).

Chthoniidae Daday, 1888

Chthonius heterodactylus Tömösváry, 1882

[16]: 1 ♀, 31. 8. 2012.

GARDINI (2014) in his revision synonymized the species *C. diophthalmus* with *C. heterodactylus*. Following this revision only *C. heterodactylus* of *C. heterodactylus* group species is known from Slovakia and it was sifted in the caves, their surroundings and from leaf litter until now (KRUMPÁL & KIEFER 1981, KRUMPÁL & KRUMPÁLOVÁ 2003, MOCK et al. 2009, PAPÁČ et al. 2009).

In the present study, only one female of *C. heterodactylus* was sifted from moss in spruce forest (Tab. 1). New record of the species in Malá Fatra NP confirmed the known findings in this area (Kruppál & Kiefer 1981, Ducháč 1989).

Chthonius cf. pygmaeus Beier, 1934

[10A]: 1 ♂, 4. 10. 2012; [15C]: 1 ♂, 12. 10. 2013.

BEIER (1934) published the first record of *C. pygmaeus* from type locality Železná Breznica in Slovakia. There were also mentioned records from other localities in Slovakia – Vyhne, Rudno nad Hronom, Sklené Teplice and Tekovské Lužany (BEIER 1934). Later KRUMPÁL & KIEFER (1981) found the species in Slovenský raj National Park and KRUMPÁL & KRUMPÁLOVÁ (2003) in Poloniny NP in leaf litter.

Two specimens of *C. cf. pygmaeus* were collected during our research in the studied region (Tab. 1). The specimens were examined by Dr. Giulio Gardini, according to his recommendation, the species needed to be compared with its type material.

Chthonius tetrachelatus (Preyssl, 1790)

[12A]: 2 ♂♂, 15. 5. 2013; [19B]: 1 ♀, 26. 7. 2013.

This species is cosmopolitan (HARVEY 2013). In Slovakia, *C. tetrachelatus* belongs to the most numerous species of the Chthoniidae family (CHRISTOPHORYOVÁ et al. 2012b, CHRISTOPHORYOVÁ 2013). It is considered to be a typical epigeic species (BEIER 1963), but it was also found in bird nests and tree hollows in Slovakia (KRUMPÁL & CYPRICH 1988, CHRISTOPHORYOVÁ 2010).

Only three adults were found in the studied area (Tab. 1).

Neobisiidae Chamberlin, 1930

Neobisium carcinoides (Hermann, 1804)

[2A]: 4 ♂♂, 3 ♀♀, 3 tritonymphs, 21. 5. 2013; [2B]: 1 ♂, 24. 5. 2013; [4]: 1 ♂, 2. 8. 2012; [5]: 1 ♀, 19. 6. 2012; [6]: 6 ♂♂, 1 ♀, 19. 4. 2014; [7]: 1 ♂, 31. 7. 2014; [8B]: 1 ♀, 24. 10. 2013; [9]: 1 ♂, 1 ♀, 1 tritonymph, 21. 3. 2014; [10A]: 4 ♂♂, 3 ♀♀, 4. 10. 2012; [11]: 2 ♂♂, 1 ♀, 3. 10. 2012; [13]: 3 ♂♂, 11. 5. 2008; [14A]: 3 ♀♀, 2 tritonymphs, 9. 9. 2014; [14B]: 1 ♂, 14. 10. 2014; [15D]: 1 ♂, 1 ♀, 18. 1. 2014; [15F]: 1 ♀, 1. 11. 2013; [15G]: 1 ♂, 29. 6. 2014; 1 ♂, 17. 7. 2014; [17A]: 2 ♂♂, 6. 10. 2011; [17C]: 2 ♂♂, 1 tritonymph, 19. 5. 2013; [20]: 2 ♂♂, 1 ♀, 2 tritonymphs, 10. 9. 2013; [21B]: 1 ♀, 31. 8. 2005.

Pseudoscorpion *N. carcinoides* is considered to be eurytopic species (BEIER 1963). In Slovakia it is known as epigeic, but it was also recorded from tree hollows, bird nests, mould of deadwood and in Malaise traps (CHRISTOPHORYOVÁ 2010, CHRISTOPHORYOVÁ et al. 2011b, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the current study, *N. carcinoides* was found on 15 localities including wetland area of Šujské rašelinisko NR, but no specimen was found in peat-bog area. The most specimens were sifted from organic material and leaf litter in deciduous forest (Tab. 1).

Neobisium erythro-dactylum (L. Koch, 1873)

[1A]: 4 ♂♂, 4 ♀♀, 8. 8. 2012; [1B]: 2 ♂♂, 22. 4. 2013; [1C]: 1 ♂, 24. 4. 2013; [9]: 1 ♂, 1 ♀, 3 deutonymphs, 21. 3. 2014; [10A]: 3 ♂♂, 5 tritonymphs, 4. 10. 2012; [12B]: 2 ♂♂, 1 ♀, 30. 3. 2014; [15A]: 1 ♂, 1 ♀, 2 tritonymphs, 2013; 1 ♂, 1 ♀, 13. 5. 2013; 1 ♀, 1 tritonymph, 17. 5. 2013; 1 ♂, 1 ♀, 27. 8. 2013; 1 tritonymph, 21. 4. 2014; 1 ♂, 1. 6. 2014; 1 deutonymph, 29. 6. 2014; 1 ♀, 28. 7. 2014; 1 ♀, 11. 8. 2014; 1 ♀, 5. 10. 2014; [15B]: 1 ♂, 1 ♀, 2013; 1 ♀, 17. 5. 2013; 1 ♂, 2. 6. 2013; 1 tritonymph, 16. 6. 2013; 1 ♀, 1. 7. 2013; 1 ♀, 1. 11. 2013; 1 ♂, 6. 4. 2013; 1 ♀, 15. 6. 2014; [15C]: 1 ♂, 17. 5. 2013; 1 ♀, 12. 10. 2013; 1 ♀, 4. 5. 2014; 1 ♂, 15. 5. 2014; 1 ♀, 1. 6. 2014; 1 ♂, 28. 7. 2014; [15D]: 4 ♀♀, 18. 1. 2014; 1 ♂, 21. 4. 2014; 2 ♂♂, 6. 4. 2015; [15E]: 1 ♂, 21. 4. 2014; 1 ♂, 28. 7. 2014; [15F]: 1 ♂, 27. 8. 2013; 1 ♂, 15. 6. 2014; [15G]: 1 ♂, 17. 7. 2014; [15H]: 1 ♂, 21. 4. 2014; 1 ♂, 15. 6. 2014; [17A]: 1 ♂, 1 deutonymph, 6. 10. 2011; [17B]: 1 deutonymph, 29. 4. 2012; [17C]: 2 tritonymphs, 19. 5. 2013.

BEIER (1928) published the first record of *N. erythro-dactylum* from Slovakia. Later findings ranked the species into soil inhabitants of Slovakia (KRUMPÁL 1980, KRUMPÁL & KRUMPÁLOVÁ 2003, KRUMPÁL & CHRISTOPHORYOVÁ 2007, CHRISTOPHORYOVÁ et al. 2014). An interesting finding of the species was the record on tree trunks, where it was collected using

Table 1. Summary of pseudoscorpions collected in specific habitats.

BB – beating branches, DW – sifting of deadwood, MO – sifting of moos, OM – sifting of organic material (forest floor, leaf litter), PT – pitfall traps in wetland area of Šušské rašelinisko Nature Reserve, RC – sifting of rotten hay, garden waste and compost.

Family / Species	BB	DW	MO	OM	PT	RC	Total
Chthoniidae							
<i>Chthonius heterodactylus</i>			1				1
<i>Chthonius cf. pygmaeus</i>				1	1		2
<i>Chthonius tetrachelatus</i>				2		1	3
Neobisiidae							
<i>Neobisium carcinoides</i>		2	2	44	6	6	60
<i>Neobisium erythroductylum</i>		3		29	45		77
<i>Neobisium fuscimanum</i>			8	4			12
<i>Neobisium sylvaticum</i>				1		5	6
Cheliferidae							
<i>Dactylochelifer latreillii</i>	2						2
Chernetidae							
<i>Chernes hahnii</i>				1		1	2
<i>Lamprochernes nodosus</i>						76	76
<i>Pselaphorchernes scorpioides</i>						2	2
Total	2	5	11	82	52	91	243

cardboard strips (KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the current study, *N. erythroductylum* was numerous found on localities in wetland area of Šušské rašelinisko NR including peatbog area (Tab. 1). In addition, 14 specimens were sifted on localities with the status of marsh area. JEŃDRYCZKOWSKI (1985) referred *N. erythroductylum* from wet meadows in peatbog areas in Poland as well.

Neobisium fuscimanum (C.L. Koch, 1843)

[5]: 1 ♀, 19. 6. 2012; [8A]: 2 ♂♂, 3 ♀♀, 13. 6. 2013; [8B]: 1 ♂, 1 ♀, 24. 10. 2013; [16]: 1 ♂, 31. 8. 2012; [18]: 1 ♂, 21. 5. 2014; [19A]: 1 tritonymph, 19. 6. 2004; [20]: 1 ♀, 10. 9. 2013.

BEIER (1928) recorded the species for the first time in Slovakia from moos. KRUMPÁL (1980, 2000) recorded *N. fuscimanum* from leaf litter in cave surrounding and KRUMPÁL & KRUMPÁLOVÁ (2003) collected it in leaf litter and moos.

In the studied area, the majority of *N. fuscimanum* specimens were sifted from moss (Tab. 1). Together with previous findings (KRUMPÁL 1980, 2000; KRUMPÁL & KRUMPÁLOVÁ 2003; DUCHÁČ 1989, 1994) we can assume that *N. fuscimanum* primarily prefers moist habitats.

Neobisium sylvaticum (C.L. Koch, 1835)

[5]: 1 tritonymph, 19. 6. 2012; [14B]: 5 tritonymphs, 14. 10. 2014.

In Slovakia, *N. sylvaticum* was recorded mainly from litter, soil and grassy habitats (KRUMPÁL 2000, KRUMPÁL & KRUMPÁLOVÁ 2003, CHRISTOPHORYOVÁ

2009, PAPÁČ et al. 2009, CHRISTOPHORYOVÁ et al. 2014). KRIŠTOFÍK et al. (2002) and CHRISTOPHORYOVÁ (2010) reported *N. sylvaticum* from bird nests. It was also collected under the tree bark and climbing on tree trunks (CHRISTOPHORYOVÁ 2010, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the present study, only tritonymphs were found. All specimens were sifted from compost heaps and leaf litter (Tab. 1).

Cheliferidae Risso, 1827

Dactylochelifer latreillii (Leach, 1817)

[21A]: 2 ♂♂, 31. 8. 2005.

In Slovakia, *D. latreillii* was collected from bird nests, bird boxes, tree hollows mould, deadwood and under the tree bark (KRUMPÁL & CYPRICH 1988, CHRISTOPHORYOVÁ 2010, CHRISTOPHORYOVÁ & KRUMPÁL 2010, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014). It was also repeatedly found in Malaise traps (KRUMPÁL & CHRISTOPHORYOVÁ 2007, CHRISTOPHORYOVÁ & KRUMPÁL 2010, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the studied area, *D. latreillii* was collected using beating branches. This finding on the tree corresponds to the known ecological preferences of the species.

Chernetidae Menge, 1855

Chernes hahnii (C.L. Koch, 1839)

[3]: 1 ♂, 2. 7. 2013; [4]: 1 ♂, 2. 8. 2012.

In Slovakia, the species was commonly found in drier habitats as mould of tree hollows, in bird nests and under the tree bark (KRUMPÁL & CYPRICH

1988, KRIŠTOFÍK et al. 1996, CHRISTOPHORYOVÁ 2010, CHRISTOPHORYOVÁ et al. 2014, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014). It was also collected on tree trunks using photoelectors, in mould of wood decay fungi, in Malaise traps and seldom also in pitfall traps (KRUMPÁL & CHRISTOPHORYOVÁ 2007, CHRISTOPHORYOVÁ & KRUMPÁL 2010, KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the present study only two specimens of *C. hahnii* were found (Tab. 1). Both of the specimens were collected on the ground, what is less common in this species.

***Lamprochernes nodosus* (Schrank, 1803)**

[3]: 1 ♂, 2. 7. 2013; [10B]: 25 ♂♂, 43 ♀♀, 1 tritonymph, 20. 7. 2013; [14A]: 6 ♀♀, 9. 9. 2014.

L. nodosus was commonly recorded from bird nests and bird boxes (KRUMPÁL & CYPRICH 1988; KRIŠTOFÍK et al. 1995, 1996, 2007; CHRISTOPHORYOVÁ 2010; CHRISTOPHORYOVÁ & KRUMPÁL 2010). CHRISTOPHORYOVÁ et al. (2014) collected the species in mould of tree hollows and in compost heaps. In the present study all *L. nodosus* specimens were sifted from compost heaps and rotten hay.

***Pselaphochernes scorpoides* (Hermann, 1804)**

[3]: 1 ♀, 1 tritonymph, 2. 7. 2013.

In Slovakia, *P. scorpoides* was found in leaf litter, tree hollows, deadwood, wood decay fungi, bird nests, under the tree bark and also in Malaise traps (CHRISTOPHORYOVÁ & KRUMPÁL 2005, 2007, 2010; KRUMPÁL & CHRISTOPHORYOVÁ 2007; CHRISTOPHORYOVÁ 2010, 2013; CHRISTOPHORYOVÁ et al. 2011b, 2014; KRAJČOVIČOVÁ & CHRISTOPHORYOVÁ 2014).

In the studied area, two *P. scorpoides* specimens were sifted from garden waste.

The pseudoscorpion diversity in the studied area is comparable to the known diversity of other regions in Slovakia (KRUMPÁL 1980; KRUMPÁL & KRUMPÁLOVÁ 2003; CHRISTOPHORYOVÁ 2009, 2013; CHRISTOPHORYOVÁ et al. 2014). The recorded species reflected the sampling methods used for material collecting, mostly the sifting and pitfall traps. For that reason, the majority of species represented the epigeal ones. The presence of rare species *N. beieri* in Malá Fatra NP has not been confirmed. To the future it would be beneficial to focus the research to all possible habitats to capture the highest species diversity of the study area.

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