

FAUNISTIC RECORDS OF SLOVAK ORIBATIDS I. ORIBATID MITES (ACARINA) OF VIHORLAT MOUNTAINS, EAST SLOVAKIA

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Abstract: Oribatid fauna of selected localities in Vihorlat Mountains and mountain foothills (Humenné, Vinné) was studied. Altogether, 165 species of oribatid mites from 47 families were found in 25 qualitative samples from years 1986 – 2005. 5 species need further study to decide if they belong to any known taxon, they may represent new species. 16 species were recorded for the first time from the territory of Slovakia. Final species list was shortly compared with known oribatid fauna in other protected areas of East Slovakia.

Key words: faunistics, Vihorlat Mountains, soil oribatid mites, new species for the fauna, East Slovakia.

INTRODUCTION

Vihorlat Mountains is a volcanic mountain range in eastern Slovakia, reaching partly also into Ukraine and belonging to Inner Eastern Carpathian mountain range. The mountains reach elevations between 400 and 1076 m. Significant part of mountains is not reachable for public (military training area), substantial part of remaining area is covered by Landscape protected area Vihorlat. The mountains are characterised dominantly by well preserved Carpathian beech forests (*Fagetum*), which are partly included into World Heritage Site of UNESCO. Lower parts are covered also by other types of forests, as *Carpino-Fraxinetum* or *Quercetum*.

Mountains were never systematically researched for oribatid mites. Historically, there is only very scarce information available. KUNST (1968), in his unpublished habilitation thesis recorded presence of three species, namely *Ophidiotrichus vindobonensis* and *Punctoribates punctum* from Remetské Hámre, and *Litholestes altitudinus* from Sninský Kameň. MIKO (1988) reported *Sphaerochthonius*

splendidus from Vinné, so the overall number of known species from Vihorlat to date is 4.

More information is available from other mountains of Eastern Carpathians mountain range. However, comprehensive data are available only from Ukrainian Carpathians. MELAMUD (2008, 2009) reported altogether 389 oribatid species from Zakarpatisje oblast of Ukraine. However, this number includes also non-mountain habitats and also needs a critical revision because of several synonyms presented. Still, around 300 species may be documented from Eastern Carpathian mountain ranges of Ukraine. Other source of information about oribatids from this area is summarizing list of species from Ukraine by KARPPINEN et al. (1992).

Slovak Eastern Carpathians are less researched for oribatids. Scarce information from Ondavská vrchovina and from Nízke Beskydy – Bukovské vrchy – Poloniny range is again available in work of KUNST (1968), broader information about oribatids from the same area was published by MIKO (1987) from western part of Nízke Beskydy. More recently,



MIKO L, 2016: Faunistic records of Slovak oribatids I. Oribatid mites (Acarina) of Vihorlat Mountains, East Slovakia. *Folia faunistica Slovaca*, 21 (1): 19–25.

[in English]

Received 17 March 2016

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Accepted 29 May 2016

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Published 12 August 2016



STARÝ (2006) reported 81 species from Bukovské vrchy Mountains, 82 species from Stužica national reserve (STARÝ 2008a) and altogether 133 species from other localities of Poloniny National Park (STARÝ 2008b).

Present paper brings first more comprehensive information about oribatid fauna of Vihorlat Mountains, still based on few ad-hoc taken samples mostly from central part of the range, complemented by samples from foothills (in Humenné, Vinné and near Jovsa). This contribution is a first part of intended series of articles, following previous faunistic works of the author from Slovakia (e.g. MIKO 1987, 1988, 1992, 2008, 2011).

MATERIAL AND METHODS

Qualitative samples were taken in years 1989, 1990 and 2005 in the sites and from habitats as indicated in overview below and indicated on Fig. 1. Samples were extracted in modified Berlese-Tullgren apparatus for one week. Extracted material was fixed in 75% alcohol, and for further study macerated in lactic acid. Determined material is kept in collection of the author, remaining material is stored in the collection of Faculty of Sciences of Pavol Jozef Šafárik University in Košice (L. Kováč). In determination and list of species, the approach of WEIGMANN (2006) was followed with some minor adjustments.

List of analysed samples

- 1 Sample LM-137-89. Humenné, forest-park Hubková, litter and upper soil layer from mixed forest (*Quercus*, *Fagus*, *Carpinus*, *Acer*), 20.5.1989, Ladislav Miko lgt.
- 2 Sample LM-138-89. Humenné, forest-park Hubková, litter and upper soil layer from mixed forest (dominantly *Carpinus*), 20.5.1989, Ladislav Miko lgt.
- 3 Sample LM-139-89. Humenné, forest-park Hubková, litter and upper soil layer from mixed forest (*Pinus silvestris*, *Pinus nigra*, *Carpinus*), 20.5.1989, Ladislav Miko lgt.
- 4 Sample LK-42-89. Vihorlat Mountains, peak Vihorlat (1070 m), litter and soil from forested part (*Fagus* sp.), May 1989, Ľubomír Kováč lgt.
- 5 Sample LK-43-89. Vihorlat Mountains, peak Vihorlat (about 1050 m), litter and soil from open part with shrubs, May 1989, Ľubomír Kováč lgt.
- 6 Sample LK-44-89. Vihorlat Mountains, peak Vihorlat (about 1000 m), litter and soil from forest on the main ridge (*Fagus* sp.), May 1989, Ľubomír Kováč lgt.
- 7 Sample LK-45-89. Vihorlat Mountains, peak Vihorlat (about 1000 m), organic material and litter from ant heap, in forest on the main ridge, May 1989, Ľubomír Kováč lgt.
- 8 Sample LK-324-05. Vihorlat Mountains, near Podstavka hill. Litter of *Fagus*, *Populus tremula* and

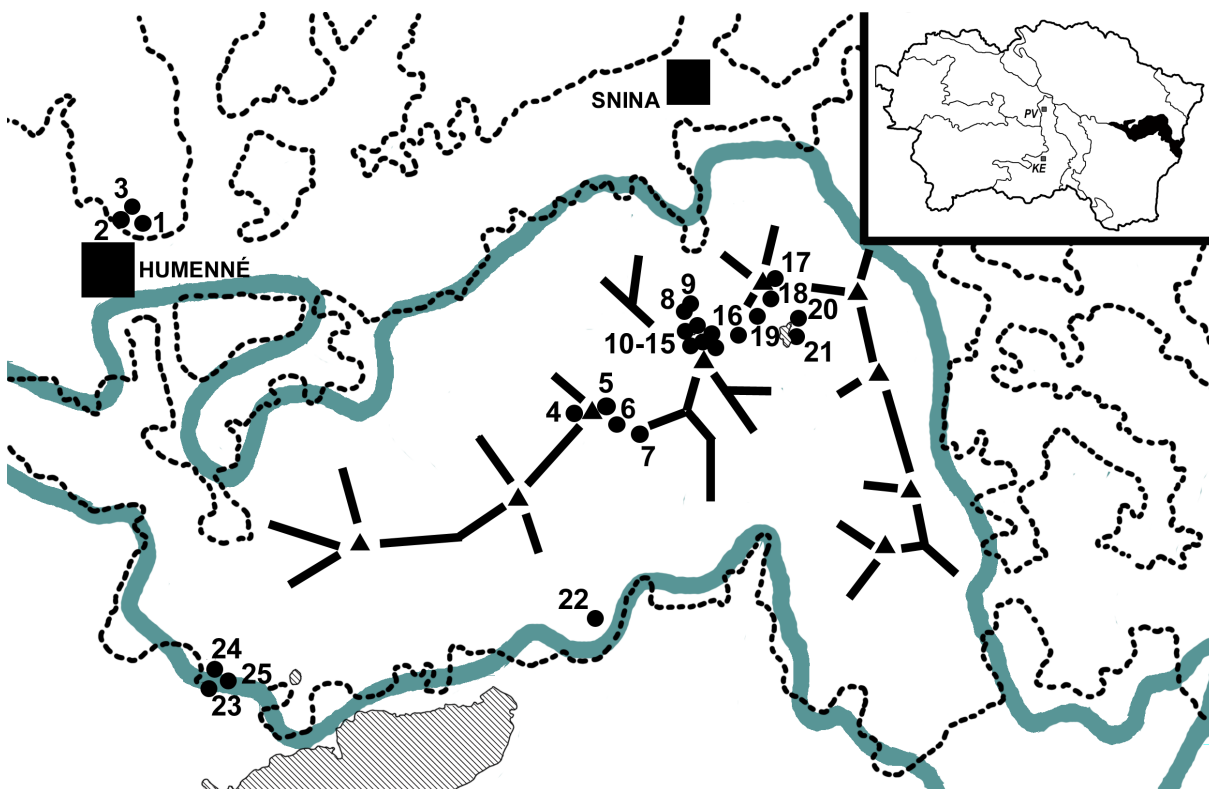


Figure 1. Schematic map of Vihorlat Mountains (East Carpathians, Slovakia), with indication of sampling sites. Numbers of sampling sites correspond to those in Material and Methods. Grey line indicates geomorphologic limits of Vihorlat Mountains, dashed line indicates limits of forested areas, dashed areas represent water bodies.

- Picea* at the edge of peat bog, 14.9.2005, Lubomír Panigaj lgt.
- 9 Sample LK-319-05. Vihorlat Mountains, near Podstavka hill. *Sphagnum* from peat bog, 14.9.2005, Lubomír Panigaj lgt.
 - 10 Sample LK-325-05. Vihorlat Mountains, between Podstavka hill and Kotlík lake. Litter of *Fagus*, *Carpinus* and *Larix* with *Rubus* undergrowth, 14.9.2005, Lubomír Panigaj lgt.
 - 11 Sample LK-323-05. Vihorlat Mountains, near Kotlík lake. Litter of *Picea*, 14.9.2005, Lubomír Panigaj lgt.
 - 12 Sample LK-321-05. Vihorlat Mountains, near Kotlík lake. Litter of *Quercus*, *Carpinus* and *Acer* at the edge of lake, 14.9.2005, Lubomír Panigaj lgt.
 - 13 Sample LK-322-05. Vihorlat Mountains, peat bog Hybkaňa under Mt. Motrogon. Litter from seasonally flooded *Querceto-Carpinetum*, 14.9.2005, Lubomír Panigaj lgt.
 - 14 Sample LK-320-05. Vihorlat Mountains, under Mt. Motrogon, at the edge of peat bog Hybkaňa. Rotting wood from *Quercus*, 14.9.2005, Lubomír Panigaj lgt.
 - 15 Sample LK-318-05. Vihorlat Mountains, peat bog Hybkaňa under Mt. Motrogon. *Sphagnum* from peat bog, 14.9.2005, Lubomír Panigaj lgt.
 - 16 Sample LK-46-89. Vihorlat Mountains, Jedlinka. Litter from *Fagus* forest above Malé Morské Oko lake, May 1989, Lubomír Kováč lgt.
 - 17 Sample LK-48-89. Vihorlat Mountains, Sninský Kameň. Upper soil layer and grass rhizosphere of grasses on the rock, May 1989, Lubomír Kováč lgt.
 - 18 Sample LK-49-89. Vihorlat Mountains, Sninský Kameň. Litter from *Fagus* forest below the rocks, May 1989, Lubomír Kováč lgt.
 - 19 Sample LK-50-89. Vihorlat Mountains, saddle Tri tably. Litter from *Fagus* forest above Morské Oko lake, May 1989, Lubomír Kováč lgt.
 - 20 Sample LK-51-89. Vihorlat Mountains, Morské Oko lake. Litter from *Fagus* forest north-west from the lake, May 1989, Lubomír Kováč lgt.
 - 21 Sample LK-52-89. Vihorlat Mountains, Morské Oko lake. Litter from *Fagus* forest east from the lake, May 1989, Lubomír Kováč lgt.
 - 22 Sample LM-55-90. Vihorlat Mountains foothills, Jovsa. Litter of *Carpinus* and *Fagus* (Jovsianska hrabina reserve), 30.3.1990, Ladislav Miko lgt.
 - 23 Sample VSN VI/10. Vinné, Castle Hill. Xerotherm, shrubby forest-steppe, litter and mosses on ground in open steppic habitat, 3.6.1986, Ladislav Miko lgt.
 - 24 Sample VSN VI/11. Vinné, foothills of Castle Hill. Xerotherm, shrubby forest-steppe, litter and upper soil layer from shrubby vegetation, 3.6.1986, Ladislav Miko lgt.
 - 25 Sample VSN VI/12. Vinné, foothills of Castle Hill. Xerotherm, shrubby forest-steppe, *Querceto-Carpinetum*, litter and upper soil layer, 3.6.1986, Ladislav Miko lgt.

RESULTS

Altogether, 165 species of oribatid mites from 47 families were found in Vihorlat Mountains. Four species – *Eueremaeus* sp., *Oppiella* sp., *Scheloribates* (s. str.) sp. and *Scheloribates* (*Hemileius*) sp. were determined only to generic level and do not represent any of the species known from Central Europe. They may represent new, unknown species or species described from more distant regions. To decide about their final status will require collection of more individuals and further detailed study. Species *Suctobelbata* cf. *prelli* differs slightly from *S. prelli* as described in original description and as known from other parts of Slovakia. More individuals needs to be collected to decide, if these differences are just within the range of species variability, or they indicate difference at (sub-)specific level. Except of mentioned, altogether 16 species found were not yet recorded from Slovakia (see discussion for more details). All find species are in following list.

List of oribatid species found

For each species, the locality is given by number code corresponding with numbering in overview of samples above. Number of determined individuals is given for each sample in parentheses. This number does not necessarily corresponds to all individuals in sample, which may be higher than given (the numbers were not counted, as all samples were qualitative and not quantitative). Species potentially new for science or requiring further study to decide on specific status are indicated by ⁿ, 16 species first time recorded from territory of Slovakia are indicated by asterisk (*).

Brachychthoniidae

1. *Brachychthonius impressus* Moritz, 1973 – 18 (1)
2. *Liochthonius andrewi* Evison, 1981 – 18 (1)
3. *Liochthonius lapponicus* (Trägårdh, 1910) – 16 (1)
4. *Liochthonius sellnicki* (Thor, 1930) – 8 (7)
5. *Liochthonius strenzkei* Forsslund, 1963 – 16 (1)
6. *Liochthonius tuxeni* (Forsslund, 1957) – 18 (1)
7. *Neobrachychthonius magnus* Moritz, 1976 – 18 (1)
8. *Sellnickochthonius hungaricus* (Balogh, 1943) – 21 (1)
9. **Sellnickochthonius oesziae* (Balogh et Mahunka, 1979) – 7 (14)
10. **Sellnickochthonius suecicus* (Forsslund, 1942) – 19 (2)
11. *Sellnickochthonius zelawaiensis* (Sellnick, 1928) – 13 (1)

Cosmochthoniidae

12. *Cosmochthonius lanatus* (Michael, 1885) – 13 (1)

Sphaerochthoniidae

13. *Sphaerochthonius splendidus* (Berlese, 1904) – 23 (2)

Hypochthoniidae

14. *Hypochthonius rufulus* C. L. Koch, 1835 – 13 (1); 15 (1)

Eulohmaniidae

15. *Eulohmannia ribagai* (Berlese, 1910) – 16 (3)

Phthiracaridae

16. **Atropacarus phyllophorus* (Berlese, 1904) – 1 (3)
 17. *Atropacarus striculus* (C. L. Koch, 1835) – 8 (1); 9 (3); 12 (4); 13 (1); 14 (1); 15 (4); 20 (2)
 18. *Phthiracarus anonymus* Grandjean, 1934 – 10 (2); 12 (11); 16 (1)
 19. **Phthiracarus bryobius* Jacot, 1930 – 8 (1); 11 (4); 13 (2)
 20. *Phthiracarus longulus* (C. L. Koch, 1841) – 16 (1)
 21. *Phthiracarus* cf. *stramineus* (C. L. Koch, 1841) – 14 (1)
 22. *Steganacarus (Tropacarus) carinatus* (C. L. Koch, 1841) – 1 (1); 2 (1); 22 (1)

Euphthiracaridae

23. *Euphthiracarus monodactylus* (Willmann, 1919) – 5 (1); 11 (2); 13 (11)

Malaconothridae

24. *Malaconothrus monodactylus* (Michael, 1888) – 8 (1); 9 (1); 15 (1)
 25. *Trimalaconothrus maior* (Berlese, 1910) – 9 (1); 15 (1)

Trhypochthoniidae

26. **Mainothrus badius* (Berlese, 1905) – 9 (2)

Trhypochthoniellidae

27. *Trhypochthoniellus longisetus setosus* Willmann, 1928 – 15 (1)

Nothridae

28. **Nothrus parvus* Sitnikova, 1975 – 5 (1)
 29. *Nothrus silvestris* Nicolet, 1855 – 9 (1); 10 (1); 11 (3); 13 (11); 15 (4); 20 (2)

Camisiidae

30. *Camisia biurus* (C. L. Koch, 1839) – 4 (1)
 31. *Platynothrus* (s. str.) *peltifer* (C. L. Koch, 1839) – 1 (1); 3 (1); 8 (1); 12 (3); 19 (3)
 32. *Platynothrus (Capillonothrus) thori* (Berlese, 1904) – 15 (1)

Nanhermanniidae

33. *Nanhermannia nana* (Nicolet, 1855) – 8 (4)

Hermanniiidae

34. *Hermannia gibba* (C. L. Koch, 1839) – 1 (1)

Hermanniellidae

35. *Hermanniella dolosa* Grandjean, 1931 – 2 (2); 8 (1); 25 (1)

Neoliodidae

36. *Poroliodes farinosus* (C. L. Koch, 1840) – 3 (1)

Damaeidae

37. *Belba corynopus* (Hermann, 1804) – 5 (2); 10 (2); 12 (1)
 38. *Damaeobelba minutissima* (Sellnick, 1920) – 11 (2); 13 (2)

39. *Damaeus* (s. str.) *auritus* C. L. Koch, 1835 – 18 (1); 22 (1); 23 (1); 25 (1)

40. *Damaeus* (s. str.) *crispatus* (Kulczynski, 1902) – 11 (1); 22 (1); 24 (2); 25 (1)

41. *Damaeus (Paradamaeus) clavipes* (Hermann, 1804) – 2 (1)

42. *Metabelba papillipes* (Nicolet, 1855) – 1 (1); 23 (1); 25 (2)

43. *Metabelba propexa* (Kulczynski, 1902) – 1 (8); 16 (2)

44. *Metabelba pulverosa* Strenzke, 1953 – 4 (3); 10 (2); 11 (7); 12 (1); 13 (16); 16 (3)

45. *Spatiodamaeus fagei* (Bulanova-Zachvatkina, 1957) – 22 (1)

Cepheidae

46. *Cepheus dentatus* (Michael, 1888) – 14 (4)

47. *Conoppia palmicineta* (Michael, 1880) – 4 (1)

Ctenobelbidae

48. *Ctenobelba pilosella* Jeleva, 1962 – 1 (2)

Eremaeidae

49. *Eremaeus hepaticus* C. L. Koch, 1835 – 10 (1); 11 (1); 13 (3, cf. *dentilamellatus* Storkan – see remarks in discussion); 20 (1); 21 (3); 22 (1)

50. *Eueremaeus valkanovi* (Kunst, 1957) – 24 (1)

51. **Eueremaeus* sp. – 23 (1)

Zetorchestidae

52. *Zetorchestes falzonii* Coggi, 1898 – 2 (1)

Caleremaeidae

53. *Caleremaeus monilipes* (Michael, 1882) – 14 (9)

Gustaviidae

54. *Gustavia microcephala* (Nicolet, 1855) – 1 (1); 2 (1)

Astegistidae

55. *Cultroribula bicultrata* (Berlese, 1905) – 1 (3)

Liacaridae

56. *Liacarus coracinus* (C. L. Koch, 1841) – 4 (1); 8(2); 14 (2); 23 (1)

57. *Liacarus subterraneus* (C. L. Koch, 1841) – 8 (1); 12 (8)

58. *Xenillus tegeocranus* (Hermann, 1804) – 2 (1); 8 (1)

Peloppiidae

59. *Ceratoppia bipilis* (Hermann, 1804) – 5 (12); 10 (1); 21 (4)

60. *Ceratoppia quadridentata* (Haller, 1882) – 4 (5); 5 (2); 18 (1)

Carabodidae

61. *Carabodes femoralis* (Nicolet, 1855) – 8 (1); 13 (2); 20 (4); 21 (1)

62. *Carabodes labyrinthicus* (Michael, 1879) – 4 (1); 5 (1); 20 (1)

63. *Carabodes marginatus* (Michael, 1884) – 12 (1)

64. *Carabodes rugosior* Berlese, 1916 – 16 (2)

Tectocephidae

65. *Tectocephus minor* Berlese, 1903 – 8 (3); 11 (2); 13 (2); 16 (1)

66. **Tectocephus velatus alatus* Berlese, 1913 – 7 (2)

67. **Tectocephus velatus knullei* Vaněk, 1960 – 8 (1)

68. *Tectocephus velatus sarekensis* Trägårdh, 1910 – 12 (4); 13 (2); 16 (25); 17 (1)
 69. **Tectocephus velatus tenuis* Knülle, 1954 – 22 (1)
 70. *Tectocephus velatus velatus* (Michael, 1880) – 1 (2); 4 (1); 6 (67); 7 (1); 20 (1); 23 (5)

Quadroppiidae

71. **Quadroppia hammerae* Minguez, Ruiz et Subias, 1985 – 2 (1); 10 (1); 13 (1)
 72. *Quadroppia monstrosa* Hammer, 1979 – 18 (2); 19 (2)
 73. *Quadroppia quadricarinata* (Michael, 1885) – 18 (1)

Oppiidae

74. *Berniniella bicarinata* (Paoli, 1908) – 1 (7); 2 (2); 5 (2); 12 (1); 13 (3, cf. *jahnae* – see remarks in discussion); 13 (4); 18 (1); 21 (1); 22 (1); 23 (1)
 75. *Berniniella conjuncta* (Strenzke, 1951) – 4 (1); 13 (1)
 76. *Berniniella hauseri* (Mahunka, 1974) – 17 (1)
 77. *Berniniella sigma* (Strenzke, 1951) – 23 (1)
 78. **Dissorhina carpatica* (Gordeeva, 1991) – 4 (5); 5 (12)
 79. *Dissorhina ornata* (Oudemans, 1900) – 2 (1); 5 (3); 10 (5); 11 (1); 12 (1); 13 (2); 16 (19); 17 (1); 18 (1); 20 (2); 21 (1); 23 (2); 25 (1)
 80. *Dissorhina tricarinatoides* (Dubinina, 1966) – 17 (2); 18 (2); 19 (3); 21 (3)
 81. *Graptoppia foveolata* (Paoli, 1908) – 8 (2)
 82. *Micropoppia minus* (Paoli, 1908) – 18 (1); 23 (3)
 83. *Multioppia glabra* (Mihelčič, 1955) – 1 (31); 2 (1); 18 (2); 22 (1)
 84. *Multioppia laniseta* Moritz, 1966 – 23 (1)
 85. *Neotrichoppia confinis* (Paoli, 1908) – 1 (1)
 86. *Oppiella* (s. str.) *falcata* (Paoli, 1908) – 5 (21); 10 (2); 11 (1); 13 (7); 18 (1); 21 (2)
 87. *Oppiella* (s. str.) *marginedentata* (Strenzke, 1951) – 1 (11); 10 (2); 16 (19); 18 (1); 20 (1)
 88. *Oppiella* (s. str.) *nova* (Oudemans, 1902) – 1 (19); 2 (4); 5 (1); 8 (9); 13 (10); 14 (3); 16 (2); 17 (2); 17 (2, forma *nana*, see remarks); 18 (3); (18 (5, forma *nana*, see remarks); 19 (3); 20 (13); 21 (10)
 89. **Oppiella* (s. str.) *paradeciens* (Kulijev, 1962) – 1 (2); 13 (3); 16 (5); 18 (1); 20 (7); 21 (19); 22 (1)
 90. **Oppiella* (s. str.) *propinqua* Mahunka et Mahunka-Papp, 2000 – 8 (1); 19 (1); 21 (1)
 91. ⁿ*Oppiella* (s. str.) sp. – 21 (1)
 92. *Oppiella* (s. str.) *uliginosa* (Willmann, 1919) – 12 (1)
 93. *Oppiella* (*Moritzoppia*) *keilbachi* (Moritz, 1969) – 16 (1)
 94. *Oppiella* (*Moritzoppia*) *unicarinata* (Paoli, 1908) – 7 (8); 14 (2)
 95. *Oppiella* (*Rhinoppia*) *loksai* (Schalk, 1966) – 1 (14); 5 (1); 8 (3); 13 (3); 16 (9); 18 (1)
 96. *Oppiella* (*Rhinoppia*) *obsoleta* (Paoli, 1908) – 2 (1); 24 (1)
 97. *Oppiella* (*Rhinoppia*) *subpectinata* (Oudemans, 1920) – 2 (3); 17 (1); 21 (4)

98. *Ramusella clavipectinata* (Michael, 1885) – 23 (1)
 99. *Subiasella quadrimaculata* (Evans, 1952) – 14 (14); 18 (1)

Suctobelbidae

100. *Suctobelba altvateri* Moritz, 1970 – 13 (2)
 101. *Suctobelba atomaria* Moritz, 1970 – 4 (2); 10 (3)
 102. *Suctobelba granulata* van der Hammen, 1952 – 13 (1)
 103. *Suctobelba trigona* (Michael, 1888) – 1 (2)
 104. ⁿ*Suctobelbata* cf. *prelli* (Märkel et Meyer, 1958) – 13 (1)
 105. *Suctobelbella acutidens* (Forsslund, 1941) – 1 (2); 8 (2); 13 (2); 16 (14)
 106. *Suctobelbella* cf. *baloghi* (Forsslund, 1958) – 20 (1)
 107. *Suctobelbella duplex* (Strenzke, 1950) – 21 (1)
 108. *Suctobelbella forsslundi* (Strenzke, 1950) – 18 (2)
 109. *Suctobelbella hammerae* Krivolutsky, 1965 – 18 (1)
 110. *Suctobelbella sarekensis* (Forsslund, 1941) – 17 (1); 18 (2); 19 (1)
 111. *Suctobelbella subcornigera* (Forsslund, 1941) – 8 (2); 11 (1); 13 (2); 14 (1); 17 (1); 23 (1)

Autognetidae

112. *Conchogneta dalecarlica* (Forsslund, 1947) – 1 (4); 10 (1); 13 (2); 16 (1)

Limnozetestidae

113. *Limnozetes ciliatus* (Schrank, 1803) – 8 (1); 9 (2); 15 (44)

Licneremaeidae

114. *Licneremaeus licnophorus* (Michael, 1882) – 7 (1)

Scutoverticidae

115. *Scutovertex minutus* (C. L. Koch, 1835) – 23 (3)
 116. *Scutovertex sculptus* Michael, 1879 – 23 (1)

Phenopelopidae

117. *Eupelops acromios* (Hermann, 1804) – 13 (1)
 118. *Eupelops occultus* (C. L. Koch, 1835) – 3 (1); 10 (1)
 119. *Eupelops plicatus* (C. L. Koch, 1835) – 8 (1); 10 (3); 19 (2); 20 (1); 22 (1)
 120. *Eupelops torulosus* (C. L. Koch, 1839) – 3 (2)
 121. **Eupelops uraceus* (C. L. Koch, 1839) – 5 (2)

Achipteriidae

122. *Achipteria coleoptrata* (Linnaeus, 1758) – 4 (2); 5 (12); 8 (3); 12 (3); 16 (14); 18 (1); 21 (12); 22 (2)
 123. *Achipteria nitens* (Nicolet, 1855) – 1 (5); 3 (8); 24 (2)
 124. *Achipteria sellnicki* van der Hammen, 1952 – 12 (9); 23 (1); 25 (1)
 125. *Anachipteria deficiens* Grandjean, 1932 – 11 (2)
 126. **Anachipteria howardi* (Berlese, 1908) – 11 (1); 13 (1)
 127. *Parachipteria willmanni* van der Hammen, 1952 – 16 (1)

Tegoribatidae

128. *Lepidozetes singularis* Berlese, 1910 – 7 (1)

Oribatellidae

129. *Ophidiotrichus vindobonensis* Piffli, 1961 – 1 (3); 2 (1)
 130. *Oribatella calcarata* (C. L. Koch, 1835) – 19 (1); 22 (1)
 131. *Oribatella dudichi* Willmann, 1938 – 1 (1); 13 (5); 21 (96)

Galumnidae

132. *Acrogalumna longipluma* (Berlese, 1904) – 19 (1)
 133. *Galumna alata* (Hermann, 1804) – 23 (1); 24 (1)
 134. *Galumna lanceata* (Oudemans, 1900) – 13 (2)
 135. *Galumna obvia* (Berlese, 1915) – 1 (1); 24 (2)
 136. *Pergalumna altera* (Oudemans, 1915) – 23 (1)
 137. *Pilogalumna tenuiclava* (Berlese, 1908) – 8 (1)

Ceratozetidae

138. *Ceratozetella minima* (Sellnick, 1928) – 1 (2); 18 (1)
 139. *Ceratozetes gracilis* (Michael, 1884) – 1 (1); 2 (3); 10 (1); 11 (1); 13 (1); 16 (3); 21 (6)
 140. *Ceratozetes mediocris* Berlese, 1908 – 1 (3); 23 (1)
 141. *Diapterobates humeralis* (Hermann, 1804) – 13 (2)
 142. *Fuscozetes setosus* (C. L. Koch, 1839) – 4 (1); 5 (1); 16 (2)
 143. *Melanozetes mollicomus* (C. L. Koch, 1839) – 4 (1)

Chamobatidae

144. *Chamobates borealis* (Trägårdh, 1902) – 4 (3); 5 (15); 11 (8); 13 (6); 16 (1); 17 (1); 18 (2); 19(2); 20 (1); 21 (1); 22 (5)
 145. *Chamobates cuspidatus* (Michael, 1884) – 4 (2)
 146. *Chamobates spinosus* Sellnick, 1928 – 22 (9)
 147. *Chamobates voigtsi* (Oudemans, 1902) – 2 (1); 10 (4); 11 (7); 12 (1); 13 (17); 17 (1); 18 (5); 21 (2); 22 (2)

Mycobatidae

148. *Minunthozetes pseudofusiger* (Schweizer, 1922) – 2 (1); 7 (1); 8 (3); 16 (1); 18 (2); 20 (2)
 149. *Minunthozetes semirufus* (C. L. Koch, 1841) – 11 (2); 22 (1)
 150. *Punctoribates punctum* (C. L. Koch, 1839) – 1 (1); 2 (4); 3 (1); 8 (2); 10 (2); 11 (4); 13 (1); 16 (1)

Euzetidae

151. *Euzetes globulus* (Nicolet, 1855) – 1 (1); 10 (1)

Parakalumnidae

152. *Neoribates* cf. *aurantiacus* (Oudemans, 1914) – 12 (5)

Schelorbitidae

153. *Liebstadia pannonica* (Willmann, 1951) – 12 (5)
 154. *Liebstadia willmanni* (Miko et Weigmann, 1996) – 4 (4); 5 (23); 10 (2); 12 (1); 16 (1); 19 (1); 21 (1)
 155. ⁿ*Schelorbitates* (*Hemileius*) sp. – 7 (2)
 156. *Schelorbitates* (s. str.) *fimbriatus* Thor, 1930 – 14 (7)

157. *Schelorbitates* (s. str.) *laevigatus* (C. L. Koch, 1836) – 12 (15); 13 (1); 19 (4); 22 (1); 23 (2); 25 (1)
 158. *Schelorbitates* (s. str.) *pallidulus* (C. L. Koch, 1840) – 9 (1); 23 (1); 24 (1)
 159. *Schelorbitates* (s. str.) *quintus* Wunderle, Beck et Woas, 1990 – 20 (1)
 160. ⁿ*Schelorbitates* (s. str.) sp. – 8 (2)

Oribatulidae

161. *Oribatula interrupta* (Willmann, 1939) – 24 (1)
 162. *Oribatula tibialis* (Nicolet, 1855) – 5 (1); 6 (73); 8 (1); 10 (2); 12 (28); 13 (3); 16 (27); 18 (1); 19 (2); 20 (1); 22 (4); 25 (1)
 163. *Oribatula pannonica* Willmann, 1949 – 25 (1)
 164. *Zygoribatula frisiae* (Oudemans, 1916) – 24 (1)
 165. ^{*}*Zygoribatula glabra* (Michael, 1890) – 23 (1)

DISCUSSION

From species recorded for the first time from Slovak territory, *Sellnickochthonius oesziae* and *Sellnickochthonius suecicus* are known from surrounding countries and may have just be not recognised until now because of limited studies dealing with family Brachychthoniidae in detail, as well as high similarity of several closely related species. Similarly, in taxonomically very difficult family Phthiracaridae many species could have been misidentified (or not identified), so first record of *Phthiracarus bryobius* may not indicate that this species is limited for area of Vihorlat Mountains. *Atropacarus phyllophorus* on the other side can hardly be misinterpreted; the finding is therefore clearly the first known from Slovakia. *Nothrus parvus* is a species known from surrounding countries of Central Europe, its finding in Slovakia were therefore expected. Remarkable is finding of tyrphophilous species *Mainothrus badius* in peat bog Podstavka. *Tectocepheus velatus*, particularly its nominal subspecies, is very broadly represented euryecous species, however, three other subspecies earlier considered a separate species (*Tectocepheus velatus alatus*, *Tectocepheus velatus knullei* and *Tectocepheus velatus tenuis*) were not yet recorded from Slovakia. Particularly *T. velatus knullei* is a rare subspecies with few, very limited findings and its finding in Vihorlat is therefore interesting. Among individuals determined as *Eremaeus hepaticus* several individuals were slightly different, with rugose prodorsal lamellae. This was a differential character of poorly described species *Eremaeus dentilamellatus* (Štorkán, 1925), considered to be synonym of *E. hepaticus* by KUNST (1968). This synonymy needs to be checked however, as the range of variability within *E. hepaticus* was not sufficiently studied.

Superfamily Oppioidea is broadly represented among found species, with a range of new records for Slovakia. *Quadroppia hammerae* was probably

recorded in past under *Quadroppia quadricarinata*, and similarly *Dissorhina carpatica* was not distinguished from common *Dissorhina ornata*. The specific status of *D. carpatica* needs to be checked thoroughly, given the variability of *D. ornata* it may represent only form or subspecies of it. Particularly interesting is rather common presence of species *Oppiella paradecipiens*. While the species was not yet formally reported from Slovakia, it was known from several locations of Slovak Eastern Carpathians, reported as *Oppia* sp. (MIKO 1987). From known records, it seems to be together with *D. carpatica* limited in range to Eastern Carpathians. *Oppiella propinqua* stands very nearly to *Oppiella nova*, and in the past was certainly misidentified, formally it represents the new record for Slovakia as well. Among the material of *Oppiella nova*, some individuals corresponding to its small form called *Oppiella nova* forma *nana* were found. However, due to the very large variability of species and its parthenogenetic reproduction, the form is broadly not recognised as separate taxon, so the findings are indicated within *Oppiella nova* (see the species overview). Remaining new records represent species which are difficult to determine, therefore it cannot be excluded that they have been found in past and misinterpreted. This is particularly valid for *Eupelops uraceus* and *Anachipteria howardi*. Finding of *Zygoribatula glabra* in xerotherm habitat of Vinné is interesting, the species may inhabit dry mosses on the ground.

Given the small number of ad-hoc taken samples, 165 found species represent very species-rich result, documenting high conservation value of studied habitats. On the other hand, the number is not very different from that of other, similarly preserved areas of Carpathians in East Slovakia, where the material was collected with comparable sampling effort, as e. g. 158 species from Dreveník (MIKO 1992), 185 species from Slanské vrchy Mountains (MIKO 2008) or 231 species from Pieniny National Park (MIKO 2011).

ACKNOWLEDGEMENT

The author is grateful to his former colleagues Dr. Ľubomír Kováč and Dr. Ľubomír Panigaj (both from

P. J. Šafárik University, Košice) for part of the collected material from Vihorlat Mountains, gained from samples collected by themselves.

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