Revision of the Checklist of Latvian Oribatid Mites (Acari: Oribatida), with Notes on Previous Studies and New Species for the Fauna of Latvia

UĢIS KAGAINIS

Institute of Biology, University of Latvia, 3 Miera Street, LV-2169, Salaspils, Latvia; e-mail: oribatida@inbox.lv

KAGAINIS U. 2011. REVISION OF THE CHECKLIST OF LATVIAN ORIBATID MITES (ACARI: ORIBATIDA) WITH NOTES ON PREVIOUS STUDIES AND NEW SPECIES FOR THE FAUNA OF LATVIA. – *Latvijas Entomologs* 50: 31-40.

Abstract: Taxonomic changes for moss mites (Oribatida) have been made many times since the first species were published for Latvia. In the current work all relevant literature on Oribatida are reviewed and a list of species recorded in the territory of Latvia is revised. On the bases of the latest literature on oribatid systematics, 10 synonyms are deleted from the list. 51 species and one synonym are removed from the list as a result of incorrect citation in the early 1980s. In total, 176 species from 52 families have been recorded till now. Two missing species *Tectocepheus velatus sarekensis* TRAGARDH, 1910 and *Passalozetes strenzkei* WEIGMANN, 2006 are re-listed. Short notes on 21 new species, one new subspecies, two new forms, two new genera and one new family for the fauna of Latvia are given and a more detailed description on changes made in the checklist is presented.

Key words: Oribatida, Latvia, checklist, revision, new species, synonyms, systematics.

Introduction

Oribatida mites or moss mites are world-wide saprophagous microarthropods living mostly in soil. They have been well studied and many changes have been made in their taxonomy during the last two hundred years (Bulanova-Zachvatkina 1967, Gilyarov 1976, Krantz 1978, Weigmann 2006).

Oribatids in Latvia have been studied irregularly. The first paper on Latvian moss mites published by Grube (1859) presented 39 different species. More than 80 years later, Eglītis (1943) listed 52 species collected in the Zemgale region. In the early 1950s Eglītis conducted an all-embracing survey on the soil fauna of Latvia (Baranovska 2007, after Eglitis 1954). As a result 113 species and three synonyms (after Weigmann 2006) of Oribatida were listed – at that time 63 of them were new for Latvian fauna (Eglitis 1954). The oribatid species listed by Eglītis were used to produce an identification key for invertebrates of the Latvian SSR (Taurins, Ozols, 1957). Vīksne (1959) described 18 new oribatid species for the fauna of Latvia among records for 87 named species. A species list for the European geographical region was published by Karppinen and Krivolutsky (1982). The authors listed 526 different species including 154 species from the fauna of Latvia, which were mistakenly cited as beeng listed in from the paper by Eglītis (1954). In the studies of Berina et al. (1989) 29 moss mite species, including ten new species for Latvian fauna, were presented. After a year, Karps et al. (1990) recorded 27 species including six new for the fauna of Latvia. An unpublished species list by Zvaigzne (1994) mentioned 198 species recorded in Latvia. Despite the fact that this was the first Latvian oribatid checklist for Latvia, Zvaigzne made a significant mistake and included a reference to Karppinen and Krivolutsky (1982) publication. A similar error occurred when Baranovska (2007) published the Latvian oribatid checklist with 200 species. This publication was mainly based on Zvaigzne's catalouge (A. Baranovska, pers. comm.) with some taxonomical corrections after Gilyarov (1975), Krantz. (1978), and Niemi et al. (1997). Couple of more publications came out around that time naming only two to four oribatid species (Baranovska et al. 2006, Spungis 2008) that were already known for fauna of Latvia.

The most recent article was written by Kagainis (2010) who mentioned two moss mite species new to Latvia.

Eitminavichute et al. (1976) published article about soil invertebrate fauna of costal area in the East Baltic region, including Latvia. In total, 131 oribatid species listed in this article, but it is impossible to clarify if the records refere to the territory of Latvia. There is a small possibility that there exists other published literature dealing with Latvian oribatid mites.

At the Institute of Biology, Univesrity of Latvia unpublished material of specimen preparate collections by V. Spungis is deposited. Medium is mainly dried, in some cases coverglass is damaged and it is impossible to verify and publish identifications.

The aim of this paper is to compile a correct species list of oribatid mites in Latvia based on critical analysis of all available literature. The taxonomy follows the Weigmann (2006) identification key, with amendments from several taxonomical studies and data bases (Willmann 1931, Weigmann, Krantz 1981, Marshall et al. 1987, Eitminavichute 2003, Joel 2003, Schatz 2003, Los 2004, Mahunka 2004, Shtanchaeva, Subias 2009).

Checklist of Latvian Oribatid Mites

Species, subspecies or forms new to the fauna of Latvia are abbreviated by asterisk (*). No vowel mutations are used (ñ, e, ä, ö, ü, å, ', etc.) (TRÄGÅRDH = TRAGARDH).

Brachychthoniidae THOR, 1934
Brachychthonius BERLESE, 1910
1. *Brachychthonius berlesei* WILLMANN, 1928
Eobrachychthonius JACOT, 1936
2. *Eobrachychthonius oudemansi* VAN DER HAMMEN, 1952
Liochthonius VAN DER HAMMEN, 1952
3. *Liochthonius brevis* (MICHAEL, 1888)
4. *Liochthonius furcillatus* (WILLMANN, 1942) *
5. *Liochthonius horridus* (SELLNICK, 1928)
6. *Liochthonius hystricinus* (FORSSLUND, 1942) *
7. *Liochthonius tuxeni* (FORSSLUND, 1957) *
Sellnickochthonius KRIVOLUCKIJ, 1964
8. *Sellnickochthonius zelawaensis* (SELLNICK, 1928)

Hypochthoniidae BERLESE, 1910
Hypochthonius C.L.KOCH, 1835
9. *Hypochthonius luteus* Oudemans, 1917
10. *Hypochthonius rufulus* C.L.Koch, 1835
Eniochthoniidae GRANDJEAN, 1947
Eniochthonius GRANDJEAN, 1933
11. *Eniochthonius minutissimus* (BERLESE, 1903)
Eulohmanniidae GRANDJEAN, 1931
Eulohmannia BERLESE, 1910
12. *Eulohmannia ribagai* (BERLESE, 1910)

Phthiracaridae PERTY, 1841
Hoplophthiracarus JAKOT, 1933
13. *Hoplophthiracarus illinoisensis* (EWING, 1909)
Phthiracarus PERTY, 1841
14. *Phthiracarus crenophilus* WILLMANN, 1951
15. *Phthiracarus ferrugineus* (C.L.KOCH, 1841) *
16. *Phthiracarus globosus* (C.L.KOCH, 1841)
17. *Phthiracarus laevigatus* (C.L.KOCH, 1844)
Steganacarus EWING, 1917
18. *Steganacarus (Atropacarus) striculus* (C.L.KOCH, 1835)
19. *Steganacarus (Steganacarus) applicatus* (SELLNICK, 1920)
20. *Steganacarus (Steganacarus) magnus* (NICOLET, 1855)
21. *Steganacarus (Steganacarus) spinosus* (SELLNICK, 1920)
22. *Steganacarus (Tropacarus) carinatus* forma *carinata* (C.L.KOCH, 1841)
23. *Steganacarus (Tropacarus) carinatus* forma *pulcherrima* (BERLESE, 1887) *

Euphthiracaridae JACOT, 1930
Euphthiracarus EWING, 1917
24. *Euphthiracarus cribrarius* (BERLESE, 1904)
25. *Euphthiracarus monodactylus* (WILLMANN, 1919)
Microtritia MARKEL, 1964
26. *Microtritia minima* (BERLESE, 1904)
Oribotritia JACOT, 1924
27. *Oribotritia berlesei* (MICHAEL, 1898)
Rhysotritia MARKEL et MEYER, 1959
28. *Rhysotritia ardua* (C.L.KOCH, 1841)

Malaconothridae BERLESE, 1916
Malaconothrus BERLESE, 1904
29. *Malaconothrus monodactylus* (MICHAEL,

1888)
Trimalaconothrus BERLESE, 1916
30. *Trimalaconothrus angulatus* WILLMANN, 1931*
31. *Trimalaconothrus maior* (BERLESE, 1910)
32. *Trimalaconothrus tardus* (MICHAEL, 1888)

Trhypochthoniidae WILLMANN, 1931
Trhypochthonius BERLESE, 1904
33. *Trhypochthonius cladonicola* (WILLMANN, 1919)
34. *Trhypochthonius tectorum* (BERLESE, 1896)

Trhypochthoniellidae KNULLE, 1957
Trhypochthoniellus WILLMANN, 1928
35. *Trhypochthoniellus longisetus* forma *longiseta* (BERLESE, 1904) *

Nothridae THORELL, 1896
Nothrus C.L.KOCH, 1835
36. *Nothrus anauniensis* CANESTRINI et FANZAGO, 1876
37. *Nothrus palustris* C.L.KOCH, 1839
38. *Nothrus silvestris* NICOLET, 1855

Camisiidae OUDEMANS, 1900
Camisia VON HEYDEN, 1826
39. *Camisia segnis* (HERMANN, 1804)
40. *Camisia spinifer* (C.L.KOCH, 1835)
Heminothrus BERLESE, 1913
41. *Heminothrus longisetosus* WILLMANN, 1925
Platynothrus BERLESE, 1913
42. *Platynothrus peltifer* (C.L.KOCH, 1839)
43. *Platynothrus thori* (BERLESE, 1904)

Nanhermanniidae SELLNICK, 1928
Nanhermannia BERLESE, 1913
44. *Nanhermannia comitalis* BERLESE, 1916
45. *Nanhermannia elegantula* BERLESE, 1913
46. *Nanhermannia nana* (NICOLET, 1855)

Hermanniidae SELLNICK, 1928
Hermannia NICOLET, 1855
47. *Hermannia gibba* (C.L.KOCH, 1839)
48. *Hermannia subglabra* BERLESE, 1910

Hermanniellidae GRANDJEAN, 1934
Hermanniella BERLESE, 1908
49. *Hermanniella dolosa* GRANDJEAN, 1931*
50. *Hermanniella granulata* (NICOLET, 1855)
51. *Hermanniella punctulata* BERLESE, 1908

Neoliodidae SELLNICK, 1928
Poroliodes GRANDJEAN, 1934
52. *Poroliodes farinosus* (C.L.KOCH, 1840)

Damaeidae BERLESE, 1896
Belba VON HEYDEN, 1826
53. *Belba compta* (KULCZYNSKI, 1902)
Damaeus C.L.KOCH, 1835
54. *Damaeus (Adamaeus) onustus* C.L.KOCH, 1844
55. *Damaeus (Paradamaeus) clavipes* (HERMANN, 1804)
Metabelba GRANDJEAN, 1936
56. *Metabelba (Parametabelba) sphagni* STRENZKE, 1950 *
57. *Metabelba pulverosa* STRENZKE, 1953
Spatiodamaeus BULANOVA-ZACHVATKINA, 1957
58. *Spatiodamaeus verticillipes* (NICOLET, 1855)

Cepheidae BERLESE, 1896
Cepheus C.L.KOCH, 1835
59. *Cepheus cepheiformis* (NICOLET, 1855)
60. *Cepheus latus* C.L.KOCH, 1835

Eremaeidae OUDEMANS, 1900
Eremaeus C.L.KOCH, 1835
61. *Eremaeus hepaticus* C.L.KOCH, 1835
Eueremaeus MIHELCIC, 1963
62. *Eueremaeus oblongus* (C.L.KOCH 1835)

Caleremaeidae GRANDJEAN, 1965
Caleremaeus BERLESE, 1910
63. *Caleremaeus monilipes* (MICHAEL, 1882)

Tenuialidae JACOT, 1929
Hafenrefferia OUDEMANS, 1906
64. *Hafenrefferia gilvipes* (C.L.KOCH, 1839)

Gustaviidae OUDEMANS, 1900
Gustavia KRAMER, 1879
65. *Gustavia microcephala* (NICOLET, 1855)

Astegistidae BALOGH, 1961
Astegistes HULL, 1916
66. *Astegistes pilosus* (C.L.KOCH, 1840)
Furcoribula BALOGH, 1943
67. *Furcoribula furcillata* (NORDENSKIOLD, 1901)

Liacaridae SELLNICK, 1928
Adoristes HULL, 1916
68. Adoristes ovatus (C.L.KOCH, 1839)
Liacarus MICHAEL, 1898
69. *Liacarus coracinus* (C.L.KOCH, 1841)
70. *Liacarus xylariae* (SCHRANK, 1803)
Xenillus ROBINEAU-DESVOIDY, 1839
71. *Xenillus tegeocranus* (HERMANN, 1804)

Pelopiidae BALOGH, 1943
Ceratoppia BERLESE, 1908
72. *Ceratoppia bipilis* (HERMANN, 1804)
73. *Ceratoppia quadridentata* (HALLER, 1882)

Carabodidae C.L.KOCH, 1843
Carabodes C.L.KOCH, 1835
74. *Carabodes areolatus* BERLESE, 1916
75. *Carabodes coriaceus* C.L.KOCH, 1835
76. *Carabodes femoralis* (NICOLET, 1855)
77. *Carabodes labyrinthicus* (MICHAEL, 1879)
78. *Carabodes marginatus* (MICHAEL, 1884)
79. *Carabodes ornatus* STORKAN, 1925
80. *Carabodes reticulatus* BERLESE, 1913
81. *Carabodes rugosior* BERLESE, 1916
82. *Carabodes subarcticus* TRAGARDH, 1902
83. *Carabodes willmanni* BERNINI, 1975

Tectocepheidae OUDEMANS, 1900
Tectocepheus BERLESE, 1895
84. *Tectocepheus velatus sarekensis* TRAGARDH, 1910 *
85. *Tectocepheus velatus velatus* (MICHAEL, 1880)

Quadroppiidae BALOGH, 1983
Quadroppia JACOT, 1939
86. *Quadroppia hammerae* MINGUEZ et AL., 1985 *
87. *Quadroppia quadricarinata* (MICHAEL, 1885)

Oppiidae GRANDJEAN, 1951
Berniniella BALOGH, 1983
88. *Berniniella bicarinata* (PAOLI, 1908)
Dissorhina HULL, 1916
89. *Dissorhina ornata* (OUDEMANS, 1900)
Microppia BALOGH, 1983
90. *Microppia minus* (PAOLI, 1908)
Oppiella JACOT, 1937
91. *Oppiella (Moritzoppia) neerlandica* (OUDEMANS, 1900)
92. *Oppiella (Moritzoppia) translamellata* (WILLMANN, 1923)
93. *Oppiella (Moritzoppia) unicarinata* (PAOLI, 1908)
94. *Oppiella (Oppiella) nova* (OUDEMANS, 1902) *
95. *Oppiella (Rhinoppia) hygrophila* (MAHUNKA, 1987) *
96. *Oppiella (Rhinoppia) subpectinata* (OUDEMANS, 1900)
Ramusella HAMMER, 1962
97. *Ramusella clavipectinata* (MICHAEL, 1885)

Suctobelbidae JACOT, 1938
Suctobelba PAOLI, 1908
98. *Suctobelba trigona* (MICHAEL, 1888)
Suctobelbella JACOT, 1937
99. *Suctobelbella forsslundi* (STRENZKE, 1950)
100. *Suctobelbella nasalis* (FORSSLUND, 1941)
101. *Suctobelbella palustris* (FORSSLUND, 1953) *
102. *Suctobelbella subcornigera* (FORSSLUND, 1941) *
103. *Suctobelbella subtrigona* (OUDEMANS, 1916)

Autognetidae GRANDJEAN, 1960
Autogneta HULL, 1916
104. *Autogneta longilamellata* (MICHAEL, 1885)
Conchogneta GRANDJEAN, 1963
105. *Conchogneta dalecarlica* (FORSSLUND, 1947)
106. *Conchogneta traegardhi* (FORSSLUND, 1947) *

Thyrisomidae GRANDJEAN, 1954
Banksinoma OUDEMANS, 1930
107. *Banksinoma lanceolata* (MICHAEL, 1885)
Pantelozetes GRANDJEAN, 1953
108. *Pantelozetes paolii* (OUDEMANS, 1913)

Hydrozetidae GRANDJEAN, 1954
Hydrozetes BERLESE, 1902
109. *Hydrozetes confervae* (SCHRANK, 1781)
110. *Hydrozetes lacustris* (MICHAEL, 1882)

Limnozetidae GRANDJEAN, 1954
Limnozetes HULL, 1916
111. *Limnozetes ciliatus* (SCHRANK, 1803)
112. *Limnozetes rugosus* (SELLNICK, 1923) *

Cymbaeremaeidae SELLNICK, 1928
Cymbaeremaeus BERLESE, 1896
113. *Cymbaeremaeus cymba* (NICOLET, 1855)

Micreremidae GRANDJEAN, 1954
Micreremus BERLESE, 1908
114. *Micreremus brevipes* (MICHAEL, 1888)

Licneremaeidae GRANDJEAN, 1931
Licneremaeus PAOLI, 1908
115. *Licneremaeus licnophorus* (MICHAEL, 1882)

Passalozetidae GRANDJEAN, 1954
Passalozetes GRANDJEAN, 1932
116. *Passalozetes africanus* GRANDJEAN, 1932
117. *Passalozetes strenzkei* WEIGMANN, 2006 *

Scutoverticidae GRANDJEAN, 1954
Scutovertex MICHAEL, 1879
118. *Scutovertex minutus* (C.L.KOCH, 1835)
119. *Scutovertex sculptus* MICHAEL, 1879

Phenopelopidae PETRUNKEVICH, 1955
Eupelops EWING, 1917
120. *Eupelops acromios* (HERMANN, 1804)
121. *Eupelops occultus* (C.L.KOCH, 1835)
122. *Eupelops plicatus* (C.L.KOCH, 1835) *
123. *Eupelops tardus* (C.L.KOCH, 1835)
124. *Eupelops torulosus* (C.L.KOCH, 1840)
Peloptulus BERLESE, 1908
125. *Peloptulus phaenotus* (C.L.KOCH, 1844)

Achipteriidae THOR, 1929
Achipteria BERLESE, 1885
126. *Achipteria coleoptrata* (LINNE, 1758)
Anachipteria GRANDJEAN, 1932
127. *Anachipteria deficiens* GRANDJEAN, 1932 *
Parachipteria VAN DER HAMMEN, 1952
128. *Parachipteria bella* (SELLNICK, 1928)
129. *Parachipteria punctata* (NICOLET, 1855)
130. *Parachipteria willmanni* VAN DER HAMMEN, 1952

Tegoribatidae GRANDJEAN, 1954
Tegoribates EWING, 1917
131. *Tegoribates latirostris* (C.L.KOCH, 1844)

Oribatellidae Jacot, 1925
Oribatella BANKS, 1895
132. *Oribatella calcarata* (C.L.KOCH, 1835)
133. *Oribatella ornata* (COGGI, 1990)
134. *Oribatella quadricornuta* MICHAEL, 1880

Galumnidae JACOT, 1925
Acrogalumna GRANDJEAN, 1956
135. *Acrogalumna longipluma* (BERLESE, 1904)
Galumna VON HEYDEN, 1826
136. *Galumna europaea* (BERLESE, 1914)
137. *Galumna flagellata* WILLMANN, 1925
138. *Galumna lanceata* (OUDEMANS, 1900)
139. *Galumna obvia* (BERLESE, 1915)
Pergalumna GRANDJEAN, 1936
140. *Pergalumna formicaria* (BERLESE, 1914)
141. *Pergalumna nervosa* (BERLESE, 1914)
Pilogalumna Grandjean, 1956
142. *Pilogalumna tenuiclava* (BERLESE, 1908) *

Ceratozetidae JACOT, 1925
Ceratozetes BERLESE, 1908
143. *Ceratozetes gracilis* (MICHAEL, 1884)
144. *Ceratozetes mediocris* BERLESE, 1908
145. *Ceratozetes peritus* GRANDJEAN, 1951 *
Diapterobates GRANDJEAN, 1936
146. *Diapterobates humeralis* (HERMANN, 1804)
Fuscozetes SELLNICK, 1928
147. *Fuscozetes fuscipes* (C.L.KOCH, 1844)
148. *Fuscozetes setosus* (C.L.KOCH, 1839)
Melanozetes HULL, 1916
149. *Melanozetes mollicomus* (C.L.KOCH, 1839)
Sphaerozetes BERLESE, 1885
150. *Sphaerozetes orbicularis* (C.L.KOCH, 1835)
Trichoribates BERLESE, 1910
151. *Trichoribates incisellus* (KRAMER, 1897)
152. *Trichoribates novus* (SELLNICK, 1928)
153. *Trichoribates trimaculatus* (C.L.KOCH, 1835)

Zetomimidae SHALDYBINA, 1966
Zetomimus HULL, 1916
154. *Zetomimus furcatus* (PEARCE et WARBURTON, 1906)

Chamobatidae GRANDJEAN, 1954
Chamobates HULL, 1916
155. *Chamobates cuspidatus* (MICHAEL, 1884)
156. *Chamobates pusillus* (BERLESE, 1895)
157. *Chamobates spinosus* SELLNICK, 1928

Mycobatidae GRANDJEAN, 1954
Minunthozetes HULL, 1916
158. *Minunthozetes pseudofusiger* (SCHWEIZER, 1922)
159. *Minunthozetes semirufus* (C.L.KOCH, 1841)
Punctoribates BERLESE, 1908
160. *Punctoribates hexagonus* BERLESE, 1908
161. *Punctoribates punctum* (C.L.KOCH, 1839)
162. *Punctoribates sellnicki* WILLMANN, 1928

Euzetidae GRANDJEAN, 1954
Euzetes BERLESE, 1908
163. *Euzetes globulus* (NICOLET, 1855)

Mochlozetidae GRANDJEAN, 1960
Podoribates BERLESE, 1908
164. *Podoribates longipes* BERLESE, 1887

Scheloribatidae GRANDJEAN, 1933
Liebstadia OUDEMANS, 1906
165. *Liebstadia similis* (MICHAEL, 1888)
Scheloribates BERLESE, 1908
166. *Scheloribates (Hemileius) initialis* (BERLESE, 1908)
167. *Scheloribates laevigatus* (C.L.KOCH, 1836)
168. *Scheloribates latipes* (C.L.KOCH, 1844)
169. *Scheloribates pallidulus* (C.L.KOCH, 1840)
170. *Scheloribates (Topobates) circumcarinatus* WEIGMANN et MIKO, 1998*

Oribatulidae THOR, 1929
Oribatula BERLESE, 1895
171. *Oribatula tibialis* (NICOLET, 1855)
Phauloppia BERLESE, 1908
172. *Phauloppia lucorum* (C.L.KOCH, 1841)
173. *Phauloppia rauschensis* (SELLNICK, 1908)
Zygoribatula BERLESE, 1916
174. *Zygoribatula exilis* (NICOLET, 1855)
175. *Zygoribatula frisiae* (OUDEMANS, 1916) *
176. *Zygoribatula propinqua* (OUDEMANS, 1900)

Discussion
Previous studies and checklist

After the revision of the previous checklist a missing subspecies – *Tectocepheus velatus sarekensis* TRAGARDH, 1910 and species *Passalozetes strenzkei* WEIGMANN, 2006 were registered. These mites were recorded by Eglītis (1943) and Vīksne (1959) and now are included in the fauna of Latvia.

51 species and one synonym (after Weigmann 2006) have been added incorrectly to the Latvian fauna since the oribatid list of Karppinen and Krivolutsky (1982) was published. The authors listed 154 species for Latvia refererring only the Eglītis (1954) monograph and a mistake was made because Eglītis referred only 117 species. Besides, foreign authors 13 species left without notice. There was no other literature found in the reference list of Karppinen and Krivolutsky (1982) dealing with species sampled in the territory of Latvia. Both authors no longer work in science and are unavailable for discussions. A possible explanation for the mistake could be that Lithuanian literature (Eitminavichute 1958, 1965 after Karppinen et Krivolutsky 1982) were mistakenly translated as the source of species for the fauna of Latvia. There are no published Lithuanian data of species mentioned for fauna of Latvia (Eitminavichute, pers. comm.) and that is why 52 species are discluded from the current list.

Ten synonyms (Tab. 1) were removed from the previous checklist (Baranovska 2007).

Table 1. Removed synonyms from the previous checklist (Baranovska 2007) and their valid species names after Weigmann (2006).

Synonyms (Baranovska 2007)	**Valid species** (Weigmann 2006)
Eniochthonius pallidula (C.L.KOCH, 1936)	*Eniochthonius minutissimus* (BERLESE, 1903)
Nothrus biciliatus C.L.KOCH, 1841	*Nothrus anauniensis* CANESTRINI et FANZAGO, 1876
Hoplophthiracarus pavidus (BERLESE, 1913)	*Hoplophthiracarus illinoisensis* (EWING, 1909)
Adoristes poppei (OUDEMANS, 1906)	*Adoristes ovatus* (C.L.KOCH, 1839)
Hermanniella picea (C.L.KOCH, 1840)	*Hermanniella punctulata* BERLESE, 1908
Oribella castanea (HERMANN, 1804)	*Banksinoma lanceolata* (MICHAEL, 1885)
Eupelops duplex (BERLESE, 1916)	*Eupelops torulosus* (C.L.KOCH, 1839)
Diapterobates notatus (THORELL, 1872)	*Diapterobates humeralis* (HERMANN, 1804)

Euzetes seminulum (O.F.MULLER, 1776)	*Euzetes globulus* (NICOLET, 1855)
Scheloribates confundatus (SELLNICK, 1928)	*Scheloribates (Hemileius) initialis* (BERLESE, 1908)

In the previous checklist, 151 species were found cited correctly and atleast once recorded in the territory of Latvia (Grube 1859, Eglitis 1943, 1954, Viksne 1959, Berina et al. 1989, Karps et al. 1990). However, according to the currently used systematics of Weigmann (2006), 55 names (Tab. 2) have been changed (Tab. 2).

Table 2. Remarks on changes made after Weigmann (2006) for species taxonomical names on the previous checklist (Baranovska 2007) of Latvian oribatids. Remarks abbreviated: Sp – species, Gn – genus, ( ) – brackets, A-Y – author and year, Y – year, (Y) – brackets and year; (A-Y) – brackets, author and year; M – mistakenly written taxon by Baranovska (2007).

Species (number from the current checklist)	**Remarks**							
	Sp	Gn	( )	A-Y	Y	(Y)	(A-Y)	M
1, 9, 12, 34, 36, 43, 57, 62, 74, 80, 119, 130, 137, 157, 162, 166, 173			X					
2, 13, 103, 105, 172	X	X		X				
3, 90, 93, 108		X						
11, 38, 54, 61, 73, 75, 124, 132, 149					X			
14, 17, 29, 31, 48, 79, 83, 109, 156, 163, 164	X						X	
18		X			X			
51, 135	X							
134						X		
161				X				
176	X				X			
11, 24, 62, 108, 151								X

Notes on new species for fauna of Latvia

Mites were collected from the soil in the fen Apšuciems (57°05'29", 23°31'69") in the Engure municipality, on 20th May, 2009.

Myrica gale, *Schoenus ferrugineus*, *Carex panicea*, *Parnassia palustris*, *Cladium mariscus*, *Drepanocladus revolvens*, and *Campylium stellatum* were the most cummon plants and mosses found in the sampling area. Thirty samples (distance – two meters) were collected along a 60 meters transect. The samples were collected using a borer. Mites were extracted on Tulgren funnels for seven days (25W light bulbs). Specimens were mounted in Hoyer's medium (Krantz 1978) and observed under the transmission light microscope Olympus BX41 combined with a digital camera Olympus DP12. Species, subspecies and forms were identified after Weigmann (2006) identification key and verified when required by Dr. Biol. Gerd Weigmann and Dr. Biol. Ritva Pentinenn. The material is deposited in the Institute of Biology, University of Latvia.

Abbreviations used in the text: Ref. – species that have not been included in the previous checklist, but are registered (the first reference is given in brackets); * - new genus or family for fauna of Latvia.

Brachychthoniidae THOR, 1934
Liochthonius VAN DER HAMMEN, 1952
Liochthonius furcillatus (WILLMANN, 1942) – 1 adult;
Liochthonius hystricinus (FORSSLUND, 1942) – 21 adults
Liochthonius tuxeni (FORSSLUND, 1957) – 1 adult;

Phthiracaridae PERTY, 1841
Phthiracarus PERTY, 1841
Phthiracarus ferrugineus (C.L.KOCH, 1841) – 37 adults;
Steganacarus EWING, 1917
Steganacarus (Tropacarus) carinatus forma *pulcherrima* (BERLESE, 1887) – 1 adult;

Malaconothridae BERLESE, 1916 *
Trimalaconothrus BERLESE, 1916 *
Trimalaconothrus angulatus WILLMANN, 1931 – 66 females and 29 juveniles;

Trhypochthoniellidae KNÜLLE, 1957
Trhypochthoniellus WILLMANN, 1928
Trhypochthoniellus longisetus forma *longiseta* (BERLESE, 1904) – 1935 females and 988 juveniles;

Hermannieliiidae GRANDJEAN, 1934
Hermanniella BERLESE, 1908
Hermanniella dolosa GRANDJEAN, 1931 – 30 adults;

Damaeidae BERLESE, 1896
Metabelba GRANDJEAN, 1936
Metabelba (Parametabelba) sphagni STRENZKE, 1950 – 15 adults and 3 juveniles;

Tectocepheidae OUDEMANS, 1900
Tectocepheus BERLESE, 1895
Tectocepheus velatus sarekensis TRAGARDH, 1910 – Ref. (Eglitis 1943);

Quadroppiidae BALOGH, 1983
Quadroppia JACOT, 1939
Quadroppia hammerae MINGUEZ et AL., 1985 – 6 adults;

Oppiidae GRANDJEAN, 1951
Oppiella JACOT, 1937
Oppiella (Oppiella) nova (OUDEMANS, 1902) – 145 females;
Oppiella (Rhinoppia) hygrophila (MAHUNKA, 1987) – 48 females;

Suctobelbidae JACOT, 1938
Suctobelbella JACOT, 1937
Suctobelbella palustris (FORSSLUND, 1953) – 98 adults
Suctobelbella subcornigera (FORSSLUND, 1941) – 56 adults;

Autognetidae GRANDJEAN, 1960
Conchogneta GRANDJEAN, 1963
Conchogneta traegardhi (FORSSLUND, 1947) – 1 adult;

Limnozetidae GRANDJEAN, 1954
Limnozetes HULL, 1916
Limnozetes rugosus (SELLNICK, 1923) – 5 adults;

Passalozetidae GRANDJEAN, 1954
Passalozetes GRANDJEAN, 1932
Passalozetes strenzkei WEIGMANN, 2006 – Ref. (Viksne 1959);

Phenopelopidae PETRUNKEVICH, 1955
Eupelops EWING, 1917
Eupelops plicatus (C.L.KOCH, 1835) – 1 adult;

Achipteriidae THOR, 1929
Anachipteria GRANDJEAN, 1932
Anachipteria deficiens GRANDJEAN, 1932 – 42 adults;

Galumnidae JACOT, 1925
Pilogalumna GRANDJEAN, 1956 *
Pilogalumna tenuiclava (BERLESE, 1908) – 41 adults;

Ceratozetidae JACOT, 1925
Ceratozetes BERLESE, 1908
Ceratozetes peritus GRANDJEAN, 1951 – 12 adults;

Scheloribatidae GRANDJEAN, 1933
Scheloribates BERLESE, 1908
Scheloribates (Topobates) circumcarinatus WEIGMANN et MIKO, 1998 – 115 adults;

Oribatulidae THOR, 1929
Zygoribatula BERLESE, 1916
Zygoribatula frisiae (OUDEMANS, 1916) – 1 female.

The Lithuanian fauna of moss mites should be considered as well investigated, 312 species are known (Eitminavichute 2003). In total, 176 species from 52 families have been recorded till now in Latvia. In the past 20 years no regular studies of oribatids of Latvia have been performed. The author expects a significant increase in the number of oribatid species in Latvia in future investigations.

Acknowledgments

Author is grateful to Gerd Weigmann (Institute of Zoology, University of Berlin, Germany) and Ritva Penttinen (Zoological Museum, University of Turku, Finland) for verifying identification of oribatid species and providing with useful literature. Author is grateful to Irena Eitminaviciute and Audrone Matuseviciute (Institute of Ecology of Nature Research Center, University of Vilnius, Lithuania), Massimo Migliorini (Department of Evolutionary Biology, University of Siena, Italy), Nusret Ayyildiz (Turkey) and Natalia Lebedeva (Southern Scientific Centre, Russian Academy of Sciences, Russia) for their help on providing with rare and valuable references. Author is grateful to Mara Pakalne for her assistance with the identification of vegetation and mosses. Author wants to thank Ineta Salmane (Institute of Biology, University of Latvia) and Voldemārs Spuņģis (Faculty of Biology, University of Latvia) for their valuable consultations. Author also wants to thank Guntis Brūmelis for provided help and comments on English. Finaly author is grateful to Roy Norton (State University of New York, USA) and Vallerie Behan-Pelletier (Biodiversity Program, Agriculture et Agri-Food Canada, Ottawa, Canada) for teaching oribatid identification and morphology during the courses "Soil Acarology - Oribatida" held in Collumbus (Ohio State University, USA) in 2008.

Presented new species were collected during the study as a part of the project "Influence of climatic changes on nature of Latvia" in the framework of the National Long Term Ecological Research and "An investigation of invertebrate species and communities and limiting factors in the subboreal fens".

References

Baranovska A. 2007. A Checklist of Latvian Oribatida. – *Latvijas entomologs* **44**: 5-10.

Baranovska A., Spungis V., Melecis V. 2006. Long-term changes in species richness of oribatid mites in pine forest ecosystems of Ziemelvidzeme biosphere rezerve. – 11th Nordic Soil Zoology Sympousium and PhD Course. Akureyri, Iceland, July 28-31, Abstracts: 81-82.

Berina D., Lapina I., Melecis V., Spungis V. 1989. *Investigation of the impact of transport emissions on soil microarthropods by the method of principal components. – In: The impact of highway transport emissions on natural environment.* Riga, Zinatne: 48-73 (in Russian, English abstract).

Bulanova-Zachvatkina E.M. 1967. [Armoured mites – Oribatids]. Higher School Press, Moscow: 254 pp. (in Russian).

Eglitis V. 1943. Material zur Oribatidenfauna Lettlands. – *Folia Zoologica et Hydrobiologica* **12**, No. 1:122-128.

Eglitis V. 1954. [Soil fauna of the Latvian SSR]. Publishing House of the Academy of Sciences of Latvian SSR, Riga: 115-140. (in Russian).

Eitminavichiute I.S. 1958. [Fauna of oribatid mites of Lithuanian SSR]. – *Acta Parasitologica Lithuanica* **1**: 71-83 (in Russian).

Eitminavichiute I.S. 1965. [Oribatid fauna from Baltic Sea coast. 1. Estonian SSR]. – *Proceedings of Academy of Science of Lithuanian SSR* **38**:81-87 (in Russian).

Eitminavichute I. 2003. *Soil Mites of Lithuania (Acari) Catalogue*. Institute of Ecology of Vilnius University, Vilnius: 168 pp. (in Lithuanian, English abstract).

Eitminavichute I.S., Aukshtikalnene A.M., Srazdene V.M., Minkyavichus V.A. 1976. *Soil Invertebrate Fauna of Costal Area in the East Baltic Region.* Mokslas, Vilnius: 72 pp. (in Russian).

Gilyarov M.C. 1975. [*An identification Keys of soil living mites (Sarcoptiformes)*]. Nauka, Moscow: 491 pp. (in Russian).

Grube A.E. 1859. Verzeichniss der Arachnoiden Liv-, Kur- und Ehstlands. – *Archiv für die Naturkunde Liv-, Ehst- und Kurlands (2. S.)* **1**: 299-486.

Joel H. 2003. Biology Catalog. Species listing of Oribatids of the World. http://insects.tamu.edu/research/collection/hallan/Acari/Family/Oribatida1.htm (last accessed: 10.03.2011.)

Kagainis U. 2010. *Carabodes rugosior* BERLESE, 1916 and *C. subarcticus* TRÄGARDH, 1902 – New Species of

Oribatid Mites (Acari: Oribatida: Carabodidae) for Fauna of Latvia, with Brief Discussion of Their Microscoping. – *Latvijas entomologs* **48**: 115-117.

Karppinen E., Krivolutsky D.A. 1982. List of oribatid mites (Acarina, Oribatei) of Northern palaearctic region. 1. Europe. – *Acta Entomologica Fennica* **41**:1-18.

Karps A., Lapina I., Melecis V., Spungis V., Sternbergs M. 1990. Environmental pollution by pig slurry. Zinatne, Riga: 50-75 (in Russian, English abstract).

Krantz G.W. 1978. *A Manual of Acarology.* 2nd edition. Oregon State University Book Store Inc., Corvallis: 509 pp.

Los W. 2004. Fauna Europea: data services of taxonomical groups http://www.faunaeur.org (last accesssed: 10.03.2011.)

Marshall W.G., Reeves M.R., Norton. R.A. 1987. Catalogue of the Oribatida (Acari) of Continental United Sates and Canada. – *Memoirs of the Entomological Society of Canada* **139**: 1-418.

Mahunka S. 2004. Oribatids from the Carpathian Basin with zoogeographical and taxonomical notes (Acari: Oribatida), – *Opuscula Zoologica Budapest* **35**: 63-72.

Niemi R., Karppinen E., Unsitalo M. 1997. Catalogue of Oribatida (Acari) of Finland. – *Acta zoologica Fennica* **207**: 1-39.

Schatz H. 2003. Oribatida – List of Species. www.zoology.ubc.ca/~srivast/mites/extras/Schatz.xls (last accessed: 10.03.2011)

Shtanchaeva U.Y., Subias L.S. 2009. A review of oribatid mites of the family Oribatellidae (Acariformes, Oribatida) from the Caucasus. – *Zoologicheskiy Zhurnal* **88**: 143-163.

Taurins E., Ozols E. (eds.) 1957. [*A key of animals of the Latvian SSR. Part 1: Invertebrates*]. Publishers of Institute of History of Latvia, Riga: 205-249 (in Latvian).

Viksne V. 1959. [Distribution, seasonal dynamics and species of Oribatid mites of Latvian SSR]. In: [*Fauna of Latvian SSR, II*], Riga, Publishing House of the Academy of Sciences of Latvian SSR: 59-86. (in Russian).

Weigmann G. 2006. *Hornmilben (Oribatida). Die Tierwelt Deutschlands*. Goecke et Evers, Keltern: 520 pp.

Weigmann G., Kratz W. 1981. Die deutschen Hornmilbenarten und ihre ökologische Charakteristik. – *Zoologie zur Beiträge* **27**: 459-489.

Willmann C. 1931. *Moosmilben oder Oribatiden (Oribatei). Die Tierwelt Deutschlands*, Bd. **22**. Gustav Fischer Verlag, Jena: 79-200.

Zvaigzne A. 1994. [*Catalogue of Latvian armoured mites (Acarina, Oribatei)*]. Faculty of Geography, University of Latvia, Riga: 36 pp. (manuscript) (in Latvian, English abstract).

Received: March 5, 2011.