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## Annotated checklist of Georgian oribatid mites

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## Table of contents

Abstract	5
Introduction	5
Material and methods	6
General results and discussion	6
Checklist	8
Superfamily: Acaronychoidea Grandjean, 1932	8
Family: Acaronychidae Grandjean, 1932	8
Superfamily: Palaeacaroidea Grandjean, 1932	8
Family: Palaeacaridae Grandjean, 1932	8
Superfamily: Brachychthonioidea Thor, 1934	8
Family: Brachychthoniidae Thor, 1934	8
Superfamily: Atopochthonioidea Grandjean, 1949	10
Family: Atopochthoniidae Grandjean, 1949	10
Superfamily: Hypochthonioidea Berlese, 1910	10
Family: Eniochthoniidae Grandjean, 1947	10
Family: Hypochthoniidae Berlese, 1910	10
Family: Lohmanniidae Berlese, 1916	10
Family: Mesoplophoridae Ewing, 1917	11
Superfamily: Protoplophoroidea Ewing, 1917	11
Family: Cosmochthoniidae Grandjean, 1947	11
Family: Sphaerochthoniidae Grandjean, 1947	11
Superfamily: Heterochthonioidea Grandjean, 1954	12
Family: Heterochthoniidae Grandjean, 1954	12
Superfamily: Eulohmannioidea Grandjean, 1931	12
Family: Eulohmanniidae Grandjean, 1931	12
Superfamily: Perlohmannioidea Grandjean, 1954	12
Family: Perlohmanniidae Grandjean, 1954	12
Superfamily: Epilohmannioidea Eudemans, 1923	13
Family: Epilohmanniidae Oudemans, 1923	13
Superfamily: Euphthiracaroidae Jacot, 1930	13
Family: Euphthiracaridae Jacot, 1930	13
Superfamily: Phthiracaroidae Perty, 1841	14
Family: Phthiracaridae Perty, 1841	14
Superfamily: Crotonioidea Thorell, 1876	19
Family: Crotoniidae Thorell, 1876	19
Family: Hermannidae Sellnick, 1928	21
Family: Malaconothridae Berlese, 1916	21
Family: Nanhermanniidae Sellnick, 1928	21
Family: Nothridae Berlese, 1896	22
Family: Trhypochthoniidae Willmann, 1931	23
Superfamily: Hermannelloidea Grandjean, 1934	23
Family: Hermannelliidae Grandjean, 1934	23
Family: Plasmobatidae Grandjean, 1961	24
Superfamily: Neoliodoidea Sellnick, 1928	24
Family: Neoliodidae Sellnick, 1928	24
Superfamily: Plateremaeoidea Trägårdh, 1928	25
Family: Aleurodamaeidae Paschoal & Johnston, 1984	25
Family: Gymnodamaeidae Grandjean, 1954	25
Family: Licnobelbidae Grandjean, 1965	26
Family: Licnodamaeidae Grandjean, 1954	26
Family: Plateremaeidae Trägårdh, 1926	26
Superfamily: Damaeidea Berlese, 1896	27
Family: Damaeidae Berlese, 1896	27
Superfamily: Eutegaeoidea Woolley, 1965	30
Family: Compactozetidae Luxton, 1988	30
Superfamily: Microzetoidea Grandjean, 1936	31
Family: Microzetidae Grandjean, 1936	31
Superfamily: Ameroidea Bulanova-Zachvatkina, 1957	32
Family: Ameridae Bulanova-Zachvatkina, 1957	32
Family: Amerobelbidae Grandjean, 1961	32
Family: Caleremaeidae Grandjean, 1965	32
Family: Ctenobelbidae Grandjean, 1965	32

Family: Damaeolidae Grandjean, 1965	33
Family: Eremobelbidae Balogh, 1961	33
Family: Eremulidae Grandjean, 1965	34
Family: Hungarobelbidae Miko & Trave, 1996	34
Family: Spinozetidae Balogh, 1972	34
Superfamily: Zetorchestoidea Michael, 1898	34
Family: Eremaeidae Oudemans, 1900	34
Family: Zetorchestidae Michael, 1898	35
Superfamily: Gustavioidea Oudemans, 1900	35
Family: Astegistidae Balogh, 1961	35
Family: Gustaviidae Oudemans, 1900	36
Family: Liacaridae Sellnick, 1928	36
Family: Peloppiidae Balogh, 1943	39
Superfamily: Carabodoidea C.L. Koch, 1837	39
Family: Carabodidae C.L. Koch, 1837	39
Family: Otocephidae Balogh, 1961	42
Superfamily: Oppioidea Grandjean, 1951	42
Family: Autognetidae Grandjean, 1960	42
Family: Epimerellidae Ayyildiz & Luxton, 1989	43
Family: Machuellidae Balogh, 1983	43
Family: Oppiidae Grandjean, 1954	44
Family: Quadropiidae Balogh, 1983	50
Family: Thyrisomidae Grandjean, 1953	51
Superfamily: Trizetoidea Ewing, 1917	51
Family: Suctobelbidae Jacot, 1938	51
Superfamily: Tectocephoidea Grandjean, 1954	55
Family: Tectocephidae Grandjean, 1954	55
Superfamily: Limnozetoidea Thor, 1937	55
Family: Hydrozetidae Grandjean, 1954	55
Superfamily: Cymbaeremaeoidea Sellnick, 1928	55
Family: Cymbaeremaeidae Sellnick, 1928	55
Superfamily: Licneremaeoidea Grandjean, 1931	56
Family: Charassobatidae Grandjean, 1958	56
Family: Micreremaeidae Grandjean, 1954	56
Family: Passalozetidae Grandjean, 1954	56
Family: Scutoverticidae Grandjean, 1954	57
Superfamily: Phenopeloidea Petrunkevich, 1955	57
Family: Phenopelopidae Petrunkevich, 1955	57
Superfamily: Achipterioidea Thor, 1929	58
Family: Achipteriidae Thor, 1929	58
Family: Tegoribatidae Grandjean, 1954	60
Superfamily: Oribatelloidea Jacot, 1925	61
Superfamily: Oripodoidea Jacot, 1925	62
Family: Haplozetidae Grandjean, 1936	62
Family: Oribatulidae Thor, 1929	63
Family: Parakalummidae Grandjean, 1936	66
Family: Scheloribatidae Grandjean, 1933	67
Family: Chamobatidae Grandjean, 1954	71
Family: Euzetidae Grandjean, 1954	73
Family: Punctoribatidae Thor, 1937	73
Family: Zetomimidae Shaldybina, 1966	74
Superfamily: Galumnoidea Jacot, 1925	75
Family: Galumnidae Jacot, 1925	75
Conclusions on oribatid species diversity in Georgia	77
References	77

## Abstract

A new updated checklist of Georgian oribatid mites is based on the critical review of existing literature data and new findings. The list includes 534 oribatid species of which 21 species are new for the country recorded from more than 390 locations. For each species information of the global and regional distribution is presented with notes on ecological characteristics. As far as necessary we provide remarks on taxonomic issues to overcome the ambiguities and inconsistencies existing in literature.

**Key words.** Oribatid mites, catalogue, Caucasus biodiversity

## Introduction

Oribatid mites represent one of the dominant arthropod groups in the soil environment, with more than 10000 species described (Norton & Behan-Pelletier 2009; Subías 2004, updated in 2015). They can be found through the soil profile, and inhabit aquatic and arboreal habitats as well (Norton & Behan-Pelletier 2009). Oribatid mites are trophically heterogeneous, with species feeding on various types of fungi, detritus, bacteria, algae and small invertebrate animals. They are characterized by k-style life history traits, such as slow development, poor dispersal ability and strong defensive mechanisms (Norton 1994; Norton & Behan-Pelletier 2009).

The Republic of Georgia is located in Caucasus, a biodiversity hot-spot which shelters the most diverse flora and fauna of the temperate region (Zazanashvili *et al.* 2004). Unlike most other groups of invertebrate animals in Georgia, the oribatid mite fauna is rather well explored. Investigations began with the works of Nadezhda Djaparidze (working period 1963–1990). The first list of Georgian oribatids was published in 1963 (Djaparidze 1963). In this checklist 80 species were recognized, and for each species sampling place and known habitats were ascribed. After this work, several updated checklists appeared dealing with oribatid mites of particular regions of Georgia or the whole country. Darejanashvili (1964) reported 71 morphospecies for Tbilisi and its surroundings, 43 species were registered on Trialeti Range (Djaparidze 1966) and 68 morphospecies were found in Borjom-Bakuriani gorge (Darejanashvili 1967). Reck (1976) provided another complete checklist for whole country with 283 species and Karppinen *et al.* (1987) indicated the presence of 299 oribatid species in Georgia. The most recent checklist of Georgian oribatid mites listed 340 species (Murvanidze & Darejanashvili 2000), and the catalogue of Stanchaeva & Subías (2010) summarized information for Caucasian oribatid mite fauna in total, reporting 553 morphospecies for Georgia.

Unfortunately, in many cases in early literature detailed information on the geographic position of sampling locations was not provided, which resulted in uncertain distribution knowledge of some species. For example, “Georgia”, “Eastern Georgia”, “Upper Kartli” *etc.* are used as only location data, but these broad geographical units are not sufficient for regional biogeographic and ecological assessment of species. All the more recent checklists repeat many vague indications which make these references less useful.

After the publication of the catalogue of Shtanchaeva & Subías (2010), new species were described for Georgia (Murvanidze & Behan-Pelletier 2011; Murvanidze & Weigmann 2012; Murvanidze 2014; Shtanchaeva *et al.* 2010; Shtanchaeva & Subías 2012, 2012a) and new records for Georgian and Caucasian fauna were added (Mumladze *et al.* 2015; Murvanidze *et al.* 2011, 2015; Murvanidze & Mumladze 2014; Murvanidze & Todria 2015). Niedbała (2015) expressed doubts concerning the taxonomic status of several species described by Shtanchaeva & Subías (2012). Subsequent unpublished work by the authors during 2010–2014 years added many new data on the distribution of certain species in the Georgian territories. These data enrich our knowledge of local and regional oribatid biodiversity including some new and rare oribatid species and their specific habitat preferences (like dead wood, canopy, caves, *etc.*).

The discovery of mistakes concerning species distributions and several disagreements with the systematic placement of certain species provided by Shtanchaeva and Subías (2010), along with the new published and unpublished data on the oribatid diversity in Georgia, led us to prepare this upgraded checklist of Georgian oribatid mites. During preparation of checklist, we encountered problems regarding old type material of Djaparidze and Darejanashvili. Most of original material is lost or badly damaged and we could not check the specimens. (*Lucoppia nicora* Djaparidze, 1986, *Flexa bidens* Djaparidze, 1990, *F. horreo* Djaparidze, 1990, *Oribatula beccus* Djaparidze, 1990, *Eremaeus longiseta* Djaparidze, 1990, *Liacarus curtus* Djaparidze, 1985, *Carabodes egregius*