



Checklist of *Sphagnum*-dwelling testate amoebae in Bulgaria

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Abstract

Background

Until now, a complete checklist of *Sphagnum*-dwelling testate amoebae in Bulgaria has never been published. Records for species diversity and distribution in the country were scattered in many faunistic and ecological publications. The aim of the present study is to summarise all data for the species distribution at the level of country by reviewing the existing literature and by additional data obtained in our research over the past two years.

New information

The checklist comprises 171 species, classified into 43 genera, 20 families, three orders, three classes and three phyla. We present data for 16 new *Sphagnum*-dwelling testate amoebae in Bulgaria and new distribution data for 134 species. Of them, 99 species are recorded from Stara Planina Mt., for which there was no available data to date. Additionally are recorded 69 new species for Pirin Mt., 21 for Vitosha Mt. and 18 for Rila Mt. Thirty six species are synonymised according to the latest taxonomic changes. Two misidentified taxa (*Euglypha brachiata* Penard, 1902 and *Diffflugia compressa* var. *africana* Gauthier-Lièvre et Thomas, 1958) are transferred into valid species *E. acanthophora* and *Zivkovicia*

compressa, respectively. Three of the recorded species have not been included in the checklist, because they are currently not referring to testate amoebae (*Cochliopodium bilimbosum* (Auerbach 1856) and *Cochliopodium echinatum* Korotneef, 1879 are gymnameobae (naked amoebae) and *Microgromia elegantula* (Penard 1904) = *Paralieberkuehnia elegantula* (Penard 1904) is freshwater foraminifera).

Keywords

Amoebozoa, Cercozoa, Stramenopiles, biodiversity, distribution, *Sphagnum* mosses, Bulgaria

Introduction

Testate amoebae are a polyphyletic assemblage of at least three *major*, unrelated taxonomic groups of eukaryotes (Adl SM et al. 2012). They are present in most terrestrial and freshwater environments and more marginally in brackish and marine habitats. They are especially abundant and diverse in *Sphagnum* mosses. Research on testate amoebae have increased significantly over the past two decades due to their increasing use in different applied aspects: as bioindicators for palaeoecological studies, in environmental monitoring, pollution hazards, ecotoxicology, studies on their role in the cycling of elements in terrestrial ecosystems, biogeographical and evolutionary studies etc. (Aoki, Yoshiyuki et al. 2007, Booth 2002, Charman 2001, Charman et al. 1998, Lamentowicz and Mitchell 2005, Mitchell et al. 2008, Nguyen-Viet et al. 2007, Swindles et al. 2008, Swindles et al. 2015, Qin et al. 2013).

Studies on *Sphagnum*-dwelling testate amoebae in Bulgaria started at the beginning of the 20th century, when Pateff (1924), Pateff (1928) published his works on freshwater Rhizopoda in the country. He recorded a total of 118 rhizopods, of which 52 testate amoebae were from *Sphagnum* mosses in the Rila, Rhodopes and Vitosha Mountains. Later, Valkanov (1932), Valkanov (1934) published results of his studies on the fauna of alpine lakes in the Rila and Pirin Mountains and recorded many testate amoebae, which are typical inhabitants of peat mosses. Unfortunately, they were recorded along with all other species and no distinction was made amongst the species found in the lakes themselves and in the *Sphagnum* mosses from the lake shore. In the 60s and 70s of the 20th century, several publications on testate amoebae from the Vitosha, Rhodopes and Pirin Mountains were published (Golemansky 1965, Golemansky 1966, Golemansky 1968, Golemansky 1974), including a lot of data on *Sphagnum*-dwelling testate amoebae. At the end of the 20th and beginning of the 21st century, the number of publications concerning various aspects of taxonomy, systematics, morphology and ecology of sphagnicolous testate amoebae in Bulgaria increased considerably (Golemansky and Todorov 1990, Golemansky and Todorov 1993, Golemansky and Todorov 2006, Golemansky and Todorov 1985, Golemansky et al. 2006, Heger et al. 2010, Kosakyan et al. 2012, Todorov 1993, Todorov 2004, Todorov 2005, Todorov 2010, Todorov and Golemansky 1995, Todorov and

Golemansky 2000, Todorov et al. 2010, Todorov et al. 2009). All data in the above-mentioned publications have never been summarised in one place and that is the reason why the main goal of the present paper is to unite this scattered information and, together with the new data obtained from our research over the past two years, to present a checklist of all known to date *Sphagnum*-dwelling testate amoebae in Bulgaria. Data on the distribution, habitats, regions, localities, altitude, authors and sources of information are provided in Suppl. material 1. Some typical and a few rare sphagnicolous testate amoebae, recorded from the country, are illustrated in Figs 1, 2, 3, 4.

Materials and methods

The data presented in the checklist are based primarily on published information concerning *Sphagnum*-dwelling testate amoebae in Bulgaria. In addition, data from our research conducted over the past two years are also included. We have tried to explore the diversity and distribution of testate amoebae in the main areas of the country where peat mosses are more widespread. Genus *Sphagnum* in Bulgaria numbers 27 species (Natcheva and Ganeva 2005) distributed in mires in mountain areas of the country above the tree belt or in mires in coniferous forest, these being an important component of habitat 91D0 (Bog Woodland) of Directive 92/43/EEC. Some of the species (e.g. *Sphagnum capillifolium* (Ehrh.) Hedw., *S. subsecundum* Nees, *S. girgensohnii* Russ., *S. centrale* C.E.O.Jensen, *S. platyphyllum* (Lindb. ex. Braithw.) Sull. ex Warnst., *S. squarrosus* Crome, *S. teres* (Schimp.) Ångstr.) are more widespread in mires of Western Stara Planina, Rhodopes, Vitosha, Rila and Pirin Mountains, where, with other bryophytes and sedges, they comprise the specific mire flora.

The material for the present study was extracted from wet *Sphagnum* mosses, gathered at Vitosha and Western Stara Planina Mountains in 2016 and Rila and Pirin Mountains in 2017. A total of 109 samples from 18 localities were sampled and examined. All data, concerning sampling localities including date, region, altitude, coordinates, *Sphagnum* moss species, as well as many physical and chemical parameters of the sampling sites, are provided in Suppl. material 2.

Testate amoebae were extracted from fresh *Sphagnum* mosses at the sampling site and concentrated by sieving (350 µm). The resulting fraction (50 ml) was observed with an optical microscope "Amplival" (Zeiss-Jena) using 40x objective and 10x ocular lens. For scanning electron microscopy (SEM), specimens were isolated by searching through small isolates of material in a petri dish. Specimens were extracted using a glass micropipette, washed several times in distilled water and then individual shells were positioned with a single-hair brush on a previously mounted double-sided adhesive tape on a standard aluminium stub and air-dried. The shells were coated evenly with gold in a vacuum coating unit. The photomicrographs were obtained using a JEOL JSM-5510, operating at 10 kV.

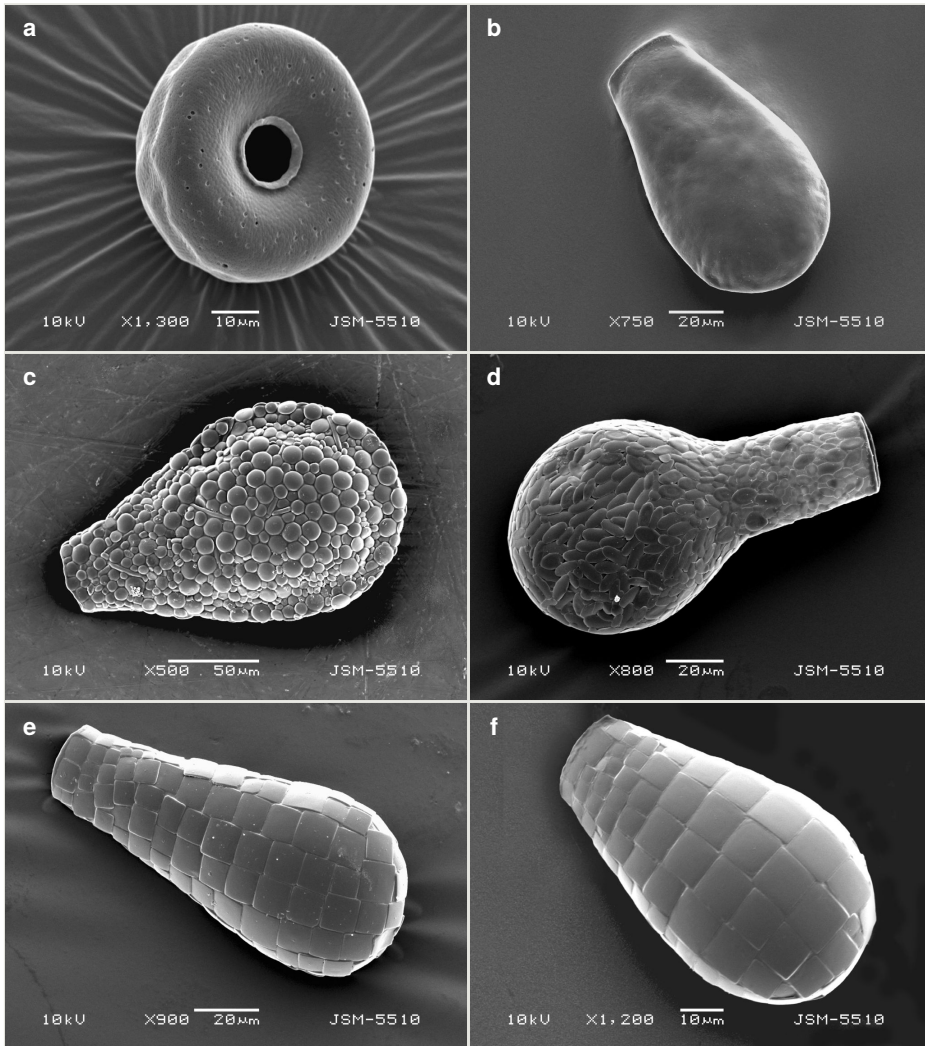


Figure 1.

Characteristic *Sphagnum*-dwelling testate amoebae from the order Arcellinida.

a: *Arcella intermedia* (Deflandre) (Arcellidae) [doi](#)

b: *Hyalosphenia papilio* (Leidy) (Hyalospheniidae) [doi](#)

c: *Gibbocarina galeata* (Penard) (Hyalospheniidae) [doi](#)

d: *Padaungiella lageniformis* (Penard) (Hyalospheniidae) [doi](#)

e: *Quadrulella longicollis* Taranek (Hyalospheniidae) [doi](#)

f: *Quadrulella symmetrica* (Wallich) (Hyalospheniidae) [doi](#)

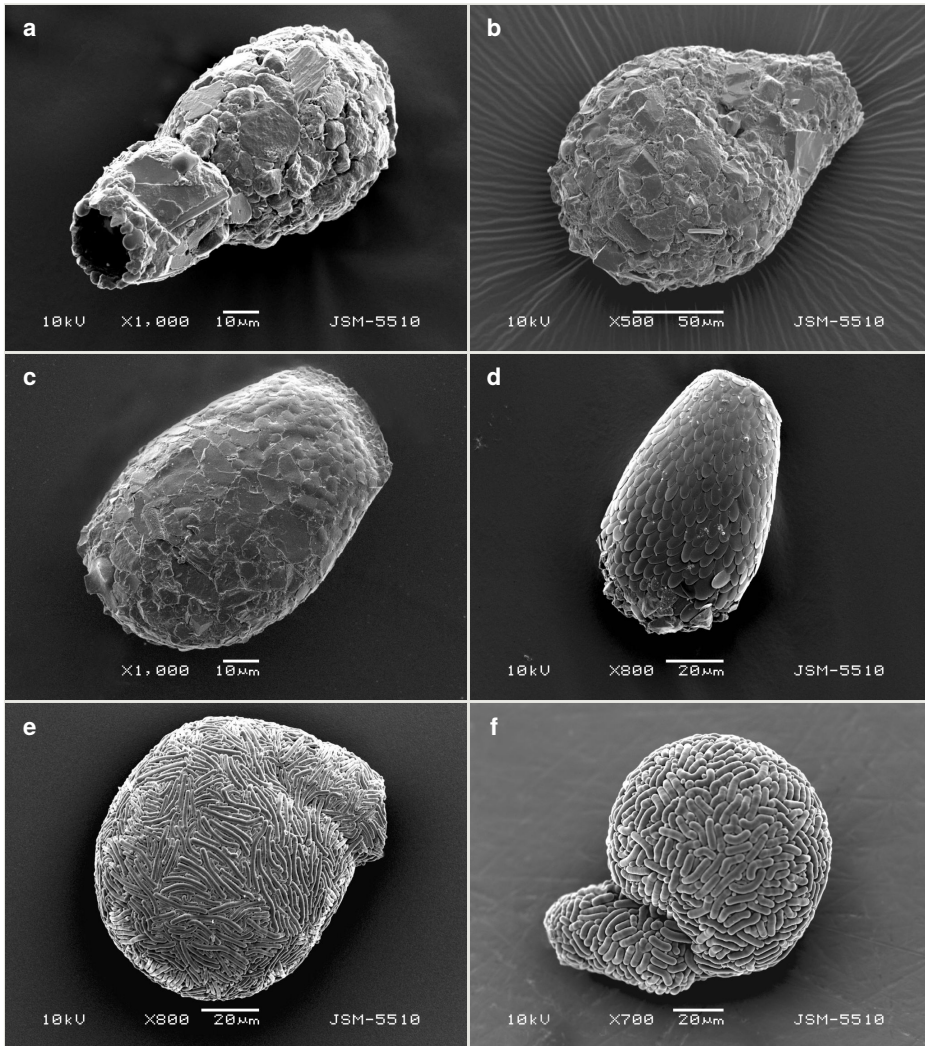


Figure 2.

Characteristic *Sphagnum*-dwelling testate amoebae from the order Arcellinida.

- a: *Lagenodifflugia bryophila* (Penard) (Diffugiidae) [doi](#)
 b: *Zivkovicia compressa* (Carter) (Diffugiidae) [doi](#)
 c: *Heleopera rosea* Penard (Incertae sedis Arcellinida) [doi](#)
 d: *Heleopera petricola* Leidy (Incertae sedis Arcellinida) [doi](#)
 e: *Lesquereusia spiralis* (Ehrenberg) (Incertae sedis Arcellinida) [doi](#)
 f: *Lesquereusia epistomium* Penard (Incertae sedis Arcellinida) [doi](#)

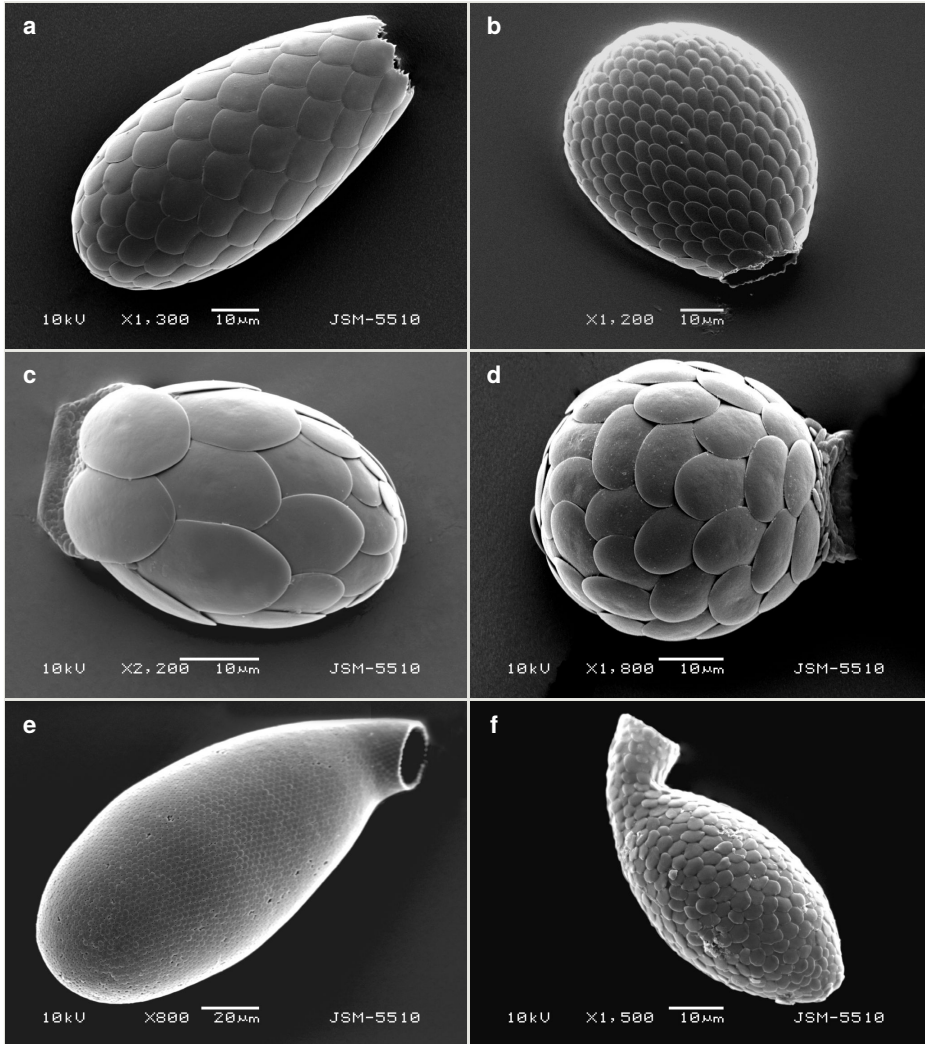


Figure 3.

Characteristic *Sphagnum*-dwelling testate amoebae from the order Euglyphida.

a: *Euglypha tuberculata* Dujardin (Euglyphidae) [doi](#)

b: *Assulina seminulum* (Ehrenberg) (Assulinidae) [doi](#)

c: *Sphenoderia fissirostris* Penard (Sphenoderiidae) [doi](#)

d: *Sphenoderia lenta* Schlumberger (Sphenoderiidae) [doi](#)

e: *Cyphoderia major* (Penard) (Cyphoderiidae) [doi](#)

f: *Campascus minutus* Penard (Cyphoderiidae) [doi](#)

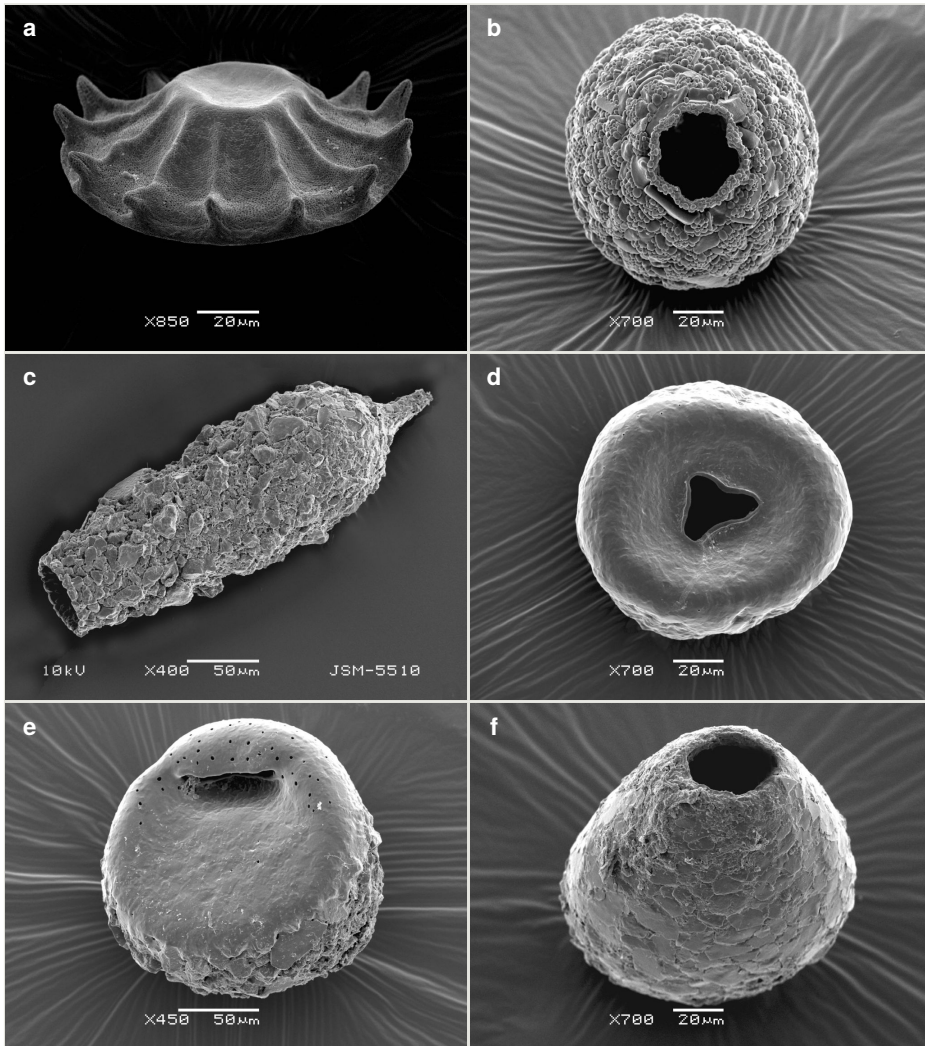


Figure 4.

Rare or incidentally occurring testate amoebae in *Sphagnum* mosses.

- a: *Arcella dentata* Ehrenberg (Arcellidae) [doi](#)
 b: *Netzelia tuberculata* (Wallich) (Netzeliidae) [doi](#)
 c: *Diffflugia acuminata* Ehrenberg (Difflogiidae) [doi](#)
 d: *Trigonopyxis arcula* (Leidy) (Trigonopyxidae) [doi](#)
 e: *Bullinularia indica* (Penard) (Plagiopyxidae) [doi](#)
 f: *Awerintzewia cyclostoma* (Penard) (Incertae sedis Arcellinida) [doi](#)

The checklist is annotated with information regarding the synonymous names (if available), species distribution in *Sphagnum* mosses in Bulgaria, the relevant literature sources and notes (mainly taxonomic). The higher classification used here follows Adl SM et al. 2012 and Meisterfeld (2002a), Meisterfeld (2002b). Taxonomic revision of some genera and

families, as well as numerous taxonomic and nomenclature changes, based on recent molecular studies and subsequent phylogenetic reconstructions, have also been taken into account (Blandenier et al. 2017, Chatelain et al. 2013, Gomaa et al. 2013, Gomaa et al. 2017, Heger et al. 2010, Kosakyan et al. 2016a, Kosakyan et al. 2012, Kosakyan et al. 2016b, Lahr et al. 2013, Lara et al. 2007, Mazei and Warren 2012, Mazei and Warren 2014, Mazei and Warren 2015).

The list does not include separate varieties and forms recorded from Bulgaria, despite the fact that, according to the International Code of Zoological Nomenclature, article 45.6.3, when the name was published before 1961 using the abbreviation 'var.' or 'f.', it is deemed to be subspecific rather than infrasubspecific. However, due to the fact that many of these taxa have not sufficiently detailed descriptions, which in many cases are based on signs that do not have much taxonomic significance (small differences in size, the presence or absence of spines/horns and their number, the number of lobes of the aperture etc.), these taxa remain with unclear taxonomic status. So, until the clarifying of their status with the help of combined morphological and molecular approaches and full confirmation of their validity, we prefer to adopt a conservative position and consider these taxa as the product of the phenotypic plasticity of nominal species. Nevertheless, in 'Notes' to each nominal species, we have included all the records for these infrasubspecific taxa, in the event that some of them may be raised in rank in the future.

Checklist of *Sphagnum*-dwelling testate amoebae in Bulgaria

Kingdom Protozoa Owen, 1858

Subkingdom Neozoa Cavalier-Smith, 1993

Phylum Amoebozoa Lühe, 1913, emend. Cavalier-Smith, 1998

Subphylum Lobosa Carpenter, 1861, emend. Cavalier-Smith, 2009

Class Tubulinea Smirnov et al., 2005

Order Arcellinida Kent, 1880

Suborder Arcellina Haeckel, 1894

Family Microcoryciidae de Saedeler, 1934

Genus *Microcorycia* Cockerell, 1911

Microcorycia flava* (Greeff, 1866), emend. Penard, 1902*Nomenclature:***Amphizonella flava* Greeff, 1866*Corycia flava* Greeff, 1866*Corycia Dujardini?* Gagliardi, 1871 (in part)**Distribution: Rhodopes Mt.** (Golemansky et al. 2006).**Family Microchlamyidae Ogden, 1985****Genus *Microchlamys* Cockerell, 1911*****Microchlamys patella* (Claparede and Lachmann, 1859) Cockerell, 1911****Nomenclature:***Pseudochlamys patella* Claparede and Lachmann, 1859**Distribution: Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).**Family Arcellidae Ehrenberg, 1843****Genus *Arcella* Ehrenberg, 1832*****Arcella arenaria* Greeff, 1866****Nomenclature:***Arcella aureola* Maggi, 1883*Arcella microstoma* Penard, 1890**Distribution: Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).***Arcella bathystoma* Deflandre, 1928****Distribution: Rila Mt.** (new data).

***Arcella catinus* Penard, 1890**

Nomenclature:

Arcella vulgaris Leidy, 1879 (in part)

Arcella artocrea Penard, 1902

Arcella vulgaris var. *compressa* Cash, 1905

Arcella catinus var. *australis* Playfair, 1918

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1928, Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Arcella dentata* Ehrenberg, 1830**

Nomenclature:

Arcella stellaris Perty, 1852

Arcella Okeni Perty, 1852

Arcella stellata Ehrenberg, 1854

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006).

***Arcella discoides* Ehrenberg, 1871**

Nomenclature:

Arcella discoidea Ehrenberg, 1843

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa have also been recorded: *Arcella discoides* var. *pseudovulgaris* Deflandre, 1928 (**Vitosha Mt.**) and *Arcella discoides* var. *scutelliformis* Playfair, 1918 (**Pirin Mt., Rhodopes Mt., Rila Mt.**).

***Arcella gibbosa* Penard, 1890**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Arcella hemisphaerica* Perty, 1852*Nomenclature:**

Arcella vulgaris var. *hemisphaerica* Wailes, 1918

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, new data); **Vitosha Mt.** (new data).

Notes: The species has been recorded both as nominal species and as infrasubspecific taxon *Arcella hemisphaerica* f. *undulata* Deflandre, 1928 (**Rhodopes Mt., Rila Mt.**).

Arcella intermedia* (Deflandre, 1928) Tsyganov and Mazei, 2006*Nomenclature:**

Arcella hemisphaerica var. *intermedia* f. *undulata* Deflandre, 1928

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Arcella rotundata* Playfair, 1918**

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa have also been recorded: *Arcella rotundata* var. *stenostoma* Deflandre, 1928 (**Vitosha Mt.**) and *Arcella rotundata* var. *stenostoma* f. *undulata* Deflandre, 1928 (**Rhodopes Mt., Vitosha Mt.**).

***Arcella vulgaris* Ehrenberg, 1830**

Distribution: **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as infrasubspecific taxon *Arcella vulgaris* f. *undulata* Deflandre, 1928 (**Rila Mt.**).

Family Netzeiliidae Kosakyan, Lara, Goma and Lahr, 2016

Genus *Netzelia* Ogden, 1979

Netzelia tuberculata (Wallich, 1864) Netzel, 1983

Nomenclature:

Difflugia proteiformis subsp. *globularis* var. *tuberculata* Wallich, 1864

Difflugia tuberculata Archer, 1867

Difflugia lobostoma Leidy, 1879 (in part)

Nebela tuberculata Owen and Jones, 1976

Difflugia tricuspsis Mediolli and Scott, 1983 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov 2004).

Notes: The species has been recorded both as nominal species and as synonym *D. tuberculata* (**Rhodopes Mt.**).

Suborder Diffflugina Meisterfeld, 2002

Family Difflugiidae Wallich, 1864

Genus *Difflugia* Leclerc, 1815

Difflugia acuminata Ehrenberg, 1838

Nomenclature:

Difflugia curvicaulis Penard, 1899

Difflugia acuminata var. *umbilicata* Penard, 1902

Difflugia venusta Ogden, 1983

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Vitosha Mt.** (Pateff 1924, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. venusta* (**Rhodopes Mt.**).

Difflugia ampullula Playfair, 1918

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Todorov 2005, new data); **Vitosha Mt.** (new data).

***Diffflugia angulostoma* Gauthier-Lièvre and Thomas, 1958**

Distribution: Rila Mt. (Todorov and Golemansky 2000); **Stara Planina Mt.** (new data).

Diffflugia bacilliarum* Perty, 1849*Nomenclature:**

Diffflugia bicornis Penard, 1890

Diffflugia australis var. *minor* Gauthier-Lièvre et Thomas, 1958

Distribution: **Stara Planina Mt.** (new data); **Rila Mt.** (Golemansky and Todorov 1993).

Diffflugia brevicolla* Cash, 1909*Nomenclature:**

Diffflugia pyriformis var. *atricolor* Penard, 1902

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (new data); **Stara Planina Mt.** (new data).

Diffflugia bryophila* (Penard, 1902) Jung, 1942*Nomenclature:**

Diffflugia pyriformis var. *bryophila* Penard, 1902

Diffflugia oblonga var. *longicollis* Gassowsky, 1936

Diffflugia longicollis (Gassowsky, 1936) Ogden and Hedley, 1980

Diffflugia gassowskii Ogden, 1983

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. gassowskii* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**).

Diffflugia distenda* Ogden, 1983*Nomenclature:**

Diffflugia acuminata var. *inflata* Penard, 1899

Diffflugia bicurris Gauthier-Lièvre et Thomas, 1958.

Distribution: **Pirin Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).

***Diffflugia elegans* Penard, 1890**

Nomenclature:

Diffflugia amphoralis Hopkinson, 1909

Diffflugia australis (Playfair, 1918) Gauthier-Lièvre et Thomas, 1958

Diffflugia borodini Gassowsky, 1936

Diffflugia elegans f. *bicornis* Jung, 1936

Diffflugia elegans f. *tricornis* Jung, 1936

Diffflugia juzephiniensis Dekhtyar, 1993

Diffflugia leidyi Wailes, 1912

Diffflugia Solowetskii Mereschkowsky, 1877

Diffflugia tricornis (Jung, 1936) Ogden, 1983

Diffflugia varians Penard, 1902

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. amphoralis* (**Rila Mt.**, **Vitosha Mt.**).

***Diffflugia glans* Penard, 1902**

Distribution: **Rila Mt.** (Todorov and Golemansky 2000).

***Diffflugia globulosa* Dujardin, 1837**

Nomenclature:

Diffflugia proteiformis Ehrenberg, 1838 subsp. *globularis* Wallich, 1864

Diffflugia globularis (Wallich, 1864) Leidy, 1877

Diffflugia chardezi Godeanu, 1972

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. globularis* (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**).

***Diffflugia hiraethogii* Ogden, 1983**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Diffflugia lanceolata* Penard, 1890**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990).

***Diffflugia lobostoma* Leidy, 1874**

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006)

***Diffflugia lucida* Penard, 1890**

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Diffflugia mammillaris* Penard, 1893**

Distribution: **Rila Mt.** (Todorov 2004).

***Diffflugia mica* Frenzel, 1892**

Distribution: **Rila Mt.** (Todorov 2005); **Vitosha Mt.** (new data).

Diffflugia microclaviformis* (Kourov, 1925) Ogden, 1983*Nomenclature:**

Diffflugia pyriformis var. *venusta* Penard 1902

Diffflugia oblogna var. *venusta* Cash, 1909

Diffflugia oblonga var. *microclaviformis* Kourov, 1925

Distribution: **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990).

Notes: The species has been recorded both as nominal species and as the infrasubspecific taxon *Diffflugia oblonga* var. *microclaviformis* (**Vitosha Mt.**).

***Diffflugia minuta* Rampi, 1950**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Todorov 2004, Todorov 2005); **Vitosha Mt.** (new data).

***Diffflugia molesta* Penard, 1902**

Nomenclature:

Diffflugia levanderi Playfair, 1918

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005, new data); **Vitosha Mt.** (new data).

***Diffflugia oblonga* Ehrenberg, 1838**

Nomenclature:

Diffflugia bacillifera Penard, 1890

Diffflugia lacustris (Penard, 1899) Ogden, 1983

Diffflugia oblonga f. *cyphodera* Jung, 1942

Diffflugia oblonga var. *incondita* Gauthier-Lièvre et Thomas, 1958

Diffflugia oblonga var. *lacustris* Cash and Hopkinson, 1909

Diffflugia oblonga var. *parva* Thomas, 1954

Diffflugia parva (Thomas, 1954) Ogden, 1983

Diffflugia pyriformis var. *lacustris* Penard, 1899

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, the synonyms *D. parva* (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**), *D. lacustris* (**Rhodopes Mt.**, **Vitosha Mt.**), *D. bacillifera* (**Rila Mt.**, **Vitosha Mt.**) and infrasubspecific taxa *D. oblonga* var. *lacustris* (Vitosha Mt.) and *D. oblonga* var. *parva* (**Rila Mt.**, **Vitosha Mt.**) have also been recorded.

***Diffflugia penardi* Hopkinson, 1909**

Nomenclature:

Diffflugia fallax Penard, 1890

Diffflugia pyriformis var. *tenuis* Penard, 1890

Diffflugia manicata Penard, 1902

Diffugia oblonga var. *tenuis* Wailes and Penard, 1911

Diffugia tenuis (Penard, 1890) Ogden, 1983

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. manicata* (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**).

Diffugia petricola Cash, 1909

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005).

Diffugia pristis Penard, 1902

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Diffugia pulex Penard, 1902

Nomenclature:

Diffugia minuta var. *minor* Godeanu, 1972

Diffugia ovalisina Beyens et Chardez, 1994

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Diffugia pyriformis Perty, 1849

Distribution: **Rhodopes Mt.** (Pateff 1924); **Rila Mt.** (Pateff 1924); **Vitosha Mt.** (Pateff 1924).

Diffugia rotunda (Chardez, 1956) Ogden, 1983

Nomenclature:

Diffugia globularis var. *sphaerica* Chardez, 1956

Distribution: **Rila Mt.** (Todorov 2004).

***Diffflugia rubescens* Penard, 1891**

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Diffflugia stoutii* Ogden, 1983**

Distribution: **Rila Mt.** (Todorov and Golemansky 2000).

***Diffflugia subaequalis* Penard, 1910**

Distribution: **Pirin Mt.** (Golemansky 1974).

Diffflugia urceolata* Carter, 1864*Nomenclature:**

Diffflugia urceolata var. *olla* Leidy, 1879

Diffflugia urceolata var. *sphaerica* Playfair, 1917

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006).

***Diffflugia ventricosa* Deflandre, 1926**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006).

Diffflugia viscidula* Penard, 1902*Nomenclature:**

Diffflugia lemani Blanc, 1892

Diffflugia histrio Penard, 1908

Diffflugia lemani var. *palustris* Chardez, 1956

Diffflugia lebes var. *masurica* Schönborn, 1965

Diffflugia lebes var. *bretschkoi* Laminger, 1971

Diffflugia finstertaliensis Laminger, 1971

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Vitosha Mt.** (Pateff 1928, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990).

Notes: The species has been recorded as nominal species, as synonym *D. lemani* (**Vitosha Mt.**), as infrasubspecific taxon *D. lemani* var. *palustris* (**Vitosha Mt.**) and as *Diffflugia* sp. (**Vitosha Mt.**).

Genus *Lagenodifflugia* Medioli and Scott, 1983

Lagenodifflugia bryophila (Penard, 1902) Ogden, 1987

Nomenclature:

Pontigulasia bryophila Penard, 1902

Pontigulasia bryophila var. *elachys* Jung, 1942

Pontigulasia varadi Godeanu, 1972

Zivkovicia bryophila (Penard, 1902) Ogden, 1983

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *P. bryophila* (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**).

Lagenodifflugia montana (Ogden and Zivkovic, 1983) Ogden, 1987

Nomenclature:

Pontigulasia montana Ogden and Zivkovic, 1983

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data).

Lagenodifflugia vas (Leidy, 1874) Medioli and Scott, 1983

Nomenclature:

Diffflugia vas Leidy, 1874

Diffflugia pyriformis var. *vas* Leidy, 1879

Pontigulasia vas (Leidy) Schouteden, 1906

Zivkovicia vas (Leidy, 1874) Ogden, 1983 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (new data); **Vitosha Mt.** (new data).

Genus *Pontigulasia* Rhumbler, 1896

Pontigulasia elisa (Penard, 1893) Schouteden, 1906

Nomenclature:

Diffflugia elisa Penard, 1893

Pontigulasia incisa Rhumbler, 1896

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Golemansky and Todorov 1993); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).

Pontigulasia rhumbleri Hopkinson, 1920

Nomenclature:

Pontigulasia compressa Rhumbler, 1896

(non *Pontigulasia compressa* (Carter, 1864))

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov 2004, Todorov 2005); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924).

Notes: The species has been recorded both as nominal species and as synonym *P. compressa* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**).

Genus *Zivkovicia* Ogden, 1987

Zivkovicia compressa (Carter, 1864)

Nomenclature:

Diffflugia compressa Carter, 1864

Diffflugia pyriformis var. *vas* sub- var. *bigibbosa* Penard, 1899

Pontigulasia bigibbosa Penard, 1902

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *P. bigibbosa* (**Pirin Mt., Vitosha Mt.**). Furthermore, in several publications on the testate amoebae from **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995), the infrasubspecific taxa *Diffflugia compressa* var. *africana* Gauthier-Lièvre et Thomas, 1958 has erroneously been

recorded, because the description of the found individuals fully corresponds to *Z. compressa*.

***Zivkovicia spectabilis* (Penard, 1902) Ogden, 1987**

Nomenclature:

Pontigulasia spectabilis Penard, 1902

Zivkovicia vas (Leidy, 1874) Ogden, 1983 (in part)

Distribution: **Rhodopes Mt.** (Golemansky 1968); **Rila Mt.** (Todorov 2004).

Notes: The species has been recorded both as nominal species and as synonym *P. spectabilis* (**Rhodopes Mt.**).

Family Centropyxidae Jung, 1942

Genus *Centropyxis* Stein, 1857

***Centropyxis aculeata* (Ehrenberg, 1830) Stein, 1857**

Nomenclature:

Arcella aculeata Ehrenberg, 1830

Diffflugia aculeata Perty, 1852

Echinopyxis aculeata Claparède et Lachmann, 1859

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa *Centropyxis aculeata* var. *oblonga* Deflandre, 1929 (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**) and *Centropyxis aculeata* var. *grandis* Deflandre, 1929 (**Vitosha Mt.**) have also been recorded.

***Centropyxis aerophila* Deflandre, 1929**

Nomenclature:

Diffflugia constricta Ehrenberg, 1838

Arcella arctiscon Ehrenberg, 1854

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and

Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, the infrasubspecific taxon *Centropyxis aerophila* var. *sphagnicola* Deflandre, 1929 has also been recorded (**Rila Mt., Vitosha Mt.**).

***Centropyxis cassis* (Wallich, 1864) Deflandre, 1929**

Nomenclature:

Diffflugia cassis Wallich, 1864

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Centropyxis constricta* (Ehrenberg, 1838) Penard, 1902**

Nomenclature:

Diffflugia constricta Ehrenberg, 1838

Arcella constricta Ehrenberg, 1841

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1990, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. constricta* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**).

***Centropyxis cryptostoma* Bonnet, 1959**

Distribution: **Rila Mt.** (new data).

***Centropyxis discoides* (Penard, 1890) Deflandre, 1929**

Nomenclature:

Centropyxis aculeata var. *discoides* Penard, 1890

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).

Centropyxis ecornis* (Ehrenberg, 1841) Leidy, 1879*Nomenclature:**

Arcella ecornis Ehrenberg, 1841

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995, new data).

Centropyxis elongata* (Penard, 1890) Thomas, 1959*Nomenclature:**

Diffflugia constricta var. *elongata* Penard, 1890

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995).

***Centropyxis gibba* Deflandre, 1929**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2005).

***Centropyxis hirsuta* Deflandre, 1929**

Distribution: **Rila Mt.** (Todorov 2004).

***Centropyxis laevigata* Penard, 1890**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006).

Centropyxis minuta* Deflandre, 1929*Nomenclature:**

Diffflugia constricta p. p. Leidy, 1879, PL. XVIII, figs. 15-16

Diffflugia constricta p. p. Penard, 1902, p. 299, figs. 13-14

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006).

***Centropyxis orbicularis* Deflandre, 1929**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data).

***Centropyxis plagiostoma* Bonnet and Thomas, 1955**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993).

***Centropyxis platystoma* (Penard, 1890) Deflandre, 1929**

Nomenclature:

Diffflugia platystoma Penard, 1890

Diffflugia constricta p. p. Leidy, 1879, PL. XVIII, figs. 20-21

Diffflugia constricta p. p. Penard, 1902, p. 299, figs. 8, 11, 12

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, the infrasubspecific taxon *Centropyxis platystoma* var. *armata* Deflandre, 1929 has also been recorded (**Vitosha Mt.**).

***Centropyxis spinosa* (Cash, 1905) Deflandre, 1929**

Nomenclature:

Centropyxis aculeata var. *spinosa* Cash, 1905

Distribution: **Pirin Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).

***Centropyxis sylvatica* (Deflandre, 1929) Bonnet and Thomas, 1955**

Nomenclature:

Centropyxis aerophila var. *sylvatica* Deflandre, 1929

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Family Trigonopyxidae Loeblich and Tappan, 1964

Genus *Cyclopyxis* Deflandre, 1929

Cyclopyxis arcelloides (Penard, 1902) Deflandre, 1929

Nomenclature:

Centropyxis arcelloides Penard, 1902

Distribution: **Vitosha Mt.** (Pateff 1928, Golemansky 1965, Golemansky and Todorov 1990, new data).

Notes: The species is recorded both as nominal species and as synonym *Centropyxis arcelloides* (**Vitosha Mt.**).

Cyclopyxis eurystoma Deflandre, 1929

Nomenclature:

Centropyxis (Cyclopyxis) eurystoma Deflandre, 1929

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Cyclopyxis kahli Deflandre, 1929

Nomenclature:

Centropyxis (Cyclopyxis) kahli Deflandre, 1929

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, new data).

Cyclopyxis pirini Golemansky, 1974

Distribution: **Pirin Mt.** (Golemansky 1974); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Cyclopyxis puteus Thomas, 1960

Distribution: **Rila Mt.** (new data).

Genus *Trigonopyxis* Penard, 1912***Trigonopyxis arcula* (Leidy, 1879) Penard, 1912****Nomenclature:**

Diffugia arcula Leidy, 1879

Cystidina arcula (Leidy, 1879) Volz, 1929

Distribution: **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).

Family Plagiopyxidae Bonnet and Thomas, 1960**Genus *Bullinularia* Deflandre, 1953*****Bullinularia indica* (Penard, 1907) Deflandre, 1953****Nomenclature:**

Bulinella indica Penard, 1907

Bullinula indica Penard, 1912

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data).

Genus *Plagiopyxis* Penard, 1910***Plagiopyxis callida* Penard, 1910****Nomenclature:**

Bullinula indica var. *callida* Jung, 1936

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Plagiopyxis declivis* Thomas, 1955**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995, new data).

***Plagiopyxis glyphostoma* Bonnet, 1959**

Distribution: **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).

Plagiopyxis labiata* Penard, 1910*Nomenclature:***Centropyxia labiata* Bartoš, 1947**Distribution:** **Pirin Mt.** (Golemansky 1974); **Rila Mt.** (Golemansky and Todorov 1993).***Plagiopyxis minuta* Bonnet, 1959****Distribution:** **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).***Plagiopyxis oblonga* (Bonnet et Thomas, 1955)****Distribution:** **Stara Planina Mt.** (new data).**Family Hyalospheniidae (Schulze, 1877) Kosakyan et Lara, 2012****Genus *Hyalosphenia* (Stein, 1857) Schulze, 1877*****Hyalosphenia elegans* (Leidy, 1874) Leidy, 1879****Nomenclature:***Diffflugia (Catharia) elegans* Leidy, 1874*Hyalosphenia turfacea* Taránek, 1881**Distribution:** **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).***Hyalosphenia papilio* (Leidy, 1874) Leidy, 1875****Nomenclature:***Diffflugia (Catharia) papilio* Leidy, 1874**Distribution:** **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).**Genus *Nebela* (Leidy, 1874) sensu Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016*****Nebela aliciae* Mitchell et Lara, 2013****Distribution:** **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Nebela collaris* (Ehrenberg 1848) Leidy, 1879*Nomenclature:**

Diffflugia collaris Ehrenberg 1848

Diffflugia cancellata Ehrenberg 1848

Diffflugia reticulata Ehrenberg 1848

Diffflugia carpio Ehrenberg 1854

Diffflugia laxa Ehrenberg 1871

Diffflugia cellulifera Ehrenberg 1874

Nebela numata Leidy 1874

Nebela bohémica Taranek 1882

Nebela sphagnophila (Steinecke) Van Oye 1933

Nebela tincta var. *major* Deflandre 1936

Nebela tincta f. *stenostoma* Jung 1936

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012; new data).

Notes: The species has been recorded as nominal species, as synonym *N. bohémica* (**Pirin Mt., Rhodopes Mt., Rila Mt., Vitosha Mt.**) and as infrasubspecific taxon *Nebela tincta* var. *major* (**Vitosha Mt.**).

Nebela flabellulum* Leidy, 1874*Nomenclature:**

Diffflugia (*Nebela*) *flabellulum* Leidy, 1874

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Stara Planina Mt.** (new data).

***Nebela guttata* Kosakyan et Lara, 2013**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Nebela militaris* Penard, 1890**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Pateff 1924, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Nebela pechorensis* Kosakyan et Mitchell, 2013**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Nebela rotunda* Penard, 1890*Nomenclature:**

Nebela tincta var. *rotunda* Penard, 1890

Distribution: **Vitosha Mt.** (new data).

Nebela tincta* (Leidy, 1879) Awerintzew, 1906*Nomenclature:**

Hyalosphenia tincta Leidy, 1879

Nebela bursella Vejdovsky, 1882

Nebela minor Penard, 1902

Nebela parvula Cash, 1909

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonyms *N. bursella* (**Rila Mt, Vitosha Mt.**), *N. minor* (**Rhodopes Mt., Rila Mt.**) and *N. parvula* (**Pirin Mt., Rhodopes Mt., Vitosha Mt.**).

Genus *Gibbocarina* Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016***Gibbocarina galeata* (Penard, 1890) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016****Nomenclature:**

Nebela galeata Penard, 1890

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: So far, all records for the species have been as *N. galeata*.

Genus *Longinebela* Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Longinebela ampulla Todorov, Bankov and Ganeva, 2018

Distribution: **Stara Planina Mt.** (Todorov et al. 2018).

Longinebela golemanskyi (Todorov, 2010) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Nomenclature:

Nebela golemanskyi Todorov, 2010

Distribution: **Vitosha Mt.** (Todorov 2010, new data).

Notes: The species has been recorded as *N. golemanskyi*.

Longinebela penardiana (Deflandre, 1936) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Nomenclature:

Nebela penardiana Deflandre, 1936

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: So far, all records for the species have been as *N. penardiana*.

Longinebela speciosa (Deflandre, 1936) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Nomenclature:

Nebela speciosa Deflandre, 1936

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: So far, all records for the species have been as *N. speciosa*.

***Longinebela tubulosa* (Penard, 1902) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016**

Nomenclature:

Nebela tubulosa Penard, 1902

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: So far, all records for the species have been as *N. tubulosa*.

Genus *Padaungiella* Lara et Todorov, 2012

***Padaungiella americana* (Taraneck, 1882)**

Nomenclature:

Nebela americana Taraneck, 1882.

Distribution: **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1990).

Notes: All records for the species have been as *N. americana* (**Rhodopes Mt., Vitosha Mt.**). This species is with doubtful identity since it is sharing overlapping characters with *P. lageniformis* and with *P. wailesi*.

***Padaungiella lageniformis* (Penard, 1890) Lara et Todorov, 2012**

Nomenclature:

Nebela lageniformis Penard, 1890

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: All records for the species (except these in Kosakyan et al. 2012) have been as *N. lageniformis*.

***Padaungiella nebeloides* (Gauthier-Lièvre and Thomas, 1958) Lara et Todorov, 2012**

Nomenclature:

Diffflugia nebeloides Gauthier-Lièvre and Thomas, 1958

Nebela nebeloides (Gauthier-Lièvre and Thomas, 1958) Todorov, Golemansky and Meisterfeld, 2010

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov et al. 2010, new data).

Notes: The species has been recorded by the synonymous name *N. nebeloides*. It should be noted that Mazei and Warren (2014) erroneously synonymised *D. nebeloides* with *D. linearis* (Penard, 1890) Gauthier-Lièvre et Thomas, 1958, because they have not taken into account the fact that this species has recently been transferred from the genus *Diffflugia* into the genus *Nebela* and subsequently in the newly described genus *Padaungiella* (Todorov et al. 2010, Kosakyan et al. 2012).

***Padaungiella tubulata* (Brown, 1911) Lara et Todorov, 2012**

Nomenclature:

Nebela tubulata Brown, 1911

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: So far, all records for the species have been as *N. tubulata*.

***Padaungiella walesi* (Deflandre, 1936) Lara et Todorov, 2012**

Nomenclature:

Nebela walesi Deflandre, 1936

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006).

Notes: The species has been recorded by the synonymous name *N. walesi*.

Genus *Planocarina* Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Planocarina carinata (Archer, 1867) Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Nomenclature:

Nebela carinata (Archer, 1867) Leidy, 1879

Distribution: **Rila Mt.** (Golemansky and Todorov 1993); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995).

Notes: So far, all records for the species have been as *N. carinata*.

Genus *Quadrullella* (Cockerell, 1909) sensu Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016

Quadrullella longicollis (Taraneck, 1882)

Nomenclature:

Quadrullella symmetrica var. *longicollis* Taraneck, 1882

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: So far, all records for the species (except this one of Kosakyan et al. 2012) have been as the infrasubspecific taxon *Q. symmetrica* var. *longicollis* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**).

Quadrullella symmetrica (Wallich, 1864) Cockerell, 1909

Nomenclature:

Diffflugia proteiformis var. *symmetrica* Wallich, 1863

Diffflugia pyriformis var. *symmetrica* Wallich, 1864

Diffflugia symmetrica Wallich, 1864

Assulina assulata Ehrenberg, 1871

Assulina leptolepis Ehrenberg, 1871

Diffflugia assulata Ehrenberg, 1871

Diffflugia carolensis Ehrenberg, 1871

Quadrula symmetrica Schulze, 1875

Nebela (Quadrulella) symmetrica Deflandre, 1936

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Kosakyan et al. 2012, new data).

Notes: Besides the nominal species, the infrasubspecific taxon *Quadrulella symmetrica* var. *irregularis* Wailes et Penard, 1911 has also been recorded (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**).

***Quadrulella tubulata* Gauthier-Lièvre, 1953**

Distribution: **Pirin Mt.** (Golemansky 1974).

***Quadrulella variabilis* Kosakyan, Lahr, Mulot, Meisterfeld, Mitchell and Lara, 2016**

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Suborder Phryganellina Bovee, 1985

Family Phryganellidae Jung, 1942

Genus *Phryganella* Penard, 1902

***Phryganella acropodia* (Hertwig and Lesser, 1874) Hopkinson, 1909**

Nomenclature:

Diffflugia acropodia Hertwig and Lesser, 1874

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Phryganella hemisphaerica* (Penard, 1890) Penard, 1902**

Nomenclature:

Pseudodiffflugia hemisphaerica Penard, 1890

Diffflugia globulosa Leidy, 1879 (in part)

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data)

***Phryganella nidulus* Penard, 1902**

Nomenclature:

Diffflugia globulosa Leidy, 1879 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005, new data); **Vitosha Mt.** (Pateff 1924).

***Phryganella paradoxa* Penard, 1902**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Family Cryptodiffugiidae Jung, 1942

Genus *Cryptodiffugia* Penard, 1890

***Cryptodiffugia compressa* Penard, 1902**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).

***Cryptodiffugia oviformis* Penard, 1890**

Nomenclature:

Diffugiella oviformis Bonnet and Thomas, 1955

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1928, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *D. oviformis* (**Rila Mt.**, **Vitosha Mt.**), as well as infrasubspecific taxon *Diffugiella oviformis* var. *fusca* Bonnet and Thomas, 1955 (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**).

Genus *Wailesella* Deflandre, 1928

Wailesella eboracensis (Wailes and Penard, 1911) Deflandre, 1928

Nomenclature:

Cryptodiffugia eboracensis Wailes and Penard, 1911

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1928, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *C. eboracensis* (**Vitosha Mt.**).

Order Arcellinida INCERTAE SEDIS

Genus *Argynnia* Vucetich, 1974

Argynnia bipes (Carter, 1870) Murray, 1870

Nomenclature:

Diffugia bipes Carter, 1870

Nebela bipes Murray, 1870

Nebela bicornis West, 1905

Distribution: **Rhodopes Mt.** (Pateff 1928, Golemansky et al. 2006); **Vitosha Mt.** (Pateff 1928, Golemansky and Todorov 1990).

Notes: The species has been recorded as synonym *N. bipes* (**Rhodopes Mt.**, **Vitosha Mt.**).

Argynnia dentistoma (Penard, 1890)

Nomenclature:

Nebela dentistoma Penard, 1890

Nebela crenulata Penard, 1893

Nebela collaris Leidy, 1879 (in part)

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara**

Planina Mt. (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: So far, all records for the species have been as synonyms *N. dentistoma* (**Pirin Mt., Rhodopes Mt., Rila Mt., Vitosha Mt.**), *N. crenulata* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**), as well as infrasubspecific taxa *Nebela dentistoma* var. *oblonga* Gauthier-Lièvre, 1853 (**Rila Mt.**).

***Argynnia vitraea* (Penard, 1899)**

Nomenclature:

Nebela vitraea Penard, 1899

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded as synonym *N. vitraea* (**Rhodopes Mt., Rila Mt., Vitosha Mt.**).

Genus *Awerintzewia* Schouteden, 1906

***Awerintzewia cyclostoma* (Penard, 1902) Schouteden, 1906**

Nomenclature:

Heleopera cyclostoma Penard, 1902

Distribution: **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006).

Notes: The species has been recorded both as nominal species and as synonym *H. cyclostoma* (**Rhodopes Mt.**).

Genus *Heleopera* Leidy, 1879

***Heleopera petricola* Leidy, 1879**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa *Heleopera petricola* var. *amethystea* Penard, 1899 (**Rila Mt.**) and *Heleopera petricola* var. *major* Deflandre, 1928 (**Vitosha Mt.**) have also been recorded.

***Heleopera rosea* Penard, 1890**

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Heleopera sphagni* (Leidy, 1874)**

Nomenclature:

Diffflugia (Nebela) sphagni Leidy, 1874

Nebela sphagni Leidy, 1876

Nebela picta Leidy, 1879

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993).

***Heleopera sylvatica* Penard, 1890**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov 2005, new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990).

Genus *Lesquereusia* Schlumberger, 1845

***Lesquereusia epistomium* Penard, 1902**

Nomenclature:

Lecquereusia jurassica var. *epistomium* Penard, 1893

Lecquereusia epistomium Penard, 1902

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Lesquereusia gibbosa* Thomas and Gauthier-Lièvre, 1859**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Lesquereusia modesta* Rhumbler, 1896*Nomenclature:**

Diffflugia spiralis Leidy, 1879 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Lesquereusia spiralis* (Ehrenberg, 1840) Bütschli, 1880*Nomenclature:**

Diffflugia spiralis Ehrenberg, 1840

Lecquereusia jurassica Schlumberger, 1845

Diffflugia helix Cohn, 1853

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Genus *Pyxidicula* Ehrenberg, 1838***Pyxidicula patens* (Claparede and Lachmann, 1858)****Nomenclature:**

Arcella patens Claparede and Lachmann, 1858

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006).

Subkingdom / Supergroup Rhizaria Cavalier-Smith, 2002

Phylum Stramenopiles Patterson, 1989, emend. Adl et al., 2005

Class Labyrinthomycetes Dick, 2001

Order Amphitremida (Poch, 1913) Gomma, Mitchell and Lara, 2013

Family Amphitremidae Poch, 1913

Genus *Archerella* Loeblich and Tappan, 1961

Archerella flavum (Archer, 1877) Loeblich and Tappan, 1961

Nomenclature:

Ditrema flavum Archer, 1877

Amphitrema flavum Archer, 1877

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded as synonym *A. flavum* (**Rhodopes Mt.**, **Vitosha Mt.**).

Phylum Cercozoa Cavalier-Smith, 1998, emend. Adl et al., 2005

Subphylum Filosa Cavalier-Smith, 2003

Class Silicofilosea Adl et al., 2005, emend. Adl et al., 2012

Order Euglyphida Copeland, 1956, emend. Cavalier-Smith, 1997

Family Euglyphidae Wallich, 1864

Genus *Euglypha* Dujardin, 1841

Euglypha acanthophora (Ehrenberg, 1841) Perty, 1849

Nomenclature:

Diffflugia acanthophora Ehrenberg, 1841

Euglypha alveolata Dujardin, 1841 (in part)

Euglypha setigera Perty, 1852 (in part)

Diffflugia setigera Ehrenberg, 1871

Diffflugia Setigerella acanthophora Ehrenberg, 1871

Euglypha brachiata Penard, 1902 (non Leidy, 1879)

Euglypha alveolata var. *gracilis* Taránek, 1881 (in part)

Euglypha armata Wailes and Penard, 1911

Euglypha australica Playfair, 1918 (in part)

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Pateff (1924) and Golemansky et al. (2006) erroneously recorded the species *E. brachiata* (**Rhodopes Mt.**, **Vitosha Mt.**), because the description of the found individuals fully corresponds to *E. acanthophora*.

***Euglypha aspera* Penard, 1899**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Todorov 2004, new data).

***Euglypha bryophila* Brown, 1911**

Nomenclature:

Euglypha α Vejdovsky, 1882

Euglypha cristata Penard, 1890 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).

***Euglypha ciliata* (Ehrenberg, 1848), Leidy, 1878**

Nomenclature:

Diffflugia ciliata Ehrenberg, 1848

Euglypha setigera Perty, 1852 (in part)

Diffflugia pilosa Ehrenberg, 1871

Diffflugia Setigerella ciliata Ehrenberg, 1871

Diffflugia Setigerella pilosa Ehrenberg, 1871

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as infrasubspecific taxon *E. ciliata* f. *glabra* Wailes, 1915 (**Rhodopes Mt., Rila Mt.**).

***Euglypha compressa* Carter, 1864**

Nomenclature:

Euglypha ampullacea Hertwig and Lesser, 1874

Euglypha ciliata Leidy, 1879 (in part)

Euglypha α Vejdovsky, 1882 (in part)

? *Euglypha zonata* Maggi, 1888

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as infrasubspecific taxon *E. compressa* f. *glabra* Wailes, 1915 (**Rhodopes Mt.**).

***Euglypha crenulata* Wailes, 1912**

Distribution: **Vitosha Mt.** (Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995).

Notes: The species has been recorded as infrasubspecific taxon *E. crenulata* var. *minor* Wailes, 1912.

***Euglypha cristata* Leidy, 1874**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Euglypha denticulata* Brown, 1912**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Euglypha filifera* Penard, 1890*Nomenclature:**

Euglypha setigera Perty, 1852 (in part)

Euglypha ciliata Leidy, 1879 (in part)

Euglypha longispina Taránek, 1881

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Euglypha laevis* (Ehrenberg, 1845) Perty, 1849*Nomenclature:**

Diffflugia laevis Ehrenberg, 1845

Euglypha alveolata Leidy, 1879 (in part)

Euglypha γ Vejdovsky, 1882

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Euglypha rotunda* Wailes and Penard, 1911**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Euglypha strigosa* (Ehrenberg, 1871) Leidy, 1878**

Nomenclature:

Diffflugia strigosa Ehrenberg, 1871

Diffflugia Setigerella strigosa Ehrenberg, 1871

Euglypha ciliata var. *strigosa* Leidy, 1879 (in part)

Euglypha heterospina Penard, 1890

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1928, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa *Euglypha strigosa* f. *glabra* Wailes and Penard, 1911 (**Rila Mt.**) and *Euglypha strigosa* f. *heterospina* Wailes and Penard, 1911 (**Rhodopes Mt.**, **Rila Mt.**, **Vitosha Mt.**) have also been recorded.

***Euglypha tuberculata* Dujardin, 1841**

Nomenclature:

Diffflugia areolata Ehrenberg, 1841

Euglypha alveolata Dujardin, 1841 (in part)

Euglypha tuberculosa Dujardin, 1841

Diffflugia alveolata Pritchard, 1861

Euglypha pusilla Entz, 1877

Euglypha β *Vejdovsky*, 1882

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *E. alveolata* (**Rhodopes Mt.**, **Vitosha Mt.**).

Family Trinematidae Hoogenraad and De Groot 1940, emend Adl et al. 2012

Genus *Trinema* Dujardin, 1841

Trinema complanatum Penard, 1890

Nomenclature:

? *Arcella nidus-pendulus* Ehrenberg, 1841

Trinema acinus Leidy, 1879 (in part)

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa *Trinema complanatum* var. *aerophila* (Decloître, 1950) Bonnet and Thomas, 1960 (**Vitosha Mt.**) and *Trinema complanatum* var. *globulosa* Chardez, 1959 (**Rhodopes Mt.**, **Vitosha Mt.**) have also been recorded.

Trinema enchelys (Ehrenberg, 1838) Leidy, 1878

Nomenclature:

Diffflugia enchelys Ehrenberg, 1838 (in part)

Trinema acinus Dujardin, 1841

Arcella enchelys Ehrenberg, 1844

Euglypha pleurostoma Carter, 1857

Euglypha enchelys Wallich, 1864

Trinema (Diffflugia) encheli Crevier, 1870

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Trinema galeata (Penard, 1890) Jung, 1942

Nomenclature:

Trinema enchelys var. *galeata* Penard, 1890

Distribution: **Rila Mt.** (Golemansky and Todorov 1993).

***Trinema grandis* (Chardez, 1960) Golemansky, 1963**

Nomenclature:

Trinema enchelys var. *grandis* Chardez, 1960

Distribution: **Rila Mt.** (Golemansky and Todorov 1993, new data).

***Trinema lineare* Penard, 1890**

Nomenclature:

Diffflugia enchelys Ehrenberg, 1838 (in part)

Arcella hyalina Ehrenberg, 1841

Arcella enchelys Ehrenberg, 1854

Trinema acinus Leidy, 1879 (in part)

Trinema enchelys forma β Awerintzew, 1906

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Genus *Corythion* Taranek, 1881

***Corythion delamarei* Bonnet and Thomas, 1960**

Distribution: **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995).

***Corythion dubium* Taránek, 1881**

Nomenclature:

Arcella constricta Ehrenberg, 1841 (in part)

Arcella disphaera Ehrenberg, 1841 (in part)

Trinema acinus Leidy, 1879 (in part)

Trinema constricta Certes, 1889

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and

Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: Besides the nominal species, two infrasubspecific taxa *Corythion dubium* var. *aerophila* Decloître, 1950 (**Vitosha Mt.**) and *Corythion dubium* var. *orbicularis* Penard, 1910 (**Vitosha Mt.**) have also been recorded.

Genus *Playfairina* Thomas, 1961

Playfairina valkanovi Golemansky, 1966

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1966, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Golemansky and Todorov 2006, new data).

Family Sphenoderiidae Chatelain, Meisterfeld, Roussel-Delif and Lara, 2013

Genus *Sphenoderia* Schlumberger, 1845

Sphenoderia fissirostris Penard, 1890

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Sphenoderia lenta Schlumberger, 1845

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Sphenoderia minuta Deflandre, 1931

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

***Sphenoderia ovoidea* Jung, 1942**

Distribution: **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Sphenoderia splendida* (Playfair, 1917) Deflandre, 1931**

Nomenclature:

Sphenoderia fissirostris var. *splendida* Playfair, 1917

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Genus *Trachelocorythion* Bonnet, 1979***Trachelocorythion pulchellum* (Penard, 1890) Bonnet, 1979**

Nomenclature:

? *Euglypha minima* Perty, 1852

Corythion pulchellum Penard, 1890

Chorythion pulchellum Awerintzew, 1907

? *Hyalina neta* Jung, 1942

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Family Assulinidae Lara et al., 2007**Genus *Assulina* Leidy, 1879*****Assulina muscorum* Greeff, 1888**

Nomenclature:

Assulina seminulum Leidy, 1879 (in part)

Assulina minor Penard, 1890

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Assulina seminulum* (Ehrenberg, 1848) Leidy, 1879*Nomenclature:**

Diffugia seminulum Ehrenberg, 1848

Diffugia Assulina seminulum Ehrenberg, 1871

Diffugia semen Ehrenberg, 1871

Euglypha brunnea Leidy, 1874

Euglypha seminulum Leidy, 1878

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924, Golemansky and Todorov 1993, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1990, new data).

Genus *Placocista* Leidy, 1879***Placocista glabra* Penard, 1906**

Distribution: **Pirin Mt.** (Golemansky 1974).

Notes: The species has been recorded as infrasubspecific taxon *Placocista glabra* var. *minima* Decloître, 1955 (**Pirin Mt.**).

Placocista spinosa* (Carter, 1865) Leidy, 1879*Nomenclature:**

Euglypha spinosa Carter, 1865

Distribution: **Rila Mt.** (Golemansky and Todorov 1993).

Family Cyphoderiidae de Saedeleer, 1934**Genus *Cyphoderia* Schlumberger, 1845*****Cyphoderia amphoralis* (Wailes and Penard, 1911)****Nomenclature:**

Cyphoderia trochus var. *amphoralis* Wailes and Penard, 1911

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Todorov et al. 2009); **Rila Mt.** (Heger et al. 2010, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

***Cyphoderia ampulla* (Ehrenberg, 1840) Leidy, 1878**

Nomenclature:

Diffflugia ampulla Ehrenberg, 1840

Diffflugia lagena Ehrenberg, 1841

Cyphoderia margaritacea Schlumberger, 1845

Euglypha curvata Perty, 1852

Lagynis baltica Schultze, 1854

Euglypha ampulla Claparède and Lachmann, 1859

Euglypha baltica Wallich, 1864

Euglypha margaritacea Wallich, 1864

Diffflugia Seelandica Ehrenberg, 1869

Diffflugia adunca Ehrenberg, 1871

Diffflugia alabamensis Ehrenberg, 1871

Diffflugia uncinnata Ehrenberg, 1871

Diffflugia margaritacea Ehrenberg, 1871

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Pateff 1924, Golemansky et al. 2006; Todorov et al. 2009, Heger et al. 2010); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2004, Todorov 2005, Todorov et al. 2009, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, Todorov et al. 2009, Heger et al. 2010, new data).

***Cyphoderia major* (Penard, 1891)**

Nomenclature:

Cyphoderia margaritacea var. *major* Penard, 1891

Distribution: **Pirin Mt.** (new data); **Rila Mt.** (Todorov et al. 2009, Heger et al. 2010, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (new data).

Genus *Campascus* Leidy, 1879

***Campascus minutus* Penard, 1899**

Nomenclature:

Campascus triqueter var. *minuta* Awerintzew, 1906

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, new data).

***Campascus triqueter* Penard, 1891**

Distribution: **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000); **Vitosha Mt.** (Golemansky 1965, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995).

Family Paulinellidae de Saedeller 1934, emend. Adl et al. 2012

Genus *Paulinella* Lauterborn, 1895

***Paulinella chromatophora* Lauterborn, 1895**

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov 2004).

Order INCERTAE SEDIS euglyphid testate amoebae

Genus *Tracheleuglypa* Deflandre, 1928

***Tracheleuglypa acolla* Bonnet et Thomas, 1955**

Distribution: **Pirin Mt.** (new data); **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Todorov and Golemansky 2000, Todorov 2005, new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Todorov 1993, Todorov and Golemansky 1995, new data).

***Tracheleuglypa dentata* (Moniez, 1888) Deflandre, 1928**

Nomenclature:

Sphenoderia lenta Leidy, 1879 (in part)

Euglypha β Vejdovsky, 1882

Euglypha dentata Moniez, 1888

Sphenoderia dentata Penard, 1890

Distribution: **Pirin Mt.** (Golemansky 1974, new data); **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000, Todorov 2005 new data); **Stara Planina Mt.** (new data); **Vitosha Mt.** (Pateff 1924, Golemansky 1965, Golemansky and Todorov 1985, Golemansky and Todorov 1990, Todorov 1993, Todorov and Golemansky 1995, new data).

Notes: The species has been recorded both as nominal species and as synonym *S. dentata* (**Vitosha Mt.**).

Family Chlamydrophyridae de Saedeleer, 1934

Genus *Lecythium* Hertwig and Lesser, 1874

Lecythium mutabilis (Bailey, 1853)

Nomenclature:

Pamphagus mutabilis Bailey, 1853

Pamphagus avidus Leidy, 1879

Lecythium mutabile Wailes, 1915

Distribution: **Rila Mt.** (Pateff 1924).

Notes: The species has been recorded as synonym *P. mutabilis* (**Rila Mt.**).

Family Pseudodifflugiidae de Saedeleer, 1934

Genus *Pseudodifflugia* Schlumberger, 1845

Pseudodifflugia fascicularis Penard, 1902

Distribution: **Rhodopes Mt.** (Golemansky 1968, Golemansky et al. 2006); **Rila Mt.** (Pateff 1924).

Pseudodifflugia gracilis Schlumberger, 1845

Nomenclature:

Pleurophrys sphaerica Claparède and Lachmann, 1858

Pleurophrys angulata Mereschkovsky, 1879

Distribution: **Rhodopes Mt.** (Golemansky et al. 2006); **Rila Mt.** (Golemansky and Todorov 1993, Todorov and Golemansky 2000).

Discussion

Prior to our investigation, the number of known *Sphagnum*-dwelling testate amoebae in Bulgaria was 155. Our study increases this number with 16 species and the present checklist comprises 171 species classified into 43 genera, 20 families, three orders, three classes and three phyla. We present data for 16 new *Sphagnum*-dwelling testate amoebae

in Bulgaria and new distribution data for 134 species. Of them, 99 species are recorded from Stara Planina Mt., for which there was no available data to date. Additionally we report 69 new species for Pirin Mt., 21 for Vitosha Mt. and 18 for Rila Mt. Thirty six species have been synonymised according to the latest taxonomic changes. All known synonyms of valid names are also listed. The species *Euglypha brachiata* Penard, 1902 and the infrasubspecific taxa *Diffflugia compressa* var. *africana* Gauthier-Lièvre et Thomas, 1958 have erroneously been recorded, because the descriptions of the found individuals fully correspond to *E. acanthophora* and *Z. compressa*, respectively. These misidentified taxa have been transferred to valid species. Three of the recorded species have not been included in the checklist, because they are currently not referring to testate amoebae (*Cochliopodium bilimbosum* and *C. echinatum* are naked amoebae and *Microgromia elegantula* is freshwater foraminifera).

About 30% (51 species) of all recorded testate amoebae are typical sphagnicolous inhabitants, which only exceptionally can be found in other habitats. These are mostly the representatives of the genera *Nebela* (5 species), *Sphenoderia* (5), *Lesquereusia* (4), *Longinebela* (4), *Padaungiella* (4), *Quadrulella* (4), *Heleopera* (3) etc. The most numerous (67 species, 39%) are the species which are found in *Sphagnum* mosses but are also common inhabitants of freshwater basins. The genera *Diffflugia* (28), *Centropyxis* (7) and *Arcella* (6) have the largest number of representatives in this group. Most likely, some of these species are not usual inhabitants and fall incidentally into the *Sphagnum* mosses, which develop around the shores of freshwater basins (e.g. *Diffflugia lobostoma*, *D. microclaviformis*, *D. urceolata*, *Netzelia tuberculata* etc.). The relative share of species that are rather inhabitants of soils and soil mosses, but also occur in peatlands is comparatively smaller (about 18%, 31 species). Most of them rarely occur and usually have a low population density in *Sphagnum* mosses (e.g. *Awerintzewia cyclostoma*, *Bullinularia indica*, *Centropyxis cryptostoma*, *Centropyxis orbicularis*, *Cyclopyxis arceloides*, *Cyclopyxis puteus*, *Heleopera sylvatica*, *Padaungiella walesi*, *Plagiopyxis callida*, *Plagiopyxis labiata*, *Trinema galeata* etc.). The number of eurybiotic species, which are widely distributed in diverse habitats, including peatlands, is the smallest. Twenty one species (about 12% of all recorded) can be referred to eurybionts. Of these, the most frequently occurring in *Sphagnum* mosses are *Centropyxis aerophila*, *Corythion dubium*, *Cyclopyxis eurystoma*, *Euglypha laevis*, *Phryganella acropodia*, *Trinema lineare* etc.

On a generic level, the genera *Diffflugia* (32), *Centropyxis* (17), *Euglypha* (13), *Arcella* (10) and *Nebela* (8) have the greatest species richness. These five genera constitute about 47% of all testate amoebae recorded in *Sphagnum* mosses in Bulgaria. Of the other genera, 23 are represented with 2-5 species and 15 with one species only.

From families, the largest richness have Difflogiidae (39 species, 4 genera), Hyalospheniidae (26, 7), Centropyxidae (17, 1), Euglyphidae (13, 1) and Arcellidae (10, 1), which together make up two thirds of *Sphagnum*-dwelling testate amoebae in Bulgaria. Six families are represented by one species of one genus only (Microcoyciidae, Microchlamyidae, Netzeiliidae, Amphitremidae, Paulinellidae and Chlamydephryidae).

At a higher taxonomic level, the most numerous is the order Arcellinida, which includes 128 species of 28 genera and 11 families, followed by the order Euglyphida with 42 species of 14 genera and 8 families and finally by the order Amphitremida with one species of 1 genus and 1 family only.

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Supplementary materials

Suppl. material 1: Checklist of *Sphagnum*-dwelling testate amoebae from Bulgaria_Distribution data [doi](#)

Authors: Nikola Bankov, Milcho Todorov and Anna Ganeva

Data type: Distribution data

Brief description: Data for the distribution of testate amoebae in *Sphagnum* mosses in Bulgaria on the basis of literature and of additional data, obtained in our research over the past two years.

Filename: Checklist of *Sphagnum*-dwelling testate amoebae from Bulgaria_Distribution data.xlsx - [Download file](#) (364.00 kb)

Suppl. material 2: Sampling sites information [doi](#)

Authors: Nikola Bankov, Milcho Todorov and Anna Ganeva

Data type: Sampling sites data

Brief description: Data concerning sampling sites, including date, region, altitude, coordinates, *Sphagnum* moss species, as well as many physical and chemical parameters of the sampling sites.

Filename: Checklist *Sphagnum*-dwelling testate amoebae in Bulgaria_Sampling sites data.xlsx - [Download file](#) (22.89 kb)