

**Case 3782 – *Nebela militaris* Penard, 1890 (Arcellinida, HYALOSPHEIIDAE): proposed conservation of the specific name by giving it precedence over *Nebela bursella* Taranek, 1881**

Clément Duckert\*

*Laboratory of Soil Biodiversity, Institute of Biology, University of Neuchâtel, Rue Émile-Argand 11, CH-2000 Neuchâtel, Switzerland (clement.duckert@unine.ch)*

Quentin Blandenier\*

*Laboratory of Soil Biodiversity, Institute of Biology, University of Neuchâtel, Rue Émile-Argand 11, CH-2000 Neuchâtel, Switzerland / Real Jardín Botánico, CSIC, Plaza de Murillo 2, 28014 Madrid, Spain*

Fanny A.L. Kupferschmid

*Laboratory of Soil Biodiversity, Institute of Biology, University of Neuchâtel, Rue Émile-Argand 11, CH-2000 Neuchâtel, Switzerland*

Anush Kosakyan

*Institute of Parasitology, Biology Centre, Czech Academy of Sciences, Branišovská 31, České Budějovice 37005 Czech Republic*

Edward A. D. Mitchell

*Laboratory of Soil Biodiversity, Institute of Biology, University of Neuchâtel, Rue Émile-Argand 11, CH-2000 Neuchâtel, Switzerland / Jardin Botanique de Neuchâtel, Chemin du Perthuis-du-Sault 58, CH-2000 Neuchâtel, Switzerland*

Enrique Lara

*Real Jardín Botánico, CSIC, Plaza de Murillo 2, 28014 Madrid, Spain*

David Singer

*Laboratory of Soil Biodiversity, Institute of Biology, University of Neuchâtel, Émile-Argand 11, CH-2000 Neuchâtel, Switzerland / Department of Zoology, Institute of Biosciences, University of São Paulo, Brazil*

\* Co-first authors

<http://zoobank.org/urn:lsid:zoobank.org:pub:AD19F334-9593-4EA1-9734-0041EB04529E>  
<http://dx.doi.org/10.21805/bzn.v77.a007>

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**Abstract.** The purpose of this application, under Article 23.9.3 of the Code, is to conserve the specific name *Nebela militaris* Penard, 1890, a junior subjective synonym of *Nebela bursella* Taranek, 1881 – referred to as *Nebela bursella* Vejdovský in the literature. Due to the absence of any type or reference specimen and due to the confusing original description, doubts about the taxonomic status of *N. bursella* persist. A review of the literature revealed that the names *N. militaris* and *N. bursella* originally referred to the same species, with the name *N. bursella* later being applied erroneously to another species. According to the Principle of Priority, *N. bursella* is the valid name of the species generally known as *N. militaris*, but there has been no mention of the former taxon since 1964 and its name is unknown to most active testate amoeba researchers. To avoid confusion, we propose to conserve the widely used species name *Nebela militaris* Penard, 1890 by granting it conditional precedence over *Nebela bursella* Taranek, 1881, and to designate a neotype.

**Keywords.** Nomenclature; taxonomy; testate amoebae; Arcellinida; HYALOSPHEIIDAE; *Nebela militaris*; *Nebela bursella*.

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1. In 1880, František Vejdovský found specimens of an unknown species of testate amoeba, which he later described as *Nebela bursella* in Vejdovský (1882: 32, pl. II, fig. 2a–c). Before publishing, he mentioned his finding to a fellow naturalist, Karl J. Taranek, who reported this species in 1881 as *Nebela bursella* Vejdovský (Taranek, 1881: 230–231, fig. 2). In this publication, the description and illustration of *Nebela bursella* are congruent with those of Vejdovský (1882). Neither author designated a type specimen or provided any permanent reference slides, and the original material is considered to be lost (Duckert et al., 2018). Because Taranek (1881) attributed the name *Nebela bursella* to Vejdovský, various authors have subsequently referred to it as *N. bursella* Vejdovský, 1881 or as *N. bursella* Vejdovský, 1882. Despite this, Taranek did not explicitly attribute the text of his description to Vejdovský, and the specific name must be attributed solely to Taranek (1881). In consequence, Vejdovský's specific name is simultaneously a junior homonym and junior subjective synonym of Taranek's name.

2. Taranek (1882: 36–38) reported on *Nebela bursella* again, and his illustrations clearly show that he included in this taxon specimens that differed markedly in morphology. While some of the illustrations (Taranek, 1882: pl III, figs. 8, 12) are congruent with those of Taranek (1881) and Vejdovský (1882), others clearly do not match the original description. They depict larger and broader specimens which, based on the current taxonomy of the Arcellinida, should rather be assigned to another species of the genus *Nebela* (Taranek, 1882: pl. III, fig. 7; pl. IV, fig. 16), or potentially even to the genus *Heleopera* (Taranek, 1882: pl. III, figs. 9–11) (Duckert et al. 2018, see also Tsyganov et al. 2016 for a comparison between *Nebela* and *Heleopera*). This error was not corrected and led to the misinterpretation that *Nebela bursella* corresponded to the broader morphotypes, which ultimately resulted in *Nebela bursella* being synonymized with *Nebela tincta* (Leidy, 1879) (see Awerintzev, 1906) – now *Nebela tincta* sensu Kosakyan & Lara (2013).

3. Penard (1890: 164, pl. VII, figs. 16–22) described *Nebela militaris* Penard, 1890 but he neither designated a type nor mentioned any isolated specimens in his description.

However, he did mention in his description the location (Tröllhattan, Rosersberg, Marstrand in Sweden and the Vallée de Joux in Switzerland) of the specimens on which he established his species and several permanent slides that he made, of which the exact year of creation is not known but thought to postdate 1900, are still preserved in two distinct collections in the Natural History Museum of London and the Natural History Museum of Geneva. We found five slides containing specimens of *Nebela militaris* after inspection of Penard's permanent slides in both museums, but it is apparent that none of those specimens can be considered as type material, as the registers of the collections show that none have been isolated in the regions mentioned by Penard in his description of *Nebela militaris*. The registers of Penard's permanent slide collections in both the Natural History Museum of London and the Natural History Museum of Geneva have been transmitted to the Commission Secretariat. Given that Penard did not designate any name-bearing type, that no specimen on which he could have based his description was found in his collections of permanent slides and that the absence of type was (and unfortunately still is) more the rule than the exception in the field of taxonomy of testate amoebae, we are certain that there is not any type material for *Nebela militaris*. The specimens that Penard isolated as well as his original description and illustrations of *Nebela militaris* (Penard, 1890) are very similar to the first description of *Nebela bursella* by Taranek (1881). Nonetheless, Penard stated that his was truly a distinct species while acknowledging that some may consider it to be merely an aberrant form of *Nebela bursella*. He did not explain what features of *N. militaris* could be considered as abnormal in comparison to *N. bursella*, but in a subsequent major monograph Penard (1902) considered *N. bursella* a synonym of *N. tinctoria*, cited by him as *Hyalosphenia tinctoria* Leidy, 1879. This allows us to infer that Penard (1890) based his concept of *N. bursella* on Taranek's (1882) misidentified specimens and thought that his new species *N. militaris* might be regarded as an abnormally slender form of *Nebela tinctoria*.

4. The name *Nebela militaris* was rapidly accepted by the scientific community. A list of 26 works by 53 authors using this name as valid for the taxonomic species in question is listed in the Appendix, with the most important works in bold. Among these works, we may mention Amesbury et al. (2016), Payne et al. (2011), Mitchell et al. (2008) and Charman et al. (2007). In contrast, the name *Nebela bursella*, having long been considered a junior synonym of *Nebela tinctoria* (Leidy, 1879) (Awerintzev, 1906) fell into disuse, being used as valid name for the last time by Sudzuki (1964). It is no longer found in its original meaning in major compendia such as Grospietsch (1958) and Tsyganov et al. (2016), and to revive it now as the valid senior subjective synonym of *N. militaris* would lead to confusion.

5. Due to the absence of any type and the lacunar state of the taxonomy of testate amoebae, it is also required that a neotype be designated for *Nebela militaris* Penard, 1890. It has been shown that species of testate amoeba can hide complexes of closely related species that differ only by slight variations in their morphology, even in the case of well-known species (see Kosakyan et al., 2013 as an example). As *Nebela militaris* has been recorded worldwide from a variety of different habitats it is likely that it corresponds to such a species complex, with each species potentially having a restricted distribution and ecology. However, the illustrations and the descriptions originally made by Penard are not representative of the morphotype found in Europe, and establishing a species on specimens found in such a large area (Switzerland and Sweden) increases the chance of lumping distinct species.

6. To avoid future confusion over the identity of *Nebela militaris* and any potential closely related species yet to be described, we propose to designate a neotype representative of the specimens found in the Swiss Jura mountains and propose this region as the type locality, as it is from this region that the specimens studied by Duckert et al. (2018) and the specimens isolated by Penard originate. Accordingly, we selected the specimen 516-2 from the Penard Collection now deposited at the Natural History Museum of Geneva in Switzerland ([https://commons.wikimedia.org/wiki/Category:Nebela\\_militaris#/media/File:Collection\\_Penard\\_MHNG\\_Specimen\\_516-2-1\\_Nebela\\_militaris.tif](https://commons.wikimedia.org/wiki/Category:Nebela_militaris#/media/File:Collection_Penard_MHNG_Specimen_516-2-1_Nebela_militaris.tif)) to be designated as the neotype.

7. This application is submitted to coincide with the publication of Duckert et al. (2018), who reappraised the taxonomic status of *Nebela militaris* and *Nebela bursella* and thereby became aware of this nomenclatural problem.

8. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to give the specific name *militaris* Penard, 1890, as published in the binomen *Nebela militaris*, precedence over the specific name *bursella* Taranek, 1881, as published in the binomen *Nebela bursella*, whenever the two are considered synonyms; and
- (2) to place on the Official List of Specific Names in Zoology the following names:
  - (a) *militaris* Penard, 1890, as published in the binomen *Nebela militaris* and as defined by the neotype (specimen 516-2 from the Penard collection in the MHNG) designated in para. 7, with the endorsement that it is to be given precedence over the name *bursella* Taranek, 1881, as published in the binomen *Nebela bursella*, whenever the two are considered synonyms; and
  - (b) *bursella* Taranek, 1881, as published in the binomen *Nebela bursella*, with the endorsement that it is not to be given precedence over the name *militaris* Penard, 1890, as published in the binomen *Nebela militaris*, whenever the two are considered synonyms.

## Acknowledgements

We thank the members of the Commission for their comments, which greatly improved the manuscript. This work was funded by the University of Neuchâtel, Switzerland and the Swiss National Science Foundation (projects No 31003A\_141188 to E.M. and 31003A\_163254 to E.L.).

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Acknowledgement of receipt of this application was published in BZN 75: 206.

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Comments on this case are invited for publication (subject to editing) in the Bulletin; they should be sent to the Secretariat, International Commission on Zoological Nomenclature, c/o Lee Kong Chian Natural History Museum, 2 Conservatory Drive, Singapore 117377, Republic of Singapore (e-mail: iczn@nus.edu.sg).

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