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NEW REPLACEMENT NAMES FOR SEVERAL FOSSIL BRACHIOPODS

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Abstract Within the genera of fossil Brachiopoda eight junior homonyms are found and the following replacement names are proposed: 1) *Brachiotesuquea* Ceccolini & Cianferoni **nom. nov.** = *Tesuquea* Sutherland and Harlow, 1973 nec Klots, 1936 (Insecta, Lepidoptera); 2) *Brachiosvalbardia* Ceccolini & Cianferoni **nom. nov.** = *Svalbardia* Barkhatova, 1970 nec Thor, 1930 (Acari, Oribatida); 3) *Rhyncholeptospira* Ceccolini & Cianferoni **nom. nov.** = *Leptospira* Boucot, Johnson & Staton, 1964 nec Swainson, 1840 (Gastropoda, Stylommatophora); 4) *Rhynchogilviella* Ceccolini & Cianferoni **nom. nov.** = *Ogilviella* Lenz, 1968 nec Paramonov, 1954 (Insecta, Diptera); 5) *Spiriarchboldiella* Ceccolini & Cianferoni **nom. nov.** = *Archboldiella* Winkler Prins, 2008 nec Heinrich , 1934 (Insecta, Hymenoptera); 6) *Brachiokasakhstania* Ceccolini and Cianferoni **nom. nov.** = *Kasakhstania* Besnossova, 1968 nec Arnol'di, 1960 (Insecta, Curculionidae); 7) *Thecidanella* Ceccolini & Cianferoni **nom. nov.** = *Danella* Pajaud, 1966 nec Gray, 1869 (Anthozoa, Alcyonacea); 8) *Brachiobittnerella* Ceccolini & Cianferoni **nom. nov.** = *Bittnerella* Dagys, 1974 nec Dall, 1898 (Bivalvia, Arcida). Moreover, 16 new combinations (**comb. nov.**) are made accordingly.

Keywords: Combinatio nova; homonyms; nomenclature changes; nomen novum; taxonomy

INTRODUCTION

Brachiopoda are marine organisms distinguished by the soft body enclosed in a shell consisting of two unequal valves (hence their common name lamp-shells).

Although living Brachiopoda includes relatively few species - about 400 - they were extremely common throughout the Paleozoic and are recorded since the Lower Cambrian; even if in the Mesozoic their diversity and richness dramatically reduced, about 30,000 fossil species are known (Emig et al., 2013) and they are among the most important fossils in paleontology to understand the history of life on Earth during Phanerozoic (e.g. Carlson, 2016; Harper et al., 2017).

Within fossil Brachiopoda there are several genera whose names are junior homonyms, not recognized as such thus far. Therefore, according to the International Code of Zoological Nomenclature (ICZN, 1999), new replacement names are needed for them.

Replacement names

I.

Sutherland and Harlow (1973: 53) described the new genus *Tesuquea* to accommodate the new species *T. formosa* from the Carboniferous of North America. Currently, the name is still in use (IRMNG, 2021). The same name was already used by Klots (1936: 4) for a new genus of moth of the family Carposinidae, still accepted (Pitkin & Jenkins, 2022; IRMNG, 2021). Accordingly, *Tesuquea* Sutherland and Harlow must be replaced since it is a junior homonym and does not have available synonyms (ICZN, 1999, Arts. 60.1, 60.2). We propose *Brachiotesuquea* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name reminds its classification in Brachiopoda, unlike *Tesuquea* Klots, 1936, adding the prefix *Brachio-* to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class STROPHOMENATA
Order PRODUCTIDA
Family PRODUCTIDAE
Genus *Brachiotesuquea* Ceccolini & Cianferoni nom. nov. = *Tesuquea* Sutherland and Harlow, 1973: 53 nec Klots, 1936: 4
Species *Brachiotesuquea formosa* (Sutherland & Harlow, 1973) **comb. nov.** = *Tesuquea formosa* Sutherland & Harlow, 1973: 53, pl. 6, figs. 1-11, 17, 18 (type species)

II.

Barkhatova (1970: 78) established the Permian brachiopod genus *Svalbardia* in a footnote in her monograph on the Late Palaeozoic of the Timan Region. Although she cited the new name and the type species *Chonetes capitolinus* Toula, 1875, she did not give any accompanying description and therefore the Article 13 of ICZN (1999) is not satisfied; nevertheless, Afanas'eva (1977), who discussed the genus and attributed it to Barkhatova, as did Archbold (1981a). Currently, the name is accepted (IRMNG, 2021). However, *Svalbardia* was also used by Thor (1930: 76) for a new mite genus within the Oribatida, with the name still accepted (IRMNG, 2021). This makes *Svalbardia* Barkhatova a junior homonym and

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accordingly an invalid name, which needs to be replaced, since no synonyms are available (ICZN, 1999, Arts. 60.1, 60.2). We propose *Brachiosvalbardia* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name stresses its classification in Brachiopoda, unlike *Svalbardia* Thor, 1930, adding the prefix *Brachio-* to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class STROPHOMENATA
Order PRODUCTIDA
Family RUGOSOCHONETIDAE
Genus *Brachiosvalbardia* Ceccolini & Cianferoni nom. nov. = *Svalbardia* Barkhatova, 1970: 78 nec Thor, 1930: 76
Species included *Brachiosvalbardia capitolina* (Toula, 1875) **comb. nov.** = *Paeckelmannia capitolina* (Toula, 1875) = *Chonetes capitolinus* Toula, 1875: 250, pl. 8, fig. 9 (type species)
Brachiosvalbardia cracowensis (Etheridge, 1872) **comb. nov.** = *Svalbardia cracowensis* (Etheridge, 1872) = *Chonetes cracowensis* Etheridge, 1872: 336, pl. XVIII, fig. 2
Brachiosvalbardia narelliensis (Archbold, 1981b) **comb. nov.** = *Svalbardia narelliensis* Archbold, 1981b: 110, fig. 2
Brachiosvalbardia thomasi (Archbold, 1981a) **comb. nov.** = *Svalbardia thomasi* Archbold, 1981a: 6, figs. 1, 2A-V
Brachiosvalbardia toulai (Dunbar, 1955) **comb. nov.** = *Svalbardia toulai* (Dunbar, 1955) = *Tornquistia toulai* (Dunbar, 1955) = *Paeckelmannia toulai* Dunbar, 1955: 69, pl. 3, figs. 1-8

III.
Boucot et al. (1964: 814) erected the brachiopod new genus *Leptospira* with the type species *Trematospira costata* Hall, 1859: 27 from the Devonian of North America. The name is still accepted (IRMNG, 2021).
However, Swainson (1840: 335) used the same name for a genus of mollusc, currently considered a subjective synonym of *Macroceramus* Guilding, 1828: 168 (MolluscaBase, 2021). *Leptospira* Swainson has the priority and makes *Leptospira* Boucot, Johnson and Staton an invalid name. Since the latter does not have available synonyms, it needs to be replaced (ICZN, 1999, Arts. 60.1, 60.2). We propose *Rhyncholeptospira* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name refers to the class to which the genus is assigned, adding the prefix *Rhyncho-* (the first part of the word Rhynchonellata) to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA
Order ATHYRIDIDA
Family RHYNCHOSPIRINIDAE
Genus *Rhyncholeptospira* Ceccolini & Cianferoni nom. nov. = *Leptospira* Boucot, Johnson & Staton, 1964: 814 nec Swainson, 1840: 335
Species *Rhyncholeptospira costata* (Hall, 1859) **comb. nov.** = *Leptospira costata* (Hall, 1859) = *Trematospira costata* Hall, 1859: 27, fig. 1 (type species)

IV.
Lenz (1968: 180) created the Lower Devonian new brachiopod genus *Ogilviella*; the name is still accepted (Baranov, 2015; IRMNG, 2021). The name can no longer be used because Paramonov (1954: 26) established the genus *Ogilviella* in the Diptera Bombyliidae; although this latter name is considered a subjective synonym of *Heteralonia* Rondani, 1863: 57 (GBIF, 2021), it retains priority according to the rules of zoological nomenclature and *Ogilviella* Lenz is an invalid name. Since no synonyms of *Ogilviella* Lenz are available, a new replacement name for it is needed (ICZN, 1999, Arts. 60.1, 60.2). We propose *Rhynchogilviella* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name refers to the class to which the genus is assigned, adding the prefix *Rhynch-* (the first part of the word Rhynchonellata) to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA
Order ATRYPIDA
Family ATRYPINIDAE
Genus *Rhynchogilviella* Ceccolini & Cianferoni nom. nov. = *Ogilviella* Lenz, 1968: 180 nec Paramonov, 1954: 26
Species included *Rhynchogilviella canadensis* (Smith, 1980) **comb. nov.** = *Ogilviella canadensis* (Smith, 1980) = *Arctispira canadensis* Smith, 1980: 66, pls. 27: 42, 48; 28: 1-32
Rhynchogilviella gerensis (Baranov, 2015) **comb. nov.** = *Ogilviella gerensis* Baranov, 2015: 468, pl. 3, figs. 3-9
Rhynchogilviella prolifica (Savage, 1970) **comb. nov.** = *Ogilviella prolifica* Savage, 1970: 657, pl. 101, figs. 1-33
Rhynchogilviella rotunda (Lenz, 1968) **comb. nov.** = *Ogilviella rotunda* Lenz, 1968: 181, pl. 31, figs. 1-35 (type species)

V.
Winkler Prins (2008: 398) established the brachiopod genus *Archboldiella* with the type species *Spirifer basleoensis* Hayasaka & Hosono, 1951: 25 from the Permian of Timor, accomodated in the family Spiriferellidae. The

name is still accepted (IRMNG, 2021). Unfortunately, this name was used by Heinrich (1934: 132) for a genus of Hymenoptera Ichneumonidae, still accepted (Wahl & Gauld, 2022). Therefore *Archboldiella* Winkler Prins is a junior synonym of *Archboldiella* Heinrich and, since it does not have available synonyms, it needs to be replaced, according to ICZN (1999, Arts. 60.1, 60.2). Herein we propose *Spiriarchboldiella* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name refers to the order to which the genus is assigned, adding the prefix *Spiri-* (the first part of the word Spiriferida) to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA
Order SPIRIFERIDA
Family SPIRIFERELLIDAE
Genus *Spiriarchboldiella* Ceccolini & Cianferoni nom. nov. = *Archboldiella* Winkler Prins, 2008: 398 nec Heinrich, 1934: 132
Species *Spiriarchboldiella basleoensis* (Hayasaka & Hosono, 1951) **comb. nov.** = *Archboldiella basleoensis* (Hayasaka & Hosono, 1951) = *Spirifer basleoensis* Hayasaka & Hosono, 1951: 25, fig. 1 (type species)

VI.
Besnossova (1968: 179) established the new fossil genus of Brachiopoda *Kasakhstania* to accommodate the species *Spirifer osborni* Harker, 1960: 65 from the Permian of North America. Presently, the name is still in use (Li et al., 2021; IRMNG, 2021). Eight years earlier Arnol'di (1960: 286) had introduced the name *Kasakhstania* in the Coleoptera Curculionidae, which is still accepted (Arzanov, 2016; IRMNG, 2021). This makes *Kasakhstania* a junior homonym and an invalid name, which must be replaced since no synonyms are available (ICZN, 1999, Arts. 60.1, 60.2). We propose *Brachiokasakhstania* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name stresses its belonging to Brachiopoda, unlike *Kasakhstania* Arnol'di, 1960, adding the prefix *Brachio-* to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA
Order SPIRIFERIDA
Family SPIRIFERIDAE
Genus *Brachiokasakhstania* Ceccolini & Cianferoni nom. nov. = *Kasakhstania* Besnossova, 1968: 179 nec Arnol'di, 1960: 286
Species *Brachiokasakhstania osborni* (Harker, 1960) **comb. nov.** = *Kasakhstania osborni* (Harker, 1960) = *Spirifer osborni* Harker, 1960: 65, pl. 20, figs. 15-17 (type species)

VII.
Pajaud (1966: 70) established the new genus name *Danella* to accommodate the new brachiopod species *D. fragilis* from the Late Cretaceous of France. The name is still in use (IRMNG, 2021). However, Gray (1869: 124) had introduced an identical genus name in the Cnidaria, currently considered a subjective synonym of *Sinularia* May, 1898: 101 (WoRMS, 2021). Regardless of the current rank of *Danella* Gray, it remains a senior homonym of *Danella* Pajaud and the latter name needs to be replaced, lacking available synonyms (ICZN, 1999, Arts. 60.1, 60.2). We propose *Thecidanella* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name refers to the order to which the genus is assigned, adding the prefix *Theci-* (the first part of the word Thecideida) to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA
Order THECIDEIDA
Family THECIDEIDAE
Genus *Thecidanella* Ceccolini & Cianferoni nom. nov. = *Danella* Pajaud, 1966: 70 nec Gray, 1869: 124
Species *Thecidanella fragilis* (Pajaud, 1966) **comb. nov.** = *Danella fragilis* Pajaud, 1966: 70, fig. B (type species)

VIII.
Dagys (1974: 77) established the new brachiopod genus name *Bittnerella* to accommodate the new Triassic species *B. bittneri* and *Cyrtina gracillima* Bittner, 1912. The name is still accepted (IRMNG, 2021). Almost 80 years earlier Dall (1898: 613) replaced the fossil Mollusca genus name *Arcoptera* Bittner, 1895: 126 using the name *Bittnerella*. Therefore, *Bittnerella* Dagys is invalid, since it is a junior homonym of *Bittnerella* Dall, 1898 and, lacking available synonyms, this name needs to be replaced (ICZN, 1999, Arts. 60.1, 60.2). We propose *Brachiobittnerella* Ceccolini & Cianferoni **nom. nov.**

Etymology. The new name stresses its classification in the Brachiopoda adding the prefix *Brachio-* to the original name. Feminine gender.

Systematics

Phylum BRACHIOPODA
Subphylum RHYNCHONELLIFORMEA
Class RHYNCHONELLATA

Order THECIDEIDA
Family THECOSPIRELLIDAE
Genus *Brachiobittnerella* Ceccolini & Cianferoni nom. nov. = *Bittnerella* Dagys, 1974: 77 nec Dall, 1898: 613
Species included *Brachiobittnerella bittneri* (Dagys, 1974) **comb. nov.** = *Bittnerella bittneri* Dagys, 1974: 78 (type species)
Brachiobittnerella gracillima (Bittner, 1912) **comb. nov.** = *Bittnerella gracillima* (Bittner, 1912) = *Cyrtina gracillima* Bittner, 1912: 25

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