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Replacement names and nomenclatural comments for problematic species-group names in Europe's Neogene freshwater Gastropoda

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Abstract

Over the last 250 years of taxonomic descriptions of freshwater gastropods a large number of primary and secondary homonyms were produced. Several of them have now been uncovered in the course of a new database project. To overcome the associated nomenclatural problems we propose 10 replacement names: *Theodoxus pseudodacicus* nom. nov., *Theodoxus stoicai* nom. nov., *Viviparus deleeuwi* nom. nov., *Viviparus lubenescuae* nom. nov., *Viviparus wesselinghi* nom. nov., *Melanopsis anistratenkoi* nom. nov., *Melanopsis gearyae* nom. nov., *Melanopsis magyari* nom. nov., *Melanopsis vrcinensis* nom. nov., and *Pyrgula rusti* nom. nov. Additionally, we discuss taxa that might become secondary homonyms because of uncertain genus attributions. The genera *Melanoptychia* Neumayr, 1880 and *Boistelia* Cossmann, 1909 are synonymized with *Melanopsis* Férussac, 1807 in Férussac & Férussac, 1807 based on the lack of sufficient separation criteria. Involved combinations are expounded and recombined accordingly. The nomenclatural problems regarding *Melanopsis costata* Fuchs, 1870 (non Olivier, 1804) and *Planorbis varians* Fuchs, 1870 sensu Bandel (2010) are discussed.

Key words: homonyms, synonyms, nomina nova, fossil freshwater gastropods

Introduction

Since the first binominal descriptions by Linnaeus (1758) many thousand species and subspecies have been introduced for freshwater gastropods. Word-wide there are about 4,000 described and valid species of Recent freshwater gastropods (Strong *et al.* 2008). For the European Neogene, the number of described species-group taxa is more difficult to determine. In his Fossilium Catalogus, Wenz (1923–1930) listed (and partly synonymized) all the records from the older literature and catalogued about 1,600 species and subspecies for the Neogene. Considering the pile of papers written since then, an actual number of 2,000–3,000 presently valid species-group names might be reasonable.

This incredible and growing number of existing names naturally increases the probability and actual presence of primary and secondary homonyms in the literature. Especially among highly diverse groups with many species and/or subspecies described the chance to introduce an already preoccupied name is considerable. This is particularly true when choosing as name a common descriptive Latin or Latinized like "*carinatus*", "*rugosus*", "*elongatus*" or many others. Moreover, both species and subspecies names, as well as variety- and forma-names published before 1961, are treated as species-group names by the International Code on Zoological Nomenclature (ICZN 1999, Articles 45 and 57.1). According to the Principle of Coordination (Article 46) they are established at all ranks within the species-group at the time of their original description. Therefore, they compete in homonymy issues even if originally established at different ranks. Especially in the older literature, where a huge number of varieties and forms named with descriptive terms was introduced, this resulted in a great many of primary and secondary homonyms.

The recently launched FreshGEN (Freshwater Gastropods of the European Neogene) database project

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successively uncovered nomenclatural mistakes that were unrecognized up to now. This paper is aimed at disposing of such errors by introducing replacement names where necessary. Additionally, doubtful cases and potential nomenclatural problems are discussed and, where possible, clarified.

Homonyms

Class Gastropoda Cuvier, 1795

Subclass Neritimorpha Golikov & Starobogatov, 1975

Order Cycloneritimorpha Frýda, 1998

Superfamily Neritoidea Rafinesque, 1815

Family Neritidae Rafinesque, 1815

Subfamily Neritininae Poey, 1852

Genus *Theodoxus* Montfort, 1810

Type species: *Theodoxus lutetianus* Montfort, 1810 (currently considered as a synonym of *Theodoxus fluviatilis* (Linnaeus, 1758)). Recent, Europe. Type by original designation (Welter-Schultes 2012, p. 26).

Theodoxus pseudodacicus nom. nov.

Theodoxus (*Theodoxus*) *dacicus* Pană 2003: 301, pl. 1, figs 7–8 [non *Theodoxus dacicus* Jekelius, 1944].

Etymology. To denote that this species is not *Theodoxus dacicus*.

Type locality. Vintilă Vodă in Slănic valley, Buzău, Romania.

Age. Lower Romanian (= Sienisian, upper Zanclean).

Holotype. Laboratory of Paleontology, Bucharest, coll. no. 623, L. P. B. III g.

Discussion. This species was introduced by Pană (2003) for a Pliocene taxon from the Dacian Basin. It is a primary homonym of *Theodoxus dacicus* Jekelius, 1944 (p. 114), a different species described from the Late Miocene of Soceni in the Pannonian Basin. The Miocene species was classified by Papp (1953, p. 99) as a subspecies of *T. leobersdorfensis* (Handmann, 1887).

When introducing this species Pană (2003) referred to it as "*Theodoxus (Theodoxus) dacicus* n. sp. Pană 1989". This leads to some confusion, since she properly described and illustrated the taxon and indicated a holotype in 2003, but gave no reference to a work from 1989. The only publication from Pană (1989) known to us deals with different taxa. Maybe she introduced the name (as *nomen nudum*) in an unpublished thesis.

Theodoxus stoicai nom. nov.

Theodoxus (*Calvertia*) *rugosa* Pană 2003: 304, pl. 2, figs 14–16 [non *Neritodonta brusinai rugosa* Pavlović, 1931].

Etymology. In honor of Marius Stoica (Bucharest University), who greatly contributed to the stratigraphic framework of the Dacian Basin from which this species derives.

Type locality. Sărăţel brook in Plopeasa valley, Prahova/Buzău, Romania.

Age. Lower Romanian (= Sienisian, upper Zanclean).

Holotype. Laboratory of Paleontology, Bucharest, coll. no. 669, L. P. B. III g.

Discussion. Pavlović (1931, p. 27) introduced "*Neritodonta brusinai* var. *rugosa*" for a Pontian taxon from

Serbia. According to Wenz (1929, p. 2934) *Neritodonta* Brusina, 1884 is a junior synonym of *Calvertia* Bourguignat, 1880, which is treated as a subgenus of *Theodoxus* (see also Papp 1953, p. 91). Therefore, *Theodoxus* (*Calvertia*) *rugosa* Pană, 2003 is a secondary homonym of *Theodoxus* (*Calvertia*) *rugosus* (Pavlović, 1931). Later, Milošević (1983, p.140) elevated the variety to the species level.

Additionally, the gender of the species epithet was erroneously introduced as feminine by Pană (2003), while *Theodoxus* is clearly masculine. In the figure caption the genus was wrongly given as "*Theodoxis*".

Subclass Caenogastropoda Cox, 1960

Order Architaenioglossa Haller, 1892

Superfamily Viviparoidea Gray, 1847

Family Viviparidae Gray, 1847

Subfamily Viviparinae Gray, 1847

Genus *Viviparus* Montfort, 1810

Type species: *Viviparus fluviorum* Montfort, 1810 (currently considered as a synonym of *Viviparus viviparus* (Linnaeus, 1758)). Recent, Northern Eurasia, Europe, Anatolia and Northern America. Type by original designation (Welter-Schultes 2012, p. 31).

***Viviparus deleeuwi* nom. nov.**

Viviparus muscelensis Lubenescu & Zazuleac 1985: 104, pl. 28, figs 1–4, 6 [non *Vivipara (Tylotoma) muscelensis* Stefanescu, 1897].

Etymology. In honor of Arjan de Leeuw (CASP, Cambridge), specialist for the stratigraphy of the Dacian Basin.
Type locality. Voineşti, Dâmboviţa, Romania.

Age. Lower Dacian (= Getian, middle Zanclean).

Holotype. Institut de Géologie et Géophysique, Bucharest, coll. no. 17050.

Discussion. In this particular case the rule of "difference in spelling of generic names" (ICZN 1999, Article 57.5) applies: *Vivipara* as given by Stefanescu (1897) represents an incorrect subsequent spelling of *Viviparus* Montfort, 1810 (Melville & Smith 1987, p. 185). The species is thus a primary homonym of *Viviparus muscelensis* (Stefanescu, 1897) and needed a replacement name (see also Wenz 1928, p. 2345).

***Viviparus lubenescuae* nom. nov.**

Viviparus conicus Lubenescu & Zazuleac 1985: 100, pl. 23, figs 5–19 [non *Vivipara conica* Pavlović, 1903].

Etymology. In honor of Victoria Lubenescu (Bucharest), who studied the viviparids of the Dacian Basin and first described this species.

Type locality. Mănăstirea Dintr-un Lemn along Runcu brook, near Dezrobiţi village, Vâlcea, Romania.

Age. Lower Dacian (= Getian, middle Zanclean).

Holotype. Institut de Géologie et Géophysique, Bucharest, coll. no. 17056.

Discussion. Here the same rules apply as for the case of *Viviparus muscelensis* above: *Viviparus conicus* Lubenescu & Zazuleac, 1985 is a primary homonym of *Viviparus conicus* Pavlović, 1903 from the Pliocene of Orahovac in the Metohia Basin, Kosovo (see also Wenz 1928, p. 2307).

Viviparus wesselinghi nom. nov.

Viviparus neumayri var. *incerta* Macarovici 1940: 322, pl. 5, figs 72–76 [non *Vivipara incerta* Fuchs, 1877].
Viviparus (*Viviparus*) *achatinoides incertus*—Taboyakova 1964: 43, pl. 1, figs 1–12, pl. 2, figs 1, 4–6 (cum syn.) [non *Vivipara incerta* Fuchs, 1877].
Viviparus (*Viviparus*) *achatinoides incertus*—Roshka 1973: 113, pl. 13, figs 150–152 [non *Vivipara incerta* Fuchs, 1877].
Viviparus incertus—Lubenescu & Zazuleac 1985: 83, pl. 14, figs 6–21 [non *Vivipara incerta* Fuchs, 1877].
Viviparus (*Viviparus*) *incertus*—Gozhik & Datsenko 2007: 39, pl. 52, fig. 25, pl. 53, figs 2, 6, 11, pl. 58, fig. 8 [non *Vivipara incerta* Fuchs, 1877].

Etymology. In honor of Frank P. Wesselingh (Naturalis, National Museum of Natural History, Leiden), a leading expert on Cenozoic freshwater mollusks.

Type locality. Vladychen' (= Impuțita) near Izmayil, Odessa, Ukraine.

Age. Dacian (= middle Zanclean).

Lectotype. No holotype was designated in the original publication; Taboyakova (1964, p. 43) designated the specimen illustrated in Macarovici (1940, pl. 5, fig. 72) as lectotype.

Discussion. As Macarovici introduced this taxon as variety before 1961, it is available as species-group name (ICZN 1999, Article 45.6.4). Here again the rule "difference in spelling of generic names" (ICZN 1999, Article 57.5) applies and *Viviparus incerta* [wrong gender] Macarovici, 1940 is a primary homonym of *Vivipara incerta* Fuchs, 1877 [= *Viviparus incertus*].

Order Cerithiimorpha Golikov & Starobogatov, 1975

Superfamily Cerithioidea Fleming, 1822

Family Melanopsidae Adams & Adams, 1854

Subfamily Melanopsinae Adams & Adams, 1854

Genus *Melanopsis* Férussac in Férussac & Férussac, 1807

Type species: *Melania costata* Olivier, 1804. Recent, Europe. Subsequent designation by Gray (1847, p. 153).

Melanopsis anistratenkoi nom. nov.

Melanopsis (*Duabiana*) *cylindrica* Anistratenko 1993: 69 [non *Lyrcea cylindrica* Stoliczka, 1862].

Etymology. In honor of Vitaliy V. Anistratenko (Schmalhausen Institute of Zoology of the Ukrainian National Academy, Kiev), who greatly contributed to our knowledge about the fossil and recent mollusk fauna from eastern Europe.

Type locality. Mok'vi monastery by the Duab River, Abkhazia, Georgia.

Age. Duab beds, Kimmerian (= middle-late Zanclean).

Holotype. Schmalhausen Institute of Zoology of National Academy of Sciences of Ukraine, Kiev, coll. no. 22/VI 1989.

Discussion. The species by Anistratenko constitutes a secondary homonym of *Melanopsis cylindrica* (Stoliczka, 1862). The latter species was introduced within *Lyrcaea* (misspelt "*Lyrcea*" by Stoliczka), which is considered a junior synonym of *Melanopsis* (Wenz 1929, p. 2647). Today it is undoubtedly referred to *Melanopsis*.

Melanopsis gearyae nom. nov.

Melanopsis eleis posterior Schütt in Symeonidis *et al.* 1986: 342, pl. 4, figs 8–9 [non *Melanopsis impressa posterior* Papp, 1953].

Etymology. In honor of Dana H. Geary (University of Wisconsin, USA), who intensively studied the evolutionary mechanisms in the melanopsids of Late Miocene Lake Pannon.

Type locality. Unnamed outcrop 3 km N of Antirrio, Aetolia-Acarnania, Greece.

Age. "Upper Pliocene" (today probably referable to the lower Pleistocene).

Holotype. Senckenberg Forschungsinstitut und Naturmuseum Frankfurt, no number indicated.

Discussion. This taxon displays a classic case of a primary homonym as a species-group name. The name "*posterior*" as a species-group name within the genus *Melanopsis* was already introduced by Papp (1953, p. 133) for a Late Miocene Lake Pannon species from Leobersdorf, Austria, namely *Melanopsis impressa posterior* Papp, 1953. Lueger (1980, p. 116) later elevated that taxon to species level.

Melanopsis magyari nom. nov.

Melanopsis Klerići inermis Brusina 1897: 8, pl. 7, figs 7–8 [non *Melanopsis inermis* Handmann, 1882].
Melanopsis klerići inermis—Wenz 1929: 2767 [non *Melanopsis inermis* Handmann, 1882].

Etymology. In honor of Imre Magyar (Hungarian Natural History Museum, Budapest), an expert for development of the Pannonian Basin and its mollusk fauna.

Type locality. Begaljica, Belgrade, Serbia.

Age. Middle Pannonian (= Middle Tortonian).

Holotype. Croatian Natural History Museum, Zagreb, coll. no. 3020-666 (Milan *et al.* 1974, p. 93).

Discussion. As a species-group name "*inermis*" is preoccupied by *Melanopsis inermis* Handmann, 1882, making *Melanopsis klerici inermis* Brusina, 1897 a primary homonym.

Melanopsis vrcinensis nom. nov.

Melanopsis (*Melanoptychia*) *glabra* Pavlović 1927: 60, pl. 6, figs 18–19 [non *Melanopsis glabra* Brusina, 1874].
Melanopsis (*Melanoptychia*) *glabra* Pavlović 1928: 38, pl. 6, figs 18–19 [non *Melanopsis glabra* Brusina, 1874].

Etymology. After the nearby village Vrčin.

Type locality. Karagača near Vrčin, Belgrade, Serbia.

Age. Middle Pannonian (= Middle Tortonian) (after Stevanović 1985).

Holotype. Natural History Museum, Belgrade, coll. no. 209 (Milošević 1962, p. 23).

Discussion. This species is a primary homonym of *Melanopsis glabra* Brusina, 1874. Wenz (1929, p. 2649) later ranked it as subspecies of *Melanopsis abbreviata* Brusina, 1874.

Order Littorinimorpha Golikov & Starobogatov, 1975

Superfamily Rissooidea Gray, 1847

Family Hydrobiidae Stimpson, 1865

Subfamily Pyrgulinae Brusina, 1881

Genus *Pyrgula* De Cristofori & Jan, 1832

Type species: *Turbo annulatus* Linnaeus, 1758. Recent, Europe. Type by monotypy.

Pyrgula rusti nom. nov.

Micromelania carinata Gillet & Geissert 1971: 134, pl. 7, figs 4–4a, pl. 12, figs 4–4a [non *Micromelania carinata* Andrusov, 1890].

Etymology. In honor of Jes Rust (University of Bonn), who intensively worked on the mollusk fauna of the Aegean region.

Type locality. Trílofon (= Trilophos), Thessaloniki, Greece.

Age. Trilophos Formation, Messinian (= mammal zones late MN 12 to MN 13; see Rust 1997).

Holotype. No holotype was designated (see also Rust 1997, p. 115); information about storage of material and collection number missing.

Discussion. This species was introduced by Gillet & Geissert (1971) as a primary homonym of *Micromelania carinata* Andrusov, 1890. Although both taxa have been recombined since then, the junior name is permanently invalid according to ICZN (1999, Article 57.2) and needs a replacement name. *Micromelania carinata* Andrusov, 1890 has been recombined as *Turricaspia carinata* (source of recombination unclear; see Iljina *et al.* 1976) and "*Micromelania carinata* Gillet & Geissert, 1971" as *Pyrgula carinata* by Rust (1997, p. 114). We follow the revised systematic placement and introduce the replacement name within the genus *Pyrgula*.

None of the mentioned taxa should be confused with two other new hydrobiid species introduced by Gillet & Geissert (1971), *Hydrobia carinata* (p. 131) and *Caspia carinata* (p. 136).

Potential homonyms

Family Neritidae Rafinesque, 1815

Genus *Theodoxus* Montfort, 1810

Theodoxus (*Calvertia*) *brusinai* (Pavlović, 1931)

Neritodonta brusinai Pavlović 1931: 27, pl. 11, figs 21–32 [non *Neritina brusinai* Andrusov, 1909].

Type locality. Valley of Voljavča brook near Bresnica, Moravica, Serbia.

Age. Pontian (= upper Messinian-lower Zanclean).

Holotype. Natural History Museum, Belgrade, coll. no. 3301 (Milošević 1962, p. 29).

Discussion. The status as a (secondary) homonym depends on the controversial generic and subgeneric affiliations of the involved species. Pavlović (1931, p. 27) introduced this species within the genus *Neritodonta* Brusina, 1884 (see also Milošević 1962). As stated above, *Neritodonta* is a junior synonym of *Calvertia* Bourguignat, 1880, which is treated as a subgenus of *Theodoxus* (see also Wenz 1929, p. 2934). The older species was introduced as *Neritina brusinai* Andrusov, 1909 and newly combined as *Theodoxus* (*Ninnia*) *brusinai* by Wenz (1929, p. 2986). Therefore, *Theodoxus* (*Calvertia*) *brusinai* (Pavlović, 1931) would be secondary homonym of *Theodoxus* (*Ninnia*) *brusinai* (Andrusov, 1909). However, *Ninnia* Brusina, 1902 was meanwhile elevated to genus level based on differences of shell and ontogeny (Bandel 2001, p. 128). A replacement name is thus not necessary at present.

Another *Theodoxus* species formally constituting a secondary homonym is *Theodoxus* (*Calvertia*) *depressus* Taner, 1974. The species-group name "*depressus*" in combination with *Theodoxus* is already in use for a taxon from the Pleistocene of Kos Island, introduced as "*Neritina Fuchsi* var. *depressa*" by Magrograssi (1928) and recombined as *Theodoxus doricus depressus* (Magrograssi, 1928) by Willmann (1981, p. 149). Wesselingh *et al.* (2008, p. 865), however, consider the species described by Taner (1974) as junior synonym of *Theodoxus bukowskii* (Oppenheim, 1919), thus we refrain from introducing a replacement name.

Name changes

Family Viviparidae Gray, 1847

Genus *Viviparus* Montfort, 1810

Viviparus dezmanianus turbureensis Fontannes, 1887

[*Vivipara Dezmaniana*, Brusina] *Var. Turbureensis* Fontannes 1887: 342, pl. 26, fig. 36.
Viviparus dezmanianus dacicus Lubenescu & Zazuleac 1985: 115, pl. 31, figs 15–27.

Type locality. Moreni, Dâmbovița, Romania.

Age. Lower Romanian (= Sienisian, upper Zanclean)

Holotype. Institut de Géologie et Géophysique, Bucharest, coll. no. 17074.

Discussion. When introducing the new name *V. dezmanianus dacicus*, Lubenescu & Zazuleac (1985) included the record "*Vivipara dezmaniana* Fontannes (non Brusina)" in the synonymy list. Although they did not discuss it, they obviously wanted to denote that Fontannes's identification was wrong and his specimens do not represent *V. dezmanianus* Brusina, 1874, but another taxon—the one they newly introduced. Apparently they overlooked that Fontannes (1887, p. 342) did not refer to *V. dezmanianus* but actually introduced a new variety. Lubenescu & Zazuleac (1985) might have been misled by the species heading, saying "*Vivipara dezmaniana*, Brusina", followed by several citations of other works mentioning this species. In the end of this confusing synonymy list Fontannes, however, clearly stated "*Var. Turbureensis*, Fontannes" (also mentioned like this in the figure captions). This taxon was illustrated and properly described in the following passage and thus is available. Hence, Lubenescu & Zazuleac (1985) introduced a new name for an already existing and described subspecies. As both names (*dacicus* and *turbureensis*) are based on different objects, they are not objective synonyms and both names are available. However, the taxonomic decision by Lubenescu & Zazuleac (1985) to synonymize the record of Fontannes is maintained. Following ICZN rules, *Viviparus dezmanianus dacicus* Lubenescu & Zazuleac, 1985 thus needs to be referred to as a junior synonym of *Viviparus dezmanianus turbureensis* Fontannes, 1887.

Family Hydrobiidae Stimpson, 1865

Subfamily Hydrobiinae Stimpson, 1865

Genus *Hydrobia* Hartmann, 1821

Type species: *Cyclostoma acutum* Draparnaud, 1805. Recent, France. Type by monotypy.

Hydrobia alpha Jekelius, 1944

Hydrobia subprotracta Jekelius 1944: 59, pl. 10, figs 1–4 [non *Hydrobia subprotracta* Zhizhchenko, 1936].
Hydrobia subprotracta alpha [sic] Jekelius 1944: 59, pl. 10, figs 5–7.

Type locality. Polițioană valley near Soceni, Caras-Severin, Romania.

Age. Sarmatian s.s. (= upper Serravallian).

Holotype. Jekelius (1944, pl. 10, fig. 2); no information about storage and collection number given.

Discussion. The species name *Hydrobia subprotracta* Jekelius, 1944 is a primary homonym of *Hydrobia subprotracta* Zhizhchenko, 1936 and therefore unavailable. Formally, a replacement name is needed here. We refrain from such a nomenclatural act because of following reason: *H. subprotracta* Jekelius, 1944 is herein considered synonymous with *H. subprotracta alpha* Jekelius, 1944. The name "*alpha*" was fully spelled out by Jekelius (1944) and does not denote an infrasubspecific taxon; it is thus available as a species-group name (see also ICZN 1999, Article 45.6.4). Apart from stronger convex whorls as indicated by the description and illustrations of Jekelius (1944), it fully corresponds to "*H. subprotracta* Jekelius, 1944". Following this, "*alpha*" is the first and only available name for the taxon. We simply avoid introducing a replacement name for *Hydrobia subprotracta* Jekelius, 1944, not to add another (redundant) name to the already existing bulk and confusing later workers.

Subfamily Micromelaniinae Dybowski & Grochmalicki, 1914

Note: the taxonomic status of the Micromelaniinae is currently under discussion. The rank as subfamily follows Wenz (1926, p. 2126; erroneously written as "Micromelaninae"). See also Kabat & Hershler (1993) and Wilke *et al.* (2007).

Genus *Goniochilus* Sandberger, 1875

Type species: *Pleurocera costulatum* Fuchs, 1870. Late Miocene, Romania. Subsequent designation by Wenz (1926).

"*Goniochilus lecrenthey* Pană, 1990" [*nomen nudum*]

Discussion. There are several problems with this species. The first and most crucial point is that it is formally a *nomen nudum*. While Pană (1990) introduced two new subspecies, she did not describe the species itself. The two subspecies are still validly introduced as species-group names. Secondly, there are many misspellings (lecrenthey, loerenthey, loeerenthey) in the publication. Concerning the *derivatio nominis* section and considering the rules of the ICZN the name should be "*lorentheyi*". According to the ICZN (1999, Articles 32.5.1 and 33.2.2), these incorrect original spellings (being either *lapsus calami* or copyist's or printer's errors) would have to be corrected—which is not necessary here, as the name is a *nomen nudum* and formally not available.

A similar case is mentioned by Welter-Schultes (2012, p. 382) for the terrestrial snail *Oxychilus draparnaudi* (Beck, 1837). This species was neither described nor indicated in the original publication (Beck 1837, p. 6), while the varieties *gallica* and *italica* were indeed indicated with bibliographic references. Welter-Schultes (2012) argues that the name *draparnaudi* was made available under ICZN Article 12.1, because it had an indication for a subordinate taxon that was included originally and this article does not demand a description for the nominal taxon. While it is true that the Code states in the glossary that "a taxon encompasses all taxa of lower rank", we would like to point out that the situation is a bit more complicated. According to the Principle of Coordination (Article 46), all taxa in the species group are deemed to be simultaneously established at every possible rank within the species group. Therefore, the names *carinatus* and *nodosus*, originally proposed as subspecies of *lorentheyi*, are species-group taxa too and thus not subordinate taxa of *lorentheyi* in a nomenclatural sense. Hence, their descriptions cannot serve as definition for the undescribed nominal form *lorentheyi*. To do so would imply that one or both are synonymized with *lorentheyi*, which would be a taxonomic but not a nomenclatural act. The situation in *O. draparnaudi*, in contrast, was solved by ICZN (1955, Op. 336), which made the name available.

Consequently, the only two taxa available are as follows:

***Goniochilus carinatus* Pană, 1990**

Goniochilus lecrenthey [sic] *carinatus* Pană 1990: 64, pl. 2, figs 1–24.

Type locality. Sibiciu de Jos near Pănătău, Buzău, Romania.

Age. Lower Pontian (= upper Messinian).

Holotype. Laboratory of Paleontology, Bucharest, coll. no. 675, L. P. B. III g.

Discussion. *Goniochilus carinatus* Pană, 1990 may become a secondary homonym. As *Goniochilus* Sandberger, 1875 is repeatedly treated as subgenus of *Micromelania* Brusina, 1874 (e.g., Pavlović 1928; Papp 1953; Bartha & Soós 1955; Marinescu 1973; Schütt & Besenecker 1973; Lueger 1980) this species-group name would be another potential secondary homonym of *Micromelania carinata* Andrusov, 1890 (see discussion of respective species above). Currently, *Goniochilus* is treated as separate genus (see Harzhauser *et al.* 2002).

Goniochilus nodosus Pană, 1990

Goniochilus loeerenthey [sic] *nodosus* Pană 1990: 68, pl. 3, figs 1–26.

Type locality. Boteni, Argeş, Romania.

Age. Pontian (= upper Messinian-lower Zanclean).

Holotype. Laboratory of Paleontology, Bucharest, coll. no. 676, L. P. B. III g.

Discussion. To our knowledge, *Goniochilus nodosus* Pană, 1990 is no homonym.

Family Melanopsidae Adams & Adams, 1854

Genus *Melanopsis* Férussac, 1807 in Férussac & Férussac, 1807

Melanopsis confusa Strausz, 1941

Melanopsis costata—Fuchs 1870a: 353 [non Olivier, 1804].
M.[*elanopsis*] *Fuchsi* Brusina 1884: 168 [non Handmann, 1882].
Melanopsis Fuchsi—Brusina 1896: 121 [non Handmann, 1882].
Melanopsis Fuchsi—Brusina 1902: VII, pl. 6, figs 38–40 [non Handmann, 1882].
M.[*elanopsis*] *hungarica* Pallary 1916: 83 [non Kormos, 1904].
Melanopsis hungarica—Wenz 1929: 2744 [non Kormos, 1904] [cum syn.].
M.[*elanopsis*] *confusa* Strausz 1941: 143, 168 [replacement name for *Melanopsis hungarica* Pallary non Kormos].
Melanopsis (Canthidomus) jekeliusi Gillet & Marinescu 1971: 55, pl. 22, figs 20–30 [unnecessary replacement name].

Type locality. Rădmăneşti, Timiş, Romania.

Age. Upper Pannonian (= Upper Tortonian).

Holotype. No holotype was designated; syntypes are stored in the Natural History Museum Vienna.

Discussion. The name *Melanopsis costata* was introduced by Olivier (1804) for an extant taxon and is still valid and accepted. Fuchs (1870a) misidentified a different species from the Late Miocene locality Rădmăneşti in Romania, classifying it as "*Melanopsis costata* Fér.". To rectify this error, Brusina (1884, p. 168) introduced a new name, i.e. *Melanopsis fuchsi* Brusina, 1884. Since he explicitly referred to the description of Fuchs (1870a), the species *M. fuchsi* was correctly indicated and is not a *nomen nudum* as stated by Wenz (1929, p. 2745). However, this name again is a primary homonym of *M. fuchsi* Handmann, 1882. Pallary (1916, p. 83) summarized the nomenclatural problems and introduced *Melanopsis hungarica* Pallary, 1916 as new name for *M. fuchsi* Brusina, 1884 non Handmann, 1882. This is the third homonym for the very same species, as the name is preoccupied by *M. hungarica* Kormos, 1904. Strausz (1941) introduced the only valid name, *Melanopsis confusa*, as replacement name for *M. hungarica* Pallary, 1916 non Kormos, 1904 (see also Strausz 1942, p. 91).

Seemingly unaware of this publication, Gillet & Marinescu (1971, p. 55) repeated the very same nomenclatural act and introduced *Melanopsis* (*Canthidomus*) *jekeliusi* as new name for *M. hungarica* Pallary, 1916 non Kormos, 1904. Following ICZN (1999, Article 61.3.4) this name is an objective synonym.

The records of "*Melanopsis costata* Férussac, 1823" in Neumayr (1869, p. 372), Neumayr & Paul (1875, p. 41) and many others (see Wenz 1929, p. 2648) for Slavonian (E Croatian) species trace back to an error made by Férussac. In his monograph on the recent and fossil melanopsids, he wrote "*Mel. costata*, nobis" (Férussac 1823, p. 156) despite citing the first description of Olivier (1804) in the synonymy list. Maybe he wanted to denote that he places this species within *Melanopsis*, while Olivier described it as "*Melania costata*". However, the records by Neumayr and others neither refer to *Melanopsis costata* (Olivier, 1804) nor to *Melanopsis confusa* Strausz, 1941. These misidentifications were already detected and clarified by Pallary (1916, p. 80), who proposed the new name *Melanopsis cosmanni* [sic] for these misidentified specimens (ranked as subspecies of *Melanopsis abbreviata* Brusina, 1874 in Wenz 1929, p. 2648). Since the name was clearly erected in honor of Maurice Cossmann, the correct name has to be "*cossmanni*" (justified emendation following ICZN Article 33.2).

The *Melanopsis-Melanoptychia-Boistelia*-problem

The taxonomic problems with the genera *Melanoptychia* and *Boistelia* were already recognized by Jekelius (1944, p. 136f). *Melanoptychia* was introduced for melanopsids with a columellar fold (Neumayr 1880, p. 480). Cossmann (1909, p. 183) gave no differential diagnosis to separate *Boistelia* from *Melanopsis* or *Melanoptychia*, but stated the columellar fold as typical characteristic. Jekelius (1944, p. 136) distinguished *Boistelia* from *Melanoptychia* on the grounds of the smooth or almost smooth whorls and the shape of the last whorl. From the text it becomes obvious that Jekelius used these morphological differences only as tool of categorization without any phylogenetic meaning. Jekelius was aware of the *Melanopsis-Melanoptychia/Boistelia* species pairs with identical teleoconchs, differing only by the presence or absence of the columellar fold. Despite being obviously aware of the problem that columellar folds vary strongly between specimens and growth stages, Jekelius still formally introduced new species for the different end members of these morphological gradients. In agreement with taxonomic practice at that time, he assigned them to different genera. To complicate matters, he chose identical epithets for the species pairs, which he considered to be differentiated by the columellar fold only (e.g., he differentiated between *Melanopsis banatica* Jekelius, 1944 without columellar fold and *Melanoptychia banatica* Jekelius, 1944 with fold). Currently these morphological differences are considered as intraspecific variability, which renders one of the two names in each species pair unnecessary. Theoretically this would create a number of secondary homonyms, which we chose not to replace here, since they likely represent superfluous names for extreme morphotypes within the same species. Below, we provide the respective synonymy lists for the species pairs. As the involved species of these pairs each refer to different type specimens, they are no objective synonyms.

In addition, the conclusion that *Melanoptychia* is a junior synonym of *Melanopsis* (see also Neubauer *et al.* 2013, p. 135) causes further homonymy within this genus group. Examples are *Melanoptychia bittneri* Neumayr, 1880 and *Melanopsis bittneri* Fuchs, 1877, which are different species established at different times and not related to the problem of end members within a morphological gradient. In Table 1 we list all the other species-group taxa that were described as or combined with *Melanoptychia* or *Boistelia*. All these are herewith regarded to belong to *Melanopsis*.

Genus *Melanopsis* Férussac, 1807 in Férussac & Férussac, 1807

Melanopsis Férussac 1807 in Férussac & Férussac 1807: 70.
Melanoptychia Neumayr 1880: 480 [type species: *Melanoptychia bittneri* Neumayr, 1880, Middle Miocene, Džepi N Konjic, Bosnia and Herzegovina; type by original designation].
Boistelia Cossmann 1909: 183 [type species: *Melanoptychia paradoxa* Brusina, 1892, Late Miocene, Zagreb-Markuševec, Croatia; type by original designation].
Melanopsis—Wenz 1929: 2647.
Melanoptychia—Wenz 1929: 2869.
Boistelia—Wenz 1929: 2871.

Melanopsis banatica Jekelius, 1944

Melanopsis banatica Jekelius 1944: 132, pl. 50, figs 3–8, 12–14.
Melanoptychia banatica Jekelius 1944: 139, pl. 58, figs 11–12.

Melanopsis brusinai Lörenthey, 1902

Melanopsis Brusinai Lörenthey 1902: 223, pl. 16, fig. 7, pl. 18, figs 3–6.
Melanopsis brusinai—Wenz 1929: 2683 [cum syn.].
Melanoptychia brusinai Jekelius 1944: 137, pl. 56, figs 1–23.

Melanopsis inermis Handmann, 1882

Melanopsis inermis Handmann 1882: 554.
Melanopsis inermis—Wenz 1929: 2758 [cum syn.].
Melanopsis inermis—Jekelius 1944: 135, pl. 54, figs 1–20.
Boistelia inermis Jekelius 1944: 137, pl. 57, figs 22–27.

Melanopsis moesiensis Jekelius, 1944

Melanopsis moesiensis Jekelius 1944: 132, pl. 50, figs 1–2.
Melanoptychia moesiensis Jekelius 1944: 139, pl. 58, figs 1–10.

Melanopsis pygmaea hispidula Pallary, 1916

Mel.[*anopsis*] *Canthidomus turritus* Handmann 1887: 32, pl. 7, fig. 13.
Melanopsis bouei bouei—Wenz 1929: 2671 [in part: referring to records of *M. turrita* only].
Melanoptychia turrita Jekelius 1944: 138, pl. 57, figs 1–21.
Melanopsis pygmaea turrita—Papp 1953: 150, pl. 12, figs 24–27.
Melanopsis hispidula Pallary 1916: 84.

Discussion. *Melanopsis turrita* Handmann, 1882 is considered a junior subjective synonym of *M. bouei bouei* by Wenz (1929, p. 2674). Jekelius (1944) seemingly ignored this and treated it still as *Melanopsis turrita* in the discussions. Papp (1953) later ranked it as a subspecies of *M. pygmaea* Hörnes, 1856. This is also followed by Fordinál (1997) and Mikuž (2005).

However, is has been overlooked so far that *M. turrita* Handmann, 1887 displays a primary homonym of the extant species *M. turrita* Rossmässler, 1854 (not "Bourguignat, 1884" as given by Pallary 1916; see also Bourguignat 1884, p. 163), for which Pallary (1916) invented the replacement name *Melanopsis hispidula*. We follow the latest taxonomic opinion and rank it as a subspecies of *M. pygmaea*.

Melanopsis soceni Jekelius, 1944

Melanopsis soceni Jekelius 1944: 73, pl. 16, figs 14–17, pl. 51, figs 1–11.
Boistelia soceni Harzhauser *et al.* 2002: 99, pl. 7, fig. 6.

Discussion. *Boistelia soceni* was described as new species by Harzhauser *et al.* (2002) from the Pannonian (biozone C–D) of the sandpit "Zollhaus" near St. Margarethen, Burgenland, Austria. The authors discuss the similarity with *Melanopsis soceni* Jekelius, 1944 from Soceni and the possibility that the new taxon could be product of hybridization (following the argumentation of Bandel 2000). Here both taxa are considered synonymous.

Melanopsis stricturata Brusina, 1892

Melanopsis stricturata Brusina 1892: 139.
Melanopsis stricturata—Wenz 1929: 2834 [cum syn.].
Melanopsis stricturata—Jekelius 1944: 127, pl. 47, figs 3–11.
Boistelia stricturata Jekelius 1944: 136, pl. 55, figs 1–14.

Other species-group nominal taxa introduced within or newly combined with *Melanoptychia* or *Boistelia* trace back to Bourguignat (1880), Neumayr (1880), Brusina (1892, 1902), and Wenz (1923–1930) (Table 1).

TABLE 1. Species-group nominal taxa introduced within or combined with *Melanoptychia* or *Boistelia*.

original combination	accepted combination	discussion
Melanoptychia bittneri Neumayr, 1880	*Melanopsis medinae* Neubauer *et al.*, 2013	type species of *Melanoptychia*; secondary homonym of *Melanopsis bittneri* Fuchs, 1877; replacement name *Melanopsis medinae* introduced by Neubauer *et al.* (2013)
Melanoptychia carusi Brusina, 1902	*Melanopsis carusi* (Brusina, 1902)	listed by Wenz (1929, p. 2870) as *Melanoptychia*; herewith recombined
Melanoptychia mojsisovicsi Neumayr, 1880	*Melanopsis mojsisovicsi* (Neumayr, 1880)	listed by Wenz (1929, p. 2870) as *Melanoptychia*; already recombined by Neubauer *et al.* (2013, p. 137)
Melanoptychia paradoxa Brusina, 1892	*Melanopsis paradoxa* (Brusina, 1892)	designated as type species for *Boistelia* by Cossmann, 1909 (see also Wenz 1929, p. 2871); recombined with *Melanopsis (Melanoptychia)* by Pavlović (1927, p. 59)
Melanoptychia pleuroplagia Bourguignat, 1880	*Melanopsis pleuroplagia* (Bourguignat, 1880)	listed by Wenz (1929, p. 2870) as *Melanoptychia*; herewith recombined
Melanopsis pseudoscalaria Sandberger, 1886	*Melanopsis pseudoscalaria* Sandberger, 1886	recombined by Wenz (1929, p. 2871) with *Melanoptychia*; original combination to be retained
Melanoptychia rarinodosa Brusina, 1892	*Melanopsis rarinodosa* (Brusina, 1892)	recombined with *Melanopsis (Melanoptychia)* by Pavlović (1927, p. 59) and *Boistelia* by Wenz (1929, p. 2871)
Boistelia substricturata Jekelius, 1944	*Melanopsis substricturata* (Jekelius, 1944)	herewith recombined

Planorbis varians Fuchs, 1870—how to recombine?

Planorbis varians Fuchs, 1870 in Fuchs 1870a: 356, pl. 14, figs 1–9.
Gyraulus (Gyraulus) varians (Fuchs): Wenz 1923: 1622 (cum syn.).
Muellerpalia varians (Fuchs, 1870); Bandel 2010: 104 [not pl. 8, figs 90–94, = *Muellerpalia bicincta* (Fuchs, 1870)].
Marinescugyra varians (Fuchs, 1870); Bandel 2010: 112, pl. 13, figs 153–158.

In his revision about the valvatiform gastropods of the Paratethys realm, Bandel (2010) introduced amongst others the genera *Muellerpalia* (Hydrobiidae) and *Marinescugyra* (Planorbidae), based on characteristic protoconch features. One of the discussed species is *Planorbis varians* Fuchs, 1870 from Rădmăneşti in Romania. On the grounds of different protoconch properties, Bandel assigned specimens, putatively belonging to the same species, to either *Muellerpalia* (p. 104) or *Marinescugyra* (p. 112). For the latter, it even constitutes the type species. Hence, Bandel used two different combinations based on the same original combination.

From a nomenclatural as well as a taxonomic view this is of course not tenable. It means that either the various specimens belong to two different species or the diagnostic features of the two genera are not meaningful. The associated problems were clear to the author as became evident from personal correspondence: Bandel (pers. comm.) stated the possibility that "*Planorbis varians*" is actually represented by two species, which would have to be assigned variably to *Muellerpalia* or *Marinescugyra* based on their protoconchs. Unfortunately, this discussion is wanting in the paper.

However, it turned out that the two combinations indeed refer to different species. The specimens illustrated by Bandel (2010) as "*Marinescugyra varians*" (pl. 13, figs 153–158) undoubtedly refer to the same species as described by Fuchs (1870a). They correspond in the two strong keels, the intermediate spiral lines, the slightly concave umbilical part, and the weakly stepped funnel-like apical part. In contrast, the individuals depicted as "*Muellerpalia varians*" (Bandel 2010, pl. 8, figs 90–95) belong to a different species: they have both keels on the umbilical side, apparently lack additional spiral lines, have highly convex whorls, and more distinct growth lines. Direct comparison of the descriptions and illustrations of Fuchs (1870a, b) and Bandel (2010) suggest that Bandel

confused several species. Firstly, "*Muellerpalia varians*" sensu Bandel rather corresponds to "*Valvata bicincta* Fuchs, 1870" in Fuchs (1870b) [= *Muellerpalia bicincta* (Fuchs, 1870)]. Secondly, specimens illustrated as "*Muellerpalia bicincta*" by Bandel rather resemble "*Valvata carinata* Fuchs, 1870" in Fuchs (1870b) [= *Muellerpalia carinata* (Fuchs, 1870)]. Conversely, *Muellerpalia carinata* (Fuchs, 1870) sensu Bandel, 2010 may represent *Muellerpalia bicincta*. The new combinations of both latter taxa with the new genus *Muellerpalia* still remain valid.

The presence of a second, fainter keel on the umbilical side in "*Muellerpalia varians*" sensu Bandel (2010) [= *Muellerpalia bicincta* (Fuchs, 1870)], which is not discernible in the original material of Fuchs (1870a), is regarded as intraspecific variability herein, as all other features correspond quite well. Unfortunately, Bandel did not provide an illustration of the apical region, which would show a distinct keel if our determination as *M. bicincta* is correct. Nevertheless, the endpoint of keel-like structure is visible in the apertural view (Bandel 2010, pl. 8, fig. 94). Even if it might turn out that this tentative placement is wrong, it still remains well separated from *Marinescugyra varians*.

In conclusion, the genus *Marinescugyra*, with *Planorbis varians* Fuchs, 1870 as type species, remains valid and the combination *Marinescugyra varians* (Fuchs, 1870) is the only accepted one. The combination *Muellerpalia varians* (Fuchs, 1870) is based on a misidentification of the species. We tentatively synonymize this record with *Muellerpalia bicincta* (Fuchs, 1870).

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