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## Beiträge zur Nomenklatur der europäischen Binnenmollusken, XXV.

### Nomenclatural remarks on the genus-group names in the synonymy of *Limax* s. str. in SCHILEYKO's treatise on recent terrestrial pulmonate molluscs, part 11 (Gastropoda: Limacidae).

By

GERHARD FALKNER, & TED VON PROSCHWITZ,  
Stuttgart, Göteborg.

The interpretation history of most of the genus-group names, which have been regarded as synonyms or subgenera of the monophyletic (KLEE & al. 2005) genus *Limax* LINNAEUS 1758, shows a chain of persistent errors and false interpretations, which not even in the recently published treatise by SCHILEYKO (2003: 1498) have been cleared. Moreover, two names have been overlooked in that synonymy.

Unproblematic synonyms of *Limax* s. str. with the type species *Limax maximus* LINNAEUS 1758 (or clear synonyms of that name), like *Limacella* BRARD 1815, *Eulimax* MOQUIN-TANDON 1855, *Heynemannia* MALM 1868 or *Macroheynemannia* SIMROTH 1888 are excluded from the following discussion.

#### 1. On the taxonomical rank of the genus- and species-group names introduced by PINI (1876).

Some erroneous assumptions by SCHILEYKO (as well as by his forerunners), seem to be based on an insufficient analysis of the rank of the names used by PINI.

Interpretation problems concerning PINI's work arise from the fact that he avoids to use the introduced names in combinations, which, according to presently used nomenclatural criteria, would allow their rank within the taxonomical groups to be defined. The total, in itself contradictive, hierarchy used by him, shows that PINI, although he made a considerable effort to formalise a complex biological reality, recognised this only incompletely and was not yet able to interpret it consistently. Examples of such contradictions could, among others, be found in the discussion on *Limax Strobili*, as PINI (1876: 22-23 [84-85]<sup>1</sup>) speaks as well of "questa mutazione" as of "questa specie". In the section *Stabilea*, "*Limax Pironae*" is treated as a binomen, of equal rank as *Limax Psarus* (1876: 36 [98]) – in the "Riassunto" (1876: 133 [195]), however, it is treated as a variety or "mutazione".

E. VON MARTENS (1878: Moll. 89) was the first who tried to bring order in the mass of names used or introduced by PINI, by attributing them to formal categories. He ascribed the names *concolor*, *cellarius*, *johnstoni*, *maculatus* and *ferussaci* the rank of varieties of *Limax cinereus*. The forms described in the "Sub-Sectio" *Gestroa* (by VON MARTENS treated as "section") are cited as "spp. nn.", and finally the species-group names introduced in *Chromolimax* and *Opilolimax* are directly combined with the generic name *Limax*, but ranked as "sub-spp. nn."; it, however, remains unclear to which species these sub-spp. should be attributed. *Limax pironae*, on the other hand, which is included in the section *Stabilea* within the *cinereoniger*-group, is indicated as "sp. n."

<sup>1</sup>) To make the anteriority of the reprint clear, the page numbers for PINI 1876 [1877] are cited in reverse order: the first numbers concern the pagination of the reprint, and in squared brackets the page numbers for the periodical are given. The publication date "1876" is confirmed inter alia by the book review of L. PFEIFFER in the same year.

In the first place it is important to state, that even if interpreted as "third" names, the species-group names, introduced by PINI, are not infrasubspecific, as the most frequently used term mutation (*mutatio*, *mutazione*) – contrary to morph or aberration – is not regulated by the Code. This means that these names have to be regarded as available names. The interpretation of their position within the species-group – whether they are of specific or subspecific rank – is nomenclaturally irrelevant. Concerning the regulations of the Code (ICZN 1999), a subspecies of a taxon in a certain species-group has the same relations to the genus name as a species (Art. 45.2) [already in the Règles from 1905, Art. 11 (ICZN 1905: 31), is stated: "Specific and subspecific names are subject to the same rules and recommendations, and from a nomenclatural stand point they are coordinate, that is, they are of the same value."]

The term mutation, in an expressly evolutionary biological sense, was for the first time introduced by the palaeontologist WILHELM WAAGEN in 1869 (ZIEGLER & BRESLAU 1927: 453). Its use in the field of recent biology only seven years later – long before the renewed definition of the term by geneticists – of which we know no predecessor, can in fact be regarded as a pioneering act of PINI.

WAAGEN (1869: 186 [8]) considered a mutation as a "wohl unterschiedene Art" (well distinguishable species), which together with other species of the same group of related species constituted a "Collectivart" or "Formenreihe" (which approximately corresponds to the presently used "Superspecies" concept). Analogously, the names introduced by PINI – without direct connection to a genus name within the form groups of "*Limax cinereus*" or "*Limax cinereo-niger*" – nomenclaturally should be regarded as binomina.

## 2. Discussion of the names.

### *Gestroa* PINI 1876.

*Limax* (*Eulimax*, Sectio *Heynemannia*, Subsectio *Gestroa*) PINI 1876 – Moll. Esino: 21 [Bull. Soc. malac. ital. 2: 83].

Originally included (sub-)species: *Limax Cornaliae* PINI 1876, *Limax Strobeli* PINI 1876, *Limax Pavesii* PINI 1876.

PINI (1876: 18-33 [80-95]) distinguished within the subgenus *Eulimax* between two large species-groups, which he summed up under the species names "*Limax cinereus*" (= *L. maximus* auctt.) and "*Limax cinereo-niger*" ("Sezione" del *Limax cinereo-niger* or "Famiglia" del *cinereus*). The Subsectio *Gestroa* (named after RAFFAELLO GESTRO, the scientific custodian of the Museo di Storia naturale di Genova), was introduced for species, which according to their external appearance resemble the *cinereoniger*-group, but anatomically belong to the *cinereus*-group (probably based on unpublished anatomical findings by F. SORDELLI).

The name is, according to Art. 10.4 of the Code, available as a genus-group name, and it has always been treated as such (VON MARTENS 1878: 89; KENNARD & WOODWARD 1926: 190; WIKTOR 1983: 125 [as "*Gastroa*"; SCHILEYKO 2003: 1498). WENZ (1923: 308), HESSE (1926: 11) and ZILCH (1959: 266) have placed *Gestroa* (using correct orthography!) in the synonymy of *Limax* s. str., but did not undertake any typification. Likewise, without any formal selection of a type species, KENNARD & WOODWARD (1926: 190) related the name to *Limax cinereoniger*. This, however, is a false interpretation, as PINI expressly wanted to discriminate the species included in *Gestroa* from those in the *cinereoniger*-group (*Chromolimax* according to the valid type selection by WIKTOR, see below). As *Gestroa* was introduced for three species-group taxa and *Limax cinereoniger* does not belong to the originally included nominal species, the procedure of KENNARD & WOODWARD can not be regarded as a valid typification according to Art. 69.1 of the Code. This error, in aggravated form, can be found in SCHILEYKO (2003: 1498), where *Limax cinereoniger* is referred to as the type species by OD (= Original designation). The presumption of an original designation is not supported by any facts.

WIKTOR (1983: 125) uses the incorrect secondary spelling "*Gastroa*" and refers to *Limax maximus* as "Typus", with the addendum "present designation". As *Limax maximus*, however, does also not belong to the originally included taxa, this type selection is also invalid and incomprehensible. As WIKTOR apparently is unaware of the derivation of the name, the incorrect writing "*Gastroa*" is repeated regularly (WIKTOR 1989: 164; 1996: 69; 2001: 62).

As so far no valid typification for *Gestroa* PINI 1876 has been undertaken, we herewith designate *Limax strobeli* PINI 1876 as type species for this genus-group name. This type selection makes the name

applicable to a group of slugs which mainly occurs in Italy and Switzerland around the lakes of Como and Lugano with a distributional extension into the Val Bregaglia.

Interpretation history of *Limax strobili*: Under the heading "Specie e forme dubbie o d'incerta classificazione", LESSONA & POLLONERA (1882: 118 [Sep.: 72]) discussed the name *strobili* PINI as a "var." of *Limax cinereus* "MÜLL.", which they regarded as a synonym of *Limax cellarius* "D'ARGENVILLE". They interpreted it as a case of incomplete albinism. COCKERELL (1893: 196) stated nearly the same: "*strobili*, as we have identified it, is only a pale or semialbine form of *maximus*". In the 20<sup>th</sup> century GAMBETTA (1932: 10) and ALZONA (1971: 143) classified *Limax strobili* as a variety or subspecies of *L. maximus*, this means as a valid taxon of subspecific rank. Recently *Limax strobili* has been rediscovered by C. M. BRANDSTETTER in the "vicinanze di Esino", which forms part of the type locality. It was recognised as an independent species (FALKNER unpubl.), which apparently forms a sister taxon to the unnamed "Blauköpfige Egelschnecke" of the southern Tessin (TURNER & al. 1998: 297). LESSONA (1880: 335 [Sep.: 21]) independently gave the name *strobili* to a presumed variety of *Limax cinereoniger* from the Valle Anzasca in Piedmont, which consequently is preoccupied by PINI's name.

### *Chromolimax* PINI 1876.

*Limax* (*Eulimax*, Sectio *Chromolimax*) PINI 1876 – Moll. Esino: 25 [Bull. Soc. malac. ital. 2 (2): 87].

Originally included (sub-)species: *Limax cinereo-niger* WOLF 1803 "typus", *L. Isseli* PINI 1876, *L. atratus* BETTONI 1870, *L. Da Campi* MENEGAZZI 1855, *L. trilineolatus* BETTONI 1870, *L. monolineatus* BETTONI 1870, *L. Doriae* BOURGUIGNAT 1861, *L. fuscus* BETTONI 1870, *L. erythrus* BOURGUIGNAT 1864, *L. Villae* PINI 1876, *L. Taccanii* PINI 1876, *L. Gualterii* PINI 1876.

Type species: *Limax cinereoniger*, subsequent designation by WIKTOR (1983: 125).

The reference, by SCHILEYKO, to *L. dacampi* as the type species by original designation (OD), is erroneous, as no such designation exists. Neither does SCHILEYKO's act validate *L. dacampi* as type species, as WIKTOR had already, in a nomenclaturally correct and valid way, designated *L. cinereoniger* as type species of *Chromolimax*.

### *Opilolimax* PINI 1876.

*Limax* (*Eulimax*, Sectio *Opilolimax*) PINI 1876 – Moll. Esino: 30 [Bull. Soc. malac. ital. 2 (2): 92].

Originally included (sub-)species: *L. punctulatus* SORDELLI 1870, *L. Pradae* PINI 1876, *L. parumpunctatus* PINI 1876, *L. Turatii* PINI 1876.

Type species: *Limax punctulatus*, subsequent designation by WIKTOR (1983: 125).

As originally four species-group taxa of equal rank are included in the section, the assumption of monotypy by SCHILEYKO is erroneous. The designation of *L. punctulatus* as type species by WIKTOR is nomenclaturally correct and valid.

An incorrect subsequent spelling used by SCHILEYKO is *Opilolimax*. This spelling was already used by WENZ (1923: 308).

### *Stabilea* PINI 1876.

*Limax* (*Eulimax*, Sectio *Stabilea*) PINI 1876 – Moll. Esino: 35 [Bull. Soc. malac. ital. 2 (2): 97] (non *Stabilea* DE BETTA 1870).

Originally included (sub-)species: *Limax Psarus* BOURGUIGNAT 1861, *L. Pironae* PINI 1876.

Type species: *Limax Psarus*, subsequent designation by WIKTOR (1983: 125).

The second species, *Limax Pironae*, included by PINI in the section *Stabilea*, is nomenclaturally difficult to judge on. It is published with a detailed diagnosis and description, but at the same time five published names are given in the synonymy. This means that, irrespective of the description, *L. Pironae* has to be considered as a replacement name of the oldest available name among the attributed synonyms.

The first three names are quoted with a question mark which must be interpreted as a conditional proposal, but as published before 1961 their attribution as senior synonyms has to be considered available (Code Art. 15.1). *Limax maximus* var. *niger* MOQUIN-TANDON 1855 is a junior homonym of *Limax lineatus* var. *niger* DUMONT & MORTILLET 1853 and *Limax maximus* var. *niger* DUMONT & MORTILLET 1853 (erroneously cited by PINI with 1857). The relative priority between the two latter names has been

determined by TAYLOR (1902: 42 [with 1903: pl.6 fig. 4]), who acting as First Reviser used *L. maximus* var. *niger* as a valid name (in subspecific rank) and treated at the same time *L. lineatus* var. *niger* as a synonym. As *Limax maximus* var. *niger* DUMONT & MORTILLET 1853 is available the replacement name *Limax Pironae* must be considered to be its invalid junior objective synonym.

Even if the name *Limax Pironae* cannot be validated, it remains an available name. The subsequent designation of the type for *Stabilea* species is therefore justified and necessary. Consequently the selection of *L. psarus* by WIKTOR is nomenclaturally correct and valid. This means that also in this case, the assumption of monotypy by SCHILEYKO is erroneous.

Finally, it should be mentioned that the limacid generic name *Stabilea* PINI 1876 is preoccupied by the clausiliid name *Stabilea* DE BETTA 1870 (cf. LINDHOLM 1924: 76).

#### *Cinereana* J. MABILLE 1870.

*Limax* Groupe B *Cinereana* J. MABILLE 1870 – Ann. Malac. 1 (2): 134 [Sep.: 30].

Originally included species: *Limax Doriae* BOURGUIGNAT 1861, *Limax callichrous* BOURGUIGNAT 1861, *Limax erythrus* BOURGUIGNAT 1864, *Limax cinereo-niger* WOLF 1803, *Limax nubigenus* BOURGUIGNAT 1861, *Limax Helveticus* BOURGUIGNAT 1862, *Limax cinereus* O. F. MÜLLER 1774, *Limax eubalius* BOURGUIGNAT 1864, *Limax veranyanus* BOURGUIGNAT 1861.

This name, which was overlooked by SCHILEYKO, was introduced by MABILLE without comment as a heading to the enumeration and diagnosing of the included species. In his summary he comments on this and the following group as follows:

"Nous regardons comme espèce alpine celle qui, par ses caractères, ses affinités, se rapporte à un type de forme communément et presque exclusivement répandu dans les contrées soumises à l'influence de la grande chaîne des Alpes: tels sont, en France, les *Limax* compris dans les sections *Agrestiana*, *Cinereana* et *Corsicana*" (MABILLE 1870: 143 [Sep.: 39]).

According to the Code (ICZN 1999, Arts. 10.4 and 12.2.5) the sectional name *Cinereana* is without any doubt an available genus-group name and therefore needs to be defined by the fixation of a type species. As up to now no typification has been undertaken, we herewith designate among the originally included species *Limax cinereus* O. F. MÜLLER 1774 as the type species.

The identity of *Limax cinereus* has been clarified by PROSCHWITZ & FALKNER (2007: 94-95). By the designation of a Lectotype *Limax cinereus* O. F. MÜLLER 1774 has become a subjective synonym of *Limax maximus* LINNAEUS 1758, the type species of the genus *Limax* LINNAEUS 1758. This means that *Cinereana* J. MABILLE 1870 has to be considered as a synonym of *Limax* s. str. and does not threaten any other name.

#### *Corsicana* J. MABILLE 1870.

*Limax* Groupe C *Corsicana* J. MABILLE 1870 – Ann. Malac. 1 (2): 140 [Sep.: 36].

Originally included species: *Limax Martinianus* BOURGUIGNAT 1869, *Limax (Eulimax) corsicus* MOQUIN-TANDON 1855.

The name, which was also overlooked by SCHILEYKO, was introduced by MABILLE as follows:

"Ce groupe des *Corsicana*, qui ne compte en France, du moins à notre connaissance, que le *Limax Martinianus*, est largement représenté dans le bassin méditerranéen et surtout en Italie. Parmi les espèces de ces contrées, nous citerons le *Limax Corsicus*, MOQUIN-TANDON, de la Corse et de la Sardaigne" (MABILLE 1870: 140 [Sep.: 36]).

The introduction of this name as a sub-unit of a genus is more explicit and unequivocal than many others of the much debated genus-group names of the "Nouvelle École" and undoubtedly fulfils the criteria as given in Art. 10.4 of the Code. The derivation of a section name from the epithet of the intended type species, which was often not even indicated, was considered as a sufficient typification by the disciples of the "Nouvelle École". Such a procedure, however, is not in line with the provisions of the Code.

So far it has not been possible to interpret properly the identity of *Limax martinianus* BOURGUIGNAT 1869. It, however, seems probable that it is a juvenile stage of one of the endemic *Limax*-species of the Alpes-Maritimes. In this context it seems not unlikely to think besides the problematic *Limax martini-*

anus itself also of *Limax modestus* FLORENCE 1889 (from the département Var). The synonymisation of *Limax martinianus* with *Lehmannia marginata* by CAZIOT (1910: 56) and GERMAIN (1931: 88) stands in striking contradiction to the original description. Especially the descriptive statements "fortement carénée" and "carène aiguë, tranchante" indicate that *martinianus* belong in the genus *Limax*.

Conclusion: The unequivocally available name *Corsicana* is based on two nominal species, which according to present knowledge, with high probability, belong to two different sub-generic units. Therefore, a formal typification is necessary, before the name can be used as valid for a subgenus. If the name, due to the historical (but not supported by the Code) reservation against the species-group names of the Nouvelle École, should be ignored, there is the danger, by the introduction of a new name for the *corsicus*-group [e.g. the nice name *Tyrrhenolimax*, of which we dreamed for some time], of producing a junior synonym. If, on the other hand, the so far not identified species *Limax martinianus* is fixed as the type species (in order to make the way free for a new name for the *corsicus*-group) the predicament might arise, that after a revision the name *Corsicana* has to be used for an endemic species-group of the southwestern Alps (which due to the misleading meaning of the word would be undesirable).

In this situation, it is the best, and we take the action, to designate *Limax (Eulimax) corsicus* MOQUIN-TANDON 1855 as the type species for the genus-group name *Corsicana*. This opens the possibility to validate the name for the well circumscribed *Corsicus*-group (NITZ & al. in press).

### 3. Recapitulation of the discussed genus-group names related to *Limax* LINNAEUS 1758 and their types.

*Chromolimax* PINI 1876 – type species: *Limax cinereoniger* WOLF 1803.

*Cinereana* J. MABILLE 1870 – type species: *Limax cinereus* O. F. MÜLLER 1774 [= *Limax maximus* LINNAEUS 1758] (designated in this paper).

*Corsicana* J. MABILLE 1870 – type species: *Limax corsicus* MOQUIN-TANDON 1855 (designated in this paper).

*Gestroa* PINI 1876 – type species: *Limax strobili* PINI 1876 (designated in this paper).

*Opilolimax* PINI 1876 – type species: *Limax punctulatus* SORDELLI 1870.

*Stabilea* PINI 1876 [a preoccupied name] – type species: *Limax psarus* BOURGUIGNAT 1861.

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Addresses of the authors: GERHARD FALKNER, Staatliches Museum für Naturkunde Stuttgart, Rosenstein 1, D-70191 Stuttgart, Germany.  
email: Falkner@malaco.de

TED VON PROSCHWITZ, Section of Invertebrate Zoology, Göteborg Natural History Museum, Box 7283,  
S-402 35, Göteborg, Sweden.  
email: ted.v.proschwitz@gnm.se

