

## Addendum to the examination of the type material of freshwater mollusk species described by J.P.R. Draparnaud

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### Abstract

An overview on the type series of freshwater mollusk species and varieties described by Jacques Philippe Raymond Draparnaud (1772–1804) in 1801 and 1805 was published by VINARSKI & ESCHNER (2016). In total, 22 out of 23 gastropod and bivalve taxa were presented with relevant information on species identity, synonymy and taxonomic position. This addendum is completing the information on freshwater mollusk species with one additional gastropod type series and two type series, which were not mentioned in the previous paper. Moreover, to complete this examination, two neotypes are depicted, as the corresponding specimens in the Draparnaud Collection are not valid. New and high quality photos with natural colour balance are given for all type series of altogether 23 freshwater taxa.

### Zusammenfassung

Die von Jacques Philippe Raymond Draparnaud (1772–1804) in den Jahren 1801 und 1805 beschriebenen Typuserien zu seinen Süßwasserarten und -Unterarten/Variationen wurden in einem Überblick von VINARSKI & ESCHNER (2016) zusammengestellt. Insgesamt wurden Typuserien von 22 der insgesamt 23 Gastropoden- und Muscheltaxa mit relevanten Informationen präsentiert sowie Angaben zu den Arten, Synonymen und ihrer taxonomischen Position gegeben. Der vorliegende Anhang komplettiert die Informationen zu den Süßwasser-Mollusken und ergänzt eine Gastropoden-Typuserie und zwei nicht erwähnte fehlende Typuserien. Auch zwei Neotypen werden abgebildet um die vorliegende Arbeit abzuschließen, da die entsprechenden Exemplare in der Draparnaud-Sammlung keine Gültigkeit besitzen. Alle Typuserien werden mit neuen, qualitativ hochwertigen Fotos in natürlicher Farbbalance dargestellt – insgesamt werden 23 Süßwasser-Taxa dokumentiert.

**Key words:** Draparnaud, freshwater Mollusca, gastropods, bivalves, types, taxonomy, nomenclature, Natural History Museum Vienna

### Introduction

In 1894, Rudolf Sturany, curator of the Mollusca Collection at the Natural History Museum Vienna (NHMW), made a revision-list with the number of specimens and several comments prior to sending the Draparnaud Collection to the French conchologist Arnould Locard in September that same year. Locard published this list with additional “observations” in his work (LOCARD 1895). Based on these two lists, a critical supplementary processing of Draparnaud’s type specimens was conducted.

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In combination with an extensive review of the historical collection (ESCHNER 2019), new details were brought to light. In the entry of the acquisition book from December 1819, Sturany added a note explaining that he checked the Draparnaud Collection for the first time in 1892. Since the acquisition of the Draparnaud Collection in 1819/20, more than five curators were responsible for the Mollusca Collection but nothing was specifically mentioned about this collection in the following 70 years. Sturany found the specimens wrapped in paper, but realized that someone had already checked the collection before and placed samples in the main collection of the NHMW. He found some labels without specimens and tried to trace most of the missing samples. Sturany made several remarks concerning missing numbers of specimens and added the comment “cannot be traced/not traceable” [“nicht mehr eruierbar”] in the list. It turned out that in addition to *Anodonta variabilis* DRAPARNAUD, 1801 mentioned in VINARSKI & ESCHNER (2016), two more type series of freshwater mollusks were missing, namely *Cyclostoma anatinum* DRAPARNAUD, 1805 and *Cyclostoma breve* DRAPARNAUD, 1805. There was not only the remark “missing” but these were also crossed out in the revision list by Sturany. The loss of several taxa (freshwater and land) is also approved by LOCARD (1895) who states “manque” [missing] in his table of the Draparnaud Collection. Interestingly, Sturany was able to trace *Cyclostoma vitreum* DRAPARNAUD, 1801 in May 1895, but Locard described it as missing in his table 1895, which could mean that the information did not reach him before publishing his work.

As the available photo equipment also improved substantially for small to very small specimens since the publication of VINARSKI & ESCHNER (2016), the authors decided to photograph all freshwater specimens again within this addendum. The photos were obtained with a Nikon DS-Ri2 camera mounted on a SMZ25 stereomicroscope, using the software NIS elements for stacking and image processing.

### **Additions to the systematic review of the Draparnaud’s types**

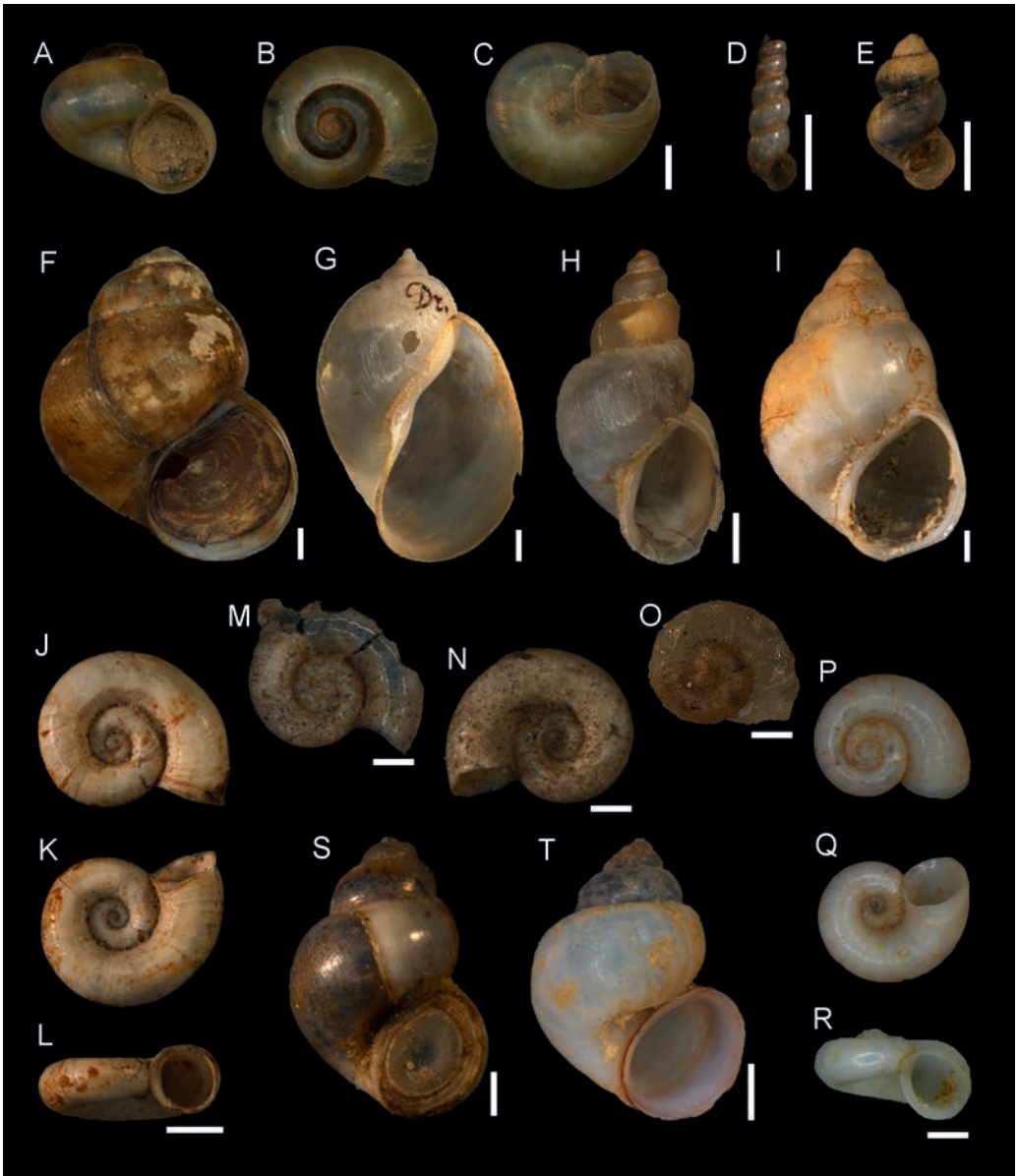
Table 1 shows the list of freshwater snails, mussels and pea-clams, altogether 26 taxa, described by DRAPARNAUD (1801, 1805). Twenty-two species were already presented in the systematic review of VINARSKI & ESCHNER (2016). Taxonomic details, references for the relevant pages and the corresponding figures are given for each taxon. Besides *Anodonta variabilis*, already mentioned as missing, *Cyclostoma anatinum* and *Cyclostoma breve* were also recognized as absent and therefore added to the list. For *Physa scaturiginum*, we provide information on the type specimen, type locality and a few taxonomical remarks concerning the treatment of the species in the current malacological literature.

New photos and short taxonomic remarks are added for the erroneously addressed freshwater specimen and for the neotypes of *Mercuria similis* and *Islamia minuta* (under their original generic affiliations *Cyclostoma* and *Valvata*). All type series are presented in a slightly modified arrangement on plates 1–3. Altogether 44 figures are given.

Table 1: List of taxa introduced by DRAPARNAUD (1801, 1805) with references for figures in the present publication and additional data presented in the publication VINARSKI & ESCHNER (2016).

<b>Taxon name</b>	<b>Note to present figures</b>	<b>Current taxonomic allocation</b>	<b>Reference to VINARSKI &amp; ESCHNER (2016) for pages and figures</b>	
<i>Cyclostoma anatinum</i>	not illustrated	<i>Mercuria anatina</i> (POIRET, 1801)	missing	missing
<i>Cyclostoma breve</i>	not illustrated	<i>Avenionia brevis</i> (DRAPARNAUD, 1805)	missing	missing
<i>Cyclostoma obtusum</i>	Fig. 1A–C	<i>Valvata piscinalis</i> (O.F. MÜLLER, 1774)	p. 33–36	fig. 4A
<i>Cyclostoma impurum</i>	Fig. 1I	<i>Bithynia tentaculata</i> (LINNAEUS, 1758)	p. 36–37	fig. 4B, C
<i>Cyclostoma achatinum</i>	Fig. 1F	<i>Viviparus viviparus</i> (LINNAEUS, 1758)	p. 37	fig. 4E
<i>Cyclostoma simile</i>	Fig. 1S (invalid lectotype), Fig. 1T (neotype)	<i>Mercuria similis</i> (DRAPARNAUD, 1805)	p. 37–38	fig. 4D
<i>Cyclostoma gibbum</i>	Fig. 1E	<i>Belgrandia gibba</i> (DRAPARNAUD, 1805)	p. 38	fig. 4F
<i>Cyclostoma vitreum</i>	Fig. 1D	<i>Spiralix vitrea</i> (DRAPARNAUD, 1805)	p. 38	fig. 4G
<i>Valvata planorbis</i>	Fig. 1M, N	<i>Valvata cristata</i> (O.F. MÜLLER, 1774)	p. 38–39	fig. 4H, I
<i>Valvata spirorbis</i>	Fig. 1J–L		p. 39	fig. 4J
<i>Valvata minuta</i>	Fig. 1O (invalid lectotype), Fig. 1 P–R (neotype)	<i>Islamia minuta</i> (DRAPARNAUD, 1805)	p. 39–41	fig. 4K
<i>Ancylus spina-rosae</i>	Fig. 2L, M	<i>Acroloxus lacustris</i> (LINNAEUS, 1758)	p. 41	fig. 5B
<i>Limneus minuta</i>	Fig. 1H (lectotype)	<i>Galba truncatula</i> (O.F. MÜLLER, 1774)	p. 42	fig. 4L, M (syntypes)
<i>Limneus ovatus</i>	Fig. 1G (var. $\alpha$ )	<i>Radix balthica</i> (LINNAEUS, 1758)	p. 42–43	fig. 4N, O (var. $\alpha$ , $\beta$ )
<i>Limneus elongatus</i>	Fig. 2A	<i>Omphiscola glabra</i> (O.F. MÜLLER, 1774)	p. 43	fig. 5A
<i>Planorbis hispidus</i>	Fig. 2E–G	<i>Gyraulus albus</i> (O.F. MÜLLER, 1774)	p. 43	fig. 5D
<i>Planorbis marginatus</i>	Fig. 2H–J	<i>Planorbis planorbis</i> (LINNAEUS, 1758)	p. 44	fig. 5C
<i>Physa acuta</i>	Fig. 2D	<i>Physella acuta</i> (DRAPARNAUD, 1805)	p. 44	fig. 4E
<i>Physa scaturiginum</i>	Fig. 2K	<i>Ferussacia folliculum</i> (SCHRÖTER, 1784)	missing	missing
<i>Auricula myosotis</i>	Fig. 2B, C	<i>Myosotella myosotis</i> (DRAPARNAUD, 1801)	p. 44–46	fig. 5F, G
<i>Cyclas fontinalis</i>	Fig. 3I	<i>Pisidium casertanum</i> (POLI, 1791)	p. 46	fig. 6A
<i>Cyclas palustris</i>	Fig. 3C, D	<i>Pisidium amnicum</i> (O.F. MÜLLER, 1774)	p. 46	fig. 6B
<i>Cyclas rivalis</i>	Fig. 3E, F	<i>Sphaerium corneum</i> (LINNAEUS, 1758)	p. 46–47	fig. 6C
<i>Cyclas caliculata</i>	Fig. 3G–H, J–K	<i>Musculium lacustre</i> (O.F. MÜLLER, 1774)	p. 47	fig. 6D, F

Taxon name	Note to present figures	Current taxonomic allocation	Reference to VINARSKI & ESCHNER (2016) for pages and figures
<i>Cyclas lacustris</i>	Fig. 3A, B	<i>Sphaerium ovale</i> (FÉRUSSAC, 1807)	p. 47–48 fig. 6E
<i>Anodonta variabilis</i>	not illustrated	<i>Anodonta anatina</i> (LINNAEUS, 1758), partim <i>Anodonta cygnea</i> (LINNAEUS, 1758), partim	p. 33 not illustrated



***Physa scaturiginum* DRAPARNAUD, 1801**

(Fig. 2 K)

*Physa scaturiginum* DRAPARNAUD, 1801: 53; – 1805: 56, pl. III, fig. 14–15.*Limneus scaturiginum*: TURTON, 1826: 565.**Type material:** 1 syntype under catalogue number NHMW-MO 14746 [Acqu. Nr. 1820.XXVI.47]. The shell belonged to a subadult individual. The shell height is 6.4 mm at 5 1/2 whorls.**Type locality:** France, “Dans les sources froides des montagnes des Cévennes.” (DRAPARNAUD 1801). The syntype label bears no information about locality.**Taxonomic remark:** Conchologically, Draparnaud's specimen corresponds well to the species *Ferussacia folliculum* (SCHRÖTER, 1784). As the specimen is not fully grown and the locality given “in cold mountain springs, Cevennes” Draparnaud obviously thought this is a new, very rare species [“Très-rare”]. ROSSMÄSSLER (1835) gave in his “Iconography” Draparnaud's *Physa scaturiginum* as an example for misidentifying young, not fully grown specimens. TURTON (1831) refers to *Physa scaturiginum* as a synonym of *Limneus scaturiginum* and mentions it dwells “in the quiescent parts of rivers and in ponds, on the under sides of the leaves of the Water Lily”. *Limneus scaturiginum* sensu Turton is, according to VINARSKI & KANTOR (2016), a synonym of *Peregriana peregra* (O.F. MÜLLER, 1774) and has nothing in common with Draparnaud's name. LOCARD (1895) states: “undoubtedly a mistake *Ferussacia* is a terrestrial mollusk and all species of this group live in the south.... Draparnaud has been misled about the true origin of this sample ... must be definitely rejected from catalogue.” Therefore, we include this specimen in the list of Draparnaud's freshwater mollusks, to make its taxonomical position clearly traceable.**Short taxonomic remarks*****Cyclostoma simile* DRAPARNAUD, 1805**

(Fig. 1 S, T)

The single shell in the Draparnaud Collection kept under NHMW-MO 14715 [Acqu. Nr. 1820.XXVI.5] (Fig. 1S) has been erroneously designated as the lectotype of *C. simile* by BOETERS (1971). This type status has to be considered as not valid as the measurements

◀ Fig. 1: Gastropod type specimens of the Draparnaud Collection and neotypes: A–C: syntype of *Cyclostoma obtusum* (NHMW-MO 14704), (A) front view, (B) top view, (C) bottom view. D: syntype of *Cyclostoma vitreum* (NHMW-MO 14708), front view (glued to cardboard). E: lectotype of *Cyclostoma gibbum* (NHMW-MO 100519), front view. F: syntype of *Cyclostoma achatinum* (NHMW-MO 14706), front view. G: syntype of *Limneus ovatus* var. *α* (NHMW-MO 14737), front view. H: lectotype of *Limneus minuta* (NHMW-MO 110406), front view. I: syntype of *Cyclostoma impurum* (NHMW-MO 14716), front view. J–L: syntype of *Valvata spirorbis* (NHMW-MO 14717). (J) top view, (K) bottom view, (L) front view. M, N: two syntypes of *Valvata planorbis* (NHMW-MO 14718), (M) top view, (N) bottom view (glued to cardboard). O: rejected lectotype of *Valvata minuta* (NHMW-MO 14720), top view (glued to cardboard). P–R: neotype of *Islamia minuta* (NHMW-MO 100485), (P) top view, (Q) bottom view, (R) front view. S: rejected lectotype of *Cyclostoma simile* (NHMW-MO 14715), front view. T: neotype of *Mercuria similis* (NHMW-MO 92596), front view. Scale bars: A–E, H–L, S, T: 1 mm; F, G: 2 mm; M–R: 0.5 mm



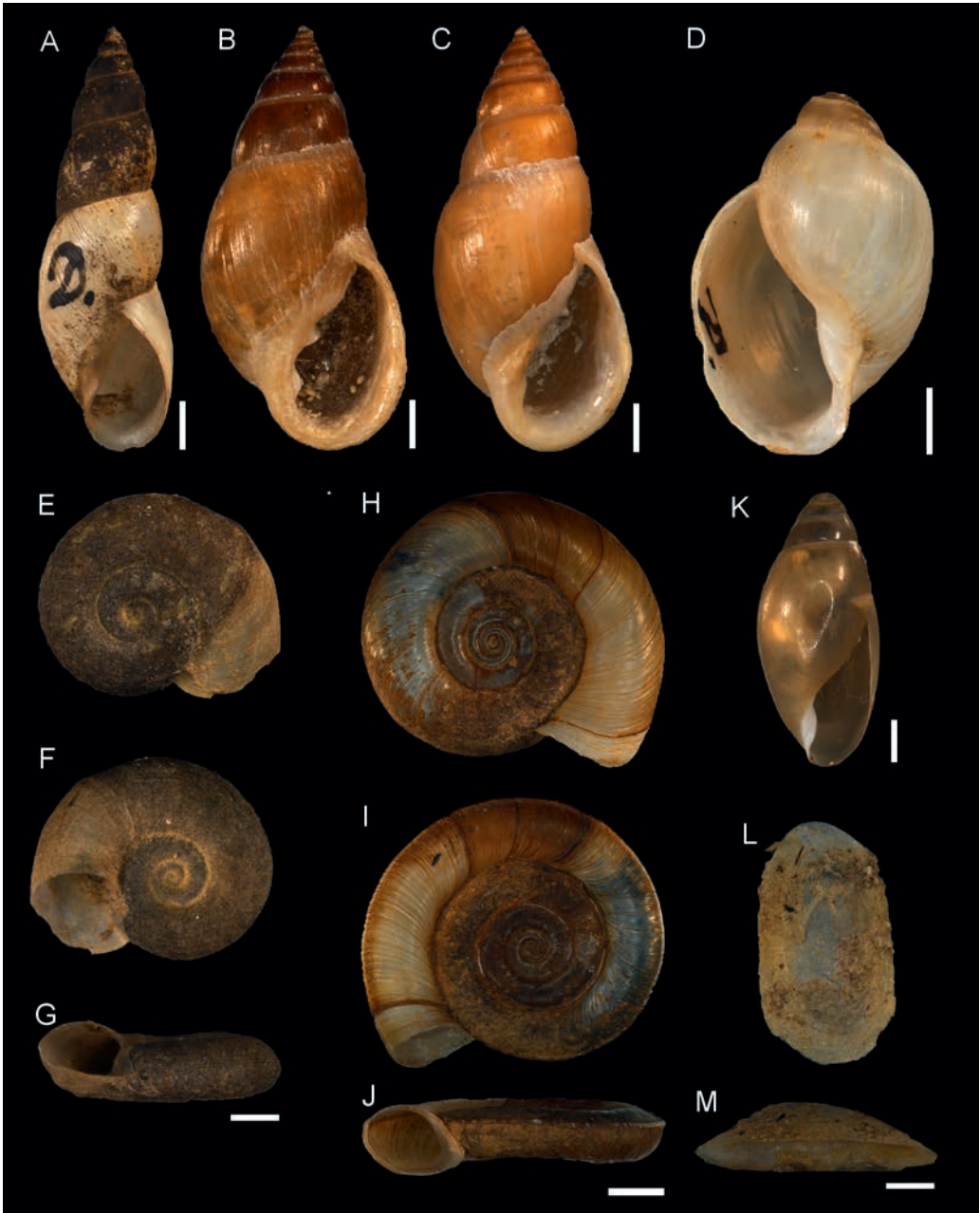


Fig. 2: Gastropod type specimens of the Draparnaud Collection: A: syntype of *Limnaeus elongatus* (NHMW-MO 14743), front view. B, C: two syntypes of *Auricula myosotis* (NHMW-MO 14747), front view. D: syntype of *Physa acuta* (102796), front view. E-G: syntype of *Planorbis hispidus* (NHMW-MO 14724); (E) top view, (F) bottom view, (G) front view. H-J: syntype of *Planorbis marginatus* (NHMW-MO 14729), (H) top view, (I) bottom view, (J) front view. K: syntype of *Physa scaturiginum* (NHMW-MO 14746), front view. L, M: syntype of *Ancyclus spina-rosae* (NHMW-MO 14735); (L) top view, (M) side view: Scale bars: A-D: 2 mm; G, K, L: 1 mm; M: 3 mm

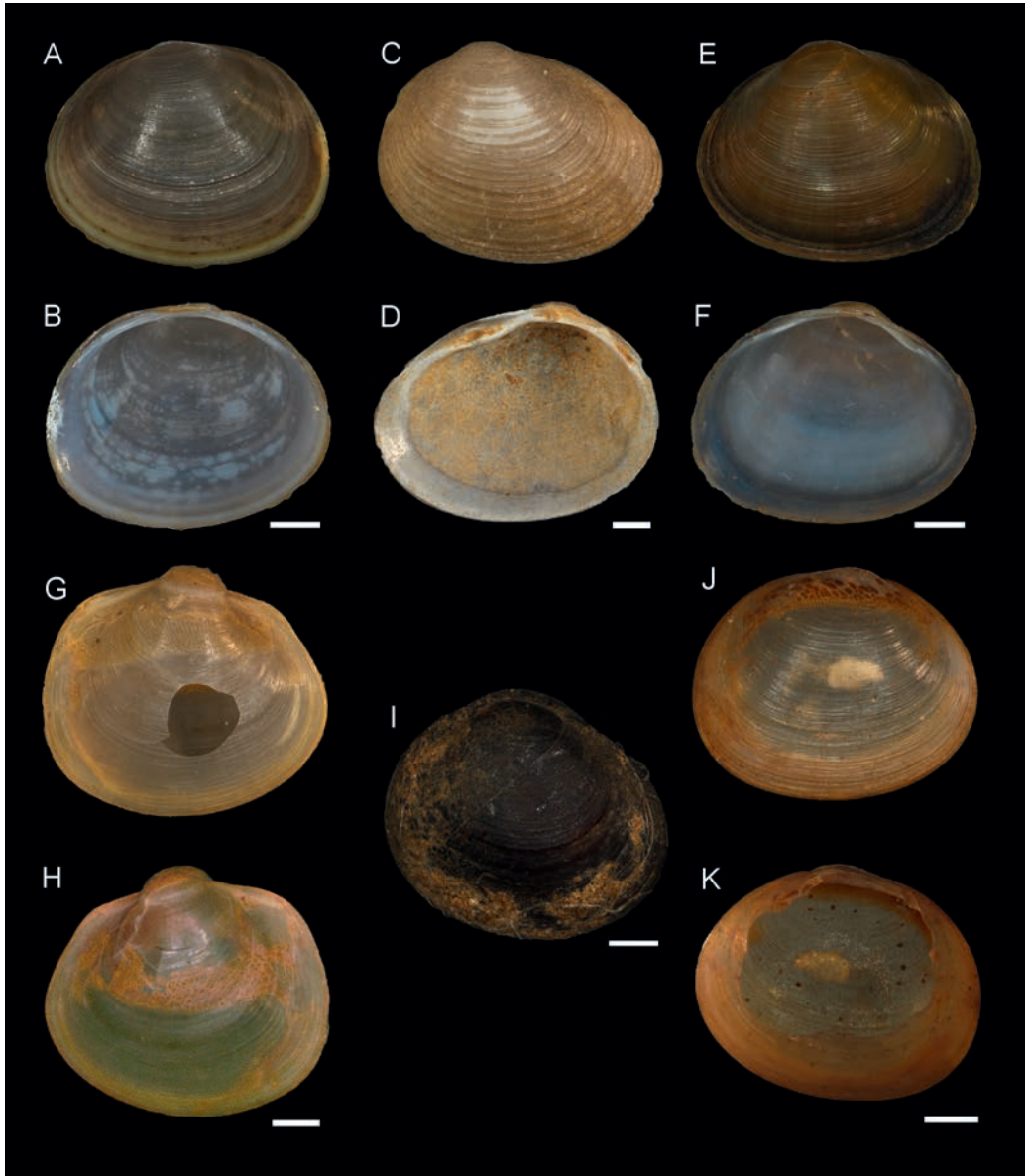


Fig. 3: Bivalve type specimens of the Draparnaud Collection: A, B: syntype of *Cyclas lacustris* (NHMW-MO 14860), (A) right valve exterior, (B) interior. C, D: syntype of *Cyclas palustris* (NHMW-MO 14865), (C) right valve exterior, (D) interior. E, F: syntype of *Cyclas rivalis* (NHMW-MO 14859), (E) right valve exterior, (F) interior. G, H, J, K: two syntypes of *Cyclas caliculata* (NHMW-MO 14863), (G, J) exterior of left valves, (H, K) right valves, (G, K) damaged shells. I: syntype of *Cyclas fontinalis* (NHMW-MO 14862), exterior right valve. Scale bars: A, B, E, F: 2 mm; C, D, G, H, J, K: 1 mm; I: 0.5 mm

do not correspond to the original description nor the figure (BOETERS & FALKNER 2000). As it has nothing to do with the neotype BOETERS & FALKNER (2000) established for *C. simile* under NHMW-MO 92596 (= lectotype of *Ammicola confusa* FRAUENFELD, 1863) (Fig. 1T), its placement in the Draparnaud Collection is enigmatic. We depicted both specimens to demonstrate the differences.

The systematic identity of *Cyclostoma simile* as a species of *Mercuria* (FALKNER et al., 2001, 2002, GLÖER et al. 2015) is still not completely clear. BOETERS & FALKNER (2017) state “finally, we have not yet been able to say with absolute certainty whether the neotype of *Cyclostoma simile* Draparnaud, 1805 with its poor geographic indication “Gallia mer.” really represents *Mercuria similis* or rather *Mercuria meridionalis* ...it would be desirable to reach an understanding of both species that allows a differentiation not only on anatomical but also on conchological characters and thereby to confirm the specific attribution of the neotype.”

### ***Valvata minuta* DRAPARNAUD, 1805**

(Fig. 1 O–R)

The single shell in the Draparnaud Collection kept under NHMW-MO 14720 [Acqu. Nr. 1820.XXVI.21] (Fig. 1O) has been designated as lectotype by BINDER (1966). BODON et al. (2000) made a proposition to the ICZN to replace the lectotype by a neotype. They were arguing that the shell on which Binder based his designation was of uncertain identity, as the original description, illustrations and lack of proper locality data do not enable unambiguous identification. Consequently BODON et al. (2001) proposed a neotype for the species, based on more recent material for which locality data and other information is available. The neotype specimen (dry shell) was collected in a spring at Source de l’Ain, Jura Mts. (France) and was from a population for which the anatomy is well known (BERNASCONI 1975). In 2003 the ICZN (Opinion 2035) formally rejected the lectotype designation of Binder and the newly established neotype of *Valvata minuta* NHMW-MO 100485 (Fig. 1 P–R) was accepted. Both specimens are depicted to demonstrate their characteristic features.

According to BODON et al. (2000), the taxonomic placement of the species within the genus *Islamia* RADOMAN, 1973 is accepted.

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