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Examination of the type material of freshwater mollusk species described by J.P.R. Draparnaud

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Abstract

Jacques Philippe Raymond Draparnaud (1772–1804) was one of the most prominent malacologists at the transition from the 18th to the 19th century. His contribution to systematic malacology lies in a fundamental taxonomic work with the description of the continental malacofauna of France. He established a number of new taxa and many of them are still accepted as valid. Fortunately, most of the type series from Draparnaud's collection are still present, being kept at the Museum of Natural History in Vienna, Austria. In this article we provide, besides a short historical review, information on the type series of species and varieties described by Draparnaud (1801a, 1805). In total 22 freshwater gastropod and bivalve species are presented and relevant information on species identity, synonymy, and taxonomic position of the type series is given. The lectotype for *Limneus minuta* Draparnaud, 1801 (= *Galba truncatula* O.F. Müller, 1774) is designated.

Zusammenfassung

Jacques Philippe Raymond Draparnaud (1772–1804) war einer der wichtigsten Malakologen am Übergang 18. /19. Jhdt. Sein Beitrag zur Systematik liegt in der umfangreichen taxonomischen Bearbeitung der kontinentalen Malakofauna von Frankreich begründet. Er beschrieb zahlreiche neue Taxa von denen viele bis heute gültig sind. Die meisten Typusserien aus Draparnauds Sammlung sind erhalten und werden im Naturhistorischen Museum Wien aufbewahrt. Die vorliegende Arbeit gibt, neben einem kurzen historischen Rückblick, Informationen zu den Typusserien der von Draparnaud (1801a, 1805) neu beschriebenen Arten und Variationen. Insgesamt werden 22 Süßwasserschnecken- und Muschelarten beschrieben und die wichtigsten Informationen zu den Arten, Synonymen und der taxonomischen Position der Typusserien gegeben. Für *Limneus minuta* Draparnaud, 1801 (= *Galba truncatula* O.F. Müller, 1774) wird ein Lectotypus designiert.

Key words: Draparnaud, freshwater Mollusca, gastropods, bivalves, types, taxonomy, nomenclature, history of zoology

Introduction

Three men of science may be praised as the co-founders of the "continental" systematic malacology in Europe. These are Carolus Linnaeus (1707–1778) in Sweden, Otto Frederik Müller (1730–1784) in Denmark, and Jacques Philippe Raymond Draparnaud (1772–1804) in France. These authors (LMD hereafter) are responsible for a plenty of genera and species of freshwater and terrestrial Mollusca described by them, and their works form the starting point for the subsequent inventory of continental molluscan

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biodiversity in 19th century Europe. From the perspective of systematics and nomenclature, contributions of LMD are very important since many taxa established by them are accepted valid in current malacology and the taxonomic names introduced by these three authors have priority over numerous synonymic names inherited from conchologists of the 19th and – to the lesser extent – 20th century. Due to brevity and sometimes vagueness of original descriptions of mollusks and absence of shell illustrations in many taxonomic works of the 18th and the first half of 19th century (see, e.g. Linnaeus 1758, Müller 1774, Gmelin 1791), it is crucial for taxonomic and nomenclatorial studies to examine the type materials of the species described by LMD. Though the collections of the co-founders of European continental malacology are not completely lost and their remnants are still available in some European zoological museums (Dance 1986), the systematic work on identification, examination and illustration of the type material of LMD has not been undertaken properly. Two large descriptive monographs on this subject, published in the 19th century (Hanley 1855, Locard 1895), do not contain pictures of shells of type specimens, and their authors dealt with taxonomy of Mollusca that is utterly outdated now. Thus, it is a relevant task to publish the information concerning the type materials of species established by Linnaeus and his immediate followers. To the date, some data were published in separate papers devoted to particular taxonomic problems but only a small part of the type series of the LMD species was studied and illustrated (see, for example, Kennard & Woodward 1926a, Boeters 1971, Falkner 2000, Korniushin 2004).

In this paper, we review the type material of freshwater gastropods and bivalve species described in the works of Draparnaud (1801a, 1805). He was a prominent French naturalist and linguist, known for his vast contribution to different branches of natural sciences ranging from physics to mycology. Draparnaud's own collection of shells is kept now in the Naturhistorisches Museum Wien (= Natural History Museum Vienna, Austria). It is in a very good condition, and most type series of Draparnaud's species are still present and available for study. Our paper may, in a sense, be regarded as a continuation of a previous study devoted to the examination of O.F. Müller's type materials (Nekhaev et al. 2015). As compared to Draparnaud's, Müller's original collection contains now the type series of only a small part of species described by this naturalist and, in this respect, Draparnaud's collection may be estimated as, perhaps, the most complete one among collections of continental mollusks amassed in the end of the 18th century.

Draparnaud, his life and scientific work

Draparnaud (Fig. 1), this "zealous and able naturalist" (Swainson 1840: 170), was born in 1772 and lived a rather short life (he died at age of 31). The biography of Draparnaud was for the first time written by his widow, Marie-Anne-Gabrielle Senaux, who published it as an appendix to Draparnaud's posthumous malacological *opus magnum* (Draparnaud 1805). Another short biographic note on Draparnaud was published in the same year by Jacques-Alexandre Poitevin, a physician and astronomer from Montpellier (Poitevin 1805). One of the most comprehensive biographic works on Draparnaud, with characteristics of his scientific works and detailed bibliography, was published by Dulieu (1956).

During his brief lifespan, Draparnaud occupied several positions, of which the most significant was the position of the Professor of Natural History in the School of Medicine

Fig. 1. Portrait of Draparnaud published in his posthumously printed book (DRAPARNAUD, 1805).

in Montpellier. The list of Draparnaud's published works includes 35 items. Papers on chemistry, physics, botany, algology, malacology, and entomology are among them (DULIEU, 1956). His dissertation was devoted to explain the importance of natural science for medicine. As a son of his epoch living before the age of scientific specialization, Draparnaud was a genuine *naturalist* contributing to different branches of *Historia naturalis*. His malacogical publications are not numerous. They included two large systematic monographs dealing with the continental mollusks of France (DRAPARNAUD 1801a, 1805), and a series of short descriptive notes devoted to different species of testacean animals (DRAPARNAUD 1797, 1799, 1801b etc). GERMAIN (1913) estimated Draparnaud's works as the "starting point for all studies of the French malacology". Indeed, his two large monographs (DRAPARNAUD 1801a, 1805) were the first attempt to review the entire

continental malacofauna of France whereas all preceding works were restricted geographically. For example, Étienne-Louis Geoffroy (1725–1810) published a book on continental mollusks of the environs of Paris (Geoffroy 1767), and Jean Louis Marie Poiret (1755–1834) a catalogue of Mollusca of the Aisne department and, again, the environs of Paris (Poiret 1801). Therefore Locard (1895: 5) correctly praised Draparnaud as the "creator of the French conchology".

The first attempt to review the species of mollusks described by Draparnaud was undertaken by Férussac (1807) though he seemingly did not study the type material. In 1831, Louis André Gaspard Michaud (1795–1880) published a "Complement" (Michaud 1831) to Draparnaud's (1805) work, where all species of continental mollusks added to the fauna of France since 1805 were listed and illustrated.

Draparnaud's conchological collection, its fate and present state

Locard (1895) lamented over the fact that nobody in France was interested to acquire Draparnaud's collection of shells after his death and, thus, this important monument of French natural history belongs to a foreign museum. Indeed, in 1820 the collection was transferred to the "Vereinigte k.k. Naturalien-Cabinete" in Vienna being sold by Draparnaud's heirs for 550 Florins (Locard 1895). Each item has an acquisition number (for example 1820. XXVI.37 – for *Limneus ovatus*) that is sometimes cited in recent taxonomic catalogues (Kantor et al. 2010, Haszprunar 2014) instead of the catalogue numbers of the type specimens. For more clearness we provide besides the correct catalogue number also the acquisition number which was used in older publications.

In September 1894, the collection was loaned to Arnould Locard (1841–1904), a French conchologist, who examined it systematically and wrote a special book devoted to Draparnaud's mollusks (Locard 1895).

Now the Draparnaud collection is kept in the Naturhistorisches Museum Wien (NHMW). It is separated from the main-collection as a single entity alongside with the second important historical collection of Ignaz von Born (1742–1791), the prominent Austrian naturalist of the 18th century. All type series are identified and marked by special labels indicating their nomenclature status (syntypes, lectotypes).

At least three types of labels accompanying the Draparnaud specimens may be distinguished. These three types of labels seem to reflect the consequent stages of the collection arrangement. The seemingly oldest one is represented by small pieces of cut cardboard cards with Latin names of mollusks written on it (Fig. 2A). Probably, these inscriptions were made by Draparnaud himself though we have no facts to affirm it surely. Besides, the acquisition number is added by other hand on these small original labels (see Fig. 2A). The next type of labels (see Fig. 2B) is made of thin paper with red ink inscriptions which seem to be written by Rudolph Sturany (1867–1935), the curator of the malacological collection in Vienna by the end of the 19th century. These labels bear only the acquisition number with addition "Coll. Draparnaud" and are not present in all samples. Most probably, the second "layer" of labels was added after acquisition of the Draparnaud's collection by the museum staff in Vienna. At last, the third series of labels is made of red-coloured cardboard and contains the most detailed information on specimens with data on their taxonomic position, synonymy and quantity (see Fig. 2C). The

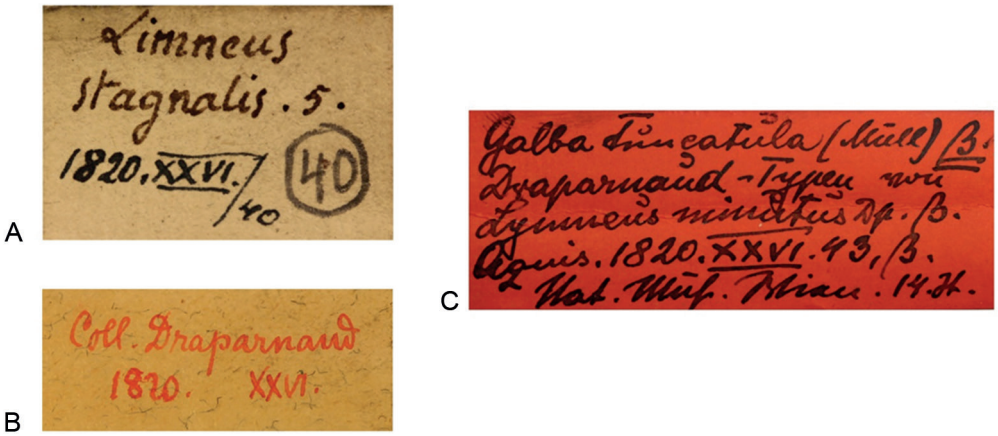


Fig. 2. Three subsequent stages of Draparnaud's collection arrangement reflected in different types of labels (A–C).

type specimens' labels bear also the "Draparnaud-Typus" inscription. The "red" labels were added after the collection returned from Locard, being the results of this conchologist's systematic work on the collection. These labels show the typical handwriting of Wolfgang Adensamer, the curator succeeding Sturany in 1923. He was working 1936/37 on the documentation of the Draparnaud collection with photos of the type specimens, updating a revision of Sturany 1894 (Fig. 3) based probably on Locards work and some labels have German inscriptions, maybe translating the comments of Locard.

Systematic review of the Draparnaud's types

In total, 23 species of freshwater snails, mussels and pea-clams were described by Draparnaud (Table 1). We examined all type material with exception of *Anodonta variabilis,* which is missing. Thus, 22 species depictions are presented in this chapter. The structure is similar to those used in previous papers devoted to examinations of the type series of old conchologists (SITNIKOVA et al. 2012, VINARSKI et al. 2013, NEKHAEV et al. 2015). For each species we provide information on the type specimens, type locality and, where necessary, some taxonomical remarks concerning the treatment of the species in the current malacological literature as well as a brief history of the name application (by no means complete). One or two specimens from each type series were selected for illustration on Figs. 4–6. Shells were measured following the scheme proposed by GLÖER (2002). A list of taxa and their current taxonomic position is provided (Table 1).

1. *Cyclostoma obtusum* DRAPARNAUD, 1801

(Fig. 4A)

Cyclostoma obtusum DRAPARNAUD, 1801a: 39.
Cyclostoma obtusum: DRAPARNAUD, 1805: 33, pl. I, fig. 14.
Cyclostoma obtusum: MILLET, 1813: 4.
Valvata obtusa: BRARD, 1815: 190, pl. VI, fig. 17.
Valvata obtusa: PFEIFFER, 1821: 98, Taf. IV, fig. 32.
Valvata obtusa "BRARD": LOCARD, 1893: 125, fig. 126.

Table 1: List of taxa introduced by Draparnaud (1801a, 1805) as new.

Taxon name	Reference to Draparnaud's publications		Current taxonomic allocation
	Draparnaud (1801a)	Draparnaud (1805)	
Cyclostoma obtusum	p. 39	p. 33, pl. I, fig. 14	*Valvata piscinalis* (O.F. Müller, 1774)
C. impurum	p. 41	p. 36, pl. I, fig. 19	*Bithynia tentaculata* (Linnaeus, 1758)
C. achatinum	p. 40	p. 37, pl. I, fig. 18	*Viviparus viviparus* (Linnaeus, 1758)
C. simile	–	p. 34, pl. I, fig. 15	Unknown
C. gibbum	–	p. 38	*Belgrandia gibba* (Draparnaud, 1805)
C. vitreum	p. 41	p. 40, pl. I, fig. 21	*Spiralix vitrea* (Draparnaud, 1805)
Valvata planorbis *V. spirorbis*	p. 42 –	p. 41, pl. I, fig. 34, 35 p. 41, pl. I, fig. 32, 33	*Valvata cristata* (O.F. Müller, 1774)
V. minuta	–	p. 42, pl. I, fig. 36-38	*Islamia minuta* (Draparnaud, 1805)
Ancylus spina-rosae	–	p. 48	*Acroloxus lacustris* (Linnaeus, 1758)
Limneus minutus	p. 51	p. 53, pl. IV, fig. 5-7	*Galba truncatula* (O.F. Müller, 1774)
L. ovatus	–	p. 50, pl. II, fig. 30, 31, 33	*Radix balthica* (Linnaeus, 1758)
L. elongatus	–	p. 53, pl. III, fig. 3, 4	*Omphiscola glabra* (O.F. Müller, 1774)
Planorbis hispidus	–	p. 43, pl. I, fig. 45-48	*Gyraulus albus* (O.F. Müller, 1774)
P. marginatus	–	p. 45, pl. II, fig. 11, 12, 15	*Planorbis planorbis* (Linnaeus, 1758)
Physa acuta	–	p. 55, pl. III, fig. 10, 11	*Physella acuta* (Draparnaud, 1805)
Auricula myosotis	p. 53	p. 56, pl. III, fig. 16, 17	*Myosotella myosotis* (Draparnaud, 1801)
Cyclas fontinalis	p. 105	p. 130, pl. X, fig. 8-12	*Pisidium casertanum* (Poli, 1791)
C. palustris	p. 106	p. 130, pl. X, fig. 15, 16	*Pisidium amnicum* (O.F. Müller, 1774)
C. rivalis	–	p. 129, pl. X, fig. 4, 5	*Sphaerium corneum* (Linnaeus, 1758)
C. caliculata	–	p. 130, pl. X, fig. 13, 14	*Musculium lacustre* (O.F. Müller, 1774)
C. lacustris	–	p. 130, pl. X, fig. 6, 7	*Sphaerium ovale* (Férussac, 1807)
Anodonta variabilis	p. 108	–	*Anodonta anatina* (Linnaeus, 1758), partim *Anodonta cygnea* (Linnaeus, 1758), partim

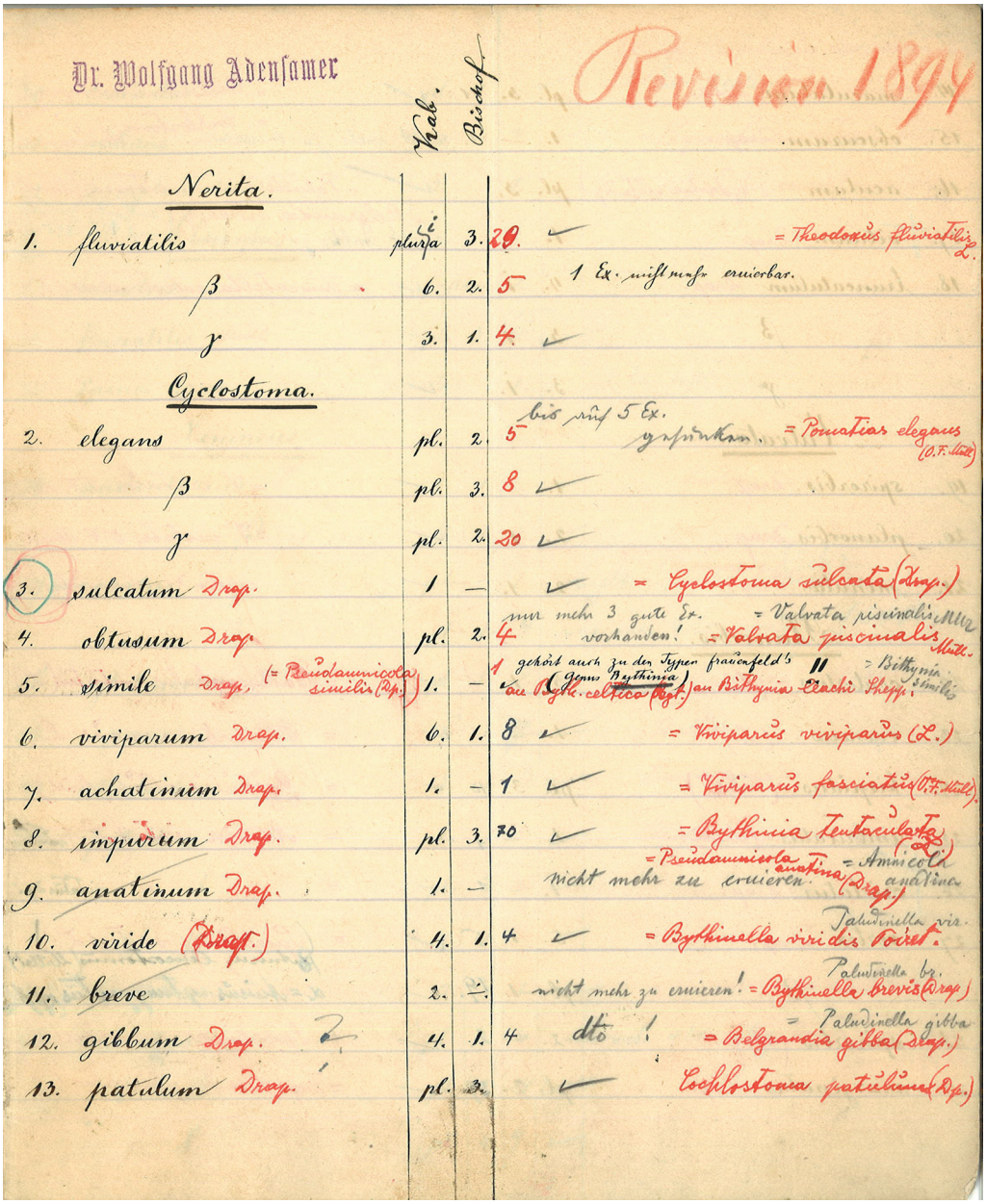


Fig. 3. First page of Sturany's revision 1894 of Draparnaud's collection with remarks of Adensamer 1935/36 in red ink.

Valvata piscinalis f. *obtusa*: BURCH, 1982: 226, fig. 30.
Cincinna obtusa: CHERNOGORENKO & STAROBOGATOV, 1987: 149.
Cincinna obtusa: ANISTRATENKO & ANISTRATENKO, 2001: 140, fig. 111.
Cincinna obtusa: STAROBOGATOV, BOGATOV, PROZOROVA & SAENKO, 2004: 275, pl. 100, fig. 13.
Cincinna obtusa: VINARSKI, ANDREEV, ANDREEVA, LAZUTKINA & KARIMOV, 2007: 177.

Type material: 10 syntypes under catalogue number Mollusca NHMW 14704 [Acqu. Nr. 1820.XXVI.4]. Most shells of the type series belonged to juvenile or subadult individuals. The largest one is illustrated on Fig. 4A. Its shell height is 4.2 mm at 4.0 whorls.

Type locality: There is no data on localities in the original description (Draparnaud 1801a). In his 1805 monograph, the author mentioned that *C. obtusum* is known from several localities, including environs of Montpellier as well as freshwaters of the Bresse region (Draparnaud 1805: 34). Haszprunar (2014) defines the type locality of *C. obtusum* as "France septemtrionale" (= northern France) though this statement is not clear for us since Montpellier is situated in southern France. The syntype label bears no information about locality.

Taxonomic remark: Conchologically, Draparnaud's specimens correspond well to the species *Valvata piscinalis* O.F. Müller, 1774 as it is accepted in modern European malacology (Glöer 2002, Welter-Schultes 2012). Draparnaud (1805: 33) himself cited *V. piscinalis* Müller as a synonym for his *C. obtusum*. However, some authors in Russia and Ukraine regard it as a separate species (Chernogorenko & Starobogatov 1987, Anistratenko & Anistratenko 2001, Starobogatov et al. 2004). Burch (1982) records *V. piscinalis* f. *obtusa* in North America (Lower Great Lakes). Sometimes, the authorship of the species *Valvata obtusa* is ascribed to Samuel Studer, an old Swiss naturalist (Westerlund 1886, Anistratenko & Anistratenko 2001). Indeed, Studer (1789) introduced a new species name, *Nerita obtusa*, in his list of Swiss mollusks. Studer also identified his *N. obtusa* with *V. piscinalis* Müller but he did not give either species description or shell picture in his work, and it is not clear if *Cyclostoma obtusum* Draparnaud has any relation to Studer's name. Draparnaud (1801a, 1805) did not cite Studer's work and presumably it was not known to him at all.

2. *Cyclostoma impurum* Draparnaud, 1801
(Fig. 4B, C)

Cyclostoma impurum Draparnaud, 1801a: 41.
Cyclostoma impurum: Draparnaud, 1805: 36, pl. I, fig. 19.
Cyclostoma impurum: Millet, 1813: 8.
Paludina impura: Brard, 1815: 183, pl. VII, fig. 2.
Paludina impura: Pfeiffer, 1821: 104, pl. IV, fig. 40, 41.
Paludina impura: Lamarck, 1822: 175.
Paludina impura: Turton, 1831: 134, fig. 120.

Type material: 70 syntypes under catalogue number Mollusca NHMW 14716 [Acqu. Nr. 1820.XXVI.18], two of these are illustrated (see Fig. 4B, C).

Type locality: Not stated in the original description (Draparnaud, 1801a). Later on, Draparnaud (1805: 37) wrote that this species is "very common throughout France".

Taxonomic remark: *Cyclostoma impurum* has almost unanimously been regarded as a synonym of *Bithynia tentaculata* (Linnaeus, 1758), and Draparnaud (1805) also indicated its identity with *Helix tentaculata* Linnaeus and *Nerita jaculator* O.F. Müller. The examination of the syntypes does not contradict this opinion though the shells from the type series are somewhat different in their appearance. Some syntypes (see Fig. 4C) correspond to an intraspecific morph *B. tentaculata* m. *producta* Menke, 1828 (see Glöer, 2002: 86) that is regarded in the Russian malacology as a distinct species (Star-

OBOGATOV et al. 2004). A prominent conchological variation in *C. impurum* was noted by DRAPARNAUD (1801a) himself.

3. *Cyclostoma achatinum* DRAPARNAUD, 1801
(Fig. 4E)

Cyclostoma achatinum DRAPARNAUD, 1801a: 40.
Cyclostoma achatinum: DRAPARNAUD, 1805: 37, pl. I, fig. 18.
Cyclostoma achatinum: MILLET, 1813: 7.
Paludina achatina: LAMARCK, 1822: 174.
Paludina achatina: PFEIFFER, 1828: 44, pl. VIII, fig. 3.
Paludina achatina: TURTON, 1831: 134, fig. 119.

Type material: A single shell (syntype) is kept under catalogue number Mollusca NHMW 14706 [Acqu. Nr. 1820.XXVI.7]. The shell has 4¾ whorls, its height is 24.1 mm.

Type locality: Not stated in the original description (DRAPARNAUD 1801a).

Taxonomic remark: *Cyclostoma achatinum* has almost unanimously been regarded as a synonym of *Viviparus viviparus* (LINNAEUS, 1758) though DRAPARNAUD (1805) used the Linnaean name *Helix viviparus* for designation of a quite different viviparid species, known today as *Viviparus contectus* (MILLET, 1813). A long story of nomenclatorial confusion between *V. viviparus* and *V. contectus* in the European malacology ended sixty years ago when WATSON (1955) published a special paper devoted to this subject and fixed the currently accepted meanings of the two taxonomic names.

4. *Cyclostoma simile* DRAPARNAUD, 1805
(Fig. 4D)

Cyclostoma simile DRAPARNAUD, 1805: 34, pl. I, fig. 15.
Paludina similis: TURTON, 1831: 135, fig. 121 (? non DRAPARNAUD, 1805).
Bithynia similis: FRAUENFELD, 1862: 1150.
Pseudoamnicola similis: ALTIMIRA, 1968: 18.
Bithynia similis: BECH & FERNANDEZ, 1987: 227.
Mercuria similis: FALKNER, BANK & PROSCHWITZ, 2001: 17.

Type material: A single shell is kept under catalogue number Mollusca NHMW 14715 [Acqu. Nr. 1820. XXVI.5]. The shell has 5¼ whorls, its height is 6.8 mm. This specimen was designated as the lectotype of *C. simile* by BOETERS (1971). Later on, BOETERS & FALKNER (2000) concluded that this shell does not correspond to the original description given by DRAPARNAUD (1805) himself and thus its previous designation by BOETERS (1971) as the lectotype is invalid. The authors decided to establish the neotype for *C. simile* (= lectotype of *Amnicola confusa* FRAUENFELD, 1863) and to place this species into the genus *Mercuria* BOETERS, 1971.

Type locality: Not stated in the original description (DRAPARNAUD 1805). The type locality of the neotype of *C. simile* is South France ("Gallia mer[idionalis]").

Taxonomic remark: The systematic position of *Cyclostoma simile* "has always been a topic of controversy" (BOETERS & FALKNER 2000: 27). FLEMING (1828) regarded it as a juvenile specimen of *Bithynia tentaculata* (LINNAEUS, 1758) but this opinion is in clear contradiction with characters of the lectotype shell. BOETERS (1971) regarded the lectotype shell as belonging to some *Bithynia* species but he could not assign it to any of species known to him. According to Peter Glöer (pers. comm. 16.01.2015), the shell of the lectotype of *Cyclostoma simile* belongs either to an undescribed species of *Bithynia*

or to an aberrant specimen of *B. tentaculata*. The current treatment of *Cyclostoma simile* as a species of *Mercuria* (Falkner et al. 2001, 2002) is based on the characters of the neotype shell and has nothing to do with the lectotype designated by Boeters (1971). Thus the shell depicted here (see Fig. 4D) has no nomenclatorial significance and should not be confused with the "true" *Mercuria similis*. Its placement under the label "*Cyclostoma simile*" in Draparnaud's collection is enigmatic. Perhaps, someone substituted the original shell with a new one, belonging to a quite different group of freshwater prosobranchs (Bithyniidae).

5. *Cyclostoma gibbum* Draparnaud, 1805
(Fig. 4F)

Cyclostoma gibbum Draparnaud, 1805: 38.
Belgrandia gibba: Locard, 1893: 93, fig. 96.
Belgrandia gibba: Haase, 2000: 174.
Belgrandia gibba: Falkner, Bank & Proschwitz, 2001: 22.

Type material: The lectotype with catalogue number Mollusca NHMW 100519 and 3 paralectotypes under Mollusca NHMW 100520 [for both: Acqu. Nr. 1820.XXVI.12] designated and depicted by Haase (2000). The lectotype has a shell height of 2.1 mm.

Type locality: Not stated in the original description (Draparnaud, 1805). Usually it is assumed that the type specimens were collected somewhere in southern France (Haase 2000).

Taxonomic remark: The systematic position of *Cyclostoma gibbum* was discussed by Haase (2000). This species is usually placed into the genus *Belgrandia* Bourguignat, 1869.

6. *Cyclostoma vitreum* Draparnaud, 1801
(Fig. 4G)

Cyclostoma vitreum Draparnaud, 1801a: 41.
Cyclostoma vitreum: Draparnaud, 1805: 40, pl. I, fig. 21.
Belgrandia vitrea: Locard, 1893: 95, fig. 97.
Spiralix vitrea: Falkner, Bank & Proschwitz, 2001: 16.

Type material: A single shell being the syntype (Mollusca NHMW 14708) [Acqu. Nr. 1820.XXVI.17] is mounted on a piece of paper. Its upper 2.0–2.5 whorls are destroyed. The remaining part of the shell has 2.0 mm height.

Type locality: France, "sur les bords du Rhône" (Draparnaud, 1801a: 42).

Taxonomic remark: Currently this species is classified within the genus *Spiralix* Boeters, 1972 (family Moitessieriidae Bourguignat, 1863). Previously, it had been placed in the genus *Moitessieria* Bourguignat, 1863 (Boeters 1969).

7. *Valvata planorbis* Draparnaud, 1801
(Fig. 4H, I)

Valvata planorbis Draparnaud, 1801a: 42.
Valvata planorbis: Draparnaud, 1805: 41, pl. I, fig. 34, 35.
Valvata planorbis: Millet, 1813: 10.

Valvata planorbis: BRARD, 1815: 188, pl. VI, fig. 18, 19.
Valvata planorbis: TURTON, 1831: 134, fig. 115.

Type material: 2 shells of syntypes (Mollusca NHMW 14718) [Acqu. Nr. 1820.XXVI.20] are mounted on a piece of paper, and one of them is damaged. The intact (and largest) specimen's width is about 2.0 mm at 3¼ whorls.

Type locality: France (fide HASZPRUNAR, 2014).

Taxonomic remark: Since the 19th century this species was almost generally regarded as a synonym of *Valvata cristata* O.F. MÜLLER, 1774 (PFEIFFER 1821; KÜSTER 1852; WESTERLUND 1886; but see BRARD 1815 and TURTON 1831). It is not accepted as a separate species in recent malacological systematics (FALKNER et al. 2001; GLÖER 2002; STAROBOGATOV et al. 2004).

8. *Valvata spirorbis* DRAPARNAUD, 1805
(Fig. 4J)

Valvata spirorbis DRAPARNAUD, 1805: 41, pl. I, fig. 32, 33.
Valvata spirorbis: BRARD, 1815: 187, pl. VI, fig. 15, 16.
Valvata spirorbis: TURTON, 1831: 132, fig. 115.
Valvata spirorbis: KÜSTER, 1852: 89, pl. 14, fig. 27, 28.
Valvata spirorbis: LOCARD, 1893: 95, fig. 97.
Valvata spirorbis: CHERNOGORENKO & STAROBOGATOV, 1987: 149.
Valvata spirorbis: ANISTRATENKO & ANISTRATENKO, 2001: 135, fig. 101.
Valvata spirorbis: STAROBOGATOV, BOGATOV, PROZOROVA & SAENKO, 2004: 271, pl. 99, fig. 1–3.

Type material: The only syntype shell (Mollusca NHMW 14717) [Acqu. Nr. 1820.XXVI.19] is 3.3 mm wide at 3¼ whorls.

Type locality: France (fide HASZPRUNAR, 2014).

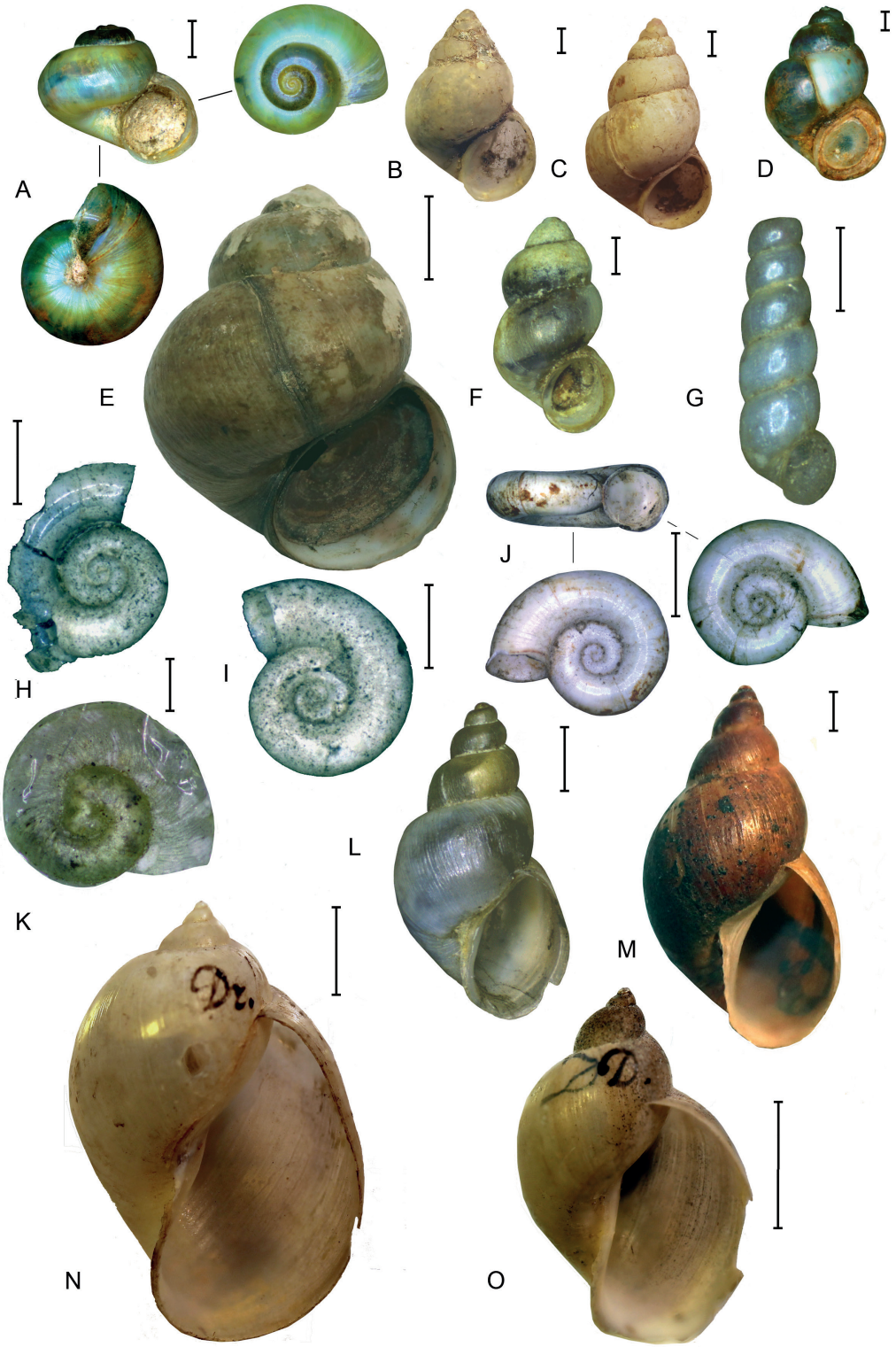
Taxonomic remark: Most authors believed that *V. spirorbis* sensu DRAPARNAUD is merely a junior synonym of *V. cristata*. Indeed, all characters of the syntype (see Fig. 4J) coincide with diagnosis of *V. cristata* given in recent papers (GLÖER 2002; WELTER-SCHULTES 2012). WESTERLUND (1886) regarded *V. spirorbis* as an intraspecific form of *V. cristata.* Its status as a distinct species is accepted in Russian literature (CHERNOGORENKO & STAROBOGATOV 1987; STAROBOGATOV et al. 2004).

9. *Valvata minuta* DRAPARNAUD, 1805
(Fig. 4K)

Valvata minuta DRAPARNAUD, 1805: 42, pl. I, fig. 36, 38.
Valvata minuta: PFEIFFER, 1821: 102, pl. IV, fig. 36.
Valvata minuta: TURTON, 1831: 132, fig. 117.
Valvata minuta: KÜSTER, 1852: 90, pl. 14, fig. 29, 30.
Valvata minuta: LOCARD, 1893: 128.
Neohoratia minuta: FALKNER, BANK & PROSCHWITZ, 2001: 23.
Islamia minuta: BODON, MANGANELLI & GIUSTI, 2001: 134

Type material: The only shell in Draparnaud's collection (Mollusca NHMW 14720) [Acqu. Nr. 1820. XXVI.21] is 1.1 mm wide at 2¼ whorls. BINDER (1966) designated it as the lectotype of *V. minuta* (see taxonomic remark below). It is tightly mounted on a piece of paper.

Type locality: Source de l'Ain, Jura Mts., France (the locality of the neotype shell).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Taxonomic remark: Most authors of the 19th century placed *V. minuta* into the genus *Valvata* (PFEIFFER 1821, TURTON 1831, LOCARD 1893). WESTERLUND (1879) devoted a special study to this species. KENNARD & WOODWARD (1926a) synonymized it with *Valvata cristata*, however the current allocation of this species in the system is quite different. BINDER (1966) has questioned its placement within Valvatidae, and recently *V. minuta* has been accepted under the binomial name *Neohoratia minuta* (FALKNER et al. 2001) or *Islamia minuta* (BODON et al. 2001; ARCONADA & RAMOS 2006). BODON et al. (2000) proposed to reject the lectotype status of the specimen from the Draparnaud collection in NHMW and to designate the neotype of *Valvata minuta* (NHMW 100485), This proposition was accepted by the International Commission – opinion 2035, case 3146 (ICZN, 2003).

10. *Ancylus spina-rosae* DRAPARNAUD, 1805
(Fig. 5B)

Ancylus spina-rosae DRAPARNAUD, 1805: 48.
Ancylus spina-rosae: LAMARCK, 1822: 27.
Ancylus spina-rosae: BRECY, 1838: 86, pl. 13, fig. 10-12.

Type material: The only shell (syntype) in Draparnaud's collection (Mollusca NHMW 14735) [Acqu. Nr. 1820.XXVI.35] has 4.9 mm length.

Type locality: Southern France, environs of Moissac Town in the Midi-Pyrénées region (on the road to Montauban).

Taxonomic remark: Judging from its shell traits, the syntype of *Ancylus spina-rosae* is not ancylid at all and should be classified as *Acroloxus lacustris* (LINNAEUS, 1758), family Acroloxidae THIELE, 1931. It was revealed as early as in 1895 by Locard though some previous authors speculated it may be an ostracod species of the genus *Cypris* (LOCARD, 1895). It is not clear why Draparnaud separated this *Acroloxus* shell in a species of its own. Other similar shells from his collection are correctly identified as *A. lacustris*. Moreover, the original diagnosis of *A. spina-rosae* given by him (DRAPARNAUD 1805: 48) corresponds to an ancylid rather than acroloxid shell. It should be noted that BRECY (1838), who published a special note on this species, gave illustrations of shell of some *Ancylus* not corresponding to the shell of the syntype. Possibly, some confusion has happened, and a specimen of *A. lacustris* was placed under a wrong label, whereas the original specimen of *Ancylus spina-rosae* was lost or destroyed. Anyway, it should have been happened before 1894 since Locard seemingly studied that shell which is kept in NHMW under No. 14735 now.

◀ Fig. 4. Shells of the type specimens (syntypes, lectotypes) from Draparnaud's collection. A. *Cyclostoma obtusa* (the same shell in three projections). B, C. Two syntypes of *C. impurum*. D. The syntype of *C. simile.* E. A syntype of *C. achatinum*. F. The lectotype of *C. gibbum*. G. The syntype of *C. vitreum*. H, I. The syntypes of *Valvata planorbis*. J. The syntypes of *V. spirorbis*. K. The lectotype of *V. minuta* designated by BINDER (1966). L. The lectotype of *Lymnaea minuta* (designated here). M. One of syntypes of *L. minutus* var. β. N. The syntype of *L. ovatus* var. α. O. The syntype of *L. ovatus* var. β. Scale bars 0.5 mm (E, G, K); 1 mm (A–D, H–J, L, M); 2 mm (E, N, O).

11. *Limneus minuta* Draparnaud, 1801
(Fig. 4L, M)

Limneus minuta Draparnaud, 1801a: 51.
Limneus minutus: Draparnaud, 1805: 53, pl. IV, fig. 5-7.
Lymnaea minuta: Millet, 1813: 28.
Lymneus minutus: Brard, 1815: 138, pl. V, fig. 8, 9.
Limnaeus minutus: Pfeiffer, 1821: 93, pl. IV, fig. 27.
Lymnaea minuta: Lamarck, 1822: 162.
Limnea minuta: Michaud, 1831: 89.
Stagnicola minuta: Leach, 1852: 104.
Limnaea minuta: Bielz, 1863: 162.

Type material: Kept under Mollusca NHMW 14741 [Acqu. Nr. 1820.XXVI.43]. The sample contains three tubes that correspond to three varieties of *L. minutus* distinguished by Draparnaud (1805). The first tube contains 4 shells of the typical variety (labelled as *L. minutus* var. α). The second one (corresponding to *L. minutus* var. β) includes 13 specimens that represent a mixture of at least three species (in current nomenclature): *Galba truncatula* (O.F. Müller, 1774), *Stagnicola palustris* (O.F. Müller, 1774) and juvenile *Radix* (?) *peregra* (O.F. Müller, 1774). One of these specimens is illustrated in Fig. 4M. The 9 shells from the third tube (= *L. minutus* var. γ) are also taxonomically heterogeneous. It is an admixture of juvenile *Radix balthica* (Linnaeus, 1758) and *S. palustris*.

Since among the syntypes of *Limneus minutus* at least four species of Lymnaeidae are present, it is reasonable to select and designate here the lectotype of *L. minutus*, *L. minutus* var. α. It is a subjective synonym of *Galba truncatula*. We choose the largest shell of this variety to serve as the lectotype with the catalogue number Mollusca NHMW 110406 (see Fig. 4L). Its shell height is 5.0 mm at 4¾ whorls.

Type locality: Not stated either in the original description (Draparnaud 1801a) or in the posthumously published book (Draparnaud 1805).

Taxonomic remark: The taxonomic name *L. minuta* (or *L. minutus*) had been used in the European malacology for designation of the dwarf pond snail till the 1860s (Bielz 1863).

12. *Limneus ovatus* Draparnaud, 1805
(Fig. 4N, O)

Limneus ovatus Draparnaud, 1805: 50, pl. II, fig. 30, 31, 33.
Lymnaea ovata: Millet, 1813: 23.
Lymneus ovatus: Brard, 1815: 142, pl. V, fig. 4, 5.
Limnaeus ovatus: Pfeiffer, 1821: 89, Taf. IV, fig. 21.
Lymnaea ovata: Lamarck, 1822: 162.
Limnea ovata: Michaud, 1831: 86.
Limnaea ovata: Westerlund, 1885: 36.
Radix ovata: Geyer, 1927: 136, Taf. XIII, fig. 14 a, b, d.
Lymnaea ovata: Kruglov, 2005: 342, fig. 223 (4).

Type material: Kept under Mollusca NHMW 14737 [Acqu. Nr. 1820.XXVI.37]. The sample contains two tubes that correspond to the varieties of *L. ovatus* distinguished by Draparnaud (1805). The first tube contains a single shell (syntype) of the typical variety (labelled as *L. ovatus* var. α). Its height is 21.7 mm at 4½ whorls (see Fig. 4N). The second tube (corresponding to *L. ovatus* var. β) includes four specimens that are conchologically distinct from the previous shell (see Fig. 4O) and may be classified as *Lymnaea intermedia* Lamarck, 1822 sensu Kruglov, 2005. The validity of *L. intermedia* is not accepted by Western European authors (Glöer 2002; Welter-Schultes 2012), who regard it as a synonym of *Radix balthica* (Linnaeus, 1758).

Type locality: Not stated in the original description (DRAPARNAUD 1805).

Taxonomic remark: Draparnaud's name *L. ovata* (or *L. ovatus*) had long been used in the European malacology for designation of a lymnaeid species known currently as *Radix balthica* (GLÖER 2002; WELTER-SCHULTES 2012). The Russian authors still accept *L. ovata* as a species closely related to *L. balthica* (STAROBOGATOV et al. 2004, KRUGLOV 2005, VINARSKI et al. 2007). It should be noted, however, that *L. ovata* sensu KRUGLOV does not correspond with the syntype of *Limneus ovatus* var. α. The latter is very similar conchologically to the neotype of *Helix balthica* designated by KRUGLOV & STAROBOGATOV (1983) and this fact adds further support for synonymization of the two taxa.

13. *Limneus elongatus* DRAPARNAUD, 1805
(Fig. 5A)

Limneus elongatus DRAPARNAUD, 1805: 53, pl. III, fig. 3, 4.
Lymnaea elongata: MILLET, 1813: 27.
Limnaeus elongatus: PFEIFFER, 1821: 92, Taf. IV, fig. 26.
Limneus elongatus: TURTON, 1831: 122, fig. 106.

Type material: Two syntypes of *L. elongatus* are kept under catalogue number Mollusca NHMW 14743 [Acqu. Nr. 1820.XXVI.42]. The largest of them, illustrated in Fig. 5A, is 16.1 mm height at 6¾ whorls.

Type locality: Not stated in the original description (DRAPARNAUD 1805).

Taxonomic remark: Draparnaud's name *L. elongatus* is a junior synonym of *Omphiscola glabra* (O.F. MÜLLER, 1774). WESTERLUND (1873) accepted it as a variety of *O. glabra*.

14. *Planorbis hispidus* DRAPARNAUD, 1805
(Fig. 5, D)

Planorbis hispidus DRAPARNAUD, 1805: 43, pl. I, fig. 45-48.
Planorbis hispidus: MILLET, 1813: 13.
Planorbis hispidus: BRARD, 1815: 159, pl. VI, fig. 6, 7.
Planorbis hispidus: LAMARCK, 1822: 154.
Planorbis hispidus: MICHAUD, 1831: 79.
Gyraulus albus var. *hispidus*: GEYER, 1927: 147.

Type material: Ten syntypes of *P. hispidus* are kept under catalogue number Mollusca NHMW 14724 [Acqu. Nr. 1820.XXVI.24]. The largest of them, illustrated in Fig. 5D, is 4.8 mm wide at 4¼ whorls.

Type locality: Not stated in the original description (DRAPARNAUD 1805).

Taxonomic remark: Most authors since PFEIFFER (1821) considered *P. hispidus* as a synonym of *Planorbis* (or *Gyraulus*) *albus* (O.F. MÜLLER, 1774). Indeed, most shells of syntypes bear a clear spiral sculpture on their surface that is a characteristic trait of *G. albus* (MEIER-BROOK 1983, GLÖER 2002). VALLOT (1801) was the first author to mention this species and to give its short description. However, this paper was "issued as an internal school script, printed for a selected audience at a determined occasion and coincidentally preserved in the municipal library of Dijon, first discovered by malacologists in the 1850s. It was not available to the public when first issued" (WELTER-SCHULTES 2014). Thus, the species names proposed by VALLOT (1801) are not available from the nomenclatorial point of view (but see opinion of BANK 2011: 15).

15. *Planorbis marginatus* Draparnaud, 1805
(Fig. 5, C)

Planorbis marginatus Draparnaud, 1805: 45, pl. II, fig. 11, 12, 15.
Planorbis marginatus: Millet, 1813: 18.
Planorbis marginatus: Brard, 1815: 152, pl. VI, fig. 5.
Planorbis marginatus: Pfeiffer, 1821: 75, Taf. IV, fig. 1, 2.
Planorbis marginatus: Michaud, 1831: 82, pl. XVI, fig. 11, 12.
Planorbis marginatus: Turton, 1831: 107, fig. 88.
Planorbis marginatus: Leach, 1852: 114, pl. II, fig. 7, 8.

Type material: 39 syntypes of *P. marginatus* are kept under catalogue number Mollusca NHMW 14729 [Acqu. Nr. 1820.XXVI.29]. The largest of them, illustrated in Fig. 5C, is 15.0 mm wide at 6.0 whorls.

Type locality: Not stated in the original description (Draparnaud 1805).

Taxonomic remark: *P. marginatus* is a junior synonym of *P. planorbis* (Linnaeus, 1758). The conchological traits of the syntypes fully correspond to those of *P. planorbis* as it is known in current taxomomy (Glöer 2002, Welter-Schultes 2012).

16. *Physa acuta* Draparnaud, 1805
(Fig. 4E)

Physa acuta Draparnaud, 1805: 55, pl. III, fig. 10, 11.
Physa acuta: Brard, 1815: 169, pl. VII, fig. 5, 6.
Physa acuta: Michaud, 1831: 84.
Physa acuta: Küster, 1841: 26, pl. IV, fig. 16–20.
Physella acuta: Glöer, 2002: 238, fig. 260.
Haitia acuta: Taylor, 2003: 135, fig. 127-130; pl. 6, fig. 8-10.
Costatella acuta: Starobogatov, Bogatov, Prozorova & Saenko, 2004: 329, pl. 140, fig. 2.
Physa acuta: Wethington et al., 2009: 285, fig. 6.

Type material: The single specimen of this species in Draparnaud's collection is kept under catalogue number Mollusca NHMW 102796 [Acqu. Nr. 1820.XXVI.45]. Taylor (2003) considers it as the holotype though we are unaware of where it was designated.

Type locality: France, Garonne River and its tributaries. Topotypic individuals of this species were studied and illustrated by Paraense & Pointier (2003).

Taxonomic remark: This species, notoriously known for his high invasion potential and almost cosmopolitan distribution, is accepted as valid by all authors. However, its generic allocation is far from being commonly accepted. It has been placed consequently into the genera *Physa* Draparnaud, 1801, *Physella* Haldeman, 1843, *Costatella* Dall, 1870, and *Haitia* Clench & Aguayo, 1932 (see synonymy above).

17. *Auricula myosotis* Draparnaud, 1801
(Fig. 5F, G)

Auricula myosotis Draparnaud, 1801a: 53.
Auricula myosotis: Draparnaud, 1805: 56, pl. III, fig. 16, 17.
Auricella myosotis: Hartmann, 1821: 215.
Carychium myosote: Michaud, 1831: 73.
Phytia myosotis: Kennard & Woodward, 1926b: 38.
Phytia myosotis: Geyer, 1927: 131, pl. VIII, fig. 45.
Myosotella myosotis: Glöer, 2002: 291, fig. 305.

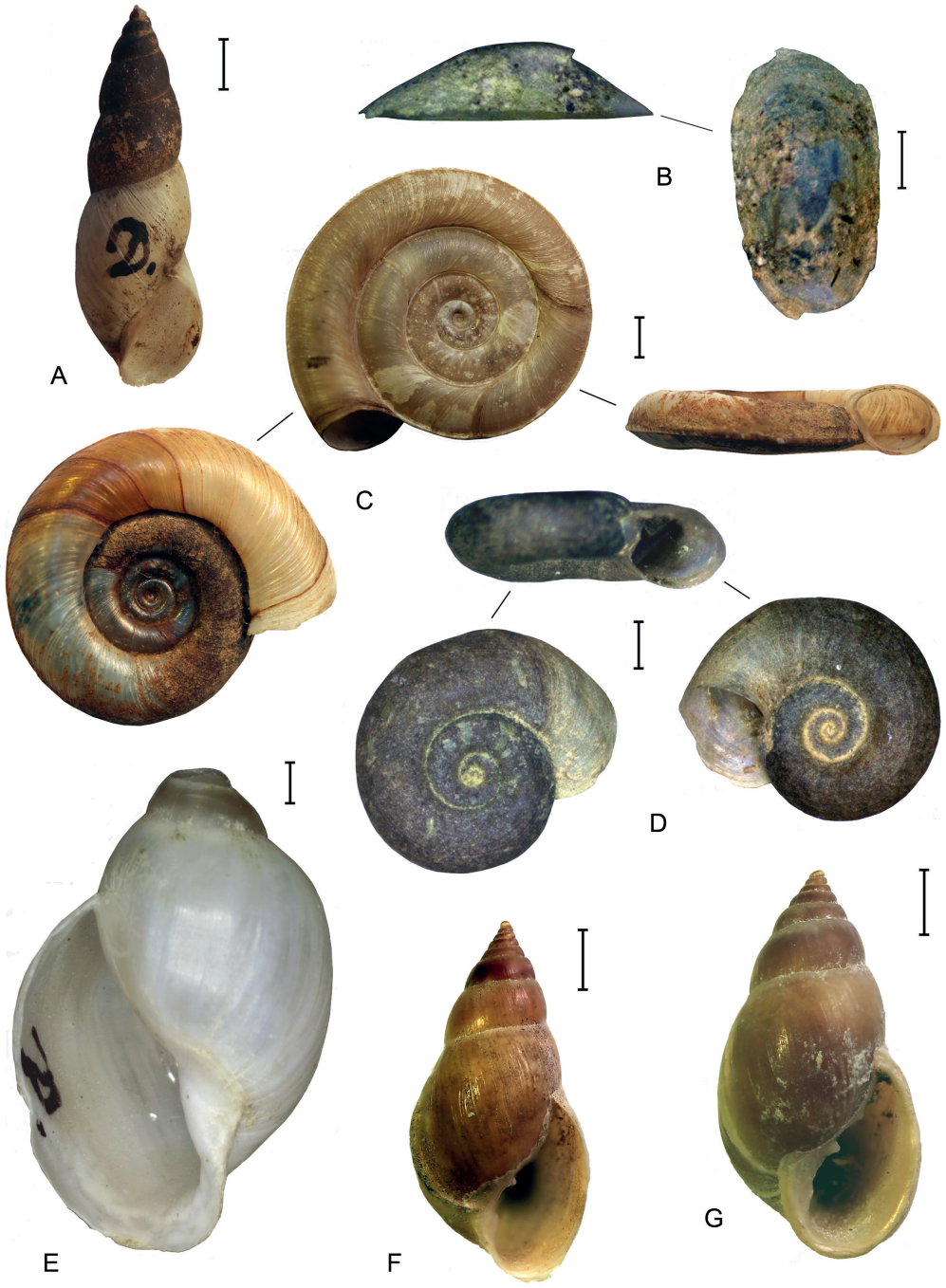


Fig. 5. Shells of the type specimens (syntypes) from Draparnaud's collection. A. A syntype of *Limneus elongatus*. B. The syntype of *Ancylus spina-rosae*, view from two projections. C. A syntype of *Planorbis marginatus.* D. A syntype of *P. hispidus*. E. The lectotype of *Physa acuta*. F, G. Two syntypes of *Auricula myosotis*. Scale bars: 1.0 mm (B, D, E); 2.0 mm (A, C, F, G).

Myosotella myosotis: Starobogatov, Bogatov, Prozorova & Saenko, 2004: 303, pl. 123, fig. 2.
Myosotella myosotis: Welter-Schultes, 2012: 72, textfig.

Type material: 115 syntypes of *A. myosotis* are kept under catalogue number Mollusca NHMW 14747 [Acqu. Nr. 1820.XXVI.48]. Conchologically, the syntypes are somewhat heterogenous that, presumably, reflects the intraspecific variation in shell proportions. Two of the syntypes are illustrated here (see Fig. 5F, G).

Type locality: France, Mediterranean Sea shore.

Taxonomic remark: Ecologically, this snail can be characterized as an amphibious mollusk therefore it has been included in works dealing with aquatic (Glöer 2002; Starobogatov et al. 2004) and terrestrial (Wiese 2014) malacofauna. As the previous species, *A. myosotis* is accepted valid by all experts but its generic position has long been uncertain (see synonymy above).

18. *Cyclas fontinalis* Draparnaud, 1801
(Fig. 6A)

Cyclas fontinalis Draparnaud, 1801a: 105.
Cyclas fontinalis: Draparnaud, 1805: 130, pl. X, fig. 8-12.
Pisidium fontinale: Pfeiffer, 1821: 125, Taf. V, fig. 15, 16.

Type material: A single syntype shell kept under number Mollusca NHMW 14862 [Acqu. Nr. 1820. XXVI.157] is about 2.1 mm wide.

Type locality: Not stated in the original description (Draparnaud 1801a). Later on, Draparnaud (1805: 130) specified that this species was "found near Arennes, in vicinities of Montpellier".

Taxonomic remark: Westerlund (1890) synonymized this species with *Pisidium pusillum* "Gmelin" Jenyns, 1832. Later on, *C. fontinalis* was regarded as identical with either *P. cinereum* Alder, 1838 (Kennard & Woodward 1926) or, more recently, with *P. casertanum* Poli, 1791 (Graf & Cummings 2014). Draparnaud (1805) distinguished two varieties of *C. fontinalis* in addition to the typical form, but there are no materials on these varieties in NMHW.

19. *Cyclas palustris* Draparnaud, 1801
(Fig. 6B)

Cyclas palustris Draparnaud, 1801a: 106.
Cyclas palustris: Draparnaud, 1805: 130, pl. X, fig. 15, 16.

Type material: 6 syntypes are in the collection under Mollusca NHMW 14865 [Acqu. Nr. 1820.XXVI.159]. The shell of the largest syntype, illustrated here (see Fig. 6B), is 7.0 mm wide.

Type locality: Not stated in the original description (Draparnaud 1801a).

Taxonomic remark: The identity between *C. palustris* and widespread European peaclam species *Pisidium amnicum* (O.F. Müller, 1774) was evident as early as in 1820s (Pfeiffer 1821; Fleming 1828).

20. *Cyclas rivalis* Draparnaud, 1805
(Fig. 6C)

Cyclas rivalis Draparnaud, 1805: 129, pl. X, fig. 4, 5.
Cyclas rivalis: Brard, 1815: 222, pl. VIII, fig. 4, 5.

Type material: 8 syntypes are in the collection under Mollusca NHMW 14859 [Acqu. Nr. 1820.XXVI.155]. The shell of the largest syntype, illustrated here (see Fig. 6, C), is 12.0 mm wide.

Type locality: Not stated in the original description (DRAPARNAUD 1805).

Taxonomic remark: *Cyclas rivalis* DRAPARNAUD was treated as a junior synonym of *Sphaerium corneum* (LINNAEUS, 1758) as early as in the 1820–1830s (PFEIFFER 1821; TURTON 1831). Moreover, DRAPARNAUD (1805) himself included the Linnean species *Tellina cornea* into the synonymy of his *C. rivalis*.

21. *Cyclas caliculata* DRAPARNAUD, 1805
(Fig. 6D, F)

Cyclas caliculata DRAPARNAUD, 1805: 130, pl. X, fig. 13, 14.
Cyclas calyculata: LAMARCK, 1818: 559.
Cyclas calyculata: PFEIFFER, 1821: 122, Taf. V, fig. 17, 18.
Cyclas calyculata: TURTON, 1831: 14, fig. 3.
Cyclas calyculata: MIDDENDORFF, 1851: 287, Taf. XXIX, fig. 7-10.

Type material: 2 syntypes of *C. caliculata* that are kept in NHMW under different catalogue numbers evidently belong to distinct species of bivalves. The first syntype (Mollusca NHMW 14864; see Fig. 6D) [Acqu. Nr. 1820.XXVI.158] may be identified as *Musculium lacustre* (O.F. MÜLLER, 1774), a widespread Palearctic species of sphaeriid clams. The second one (Mollusca NHMW 14863; see Fig. 6F) [Acqu. Nr. 1820.XXVI.157+158] belongs to some species of small *Pisidium* of the subgenus *Euglesa* LEACH in JENYNS, 1832 (some malacologists separate smaller species of *Pisidium* in a family of their own, Euglesidae PIROGOV & STAROBOGATOV, 1974; see STAROBOGATOV et al. 2004). The "red" label of the second syntype says it is *P. personatum* MALM, 1855. The name of the person who made this determination is unknown but it was hardly Locard since he said nothing about the presence of *P. personatum* in the type series of *C. caliculata* (LOCARD, 1895).

Type locality: Not stated in the original description (DRAPARNAUD 1805).

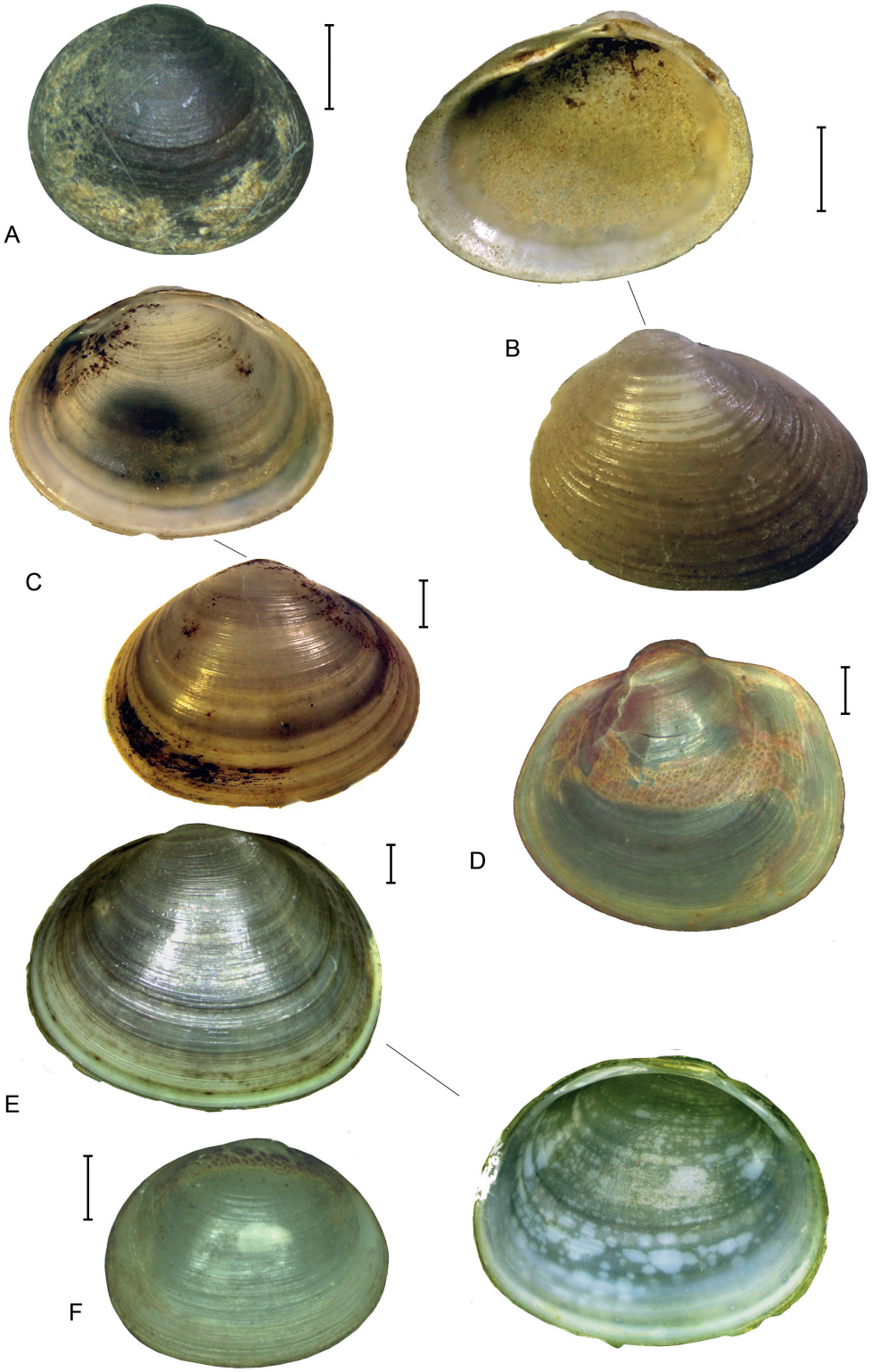
Taxonomic remark: DRAPARNAUD (1805) spelt the taxonomic name of this clam as *Cyclas caliculata* but subsequent conchologists usually used an alternate version – *C. calyculata*. The presence of two taxonomically distinct specimens in the type series of *C. caliculata* is rather enigmatic. FÉRUSSAC (1807) was, probably, the first author to correlate Draparnaud's *C. caliculata* with the Müllerian species *Tellina lacustre*. However, neither FÉRUSSAC (1807) nor LOCARD (1895) discussed this species in connection with any taxon of small pea-clams. DRAPARNAUD (1805) himself did not distinguish any varieties within *C. caliculata* and did not mention any intraspecific variation in shell size, shape or proportions.

22. *Cyclas lacustris* DRAPARNAUD, 1805
(Fig. 6C)

Cyclas lacutris DRAPARNAUD, 1805: 130, pl. X, fig. 6, 7 (misspelling!).
Cyclas lacustris: FÉRUSSAC, 1807: 128.
Cyclas lacustris: TURTON, 1831: 14, fig. 4.

Type material: 3 syntypes are in the collection under Mollusca NHMW 14860 [Acqu. Nr. 1820.XXVI.156]. One valve was selected by FALKNER (2000) to become the lectotype of *Sphaerium ovale* (A. FÉRUSSAC, 1807).

Type locality: Not stated in the original description (DRAPARNAUD 1805).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Taxonomic remark: Conchologically, *Cyclas lacustris* DRAPARNAUD has nothing to do with *Tellina lacustris* sensu MÜLLER. Now this species is known under the name *S. ovale* (GLÖER & MEIER-BROOK 2003; WELTER-SCHULTES 2012) that was fixed by the lectotype designation made by FALKNER (2000).

Acknowledgements

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◀ Fig. 6. Shells of the type specimens (syntypes) of bivalve mollusks from Draparnaud's collection. A. The syntype of *Cyclas fontinalis*. B. A syntype of *C. palustris*. C. A syntype of *C. rivalis*. D. One of the syntypes of *C. caliculata*. E. A syntype of *C. lacustris* (= lectotype of *Sphaerium ovale*). F. Another syntype of *C. caliculata*. Scale bars: 1.0 mm (A, D-F); 2.0 mm (B, C).

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