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# Eduard von Martens's contribution to the knowledge of the Russian continental malacofauna (with examination of type materials of aquatic species accepted by Russian taxonomists)

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**ABSTRACT.** Eduard von Martens (1831–1904) was a prominent German malacologist of the nineteenth century contributed heavily to taxonomy and zoogeography of different groups of Mollusca and created a plethora of taxonomic names of the genus and species rank. The type materials of the species described by him are kept now in the Berlin Natural History Museum (Museum für Naturkunde). This article deals with von Martens' role as a student of continental snails and bivalves of the former Russian Empire. Though von Martens did not travelled to Russia himself, he was able to study numerous samples of mollusks provided to him by both Russian and German explorers. It made him a great student of Russian malacofauna of that time. Most of von Martens works in this field were devoted to investigation of continental mollusks of the underexplored regions of the Russian Empire (Siberia, Russian Turkestan, Caucasus). At least 15 species described by von Martens are accepted as valid by the Russian malacologists. The article contains detailed accounts of the 15 species with illustrations of their type materials (lectotypes, syntypes), notes on distribution, taxonomy and nomenclature of these taxa.

Karl Eduard von Martens (1831–1904) was among the most prominent European malacologists of the nineteenth century (Fig. 1). Sometimes he is acknowledged as “the greatest German malacologist of the 19th century” [Glaubrecht, Zorn, 2012: 37]. His contribution to the taxonomic knowledge of Mollusca covers almost all continents of the Globe as well as all domains of molluscan diversity – marine, terrestrial, and freshwater, with most publications devoted to non-marine taxa. Between 1859 and 1904, von Martens held a position in the Berlin Natural History Museum (Museum für Naturkunde) and spared no effort in order to curate the malacological collection of this institution that is now among the world's richest collections of Mollusca. There is a series of biographical and historical-zoological publications dealing with von Mar-

tens and his malacological work [Meissner, 1901; Kobelt, 1905; Kabat, Boss, 1997; Glaubrecht, Zorn, 2012] that makes it unnecessary to repeat his *curriculum vitae* here. Instead, I would like to focus my efforts on von Martens' contribution to the knowledge of the malacofauna of the former Russian Empire that constituted a significant part of his malacological activity. Another aim of my paper is to present the results of examination of the type series of the Russian freshwater Mollusca described by this author and housed in the Natural History Museum, Berlin (ZMB hereafter). According to the recent catalogue of the former USSR continental mollusks [Kantor *et al.*, 2010], 15 species of aquatic gastropods and bivalves described by von Martens are currently accepted as valid by the ex-USSR malacologists. Nearly half of them have type localities lying within borders of the former Russian Empire (Table 1). In most cases, the type series of these species are extant and were examined by me in ZMB in April of 2015. The data on some of these series (along with illustrations of the type specimens) have been published by Kiliyas [1961, 1967], Korniuschin and Glaubrecht [2001], Korniuschin [2004], and Glaubrecht *et al.* [2007] but nobody ever reviewed the overall contribution of von Martens to the study of the Russian continental aquatic mollusks.

## Material and methods

The main part of the study was carried out in the Berlin Natural History Museum (Museum für Naturkunde; ZMB hereafter) where von Martens collection is kept. The scheme of publication of the type materials follows that of my earlier works dealing with the type specimens of C.A. Westerlund [Vinarski *et al.*, 2013] and O.F. Müller [Nekhaev *et al.*, 2015]. In all cases when it was possible I tried to give dimensions of shells of holotypes or lecto-

Table 1. A list of extant taxa of continental Mollusca described by von Martens with type localities situated in the former Russian Empire (after Kantor *et al.*, 2010).Табл. 1. Перечень современных видов континентальных моллюсков, описанных фон Мартенсом, с типовыми местонахождениями, расположенными в пределах бывшей Российской Империи (по данным Kantor *et al.*, 2010).

Original species name, reference to the original description	Family	Status	Current taxonomic allocation
<i>Buliminus albiplicatus</i> von Martens, 1874: 20	Enidae	<b>valid</b>	<i>Pseudonapaeus albiplicatus</i> (von Martens)
<i>Buliminus dissimilis</i> von Martens, 1882b: 106	Enidae	<b>valid</b>	<i>Pseudonapaeus dissimilis</i> (von Martens)
<i>Buliminus entodon</i> von Martens, 1882b: 106	Enidae	<b>valid</b>	<i>Pseudonapaeus entodon</i> (von Martens)
<i>Buliminus intumescens</i> von Martens, 1874: 22	Enidae	<b>valid</b>	<i>Chondrulopsina intumescens</i> (von Martens)
<i>Buliminus labiellus</i> von Martens, 1881: 24	Enidae	<b>valid</b>	<i>Subzebrinus labiellus</i> (von Martens)
<i>Buliminus labiellus</i> var. <i>kokandensis</i> von Martens, 1882a: 21	Enidae	invalid	<i>Pseudonapaeus sogdianus</i> (von Martens)
<i>Buliminus miser</i> von Martens, 1874: 21-22	Enidae	<b>valid</b>	<i>Pseudonapaeus miser</i> (von Martens)
<i>Buliminus oxianus</i> von Martens, 1876a: 335	Enidae	invalid	<i>Pseudonapaeus sogdianus</i> (von Martens)
<i>Buliminus oxianus</i> var. <i>brevior</i> von Martens, 1876a: 335	Enidae	invalid	
<i>Buliminus oxianus</i> var. <i>elatio</i> von Martens, 1876a: 335	Enidae	invalid	
<i>Buliminus sogdianus</i> von Martens, 1874: 19	Enidae	<b>valid</b>	
<i>Buliminus tridens</i> var. <i>caucasicus</i> von Martens, 1880: 147	Enidae	invalid	<i>Chondrula tridens</i> (O.F. Müller, 1774)
<i>Clausilia acrolepta</i> von Martens, 1876c: 90	Clausiliidae	invalid	<i>Mucronaria acuminata</i> (Mousson, 1876)
<i>Cyclas asiatica</i> von Martens, 1864b: 349	Sphaeriidae	<b>valid</b>	<i>Amesoda asiatica</i> (von Martens)
<i>Cyrena fluminalis</i> var. <i>oxiana</i> von Martens, 1876a: 337	Corbiculidae	invalid	?
<i>Helicarion sogdianus</i> von Martens, 1871b: 65	Ariophantidae	<b>valid</b>	<i>Macrochlamys sogdiana</i> (von Martens)
<i>Helix apollinis</i> von Martens, 1882b: 105	Hygromiidae	<b>valid</b>	<i>Archaica apollinis</i> (von Martens)
<i>Helix arpatschaiana</i> var. <i>sewanica</i> von Martens, 1880-1881: 9	Hygromiidae	invalid	<i>Stenomphalia pisiformis</i> (L. Pfeiffer, 1846)
<i>Helix dichrozona</i> von Martens, 1885: 17	Bradybaenidae	<b>valid</b>	<i>Fruticicola dichrozona</i> (von Martens)
<i>Helix fedtschenkoi</i> von Martens, 1874: 16	Bradybaenidae	<b>valid</b>	<i>Fruticicola fedtschenkoi</i> (von Martens)
<i>Helix lentina</i> von Martens, 1885: 18	Hygromiidae	<b>valid</b>	<i>Paedhoplita lentina</i> (von Martens)
<i>Helix mesoleuca</i> von Martens, 1882b: 105	Hygromiidae	<b>valid</b>	<i>Leucozonella mesoleuca</i> (von Martens)
<i>Helix paricincta</i> var. <i>bilaticincta</i> von Martens, 1882a: 5-6	Bradybaenidae	<b>valid</b>	<i>Fruticicola bilaticincta</i> (von Martens)
<i>Helix phaeozona</i> von Martens, 1874: 13	Bradybaenidae	<b>valid</b>	<i>Fruticicola ph. phaeozona</i> (von Martens)
<i>Helix plectotropis</i> von Martens, 1864a: 114	Bradybaenidae	<b>valid</b>	<i>Fruticicola p. plectotropis</i> (von Martens)
<i>Helix rubens</i> von Martens, 1874: 12	Hygromiidae	<b>valid</b>	<i>Leucozonella rubens</i> (von Martens)
<i>Helix rubens</i> var. <i>concolor</i> von Martens, 1880-1881: 12	Hygromiidae	invalid	
<i>Helix rubens</i> var. <i>finschiana</i> von Martens, 1880-1881: 12	Hygromiidae	invalid	
<i>Helix rubens</i> var. <i>regeliana</i> von Martens, 1880-1881: 12	Hygromiidae	invalid	
<i>Helix rubens</i> var. <i>zeiliana</i> von Martens, 1880-1881: 12	Hygromiidae	invalid	
<i>Helix rufispira</i> von Martens, 1874: 9	Hygromiidae	<b>valid</b>	<i>Leucozonella rufispira</i> (von Martens)
<i>Helix semenovi</i> von Martens, 1864a: 115	Bradybaenidae	<b>valid</b>	<i>Ponsadenia semenovi</i> (von Martens)
<i>Helix talischana</i> von Martens, 1880: 154	Hygromiidae	<b>valid</b>	<i>Monacha talischana</i> (von Martens)
<i>Hydrobia (Amnicola) brevicula</i> von Martens, 1874: 30-31	Hydrobiidae	<b>valid</b>	<i>Martensamnicola brevicula</i> (von Martens)
<i>Hydrobia (Amnicola) pallida</i> von Martens, 1874: 31-32	Hydrobiidae	<b>valid</b>	<i>Sogdamnicola pallida</i> (von Martens)
<i>Limax brandti</i> von Martens, 1880: 143	Limacidae	<b>valid</b>	<i>Eulimax brandti</i> (von Martens)
<i>Limnaeus obliquatus</i> von Martens, 1864a: 116	Lymnaeidae	<b>valid</b>	<i>Lymnaea obliquata</i> (von Martens)
<i>Macrochlamys turanica</i> von Martens, 1874: 7	Ariophantidae	<b>valid</b>	<i>Macrochlamys turanica</i> von Martens
<i>Pupa cristata</i> von Martens, 1874: 23	Pupillidae	invalid	<i>Gibbulinopsis signata</i> (Mousson, 1873)
<i>Succinea altaica</i> von Martens, 1871: 46, 50	Succineidae	<b>valid</b>	<i>Novisuccinea altaica</i> (von Martens)
<i>Vitrina (?) conoidea</i> von Martens, 1874: 8	Vitrinidae	invalid	? <i>Phenacolimax annularis</i> (Studer, 1820)
<i>Vitrina rugulosa</i> von Martens, 1874: 7	Vitrinidae	<b>valid</b>	<i>Vitrina rugulosa</i> von Martens

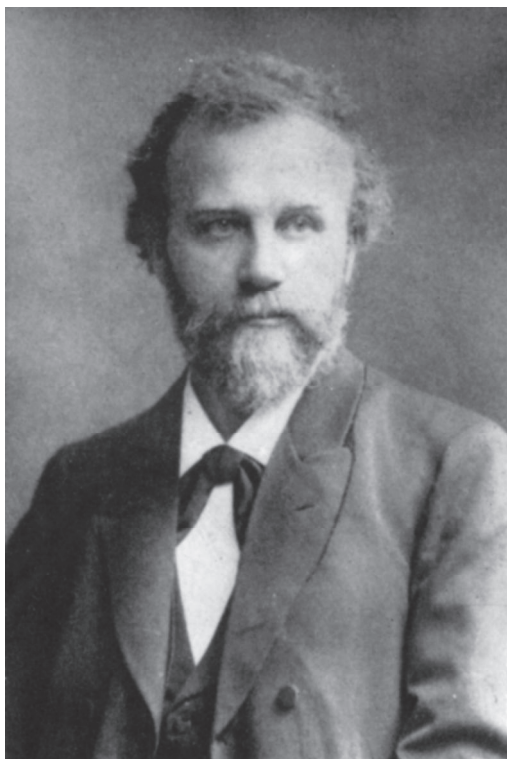


FIG. 1. Karl Eduard von Martens in young age (after Dance, 1966).

РИС. 1. Карл Эдуард фон Мартенс в молодости (из: Dance, 1966).

types using the measurement schemes proposed by Starobogatov *et al.* [2004] and Kruglov [2005]. The nomenclature of species is given after Kantor *et al.* [2010], with except of Lymnaeidae, whose generic and suprageneric taxonomy follows my previously published system [Vinarski 2013].

Abbreviations for shell measurements used in this paper: SH – shell height, SW – shell width, SpH – spire height, BWH – body whorl height, AH – aperture height, AW – aperture width.

## Results

### Karl Eduard von Martens as the student of Russian mollusks

Russian malacology of the last third of the 19<sup>th</sup> century was in the state of apparent decline. In the middle of the century, the mighty monographic works by A.Th. von Middendorff [1848, 1849, 1851] gave a strong impetus for the studies of continental snails and bivalves of remote corners of the Russian Empire. The important papers by Maack [1854], Gerstfeldt [1859], and Schrenk [1867] were published in the wake of Middendorff's [1851] taxonomic account of Siberian mollusks [Vinarski, 2010]. Unfortunately, this impetus died down to the

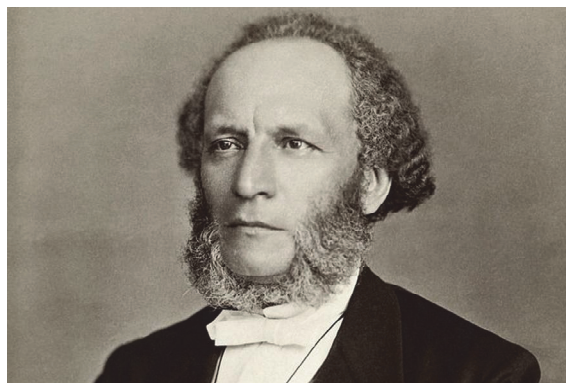


FIG. 2. Pyotr Semyonov-Tian-Shansky. Source: Commons Wikimedia.org

РИС. 2. Пётр Семенов-Тянь-Шанский. Источник: Commons Wikimedia.org

end of the century, when only a few significant malacological publications devoted mainly to marine taxa [Grimm, 1877; Herzenstein, 1885] appeared. A situation with the study of continental mollusks in the 1870–1890s was even more critical. There was nobody in Russia able to identify freshwater and terrestrial species, and the curators of the Imperial Zoological Museum in Saint-Petersburg were forced to send mollusks abroad in order to identify them [Vinarski, 2010]. It is not surprising that the most important taxonomic publications on the Russian malacofauna appeared between 1870 and 1901 were written by foreign zoologists [von Martens, 1874, 1882a; Westerlund, 1877, 1897; Simroth, 1901].

Von Martens was involved in this activity since the early 1860s, and during next several decades he had participated in scientific treatment of molluscan samples collected in different regions of Asiatic Russia and adjacent areas. Siberia and Central Asia were the two regions of von Martens' principal interest. His only publication devoted to mollusks of the European part of the Russian Empire appeared in 1878 and is of special interest being a short overview of distribution of common species of land and freshwater Mollusca in this region, including an attempt to characterize the malacofaunas of different bioclimatic zones of Russia (tundra, taiga, steppe) [von Martens, 1878].

Though Middendorff [1851] provided a deep and detailed survey of Siberian mollusks, his study was by no means a complete description of the fauna, and there remained much work to do. The first von Martens' publication on Siberian Mollusca was devoted to fossil specimens of freshwater snails and bivalves collected on the shore of Irtysh River in vicinities of Omsk City [von Martens, 1864b]. The collector of this materials was Pyotr Semyonov (1827–1914), a great Russian traveller,



FIG. 3. *Lymnaea stagnalis* (L., 1758), a broken shell collected by Ehrenberg in the Om' River near Omsk, Western Siberia (ZMB). Scale bar 5 mm.

РИС. 3. Поврежденная раковина большого прудовика, *Lymnaea stagnalis* (L., 1758), собранная Эренбергом в реке Омь близ Омска, Западная Сибирь (ZMB). Масштаб 5 мм.

one of the first explorers of Central Asia (Fig. 2). His most famous expedition was undertaken in 1856–1857, when Semyonov explored the Tien Shan Mts. in Central Asia and became the first European geographer to reach this remote mountain country. In 1906, his surname was officially changed to Semyonov-Tian-Shansky, in commemoration of this expedition.

The fossil mollusks were collected by Semenov during his stop in Omsk on the way to Central Asia. Having studied them, von Martens [1864b] described some new taxa, including one species of freshwater bivalves that still inhabits Northern Siberia – *Sphaerium asiaticum* (von Martens, 1864).

During 1870s von Martens published a series of small papers devoted to description of several collections of Siberian continental mollusks. The first of them was gathered as early as in 1829, during Alexander von Humboldt travel through the Urals and southern Siberia [Vinarski, 2010]. Presumably, it is the oldest exactly dated collection of mollusks of Asiatic Russia survived, and it is still serves as a source of scientific information [Vinarski, Glöer, 2008]. The main body of this collection is housed in ZMB (Fig. 3); a few samples are kept in ZIN. The real collector of molluscan samples in Russia was Christian Gottfried Ehrenberg (1795–1876), the influential German zoologist who participated in von Humboldt's voyage. Ehrenberg himself did not publish on Mollusca, and his samples remained unstud-

ied till the 1870s. Von Martens identified snails and bivalves collected by Ehrenberg and published two concise reports on this subject containing a list of species with indications of their localities [von Martens, 1871a, 1875]. The second collection of Siberian mollusks was sent to Martens from Saint-Petersburg and contained a series of land and freshwater species sampled in the mouth of the Yenisei River by Friedrich Schmidt during his 1866 expedition to the mammoth carcass discovered at the source of the River Gyda [Tolmachoff, 1929]. Von Martens [1872] published a short account of this collection.

The last publication of the author on Siberian malacofauna appeared in 1877. It contained a description of several collections of shells gathered by German travellers (O. Finsch and K. von Waldburg-Zeil) in several parts of Siberia, from extreme North to Altai Mts [von Martens, 1877a].

Finally, I would like to add that von Martens is the author of two genera of Baikalian endemic snails (*Baicalia* Martens, 1876 and *Liobaicalia* Martens, 1876) appeared in his review of W. Dybowski article on Baikalian gastropods [von Martens, 1876d]. These generic names are still accepted valid [Kantor *et al.*, 2010].

The malacofauna of Central Asia was almost unknown in the middle of the 19<sup>th</sup> century as compared even with the Siberian one. There was no comprehensive works on the subject commensura-

ble with the Middendorff's [1851] account of Siberian mollusks. Von Martens should be credited as the pioneer in this field, too. The Russian travellers in Central Asia (N.A. Severtsov, A.P. Fedchenko, P.P. Semyonov and N.M. Przhevalsky were the most prominent among them) brought a large amount of zoological objects from these underexplored countries, and shells of mollusks, both terrestrial and aquatic, were sent to Western European malacologists to identify them and to describe new taxa. Some of these shells were collected within the boundaries of Russian Empire (in the so-called "Russian Turkestan"), whereas other originated from various regions of Mongolia and northwestern China. For example, several valid species of the ex-USSR terrestrial malacofauna [*Pseudonapaeus asiaticus* (von Martens, 1881), *Novisuccinea evoluta* (von Martens, 1879)] were described from Kuldja (Yining) in Northern China. However, it is sometimes difficult now to determine the exact geographic position of type localities as they were given in work of von Martens and other malacologists of the time due to vagueness of geographic information on the original labels and subsequent changes in names of geographic objects and their national identity.

Between 1881 and 1885, von Martens published a series of papers devoted to taxonomic description and zoogeographic characterization of the continental malacofauna of Central Asia. Two relatively large works [von Martens, 1874, 1882a] were among them. Significantly, the first of them [von Martens, 1874] appeared in Russian and thus represents the first malacological monograph ever published in Russian. All previous large works on Russian mollusks were written either in Latin or in German. Both monographs are standard descriptive zoological books of that time, with synonymies, morphological characterizations of shells and sometimes structures of the soft body (for example, von Martens [1874] gives some details of anatomical structures of slugs provided to him by Dr. Simroth), information on distribution and ecology of species, shell illustrations. In the first Russian book [von Martens, 1874: 40-45] a key for determination of snails of Russian Turkestan is also given.

The minor von Martens' papers on mollusks of Central Asia [1871b, 1876a, 1885] are merely species lists with occasional descriptions of new taxa and taxonomic and nomenclatorial remarks.

At last, the Caucasian provinces of the Russian Empire constituted the third region of interest for von Martens. Again, he did not travel to Caucasus himself but worked with materials collected by Russian and Western European explorers and described a plethora of new taxa, mostly terrestrial snails. The list of von Martens' publications on the subject includes at least four relatively short contri-

butions published in German [von Martens, 1876b, c, 1880, 1882b].

The mollusks of the Russian Far East were not studied by the author specially, however von Martens published several papers devoted to snails and bivalves of Japan and Korea. Certain species described by him from these countries are represented in the Russian fauna (for example, *Valvata japonica* von Martens, 1877) and thus are considered in my paper.

## Species accounts

### GASTROPODA

#### Family Amnicolidae Tryon, 1863

##### *Marstoniopsis steinii* (von Martens, 1858) (Fig. 4 A, B)

*Hydrobia steinii* von Martens, 1858: 183, Taf. V, fig. 5.

##### History of the name application:

*Bythinella steini*. — Clessin, 1884: 480, fig. 328 (shell description, distribution);

*Pseudamnicola steini*. — Westerlund, 1886: 38 (shell description, distribution);

*Paludestrina steini*. — Geyer, 1927: 167, pl. XX, figs 1, 2 (shell description, distribution, ecology);

*Amnicola steini*. — Ehrmann, 1933: 198, fig. 122 (shell description, distribution, ecology);

*Hydrobia steini*. — Zhadin, 1933: 146, fig. 124 (shell description, distribution);

*Marstoniopsis steinii*. — Mandahl-Barth, 1949: 42, 193, fig. 20 (shell description, distribution in Denmark, description of egg-capsule); Zhadin, 1952: 237, fig. 169 (shell description, distribution); Anistratenko, Stadnichenko, 1994: 154, fig. 132 (shell description, variation, distribution, ecology); Starobogatov *et al.*, 2004: 300, pl. 121, figs 1, 2 (determination key, distribution, ecology).

Type series. ZMB, No. 19578. The type series contains three syntypes mounted on a piece of cardboard. The largest of them is 2.6 mm height.

Type locality: Germany, lake Tegel between Berlin and Spandau (nowadays in Berlin City). This lake is now called Plötzensee (Ch. Zorn, pers. comm.)

Distribution: Central and Eastern Europe [Starobogatov *et al.*, 2004]. In the former USSR, it inhabits the Baltic Sea basin, upper part of the Volga basin [Starobogatov *et al.*, 2004], Zapadnyi Bug River [Anistratenko, Stadnichenko, 1994].

Remark: The Western European authors [Glöer, 2002; Welter-Schultes, 2012] regard this species as a junior synonym of *Marstoniopsis scholtzii* (Schmidt, 1856). The older malacologists [Clessin, 1884; Geyer, 1927; Ehrmann, 1933; Zhadin, 1933; Mandahl-Barth, 1949] usually used the taxonomic name *M. steinii* for designation of this species despite the fact that *M. scholtzii* has a formal priority before the von Martens' name. Westerlund [1886] regarded *M. scholtzi* as a variety of *M. steinii*.

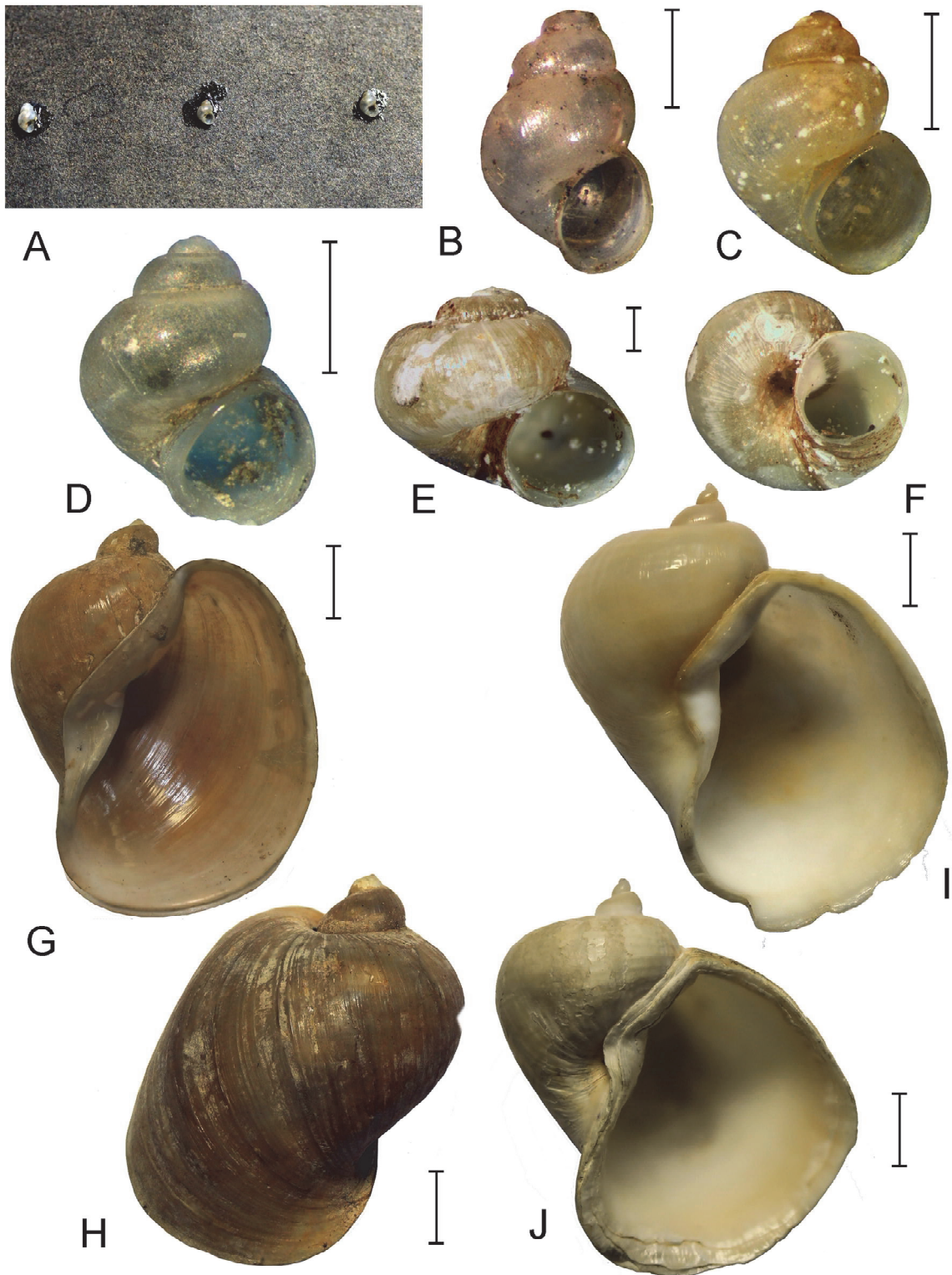


FIG. 4. Shells of syntypes of snail species described by von Martens (ZMB). **A.** *Hydrobia steinii*, a general view of the type series. **B.** *Hydrobia steinii*, one of the syntypes. **C.** *Hydrobia (Amnicola) brevicula*, the syntype. **D.** *Hydrobia (Amnicola) pallida*, one of the syntypes. **E, F.** *Valvata japonica*, a probable syntype, views from two projections. **G, H.** *Limnaea auricularia* var. *coreana*, a syntype (views from two projections). **I, J.** *Limnaeus obliquatus*, two syntypes. Scale bars: 1 mm (B–F), 5 mm (G–J).

РИС. 4. Раковины синтипов из типовых серий видов, описанных фон Мартенсом (ZMB). **A.** *Hydrobia steinii*, общий вид типовой серии. **B.** *Hydrobia steinii*, один из синтипов. **C.** *Hydrobia (Amnicola) brevicula*, синтип. **D.** *Hydrobia (Amnicola) pallida*, один из синтипов. **E, F.** *Valvata japonica*, вероятный синтип, вид сбоку и с пупка. **G, H.** *Limnaea auricularia* var. *coreana*, а синтупе (вид с передней стороны и с затылка раковины). **I, J.** *Limnaeus obliquatus*, два синтипа. Масштабные линейки: 1 мм (B–F), 5 мм (G–J).

## Family Hydrobiidae Stimpson, 1865

*Martensamnicola brevicula* (von Martens, 1874)  
(Fig. 4C)

*Hydrobia* (*Amnicola*) *brevicula* von Martens, 1874: 30-31, pl. 2, fig. 28.

## History of the name application:

*Pseudamnicola brevicula*. — Zhadin, 1933: 147, fig. 127 (shell description, distribution); Zhadin, 1952: 230, fig. 156 (shell and radula description, distribution, ecology);

*Martensamnicola brevicula*. — Kantor, Sysoev, 2005: 79 (distribution, ecology).

Type series. The only syntype is kept under No. ZMB 22484. Its shell height is 2.2 mm (Martens [1874] gives shell height equal to 2.0 mm).

Type locality: Uzbekistan, Samarkand, leg. A.P. Fedchenko (information from the syntype label). According to the original description of this species [von Martens, 1874: 30], the type series was collected in a puddle near Samarkand fortress (31.01.1869).

Distribution: Endemic of Central Asia (within the ex-USSR boundaries), known from Uzbekistan and Tajikistan [von Martens, 1874; Zhadin, 1952; Izzatullaev *et al.*, 1985].

Remark: Izzatullaev *et al.* [1985] separated *M. brevicula* along with other two species living in Central Asia into a subfamily of its own, Martensamnicolinae Izzatullaev, Sitnikova et Starobogatov, 1985. Bouchet and Rocroi [2005] regarded this taxon as a synonym of Belgrandiinae di Stefani, 1877.

*Sogdamnicola pallida* (von Martens, 1874)  
(Fig. 4D)

*Hydrobia* (*Amnicola*) *pallida* von Martens, 1874: 31-32, pl. 2, fig. 27.

## History of the name application:

*Pseudamnicola pallida*. — Zhadin, 1933: 147, fig. 128 (shell description, distribution); Zhadin, 1952: 231, fig. 157 (shell description, distribution, ecology);

*Sogdamnicola pallida*. — Izzatullaev *et al.*, 1985: 58 (shell description, reproductive morphology); Kantor, Sysoev, 2005: 80 (distribution, ecology).

Type series. ZMB No. 22486. There are 13 shells of syntypes in ZMB, the largest of them is 2.0 mm height (Martens [1874] gives another dimension – 2.3 mm).

Type locality: Uzbekistan, Zeravshan valley, a little pond in the garden in Uzgung. The original label is “Urgut-Turkest[an]”. The type series was collected by Fedchenko, 23.05.1869 [von Martens, 1874].

Distribution: Endemic of Central Asia (within the ex-USSR boundaries) [von Martens, 1874; Zhadin, 1952; Izzatullaev *et al.*, 1985].

Remark: Izzatullaev *et al.* [1985] placed *S. pal-*

*lida* into the family Horatiidae Radoman, 1973. Bouchet and Rocroi [2005] regarded this taxon as a synonym of Belgrandiinae di Stefani, 1877.

## Family Valvatidae J.E. Gray, 1840

*Cincinna japonica* (von Martens, 1877)  
(Fig. 4 E, F)

*Valvata japonica* Martens, 1877b: 116.

## History of the name application:

*Cincinna* (*Sibirovalvata*) *japonica*. — Prozorova, Starobogatov, 1998: 73, figs 6 D, E (determination key, distribution); Prozorova, Starobogatov, 1999: 51, fig. 1 A, B; fig. 2 A (shell morphology, distribution, synonymy); Starobogatov *et al.*, 2004: 278, pl. 104, figs 7-9 (determination key, distribution, ecology).

Type series. I found only two specimens of *Valvata japonica* in ZMB collection (museum number 38883), sampled in the Hakone Lake. No indication of their probable nomenclatorial status (syntypes) is given on the label, and it is unclear if these shells may be regarded as syntypes. Though their locality corresponds to the type locality of *V. japonica* given by von Martens [1877b] himself (i.e. Hakone Lake), but the original description was based on a single specimen (“nur Ein Exemplar”; von Martens, 1877b: 116) collected by Hilgendorf, whereas No. 38833 contains two specimens collected by another person, Gottsche.

The largest of the two shells from ZMB collection is 4.8 mm height.

Type locality: “Hakone-See” = Hakone (= Ashi) Lake, Honshû Island, Japan.

Distribution: Endemic of the Far East, including Japan (Honshû and Hokkaido islands) and southern Sakhalin Island [von Martens, 1877b; Prozorova, Starobogatov, 1999; Starobogatov *et al.*, 2004].

Remark: Prozorova and Starobogatov [1999] listed the species *Cincinna kizakikoensis* Fuijta et Habe, 1991 as a junior synonym of *C. japonica*.

## Family Lymnaeidae Rafinesque, 1815

*Radix* (*Radix*) *coreana* (von Martens, 1886)  
(Fig. 4 G, H)

*Limnaea auricularia* var. *coreana* Martens, 1886: 80.

## History of the name application:

*Limnaea* (*Radix*) *coreana*. — Kruglov, Starobogatov, 1989: 18, fig. 1, 18 (taxonomic position, distribution); Bogatov, Zatravkin, 1990: 112, fig. 29, B (shell description, distribution, ecology); Kruglov, Starobogatov, 1991: 128, fig. 6, 9-11 (egg-capsules); Prozorova, 1991: 84, fig. 2, 1-4 (egg-capsules); Kruglov, Starobogatov, 1993: 92, fig. 14 C (taxonomic position, distribution); Starobogatov *et al.*, 2004: 316, pl. 132, fig. 2 (determination key, distribution, ecology); Kruglov, 2005: 287, figs 177, 2; 180-181 (shell description, determination key, anatomy, egg-capsules, distribution).

Type series. ZMB, Nos. 38440 (a and b) and 55594. The type series includes the lectotype (designated by Kilijs [1967]) and ten paralectotypes. According to the original label, the type series was collected 30.10.1884 by Gottsche. The quantitative conchological characteristics of the type series is given in Table 2.

Type locality: Korea, "Changjin, Prov. Hangyöng-do".

Distribution: Far East. In Russia, the species is known from the Amur River basin, southern part of the Primorye Territory [Kruglov, Starobogatov, 1993].

*Radix (Radix) obliquata* (von Martens, 1864)  
(Fig. 4 I, J)

*Limnaeus obliquatus* von Martens, 1864a: 116, pl. 3, fig. 9-10.

History of the name application:

*Limnaea auricularia* var. *obliquata*. — Zhadin, 1933: 96, fig. 38 (shell description, distribution); Zhadin, 1952: 168, fig. 65 (shell description, distribution);

*Limnaea auricularia obliquata ampla*. — Zhadin, 1952: 168, fig. 66 (shell description, distribution);

*Limnaea (Radix) obliquata*. — Kruglov, Starobogatov, 1993: 88, fig. 13 B (taxonomic position, distribution); Prozorova, Sharyi-ool, 1999: 16 (distribution in Tuva); Kruglov, 2005: 277, figs 164, 2; 167-168 (shell description, determination key, anatomy, egg-capsules, distribution).

Type series. ZMB, No. 7164. The type series contains two syntypes. Their dimensions are as follows (in mm): 1. Whorls number 3.75; SH = 27.1; SW = 25.2; SpH = 7.3; BWH = 26.3; AH = 23.3; AW = 16.8. 2. Whorls number 4.12; SH = 28.8; SW = 25.8; SpH = 6.8; BWH = 26.4; AH = 22.4; AW = 17.6.

Type locality: Kyrgyzstan, Issyk-Kul' Lake.

Distribution: Inhabits mountainous regions of Central Asia, including Kyrgyzstan, Republic of Tuva (southern Siberia) and northern and northwestern parts of Mongolia and China [Kruglov, Starobogatov, 1993; Prozorova, Sharyi-Ool, 1999; Kruglov, 2005; Vinarski, unpublished].

Family Planorbidae Rafinesque, 1815

*Anisus (Gyraulus) japonica* (von Martens, 1867)  
(Fig. 5A)

*Planorbis compressus* var. *japonicus* von Martens, 1867: 214.

History of the name application:

*Planorbis compressus* var. *japonicus*. — von Martens, 1877b: 112 (distribution);

*Planorbis (Gyraulus) japonicus*. — Westerlund, 1887: 182 (distribution);

*Anisus (Gyraulus) japonica*. — Prozorova, 1996: 25 (distribution);

*Anisus japonica*. — Kantor, Sysoev, 2005: 213 (distribution).

Type series. ZMB, No. 8901. The type series

Table 2. Measurements of *Limnaea auricularia* var. *coreana* syntypes. Above lines – limits of variation, below the lines – means  $\pm$  standard deviations.

Табл. 2. Промеры синтипов *Limnaea auricularia* var. *coreana*. В числителе – пределы изменчивости признаков, в знаменателе – средние значения и значения среднеквадратического отклонения.

Character / index*	No. 38440 (n = 7)	No. 55594 (n = 4)
Whorls number	<u>3.5 – 3.75</u> 3.62 $\pm$ 0.11	3.50 $\pm$ 0.00
SH, mm	<u>24.8 – 29.4</u> 27.9 $\pm$ 1.5	<u>27.5 – 31.8</u> 28.9 $\pm$ 2.0
SW, mm	<u>18.2 – 23.6</u> 21.3 $\pm$ 1.7	<u>22.1 – 26.5</u> 23.7 $\pm$ 2.0
SpH, mm	<u>3.4 – 5.4</u> 4.4 $\pm$ 0.7	<u>3.3 – 7.1</u> 4.7 $\pm$ 1.7
BWH, mm	<u>22.8 – 27.3</u> 25.6 $\pm$ 1.5	<u>22.1 – 29.9</u> 25.4 $\pm$ 3.5
AH, mm	<u>20.2 – 27.4</u> 24.5 $\pm$ 2.4	<u>24.8 – 26.7</u> 25.9 $\pm$ 0.8
AW, mm	<u>14.6 – 19.8</u> 17.8 $\pm$ 1.6	<u>18.2 – 19.2</u> 18.8 $\pm$ 0.4
SW/SH	<u>0.73 – 0.80</u> 0.76 $\pm$ 0.03	<u>0.79 – 0.85</u> 0.82 $\pm$ 0.03
SpH/SH	<u>0.14 – 0.20</u> 0.16 $\pm$ 0.02	<u>0.12 – 0.22</u> 0.16 $\pm$ 0.04
BWH/SH	<u>0.90 – 0.93</u> 0.92 $\pm$ 0.01	<u>0.79 – 0.94</u> 0.88 $\pm$ 0.07
AH/SH	<u>0.80 – 0.95</u> 0.89 $\pm$ 0.05	<u>0.84 – 0.93</u> 0.90 $\pm$ 0.04
AW/AH	<u>0.70 – 0.79</u> 0.73 $\pm$ 0.03	<u>0.70 – 0.76</u> 0.73 $\pm$ 0.02

\*See **Material and methods** for abbreviations.

contains eight shells of very different size. The largest syntype (see Fig. 5A) has shell width 4.5 mm.

Type locality: Japan, vicinities of Yokohama City.

Distribution: Far East (Japan). Prozorova [1996] recorded *A. japonica* from the southern Kurile Islands. This species was described from Honshû Island, and its presence in the Kurile waterbodies is quite possible. However, in her later publication Prozorova [2003] did not list this species in the enumeration of the *Gyraulus* species of Russia, and also Starobogatov *et al.* [2004] did not mention it.

*Polypylis nitidella* (von Martens, 1877)  
(Fig. 5B)

*Planorbis nitidellus* Martens, 1877b: 112.

History of the name application:

*Polypylis (Polypylis) nitidella*. — Prozorova, 1996: 26 (distribution);

*Polypylis nitidella*. — Starobogatov *et al.*, 2004: 341, pl. 148, figs 10-12 (determination key, distribution); Kantor, Sysoev, 2005: 222 (distribution).

Type series. There are two samples of this species in ZMB. The first, No. 8900, contains two



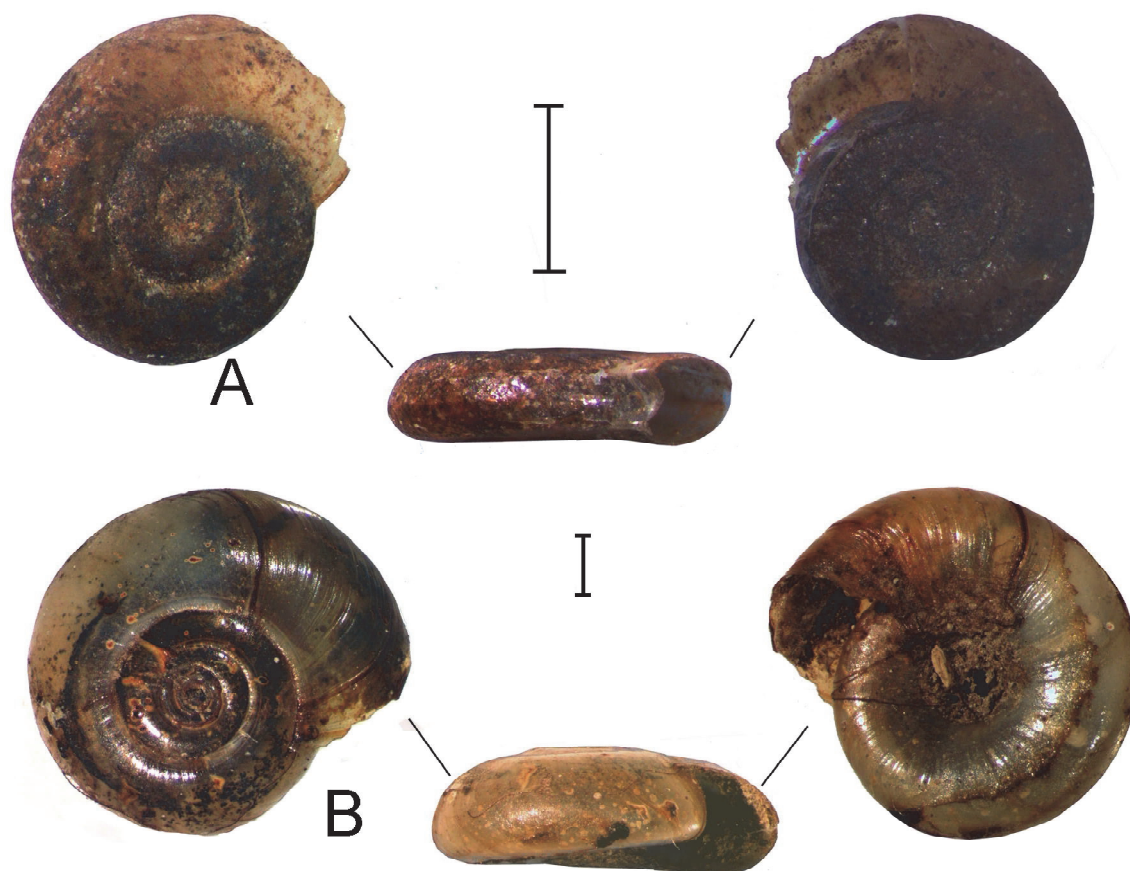


FIG. 5. Shells of syntypes of Planorbidae species described by von Martens (ZMB). **A.** *Planorbis compressus* var. *japonicus*, one of the syntypes. **B.** *Planorbis nitidellus*, one of the syntypes. Scale bars: 1 mm (B), 2 mm (A).

РИС. 5. Раковины синтипов видов Planorbidae, описанных фон Мартенсом (ZMB). **A.** *Planorbis compressus* var. *japonicus*, один из синтипов. **B.** *Planorbis nitidellus*, один из синтипов. Масштабные линейки: 1 мм (B), 2 мм (A).

syntypes collected in Yokohama. Another sample, No. 109784, consists of three syntypes collected in Mukosima. The largest of the syntypes (see Fig. 5B) is 5.6 mm width (Martens [1877] reported shell width of this species as equal to 6.0 mm).

Type locality: Japan, vicinities of Yokohama City, Mukosima and Hakodate.

Distribution: Japan (Honshû and Hokkaido Islands), Kurile Archipelago (Kunashir Island) [Prozorova, 1996].

#### BIVALVIA

Family Unionidae Rafinesque, 1820

*Buldotskia flavotincta* (von Martens, 1905)  
(Fig. 6 A, B)

*Anodonta arcaeformis* var. *flavotincta* von Martens, 1905:  
64, pl. 2, fig. 4.

History of the name application:

*Buldotskia flavotincta*. — Moskvicheva, 1973: 833, fig. 2, 7 (shell morphology, distribution); Zatravkin, Bogatov, 1987: 81, figs 15 б, 17 в, г (shell morphology, determination key, distribution); Starobogatov *et al.*, 2004: 46, pl.

36, figs 3, 4 (determination key, distribution); Kantor, Sysoev, 2005: 333 (distribution).

Type series. ZMB, Nos. 36371 and 55623. The type series contains four syntypes, the largest of which has 48.5 mm length.

Type locality: Korea, “Söul, Provinz Kyöngkwido, Keumgang bei Konju, Provinz Chhungchöngdo” [von Martens, 1905: 64].

Distribution: Far East. Known from Korea and southern part of the Primorye Territory, Russia [Starobogatov *et al.*, 2004].

Remark: According to Modell [1945], it is a subspecies of *Anodonta lauta* Martens, 1877. Graf [2007] treated this species as a synonym of *A. arcaeformis* (Heude, 1877).

*Kunashiria japonica* (Martens in Clessin, 1874)  
(Fig. 6 C, D)

*Anodonta japonica* Clessin, 1874: 144-145, pl. 47, figs. 3-4.

History of the name application:

*Kunashiria japonica*. — Zatravkin, Bogatov, 1987: 112, figs 20 e, 26 б (shell morphology, determination key, distribution); Bogatov *et al.*, 1999: 59, fig. 2 B (taxonomic posi-

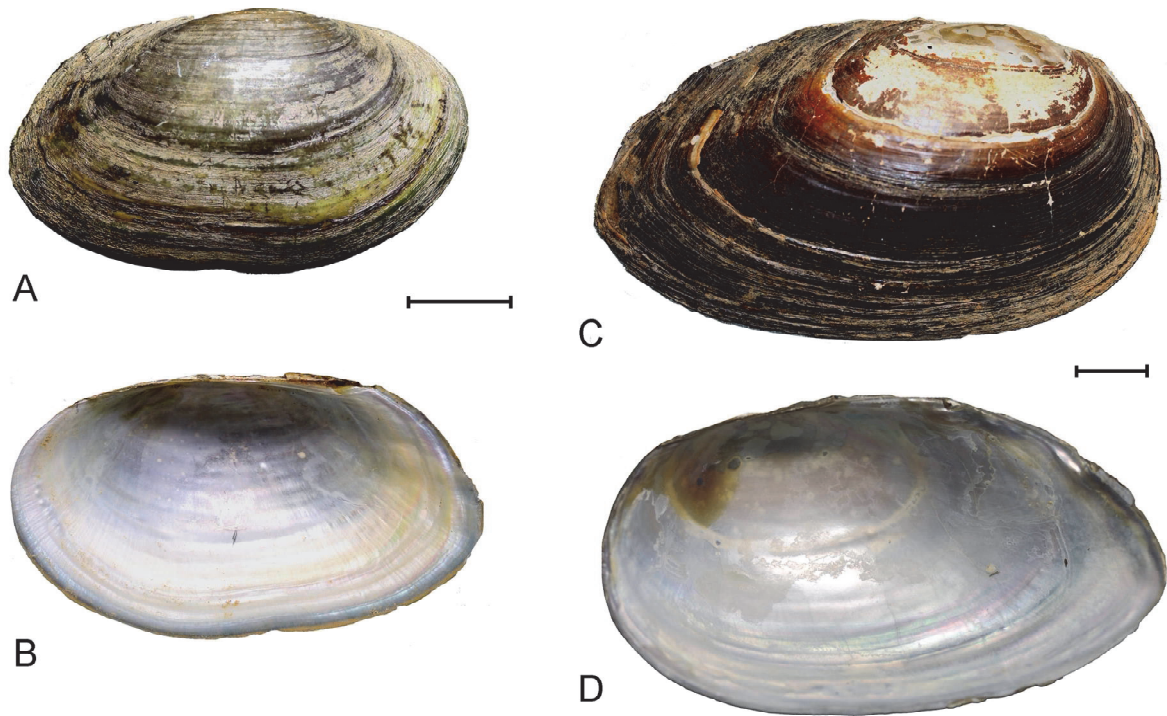


FIG. 6. Shells of syntypes of Unionidae species described by von Martens (ZMB). **A, B.** *Anodonta arcaeformis* var. *flavotincta*, a syntype, view from two projections. **C, D.** *Anodonta japonica*, a syntype, view from two projections. Scale bars 10 mm.

РИС. 6. Раковины синтипов видов семейства Unionidae, описанных фон Мартенсом. **A, B.** *Anodonta arcaeformis* var. *flavotincta*, один из синтипов, вид с внешней и внутренней сторон створки; **C, D.** *Anodonta japonica*, один из синтипов, вид с внешней и внутренней сторон створки. Масштабные линейки 10 мм.

tion, glochidia morphology); Starobogatov *et al.*, 2004: 43, pl. 31, figs 5, 6 (determination key, distribution); Kantor, Sysoev, 2005: 339 (distribution).

Type series. ZMB, No. 9093. The type series includes four intact specimens and 13 separate valves. The largest of the syntypes has 83 mm length.

Type locality: Japan, Yokohama.

Distribution: Far East: Japan, Southern Sakhalin and southern Kurile Islands [Zatravkin, Bogatov, 1987; Starobogatov *et al.*, 2004].

Remark: Graf and Cummings [2013] regarded this species as a synonym of *Sinanodonta woodiana* (Lea, 1834).

Family Cyrenidae Gray, 1840  
*Corbicula elatior* Martens, 1905  
(Fig. 7 A, B)

*Corbicula elatior* von Martens, 1905: 65, pl. 2, fig. 4.

History of the name application:

*Corbicula elatior*. — Kursalova, Starobogatov, 1971: 94 (distribution); Zatravkin, Bogatov, 1987: 127, fig. 28, д, е (shell morphology, determination key, distribution); Bogatov, Starobogatov, 1994: 150 (determination key, distribution); Starobogatov *et al.*, 2004: 51, pl. 41, figs 8, 9

(determination key, distribution); Glaubrecht *et al.*, 2007: 251, fig. 2 I (lectotype designation, shell illustration).

Type series. ZMB, Nos. 55624 (the lectotype), 38430b, 38439, 38929, and 55626. The type series includes the lectotype and 18 paralectotypes represented either by pairs of valves or separate valves [see Glaubrecht *et al.*, 2007 for details]. The lectotype dimensions are: SH 36.8 mm, SW 39.0 mm.

Type locality: Originally stated as “Provinz Kyöngsangdo, zwischen Tongnai und Kimhai. Imjingang bei Imjin, Provinz Kyöngkwido”; Martens, 1905: 65). Glaubrecht *et al.* [2007] designated the lectotype collected in Naktong River near Kimhae, Kyongsang-namdo (35°11'57" N, 128°54'00" E).

Distribution: Far East: Korea, southern part of the Primorye Territory [Starobogatov *et al.*, 2004].

*Corbicula producta* Martens, 1905  
(Fig. 7 C, D)

*Corbicula producta* von Martens, 1905: 66, pl. 2, fig. 8.

History of the name application:

*Corbicula producta*. — Kursalova, Starobogatov, 1971: 94 (distribution); Zatravkin, Bogatov, 1987: 130, figs 29, в, г (shell morphology, determination key, distribution); Bogatov, Starobogatov, 1994: 150 (determination key, distribution); Starobogatov *et al.*, 2004: 50, pl. 41, figs 1, 2

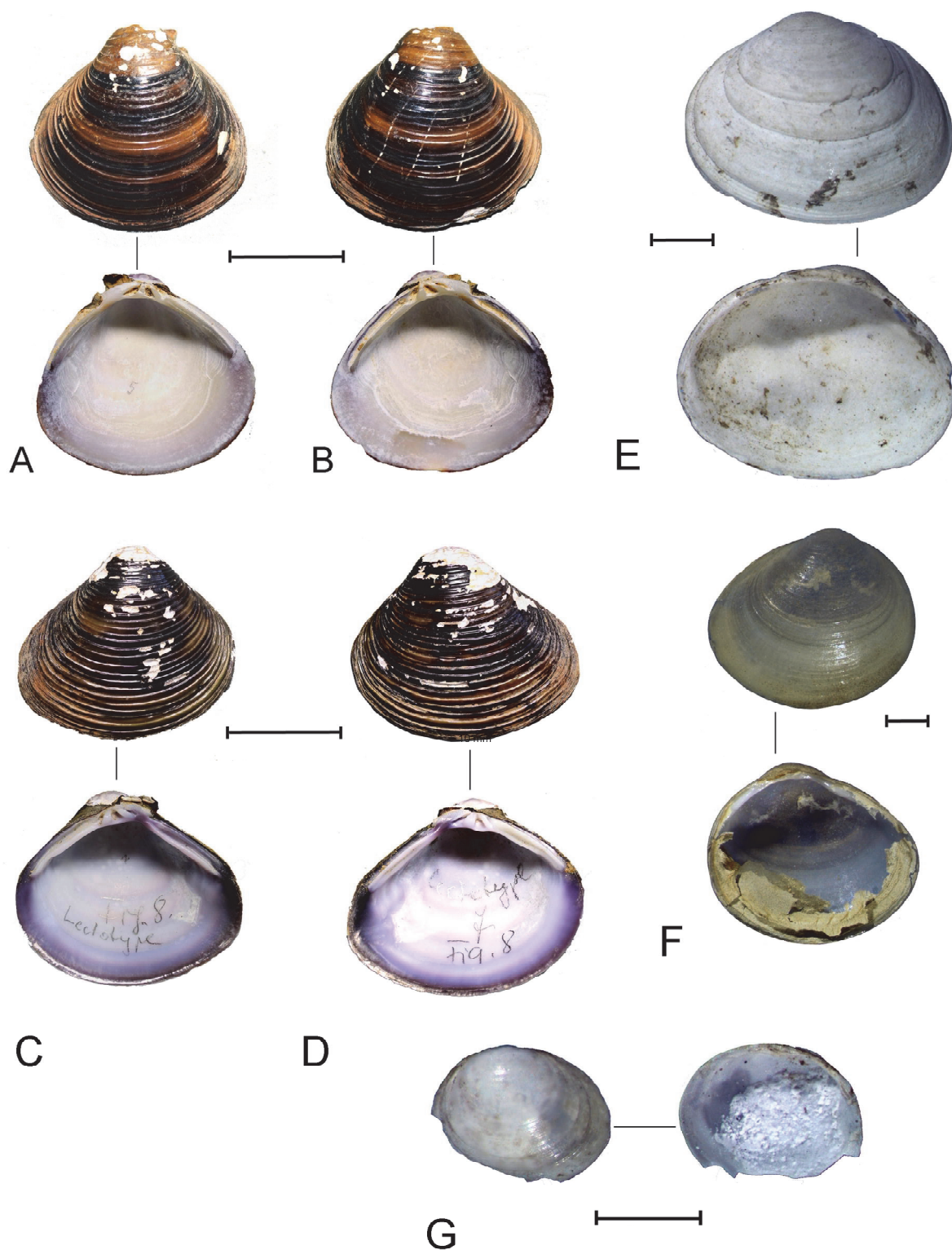


FIG. 7. Shells of type specimens of small bivalve species described by von Martens (ZMB). All shells (valves) are presented from the external and internal surfaces. **A, B.** *Corbicula elatior*, left (**A**) and right (**B**) valves of the lectotype. **C, D.** *Corbicula elatior*, left (**C**) and right (**D**) valves of the lectotype. **E.** *Cyclas asiatica*, the lectotype. **F.** *Pisidium obliquatum*, one of the syntypes. **G.** *Pisidium turanicum*, one of the syntypes. Scale bars 1 mm (C, F), 2 mm (A-E).

FIG. 7. Раковины синтипов мелких двустворчатых моллюсков, описанных фон Мартенсом (ZMB). Все раковины (створки) представлены с внешней и внутренней стороны. **A, B.** *Corbicula elatior*, левая (**A**) и правая (**B**) створки раковины лектотипа. **C, D.** *Corbicula elatior*, левая (**C**) и правая (**D**) створки раковины лектотипа. **E.** *Cyclas asiatica*, лектотип. **F.** *Pisidium obliquatum*, один из синтипов. **G.** *Pisidium turanicum*, один из синтипов. Масштабные линейки 1 мм (C, F), 2 мм (A-E).

(determination key, distribution); Glaubrecht *et al.*, 2007: 258, fig. 3 A (lectotype designation, shell illustration).

Type series. ZMB, No. 55625. The type series includes the lectotype (designated by Glaubrecht *et al.* [2007]) and four paralectotypes. The lectotype dimensions are: SH 32.1 mm, SW 37.3 mm.

Type locality: Originally stated as „Keumgang bei Kongju, Provinz Chhungchhôngdo, Korea“. According to Glaubrecht *et al.* [2007], it means South Korea: Province Ch’ungch’ong-namdo, Keum River near Kongju (36°28'N, 127°06'E).

Distribution: Far East. Known from the Primorye Territory of Russia and the Korean peninsula [Graf, Cummings, 2013].

Family Sphaeriidae Jeffreys, 1862  
*Amesoda asiatica* (von Martens, 1864)  
(Fig. 7E)

*Cyclas asiatica* von Martens, 1864b: 349, fig. 5.

History of the name application:

*Sphaerium asiaticum*. — Westerlund, 1887: 153 (distribution); Korniusshin, 2001: 85, fig. 6 (morphological description, variation, taxonomy); Korniusshin, Glaubrecht, 2001: 132, textfig, pl. 1 A (lectotype designation, taxonomy);

*Sphaerium corneum* var. *scaldianum* natio *asiaticum*. — Zhadin, 1933: 201 (distribution);

*Sphaerium scaldianum* var. *asiaticum*. — Zhadin, 1952: 322 (distribution);

*Amesoda asiatica*. — Starobogatov, Streletskaja, 1967: 246, fig. 43 (shell morphology, distribution, taxonomy);

*Amesoda* (*Asiocyclas*) *asiatica*. — Korniusshin, 1996: 82, fig. 30 A, B (shell morphology, distribution, taxonomy); Starobogatov *et al.*, 2004: 59, pl. 48, figs. 10-12 (determination key, distribution).

Type series. The lectotype (designated by Korniusshin and Glaubrecht [2001]) – ZMB No. 102816, a fossil (subfossil?) specimen with shell width equal to 9.2 mm.

Type locality: Russia, Omsk Region, bank of the Irtysh River near Omsk City (“am Ufer des Irtyshflusses bei Omsk”).

Distribution: Siberia eastward to the Kolyma River basin; Pechora River basin [Korniusshin, 2001].

Remark: The ex-USSR authors placed this species into the genus *Amesoda* [Starobogatov, Streletskaja, 1967; Starobogatov *et al.*, 2004]. Korniusshin and Glaubrecht [2001: 133] “found the reason for its assignment to *Amesoda* insufficient”. They hypothesized that *Sphaerium asiaticum* is a Siberian vicariant of *Sph. solidum* (Normand, 1844).

Family Euglesidae Pirogov et Starobogatov, 1974  
*Euglesa obliquata* (Clessin in Martens, 1874)  
(Fig. 7F)

*Pisidium obliquatum* von Martens, 1874: 36-37, pl. 3, fig. 31.

History of the name application:

*Euglesa* (*Casertiana*) *obliquata*. — Stadnichenko, 1984: 324,

fig. 114 (shell morphology, distribution, taxonomy, ecology); Izzatullaev, Korniusshin, 1993: 28 (distribution); Korniusshin, 1996: 110, fig. 20 E, H (shell morphology, distribution, taxonomy); Starobogatov *et al.*, 2004: 72, pl. 72, figs 1-3 (distribution);

*Pisidium obliquatum*. — Korniusshin, Glaubrecht, 2001: 142 (taxonomy, nomenclature).

Type series. ZMB, No. 22489. The type series contains seven syntypes. Two other syntypes are kept in the Zoological Museum of the Moscow State University [fide Korniusshin, Glaubrecht, 2001]. One of the syntypes from ZMB collection was once selected by Kuiper to become the lectotype of *Pisidium obliquatum*, however Kuiper did not formally designate it [Korniusshin, Glaubrecht, 2001]. This specimen illustrated here (see Fig. 7F) is 5.3 mm width.

Type locality: Uzbekistan (?), Zeravshan River valley (“aquas prope Djam in valle Sarafschan”; von Martens, 1874: 36).

Distribution: Known from waterbodies of the European part of Russia, Ukraine as well as from Central Asia (within the ex-USSR boundaries) [Stadnichenko, 1984; Izzatullaev, Korniusshin, 1993; Starobogatov *et al.*, 2004].

Remark: The ex-USSR authors placed this species into the nominative subgenus of the genus *Euglesa* Leach in Jenyns, 1832, whereas their Western European colleagues usually classified all taxa of minute freshwater bivalves within the genus *Pisidium* C. Pfeiffer, 1821 sensu lato [Falkner *et al.*, 2001; Welter-Schultes, 2012]. Woodward [1913] as well as Graf and Cummings [2013] considered *Pisidium obliquatum* as a junior synonym of *P. casertanum* (Poli, 1791).

*Pseudeupera turanica* (Clessin in Martens, 1874)  
(Fig. 7G)

*Pisidium turanicum* von Martens, 1874: 38-39, Taf. 3, fig. 34.

History of the name application:

*Euglesa* (*Cyclocalyx*) *turanica*. — Korniusshin, 1996: 119 (distribution, taxonomy);

*Pisidium turanicum*. — Korniusshin, Glaubrecht, 2001: 148 (taxonomy, nomenclature);

*Pseudeupera turanica*. — Kantor, Sysoev, 2005: 385 (distribution).

Type series. ZMB, No. 22491. The only syntype is represented by two disconnected valves one of which is completely broken. Another valve (illustrated here) is almost intact; its width is 1.8 mm.

Type locality: Uzbekistan (?), Durmankul’ Lake in the floodplain of the Zeravshan River.

Distribution: Known from waterbodies of Central Asia (within the ex-USSR boundaries) [Kantor *et al.*, 2010].

Remark: Kuiper [1987] considered this species as a synonym of *Pisidium obtusale* (Lamarck, 1818).

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Вклад Эдуарда фон Мартенса в познание континентальной малакофауны России (с изучением типовых материалов по водным видам, принимаемым российскими систематиками)

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**РЕЗЮМЕ.** Эдуард фон Мартенс (1831–1904) – выдающийся немецкий малаколог 19 века, внесший большой вклад в познание систематики и зоогеографии различных групп моллюсков и описавший множество таксонов родового и видового ранга. Типовые материалы описанных им видов хранятся ныне в Берлинском музее естественной истории (Museum für Naturkunde). В статье рассматривается роль фон Мартенса как исследователя континентальных моллюсков (двустворчатых и брюхоногих) бывшей Российской Империи. Хотя сам фон Мартенс в России никогда не был, он имел возможность изучать многочисленные сборы моллюсков, предоставленные ему российскими и немецкими путешественниками, что сделало его одним из выдающихся исследователей российской малакофауны своего времени. Большинство из его работ в этой области посвящено малакофауне слабоизученных тогда регионов Российской Империи (Сибирь, Русский Туркестан, Кавказ). В настоящее время российскими малакологами признаются валидными не менее 15 видов моллюсков, описанных фон Мартенсом. В статье приводятся очерки по каждому из этих видов, включая изображения типовых экземпляров (синтипы, лектотипы), замечания о распространении, таксономическом положении и номенклатуре этих таксонов.

