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Type materials of freshwater gastropod species described by C.A. Westerlund and accepted in current malacological taxonomy: a taxonomic and nomenclatorial study

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ABSTRACT. Carl Agardh Westerlund (1831–1908) was a prominent Swedish malacologist, who studied taxonomy and distribution of continental molluscs (terrestrial and freshwater). He established a number of new taxa, some of them are still accepted as valid. In this study, we provide information on type materials of 41 species of freshwater snails introduced by Westerlund and accepted in the current Russian taxonomy. The study is based on examination of materials from original Westerlund's collection dispersed now among three large scientific institutions (Göteborgs Naturhistorska Museum, Swedish Museum of Natural History, and Zoological Institute of the Russian Academy of Sciences). For each species an account containing all relevant information on its type series is given. Taxonomic and nomenclatorial notes are also presented. For the majority of taxa, shells of type specimens are illustrated. The lectotypes for *Limnaea truncatula* var. *sibirica* Westerlund 1885, *Planorbis dispar* Westerlund 1871, *Planorbis concinnus* Westerlund 1881, *Planorbis stroemi* Westerlund 1881 and *Physa sibirica* Westerlund 1881 as well as the neotype for *Planorbis borealis* Lovén in Westerlund, 1875 are designated here.

Introduction

Carl Agardh Westerlund (1831–1908) was a prominent Swedish malacologist of the XIXth century, who studied both terrestrial and freshwater taxa of mollusks. Perhaps, the most valuable taxonomic work of Westerlund is his basic monograph "Fauna der in der Paläarktischen Region (Europa, Kaukasien, Sibirien, Turan, Persien, Kurdistan, Armenien, Mesopotamien, Kleinasien, Syrien, Arabien, Egypten, Tripolis, Tunesien, Algerien und Marocco) lebenden Binnenconchylien" published in several volumes between 1884 and 1890. It contains short descriptions (in German) of several thousand species and varieties of continental snails and bivalves, including a number of newly described taxa. Besides, Westerlund is known as an author of nine other taxonomic monographs devoted to description of regional malacofaunas of the Palearctic region. The geographic scope of these monographs varies from Greece [Westerlund, Blanc, 1879] to Siberia [Westerlund, 1877], with a special accent on countries of Scandinavia [Westerlund, 1865, 1873, 1897a and others]. Being a prolific author, Westerlund introduced a number of taxonomic names, ranging in their ranks from variety to family. Most of these names, however, are recognized now as merely synonyms of earlier described taxa. Some other of the taxonomic names introduced by Westerlund are still in active use though malacologists of Western Europe and Russia accept drastically different number of taxa as valid. For example, Falkner *et al.* [2001] recognize only three of the taxonomic names introduced by Westerlund as valid, whereas their Russian colleagues include as many as 41 such species in their lists (see Table 1).

The aim of this paper is to present a full account on type materials of species of freshwater gastropods described by Westerlund that are accepted in the current malacological taxonomy (excluding those not living within the former USSR territory). We give illustrations of most type specimens as well as short accounts on the species' taxonomic position, distribution and synonymy. The content and current position of the type series are provided as well. In some cases, lectotypes and neotypes of certain taxa are established here. A special attention was paid to the clarification of geographic positions of

Table 1. List of Westerlund's taxa of freshwater snails recognized as valid in current malacological taxonomy

Таблица 1. Список таксонов пресноводных гастропод, описанных К.А. Вестерлюндом и принятых в современной малакологической систематике

Westerlund's original taxonomic name	Source of original description	Taxon name in the Western European systematics [Falkner *et al*., 2001]	Taxon name in the Russian systematics [Kantor *et al*., 2010]
Paludinella pupula	Westerlund, 1886	*Graziana pupula*	Not living in the former USSR
Paludinella cazioti	Westerlund, 1890	*Belgrandia cazioti*	Not living in the former USSR
Baicalia nodosa	Westerlund, 1897b	Not listed	"*Parajuga*" *nodosa*
Bithynia socialis	Westerlund, 1886	Not accepted	*Paraelona socialis*
Bithynia servainiana var. *caspica*	Westerlund, 1902	Not listed	*Allocinma caspica*
Bithynia caerulans	Westerlund, 1896	Not listed	*Boreoelona caerulans caerulans*
Bithynia troschelii var. *sibirica*	Westerlund, 1886	Not listed	*Boreoelona sibirica*
Nematurella marginata	Westerlund, 1902	Not listed	*Pyrgula marginata*
Lithoglyphus naticoides var. *berolinensis*	Westerlund, 1886	Not accepted	*Lithoglyphus naticoides berolinensis*
Valvata aliena	Westerlund, 1877	Not listed	*Cincinna aliena*
Valvata ambigua	Westerlund, 1873	Not accepted	*Cincinna ambigua*
Valvata confusa	Westerlund, 1897b	Not listed	*Cincinna confusa*
Valvata discors	Westerlund, 1886	Not accepted	*Cincinna discors*
Valvata frigida	Westerlund, 1873	Not accepted	*Cincinna frigida*
Valvata lilljeborgi	Westerlund, 1897a	Not accepted	*Cincinna lilljeborgi*
Valvata mergella	Westerlund, 1883	Not listed	*Cincinna mergella*
Valvata nana	Westerlund, 1886	Not accepted	*Cincinna nana*
Limnaea ovata var. *aberrans*	Westerlund, 1897b	Not listed	*Lymnaea aberrans*
Limnaea glabra var. *clavata*	Westerlund, 1885a	Not accepted	*Lymnaea clavata*
Limnaea palustris var. *liogyra*	Westerlund, 1897b	Not listed	*Lymnaea liogyra*
Limnaea taurica var. *pachyta*	Westerlund, 1885a	Not accepted	*Lymnaea pachyta*
Limnaea truncatula var. *sibirica*	Westerlund, 1885a	Not listed	*Lymnaea sibirica*
Limnaea palustris var. *terebra*	Westerlund, 1885b	Not listed	*Lymnaea terebra terebra*
Limnaea peregra var. *torquilla*	Westerlund, 1877	Not listed	*Lymnaea torquilla*
Planorbis corneus var. *pinguis*	Westerlund, 1885b	Not accepted	*Planorbarius pinguis*
Planorbis contortus var. *labiatus*	Westerlund, 1875	Not accepted	*Anisus agardhi* Starobogatov in Prozorova, 2003
Planorbis charteus var. *bavaricus*	Westerlund, 1885a	Not accepted	*Anisus bavaricus*
Planorbis borealis	Westerlund, 1875	Not accepted	*Anisus borealis*
Planorbis vortex var. *carinea*	Westerlund, 1897b	Not accepted	*Anisus carinea*
Planorbis centrifugus	Westerlund, 1897b	Not listed	*Anisus centrifugus*
Planorbis concinnus	Westerlund, 1881	Not accepted	*Anisus concinnus*
Planorbis correctus	Westerlund, 1897a	Not accepted	*Anisus correctus*
Planorbis dispar	Westerlund, 1871	Not accepted	*Anisus dispar*
Planorbis illibatus	Westerlund, 1883	Not listed	*Anisus illibatus*
Planorbis infraliratus	Westerlund, 1876	Not listed	*Anisus infraliratus*
Planorbis kamtschaticus	Westerlund, 1877	Not listed	*Anisus kamtschaticus*
Planorbis strömi	Westerlund, 1881	Not accepted	*Anisus stroemi*
Planorbis riparius	Westerlund, 1865	*Gyraulus riparius*	*Choanomphalus riparius*
Planorbis clessini	Westerlund, 1873	Not accepted	*Segmentina clessini*
Planorbis nitidus var. *molytes*	Westerlund, 1885	Not accepted	*Segmentina molytes*
Planorbis nitidus var. *oelandicus*	Westerlund, 1885	Not accepted	*Segmentina oelandica*
Physa (?) *aenigma*	Westerlund, 1877	Not listed	*Sibirenauta aenigma*
Physa sibirica	Westerlund, 1877	Not listed	*Sibirenauta sibirica*

loci typici of the Westerlund species and their correct spellings.

For Russian taxonomists, examination of the Westerlund type collection has a specific significance. As Sitnikova *et al.* [2012] mention, till 1990s Russian malacologists were almost unable to study type series of molluscan species kept in the foreign museum collections which led to numerous resurrections of older taxonomic names (introduced by Bourguignat, Clessin, Servain, Westerlund and other European authors) without inspection of their type materials. Inevitably, it was a cause of serious discrepancies and taxonomic errors [see Vinarski, Glöer, 2009; Sitnikova *et al.*, 2012]. This publication of type materials of species introduced by Westerlund and accepted in the current malacologi-

cal taxonomy [Falkner *et al.*, 2001; Starobogatov *et al.*, 2004; Kantor, Sysoev, 2005; Kantor *et al.*, 2010] will be helpful for further clarification of their systematic position and nomenclature. In a sense, this work is a continuation of an earlier paper by Sitnikova *et al.* [2012], where the type materials of some species described by J.-R. Bourguignat are presented.

Brief history of the Westerlund's malacological collection

Like many of leading conchologists of his time, Westerlund kept a private shell collection where the type materials of his taxa had been placed. However, being a happy father of several daughters, Westerlund was obliged to find money to provide dowries for each of them. That's why he sold small parts of this collection to several museums, including those situated in Stockholm, Lund, Dublin, Glasgow and Sankt-Petersburg [Dance, 1986; Vinarski, 2010]. However, the main part of the private Westerlund's collection was sold to the Göteborgs Naturhistoriska Museum (Gothenburg, Sweden) as late as in 1901 and is still kept there. This is the largest and most important part of the collection from the nomenclatorial point of view. The parts of the collection housed in Swedish Museum of Natural History (Stockholm, Sweden) and Zoological Institute of the Russian Academy of Sciences (St.-Petersburg, Russia) also contain some type materials of several taxa described by Westerlund. We were able to study the parts of the Westerlund collection housed in all three museums mentioned above and, thus, to gather all information concerning the type materials of his taxa.

The taxonomical and nomenclatorial study of Westerlund's taxa is rather difficult due to the fact that the author did not establish types specimens for the taxa he described. Moreover, the volume and content of type series of Westerlund's species and varieties are often not clear. In Westerlund's collection, one box may contain a lot of samples labeled as belonging to the same species, though some of these samples obviously had been added several years after the species' original description. More confusion is added by the fact that Westerlund used several types of labels for arrangement of shells in his collection, and one of these types bear inscription "Collectio Molluscorum Typica" (Fig. 1). Not rarely, these "type" labels are attached to specimens of species not described by Westerlund himself. Most probably, the author designated as "types" reference samples of taxa described by other malacologists and used them for comparative purposes. Obviously, the syntypes from such samples have equal nomenclatorial value with those from other samples, but we consider specimens

FIG. 1. Westerlund's original label with inscription "Collectio Molluscorum Typica".

РИС. 1. Оригинальная этикетка из коллекции Вестерлюнда с надписью "Collectio Molluscorum Typica".

from the "Collectio typica" as more appropriate candidates for the selection of lectotypes.

In this situation, one may distinguish two situations concerning materials from the original Westerlund collection:

1. 'Type series". It includes all samples of a given taxon described by Westerlund that were collected from the type locality as it is stated in the original publication. For example, materials of the species *Bithynia socialis* Westerlund, 1886 in the Westerlund original collection include seven specimens (empty shells) collected in "Sic[ilien], Oreto bei Palermo". It coincides completely with the type locality as it is stated in the original description [Westerlund, 1886: 19], therefore we consider these six shells as the type series (a set of syntypes) of this taxon.

It should be noted here, that in some cases the original type series is scattered now among two or three museums. For instance, the type series of the species *Planorbis concinnus* Westerlund, 1881 is divided among three collections (Gothenburg, Stockholm, Sankt-Petersburg). All shells of the type series have the same label ("Ronneby", Sweden) and, thus, possess the equal nomenclatorial status being syntypes of this species.

2. "Hypodigm". This term was coined by Simpson [1940] for designation of a totality of specimens used by a given taxonomist to establish a new species (subspecies, variety) even if he did designate none of them as a nomenclatorial type. According to this author, "all the specimens used by the author of a species as his basis for inference, and this should mean all the specimens that he referred to the species, constitute his hypodigm of that species" [Simpson, 1940: 418]. Hypodigm is wider than type series as it may comprise specimens that were determined by the author as belonging to a given taxon after its description was pub-

lished. Thus, a type series is a part of a hypodigm but has more importance in the nomenclatorial sense and constitutes a core of a given hypodigm.

In all cases when designation of a lectotype or a neotype was found necessary, we tried to select a specimen from type series, not from other part of the hypodigm.

Taxonomic account

The species accounts given below contain information on type materials of all Westerlund's taxa considered as valid in the current Russian malacology [Starobogatov *et al.*, 2004; Kantor, Sysoev, 2005; Kantor *et al.*, 2010]. Taxonomy and nomenclature are given according to Kantor and Sysoev [2005]. The accounts on species whose type materials are probably lost are brief and contain only references to literary sources and distribution data without taxonomic and nomenclatorial remarks.

Abbreviations: AN – accession number; GNM – Göteborgs Naturhistoriska Museét; ICZN – International Code of Zoological Nomenclature (fourth edition); SMNH – Swedish Museum of Natural History, Stockholm; ZIN – Zoological Institute RAS.

Abbreviations for standard shell dimensions (two latter are available for discoidal shells only): SH – shell height, SW – shell width; SpH – spire height; BWH – body whorl height; AH – aperture height; AW – aperture width; IWD_a – inner whorls diameter from the apical side; WLW_a – width of the last whorl. For measurement scheme see Andreeva *et al.* [2010].

Family Pachychilidae P. Fischer et Crosse, 1892

1. *"Parajuga" nodosa* (Westerlund, 1897) – not illustrated.

Baicalia (Maackia) nodosa Westerlund, 1897b: 128.

History of the name application:

– *Juga* (*Hua*) *nodosa* — Bogatov, Zatravkin, 1990: 66, fig. 17, в (shell description, distribution, ecology);
– *Parajuga nodosa* — Starobogatov *et al.*, 2004: 282, plate 106, fig. 10 (determination key, distribution);
– *"Parajuga nodosa"* — Kantor, Sysoev, 2005: 48 (synonymy, distribution).

Type locality: "Sibirien. Fluss Argunj" (Siberia, Argun' River) [Westerlund, 1897b: 128].

Type series. Westerlund [1897b] stated that this species was established on the basis of a single shell collected in the Argun' River (right tributary of the Amur River). The current placement of this specimen is unknown [Kantor *et al.*, 2010]. It is absent in the SMNH and GNM collections and, most probably, is lost.

Distribution: entire Amur basin except for Amgun and upper reaches of Zeya [Kantor *et al.*, 2010].

Family Bithyniidae Gray, 1857

2. *Alocinma caspica* (Westerlund, 1902) – Fig. 2, C.

Bythinia (*Digycidum*) *servainiana* var. *caspica* Westerlund, 1902: 45.

History of the name application:

– *Alocinma caspica* — Beriozkina *et al.*, 1995: 36, fig. 5 F (shell description, distribution);
– *Alocinma caspica* — Kantor, Sysoev, 2005: 75 (taxonomy, distribution).

Type locality: "Kaspisches Meer an der Ostseite" (eastern part of the Caspian See) [Westerlund, 1902: 45]. Beriozkina *et al.* [1995] contend that this taxon was described from the vicinity of Krasnovodsk (Turkmenia).

Type series. There is a single specimen of *Bythinia* (*Digycidum*) *servainiana* var. *caspica* in GNM (AN 4312). It was illustrated by Beriozkina *et al.* [1995, fig. 5 F], who stated it is the "holotype", however, according to article 73.1.2 ICZN, such statement is defensible only if it is "stated or implied in the original publication" that the original description was based on a single specimen. Actually, the original description text [Westerlund, 1902: 45] neither states nor implies that the taxon name is based on a single specimen. Besides, it is labeled as "Mare Casp[icum] australe" (southern Sea of Caspian) that does not coincide exactly with the locus typicus declared by Westerlund himself (east part of the Caspian Sea). It is obvious, though, that Krasnovodsk is situated in approximately south-eastern corner of this large lake, and, thus, there is no formal objection to consider this specimen to origin from the type locality. Thus, the nomenclatorial status of this specimen is unclear.

Distribution: probably lives in waterbodies of Bolshoi Balkhan (Turkmenistan) [Kantor *et al.*, 2010].

РИС. 2. A-B. *Bithynia socialis*, синтипы ("Sic[ilien], Oreto bei Palermo"; A – GNM; B – SMNH). C. *Bithynia servainiana* var. *caspica*, синтип ("Mare Casp[icum] australe"; GNM). D. *Bithynia caerulans*, раковина из состава гиподигмы ("Stadt Zepsamus"; GNM). E. *Bithynia troscheli* var. *sibirica*, раковина из состава гиподигмы ("Kungur"; GNM). F. *Nematurella marginata*, синтип, ошибочно этикетированный как лектотип ("Mare Casp[icum] australe", GNM). G. *Lithoglyphus naticoides* var. *berolinensis*, паралектотип ("Berlin-Spandauer. Schiffahrts-Canal bei Plötzensee nächst Berlin"; GNM). H. *Valvata aliena*, паралектотип ("Jenissei, Nischnij Inbatsk"; GNM). I. *Valvata ambigua*, синтип ("Sverige vid Göteborg"; Museum für Naturkunde Berlin). Масштабная линейка 2 мм.

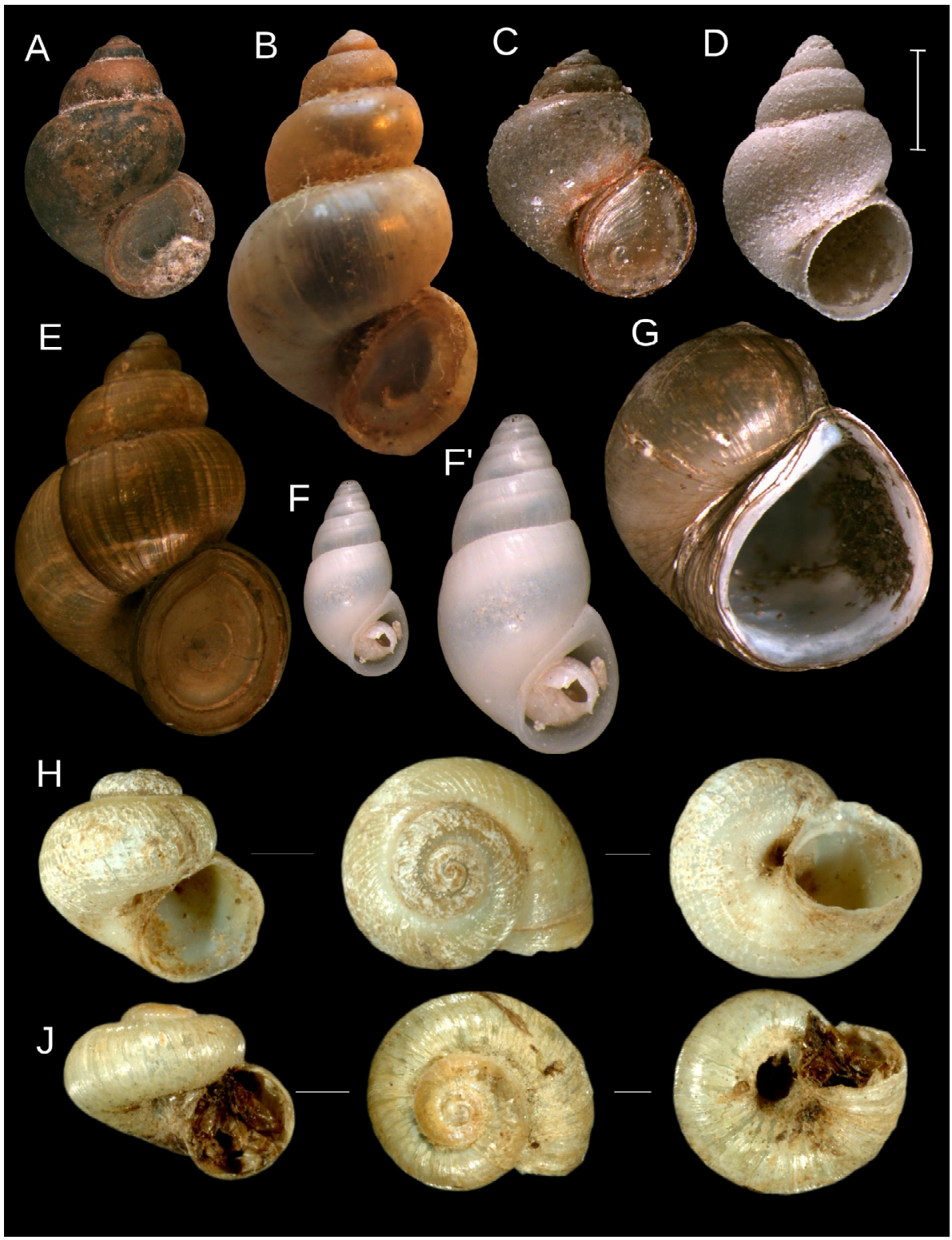

FIG. 2. A-B. *Bithynia socialis*, syntypes ("Sic[ilien], Oreto bei Palermo"; A – GNM; B – SMNH). C. *Bithynia servainiana* var. *caspica*, syntype ("Mare Casp[icum] australe"; GNM). D. *Bithynia caerulans*, a shell from the hypodigm ("Stadt Zepsamus"; GNM). E. *Bithynia troscheli* var. *sibirica*, a shell from the hypodigm ("Kungur"; GNM). F. *Nematurella marginata*, syntype, erroneously labelled as lectotype ("Mare Casp[icum] australe", GNM). G. *Lithoglyphus naticoides* var. *berolinensis*, paralectotype ("Berlin-Spandauer. Schiffahrts-Canal bei Plötzensee nächst Berlin"; GNM). H. *Valvata aliena*, paralectotype ("Jenissei, Nischnij Inbatsk"; GNM). I. *Valvata ambigua*, syntype ("Sverige vid Göteborg"; Museum für Naturkunde Berlin). Scale bars 2 mm.

3. *Boreoelona caerulans caerulans* (Westerlund, 1896) – Fig. 2, D.

Bithynia (*Elona*) *caerulans* Westerlund, 1896: 197.

History of the name application:

– *Bithynia caerulans* — Zhadin, 1952: 249 (shell description, distribution);
– *Boreoelona caerulans* — Izzatullaev, 1982: 339 (taxonomy);
– *Bithynia caerulans* — Kantor, Sysoev, 2005: 73 (taxonomy, distribution).

Type locality: "Dshungarei. Nördliches Ufer von Balchasch nahe Ajagus" (Dzungaria, northern shore of the Balkhash Lake near Ajagus") [Westerlund, 1896: 197].

Type series. According to the hand-written catalogue of ZIN collection, it contains 5 specimens from the type locality of *Bithynia caerulans* determined by Westerlund himself. However, we failed to find these specimens in the ZIN type collection (January of 2013).

Hypodigm. Includes the type series and a single specimen labeled as "Stadt Zepsamus" (unknown locality) housed in GNM (AN 4358). The inscription on the label indicates that this shell was obtained from the Sankt-Petersburg Museum.

Distribution: Balkhash Lake [Zhadin, 1952].

4. *Boreoelona sibirica* (Westerlund, 1886) – Fig. 2, E.

Bithynia (*Elona*) *troscheli* var. *sibirica* Westerlund, 1886: 18.

History of the name application:

– *Bithynia* (*Boreoelona*) *sibirica* — Starobogatov, Streletzkaja, 1967: 227, fig. 8 (shell illustration, taxonomy, distribution);
– *Boreoelona sibirica* — Bogatov, Zatravkin, 1990: 54, fig. 14, д (shell description, distribution, ecology);
– *Boreoelona sibirica* — Starobogatov *et al.*, 2004: 290, pl. 112, fig. 3-4 (determination key, distribution);
– *Boreoelona sibirica* — Lazutkina *et al.*, 2009: 116, fig. 1-4 (species redescription, taxonomy, distribution);
– *Boreoelona sibirica* — Lazutkina *et al*., 2010: 104, fig. 1-2 (shell description, taxonomy, distribution).

Type locality: "Sibirien" [Westerlund, 1886: 18]. As the original description was based on the re-examination of *Bithynia inflata* sensu Westerlund, 1877, the type locality of *Bithynia troscheli* var. *sibirica* probably should be cited as "Jenissei, Worogova Selo, ...(60 50')" (Yenisei river, Vorogova vilage) [see below].

Type series. The determination of the type locality and the content of the type series of *Bithynia troscheli* var. *sibirica* is difficult. Westerlund [1886] introduced this taxonomic name for designation of *Bithynia inflata* Hansen, 1845 sensu Westerlund, 1877 (non Villa et Villa, 1841) collected in "Jenissei, Worogowa Selo" [Westerlund, 1877: 64]. Starobogatov and Streletzkaja [1967] considered this locality as the locus typicus of *B. sibirica*. Lazutkina *et al.* [2009] could not locate current position of specimens of *B. sibirica* collected in Worogowa and considered two specimens from "Kungur, Siberia" housed in SMNH (AN 6150) as the syntypes (actually, there is one more specimen from Kungur in GNM, AN 4337). Formally, its sampling site corresponds to the type locality stated in the original description [Westerlund, 1886]: "Sibirien", but actually these specimens were received by Westerlund between 1896 and 1898 [Lazutkina *et al.*, 2009] and could not have be used for description of *B. troscheli* var. *sibirica*. Thus, their status as syntypes is not justified and it seems to be more correct to treat the samples listed above as *hypodigm,* not as the "true" type series of *B. troscheli* var. *sibirica*. In addition, we found two more samples of *Bithynia troscheli* var. *sibirica* from the Westerlund's hypodigm in GNM, SMNH and ZIN (both overlooked by Lazutkina *et al.*, 2009):

1. "Turukhansk" (Eastern Siberia, Krasnoyarsk Region) – 10 specimens in ZIN, AN 1, 2 specimens in GNM.

2. "Semipalatinsk" (Eastern Kazakhstan) – 2 specimens in GNM, AN 4337.

Along with the sample from Kungur, these samples form the hypodigm of *Bithynia troscheli* var. *sibirica*. The shells collected in Worogowa are absent in all malacological collections available [Lazutkina *et al.*, 2009], and, thus, the type series is lost.

Dimensions (in mm) of the largest specimen from Kungur at 4.75 whorls: SH = 10.4; SW = 6.9; SpH = 6.3; BWH = 7.5; AH = 4.7; AW = 3.6.

Distribution: Urals, Siberia, north part of the Far East eastwards to Kamchatka Peninsula [Lazutkina *et al.*, 2009].

5. *Paraelona socialis* (Westerlund, 1886) – Fig. 2, A-B.

Bithynia (*Elona*) *socialis* Westerlund, 1886: 19.

History of the name application:

– *Bithynia socialis* — Kobelt, 1892: 68, Taf. CXXXVII, fig. 863 (shell description);
– *Bithynia socialis* — Locard, 1894: 87, pl. VI, fig. 17 (shell illustration);
– *Paraelona socialis* — Beriozkina *et al.*, 1995: 36, fig. 4D (differential diagnosis, taxonomy, distribution);
– *Paraelona socialis* — Andreeva, Abakumova, 2003: 139, fig. 1, A (shell description, distribution);
– *Paraelona socialis* — Starobogatov *et al.*, 2004: 288, pl. 110, fig. 9 (determination key, distribution);
– *Paraelona socialis* — Kantor, Sysoev, 2005: 74 (synonymy, distribution).

Type locality: "Sicilien, Oreto bei Palermo" [Westerlund, 1886: 19].

Type series. Consists of 7 syntypes collected in the locus typicus. 6 of them are housed in GNM (AN 4341), and a single specimen in SMNH (AN 13:104; see Fig. 1, B).

Dimensions (in mm) of the largest of the syntypes (at 4.5 whorls): SH = 8.5; SW = 5.4; SpH = 5.1; BWH = 6.0; AH = 3.4; AW = 3.1.

Distribution: Southern Europe, lower Ob basin waterbodies, northern and western Kazakhstan [Kantor *et al.*, 2010].

Remark. Shells from the type series are sharply different in relative height of spire (see Fig. 1, A, B) and, probably, are not conspecific. Furthermore, a special study is needed to reveal, whether this species with the type locality situated in Sicily really reaches Siberia.

Family Hydrobiidae Stimpson, 1865
Subfamily Pyrgulinae Brusina, 1882

6. *Pyrgula marginata* (Westerlund, 1902) – Fig. 2, F.

Nematurella marginata Westerlund, 1902: 45.

History of the name application:

– *Pyrgula marginata* — Logvinenko, Starobogatov, 1968: 366, fig. 7 (shell description and illustration, distribution);
– *Pyrgula marginata* — Kantor, Sysoev, 2005: 74 (taxonomy, distribution).

Type locality: "Kaspisches Meer bei Krasnojarsk" (sic!). This is obviously erroneous, most probably, Krasnovodsk (now Turkmenbashi) City in Turkmenistan is meant.

Type series. There are ten syntypes of *Nematurella marginata* in GNM (AN 4368) labeled as "Mare Casp[icum] australe". Clearly, these originate from the same sample that the "holotype" of *Bithynia servainiana* var. *caspica* (see above). One of these shells is separated in an additional tube with label "This specim[en] will be designated as lectotype. Y. Starob[ogatov]". We are unaware of a subsequent lectotype designation for this taxon by Starobogatov. Possibly, he did not accomplish his intention. We need to report also that there is a small shell presumably belonging to the same species jammed in the aperture of the "lectotype" shell.

Distribution: Middle and southern Caspian Sea; 25- 120 m [Logvinenko, Starobogatov, 1968].

Family Lithoglyphidae Troschel, 1857

7. *Lithoglyphus naticoides berolinensis* Westerlund, 1886 – Fig. 2, G

Lithoglyphus naticoides var. *berolinensis* Westerlund, 1886: 85.

History of the name application:

– *Lithoglyphus naticoides berolinensis* — Ehrmann 1933: 199 (short description, distribution);
– *Lithoglyphus naticoides berolinensis* — Alexeenko *et al.*, 1990: 13 (lectotype designation, shell description, distribution);
– *Lithoglyphus naticoides berolinensis* — Anistratenko, Stadnichenko, 1994 [1995]: 133, fig. 113 (shell description and illustration, distribution, ecology);
– *Lithoglyphus naticoides berolinensis* — Starobogatov *et al.*, 2004: 286, pl. 109, fig. 3 (determination key, distribution);
– *Lithoglyphus naticoides berolinensis* — Kantor, Sysoev, 2005: 95 (taxonomy, distribution).

Type locality: "Germ[ania], Berlin" – type locality of the lectotype [Alexeenko *et al.*, 1990].

Type series. ZIN (lectotype, AN 1). Paralectotypes: 1 specimen in ZIN; 8 specimens in GNM (AN 4549), 5 specimens in SMNH (AN 14:39). All collected in Berlin and vicinities.

Distribution: Baltic Sea drainage basin, Poland, Germany, northern France [Anistratenko, Stadnichenko, 1994].

Family Valvatidae Gray, 1840

8. *Cincinna aliena* (Westerlund, 1876) – Fig. 2, H

Valvata aliena Westerlund, 1876: 102.

History of the name application:

– *Valvata aliena* — Westerlund, 1877: 63, fig. 15 (shell description, distribution);
– *Valvata* (*Cincinna*) *aliena* — Westerlund, 1886: 136 (shell description, distribution);
– *Valvata* (*Cincinna*) *aliena* — Kobelt, 1910: 26, Taf. CCC-CIV, fig. 2312 (shell description and illustration);
– *Valvata* (*Cincinna*) *aliena* — Zhadin, 1933: 139, fig. 112 (shell description, distribution);
– *Valvata aliena* — Mozley, 1936: 613 (shell description, distribution);
– *Valvata* (*Cincinna*) *aliena* — Zhadin, 1952: 139, fig. 112 (shell description, distribution);
– *Valvata* (*Sibirovalvata*) *aliena* — Starobogatov, Streletzkaja, 1967: 223, fig. 3 (taxonomy, lectotype designation, shell illustration, distribution);
– *Cincinna* (*Sibirovalvata*) *aliena* — Sitnikova, 1994: 86, fig. 8 B (shell description, distribution);
– *Cincinna* (*Sibirovalvata*) *aliena* — Prozorova, Starobogatov, 1998: 71, fig. 4, C, D (determination key, distribution);
– *Cincinna* (*Sibirovalvata*) *aliena* — Starobogatov *et al.*, 2004: 278, pl. 104, fig. 10-12 (determination key, distribution);
– *Cincinna aliena* — Kantor, Sysoev, 2005: 157 (taxonomy, distribution).

Type locality: "Jenissei, Nischnij Inbatsk (lat. 63°50')" [Westerlund, 1876: 102].

Type series. ZIN (lectotype, AN 8). Paralectotypes: GNM (2 specimens, AN 4664), SMNH (2 specimens, AN 14:89). Dimensions (in mm) of shell of one of the paralectotypes (GNM) at 4.0 whorls: SH = 5.0; SW = 5.4; SpH = 2.3; BWH = 4.3; AH = 2.9; AW = 3.0.

Distribution: Rivers of Yenissei River basin, estuaries of large tributaries of Baikal, north of Western Siberia [Kantor *et al.*, 2010].

9. *Cincinna ambigua* (Westerlund, 1873) – Fig. 2, I

Valvata ambigua Westerlund, 1873: 439.

History of the name application:

– *Valvata* (*Cincinna*) *ambigua* — Westerlund, 1886: 133 (shell description, distribution);
– *Valvata piscinalis* var. *ambigua* — Westerlund, 1897a: 138 (shell description, distribution);
– *Valvata* (*Valvata*) *ambigua* — Starobogatov, 1977: 157, fig. 346 (shell illustration, determination key);
– *Cincinna* (*Cincinna*) *ambigua* — Chernogorenko, Starobogatov, 1987: 150 (taxonomy, distribution);
– *Cincinna* (*Cincinna*) *ambigua* — Anistratenko, Anistratenko, 2001: 141, fig. 112 (taxonomy, shell description and illustration, distribution);
– *Cincinna* (*Cincinna*) *ambigua* — Starobogatov *et al.*, 2004: 274, pl. 100, fig. 9 (determination key, distribution);
– *Cincinna ambigua* — Kantor, Sysoev, 2005: 157 (taxonomy, distribution);
– *Valvata ambigua* — Glöer, Diercking, 2010: 79 (taxonomy, ecology);
– *Valvata ambigua* — Vinarski *et al.*, 2013a: 297-301 (taxonomy, distribution, study of the type specimens).

Type locality: "Sverige vid Göteborg" (Sweden at Gothenburg) [Westerlund, 1873: 102].

Type series. Westerlund [1873: 439] stated that he based this taxon on a sample collected by Malm in Gothenburg. It is housed now in the Museum für Naturkunde Berlin. Initially, this sample contained three shells, but now it includes only two ones (one of them is completely broken) [Vinarski *et al.*, 2013a]. However, there are more samples of *V. ambigua* collected in Gothenburg, in the original Westerlund's collection. Probably, these specimens should be included to the type series as syntypes. These samples are as follows. 1. ZIN (AN 1; 3 specimens). 2. SMNH (AN 14:79, 5 specimens).

Hypodigm. Includes the type series outlined above and one more empty shell collected in Vefsendal, province Nordland, Norway in 1885 (GNM AN 4650).

Distribution: Rivers of Europe and south of Western Siberia [Vinarski *et al.*, 2013a].

10. *Cincinna confusa* (Westerlund, 1897) – Fig. 3, A

Valvata (*Cincinna*) *confusa* Westerlund, 1897b: 130.

History of the name application:

– *Valvata* (*Sibirovalvata*) *confusa* — Starobogatov, Streletzkaja, 1967: 224, fig. 5 (taxonomy, lectotype designation, shell illustration, distribution);
– *Cincinna* (*Sibirovalvata*) *confusa* — Bogatov, Zatravkin, 1990: 31, fig. 6, r-e (shell description, distribution, ecology);
– *Cincinna* (*Sibirovalvata*) *confusa* — Prozorova, Starobogatov, 1998: 71, fig. 4, G (determination key, distribution);
– *Cincinna* (*Sibirovalvata*) *confusa* — Starobogatov *et al.*, 2004: 278, pl. 103, fig. 16-18 (determination key, distribution);
– *Cincinna confusa* — Kantor, Sysoev, 2005: 158 (taxonomy, distribution).

Type locality: "Sibirien. Thal des Olenek" (Siberia, floodplain of the Olenek River) [Westerlund, 1897b: 130].

Type series. The lectotype is kept in ZIN (AN 32). Paralectotypes: ZIN (AN = 33; 17 specimens), GNM (AN 4656; 5 specimens). Dimensions (in mm) of shell of one of the paralectotypes (GNM) at 4.5 whorls: SH = 7.7; SW = 8.1; SpH = 4.0; BWH = 6.1; AH = 4.1; AW = 3.5. Dimensions of the lectotype shell (after Bogatov, Zatravkin [1990]): SH = 5.9; SW = 7.0; AH = 4.0; AW = 4.0.

Hypodigm. Includes the type series as well as shells from three Siberian localities determined by Westerlund himself:

1. "Sib[eria], Tjumenj" (Tyumen' City). ZIN (AN 5; 11 specimens) and GNM (AN 4656; 1 specimen).

2. "Padun bei Angara". ZIN (AN 2, 6 specimens) and GNM (AN 4656; 1 specimen).

3. "Tunguzka, Podvolochnaya". ZIN (AN 3; 2 specimens) and GNM (AN 4656; 1 specimen).

Distribution: From north of western Siberia to Kamchatka and Chukchi Peninsula, North Kurile Islands [Kantor *et al.*, 2010].

11. *Cincinna discors* (Westerlund, 1886) – Fig. 3, B, C

Valvata (*Cincinna*) *discors* Westerlund, 1886: 133.

History of the name application:

– *Valvata piscinalis* var. *discors* — Westerlund, 1897a: 138 (shell description, distribution);
– *Cincinna* (*Atropidina*) *discors* — Chernogorenko, Starobogatov, 1987: 149 (taxonomy, distribution);
– *Cincinna* (*Atropidina*) *discors* — Anistratenko, Anistratenko, 2001: 144, fig. 118 (taxonomy, shell description and illustration, distribution);
– *Valvata* (*Cincinna*) *piscinalis discors* — Glöer, 2002: 193, Abb. 222 (shell description, syntype illustrations, distributions);
– *Cincinna* (*Atropidina*) *discors* — Starobogatov *et al.*, 2004: 273, pl. 100, fig. 1 (determination key, distribution);
– *Cincinna discors* — Kantor, Sysoev, 2005: 158 (taxonomy, distribution).

Type locality: "Schweden in See Ringsjön, eine forma major in Pite Lappmark bei Jörn" [Westerlund, 1886: 133]. Several Swedish lakes share the same name Ringsjön, but in this case the lake is definitely Lake Ringsjön in the province Skåne (Scania) in the southernmost part of the country. The locality for the forma major is the municipality Jörn in the province of Västerbotten (the statement by Westerlund: "in Pite Lappmark" is wrong, Jörn is not situated in Pite Lappmark, which lies more to the west and constitutes a part of the large province of Lappland).

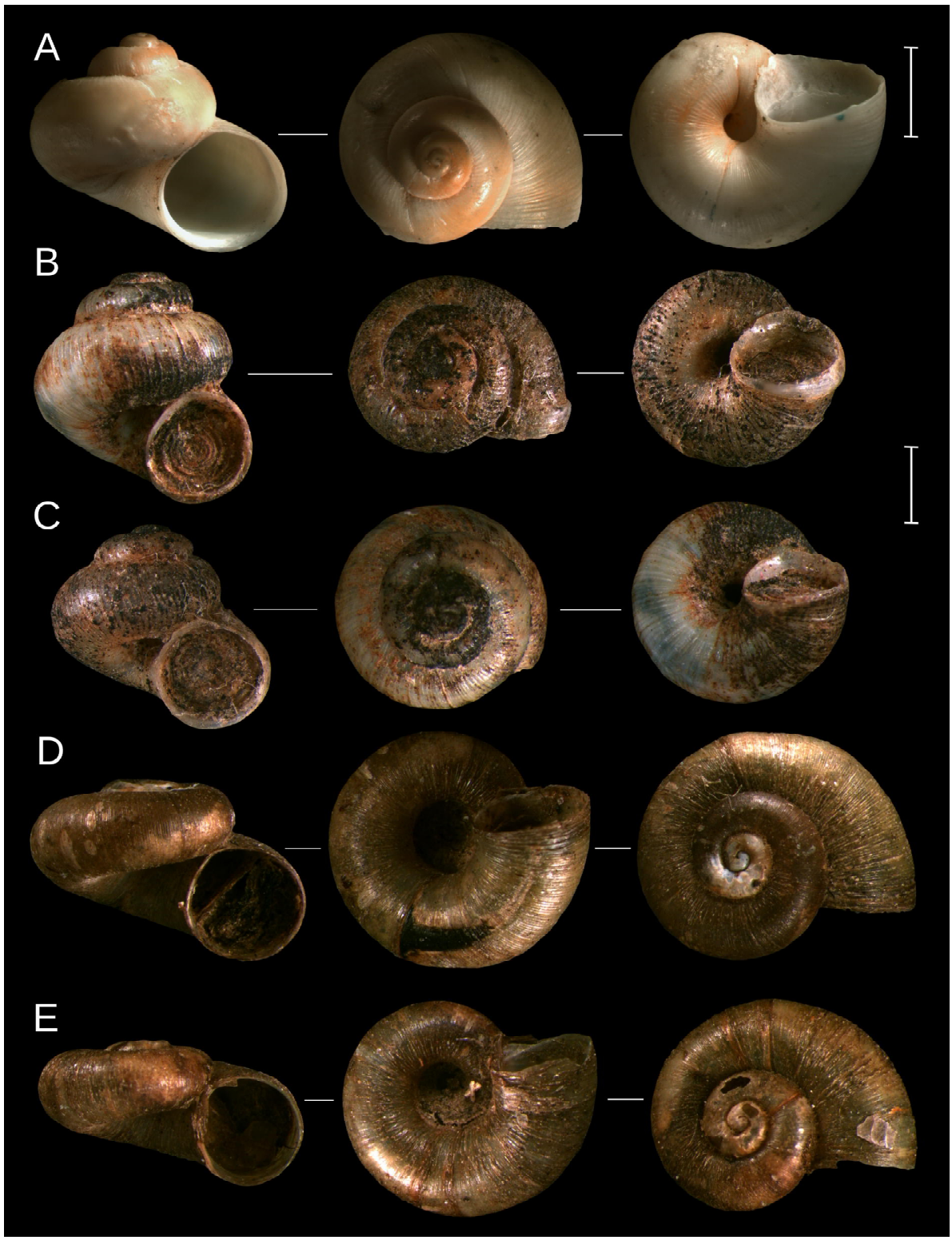

FIG. 3. A. *Valvata confusa*, lectotype (“Siberia, floodplain of the Olenek River”; ZIN). B-C. *Valvata discors*, syntypes (“See Ringsjön”; GNM). D-E. *Valvata frigida*, syntypes (“Lapp. Torn. ad Muonioniska”; GNM). Scale bars 2 mm.

РИС. 3. A. *Valvata confusa*, лектотип (“Siberia, floodplain of the Olenek River”; ZIN). B-C. *Valvata discors*, синтипы (“See Ringsjön”; GNM). D-E. *Valvata frigida*, синтипы (“Lapp. Torn. ad Muonioniska”; GNM). Масштабная линейка 2 мм.

Type series. The syntypes are kept in GNM (AN 4649; 2 specimens) and SMNH (AN 14:78; 2 specimens).

Hypodigm. Includes the type series as well as a single shell housed in SMNH (AN 14:78) and labeled as "Landsberg, Germania".

Distribution: lakes and rivers of the Baltic Sea basin, central Dnieper basin, Western Siberia (Irtysh River basins) [Kantor *et al.*, 2010].

Remark. The shell surface of the syntypes of *V. discors* is well ribbed (see especially Fig. 2, B) and, thus, this species formally corresponds to the diagnosis of the subgenus *Cincinna* (*Sibirovalvata* Starobogatov et Streletkaya, 1967). However, Russian authors do not place *V. discors* in this subgenus though it is believed that only *Sibirovalvata* shells are characterized by axial riblets [Starobogatov *et al.*, 2004].

12. *Cincinna frigida* (Westerlund, 1873) – Fig. 3, D, E.

*Valvata frigid*a Westerlund, 1873: 436.

History of the name application:

– *Valvata frigida* — Westerlund, 1897a: 141 (shell description, distribution);
– *Valvata* (*Atropidina*) *frigida* — Kobelt, 1910: 22, Taf. CCCCII, fig. 2308 (shell description and illustration, distribution);
– *Cincinna frigida* – Leshko, 1998: 34 (distribution, ecology);
– *Cincinna* (*Sibirovalvata*) *frigida* — Prozorova, Starobogatov, 1998: 70, fig. 2, A, B (determination key, distribution);
– *Cincinna* (*Sibirovalvata*) *frigida* — Starobogatov *et al.*, 2004: 277, pl. 102, fig. 10-12 (determination key, distribution);
– *Cincinna frigida* — Kantor, Sysoev, 2005: 158 (taxonomy, distribution).

Type locality: "Från Naustejaur i Pite Lappmark" (From Naustejaur in Pite Lappmark) [Westerlund, 1873: 437]. Westerlund [1873] gave a wrong spelling of the waterbody name; the correct form is: Naustajaure; jaure = Lappish for lake. The Naustajaure Lake is situated north of the village Slagnäs in Pite Lappmark in the province of Lappland.

Type series. Includes seven syntypes collected in Lappland: GNM (AN 4677; 4 specimens) and SMNH (AN 14:89; 3 specimens).

Hypodigm. Includes the type series as well as two shells from the Westerlund's original collection taken from "Lapp. Torn. ad Muonioniska": GNM (AN 4677). This is to be interpreted as: Muonioniska, small village near Muonio in Finnish Lappland (Finland). "Torn." refers to Torne Lappmark (the northernmost part of Lappland), which was divided into Swedish and Finnish parts along the river Torne älv, when Sweden ceded Finland to Russia in 1809.

Distribution. Northern Europe and Siberia to Okhotsk Sea basin, lakes [Kantor *et al.*, 2010].

13. *Cincinna lilljeborgi* (Westerlund, 1897) – Fig. 4, A, B

Valvata lilljeborgi Westerlund, 1897a: 137.

History of the name application:

– *Cincinna* (*Cincinna*) *lilljeborgi* — Chernogorenko, Starobogatov, 1987: 149 (taxonomy, distribution);
– *Cincinna* (*Cincinna*) *lilljeborgi* — Anistratenko, Anistratenko, 2001: 139, fig. 109 (taxonomy, shell description and illustration, distribution);
– *Cincinna* (*Cincinna*) *lilljeborgi* — Starobogatov *et al.*, 2004: 274, pl. 100, fig. 11 (determination key, distribution);
– *Cincinna lilljeborgi* — Kantor, Sysoev, 2005: 159 (taxonomy, distribution).

Type locality: "Suecia in fluvio Fyrisån ad Uppsala"" (Sweden, in stream Fyrisån at Uppsala) [Westerlund, 1873: 437].

Type series includes five syntypes in GNM (AN 4654) and two syntypes in ZIN (AN 1).

Distribution. Lakes of the Baltic Sea basin, central part of Dnieper basin, south of Western Siberia [Kantor *et al.*, 2010].

Remark. Shells of the type series are visibly different in their proportions (see Fig. 4, A, B) and are covered by thin axial riblets (like shells of *Sibirovalvata* species, see above).

14. *Cincinna mergella* (Westerlund, 1883) – not illustrated

Valvata mergella Westerlund, 1883: 166.

History of the name application:

– *Valvata mergella* — Dall, 1905: 124 (shell description, distribution);
– *Valvata mergella* — Burch, Tottenham, 1980: 81, fig. 38 (shell illustration, distribution);
– *Valvata mergella* — Burch, 1989: 226, fig. 28 (determination key, distribution);
– *Cincinna* (*Sibirovalvata*) *mergella* — Starobogatov *et al.*, 2004: 274, pl. 102, fig. 13-15 (determination key, distribution);
– *Cincinna mergella* — Kantor, Sysoev, 2005: 160 (taxonomy, distribution).

Type locality: "America borealis, Port Clarence in Alaska" [Westerlund, 1883: 166].

Type series. Includes 16 syntypes (SMNH AN 1640) illustrated and briefly discussed by Johannes [2011].

Distribution: Chukchi Peninsula: Khatyrka River basin in the south to Chaun lowland in the north. North-western part of North America [Burch, 1989; Kantor *et al.*, 2010; Johannes, 2011].

15. *Valvata nana* Westerlund, 1886 – Fig. 4, C

Valvata (*Tropidina*) *nana* Westerlund, 1886: 141.

History of the name application:

– *Valvata nana* — Westerlund, 1897a: 140 (shell description, distribution);

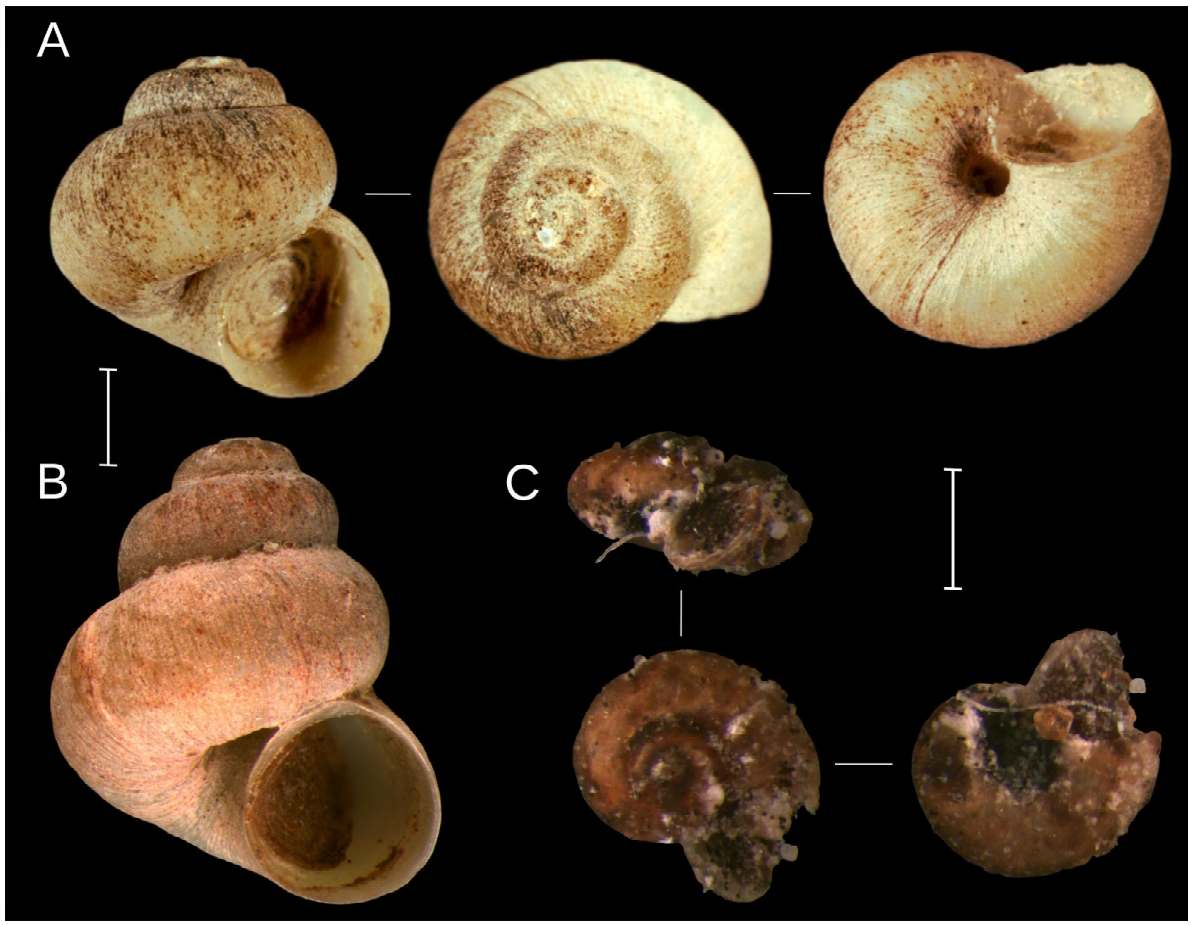

FIG. 4. A-B. *Valvata lilljeborgi*, syntypes ("Su[ecia], Uppsala"; GNM). C. *Valvata nana*, one of syntypes ("Sjælland, Dania"). Scale bars 2 mm.

РИС. 4. A-B. *Valvata lilljeborgi*, синтипы ("Su[ecia], Uppsala"; GNM). C. *Valvata nana*, один из синтипов ("Sjælland, Dania"). Масштабная линейка 2 мм.

– *Valvata* (*Microcincinna*) *nana* — Chernogorenko, Starobogatov, 1987: 148 (taxonomy, distribution);
– *Valvata* (*Microcincinna*) *nana* — Starobogatov *et al.*, 2004: 272, pl. 99, fig. 10-11 (determination key, distribution);
– *Valvata nana* — Kantor, Sysoev, 2005: 162 (taxonomy, distribution).

Type locality: Denmark (without an exact locality, see Westerlund, 1897a).

Type series includes two syntypes: one in GNM (AN 4679) and another in SMNH (AN 14: 96) labeled as "Sjælland, Dania" (see Fig. 1). Sjælland (= Zealand) is the easternmost of the large Danish islands.

Distribution: lakes of the basin of the Baltic Sea [Starobogatov *et al.*, 2004].

Remark. According to the diagnosis of the genus *Valvata* O.F. Müller, 1774 sensu Chernogorenko et Starobogatov, 1987, shells of this group are characterized by an absolutely round aperture, without any angle in its upper part [Anistratenko, Anistratenko, 2001; Starobogatov *et al.*, 2004]. Apertures of shells of *V. nana* syntypes are of ovoid, not round, shape (see Fig. 4, B). Thus, *Valvata nana* sensu Westerlund, 1886 does not belong formally to the genus *Valvata* sensu Chernogorenko et Starobogatov. Given very small size of syntype shells, one may suggest that juvenile specimens of some species of the genus *Cincinna* Hübner, 1810 were described under this name.

Family Lymnaeidae Rafinesque, 1815

16. *Lymnaea aberrans* (Westerlund, 1897) – Fig. 5, A-B.

Limnaea ovata var. *aberrans* Westerlund, 1897: 125.

History of the name application:

– *Lymnaea aberrans* — Kruglov, Starobogatov, 1984: 31, fig. 1: 21, 2: 3 (shell and reproductive morphology description, taxonomy, distribution);
– *Lymnaea aberrans* — Kruglov, Starobogatov, 1993b: 164, fig. 3 E (distribution);
– *Lymnaea aberrans* — Starobogatov *et al.*, 2004: 320, fig. 135: 4 (determination key, distribution);
– *Lymnaea aberrans* — Kruglov, 2005: 331-332, fig. 213: 5, 218 (shell and reproductive morphology description, taxonomy, determination key, distribution).

Type locality: "Fl[uss] Kamtschatka" (Kamchatka river) – place of the lectotype collection.

Type series: Most probably, the original description of this species was based on the materials served to Middendorff [1851] for describtion of another lymnaeid species, *Limnaeus kamtschaticus* Middendorff, 1851. In this situation, Kruglov and Starobogatov [1984] designated lectotypes for both *L. aberrans* (AN № 1) and *L. kamtschaticus* (AN № 1). The type series of *Limnaea ovata* var. *aberrans* includes the lectotype and two paralectotypes (one in ZIN, AN 2; another in GNM, AN 3729).

Distribution: East Kamtchatka, Western coast of the Sea of Okhotsk.

17. *Lymnaea clavata* (Westerlund, 1885) – Fig 5, C.

Limnaea glabra var. *clavata* Westerlund, 1885a: 49.

History of the name application:

– *Limnaea glabra* var. *clavata* — Westerlund, 1897a: 108 (shell description);
– *Lymnaea clavata* — Kruglov, Starobogatov, 1981: 976, Fig. 1, *5, 11, 16* (shell illustration, determination key);
– *Lymnaea clavata* — Kruglov, Starobogatov, 1993b: 82, Fig. 9, D (shell illustration, distribution);
– *Lymnaea clavata* — Stadnichenko, 2004: 168-171, fig. 54 (shell and reproductive morphology, determination key, distribution);
– *Lymnaea clavata* — Starobogatov *et al.*, 2004: 312, fig. 129: 4 (determination key, distribution);
– *Lymnaea clavata* — Kruglov, 2005: 232-233, fig. 123, 124, 128 (shell and reproductive morphology description, taxonomy, determination key, distribution).

Type locality: "Norddeutschland, Schweden" (North Germany, Sweden).

Type series. Two syntypes from Osnabrück (Germany) are kept in the GNM (AN 3823). Specimens from Sweden are absent.

Distribution: North part of Western Europe [Starobogatov *et al.*, 2004].

18. *Lymnaea liogyra* (Westerlund, 1897) – Fig. 5, D.

Limnaea palustris var. *liogyra* Westerlund, 1897: 125.

History of the name application:

– *Galba liogyra* — Zhadin, 1952: 174, fig. 74 (shell description, distribution);
– *Lymnaea liogyra* — Kruglov, Starobogatov, 1986: 67, fig. 1: 9, 2: 9 (reproductive morphology, taxonomy, distribution);
– *Lymnaea liogyra* — Bogatov, Zatravkin, 1990[1992]: 81, fig. 20, 1 (shell description, distribution);
– *Lymnaea liogyra* — Kruglov, Starobogatov, 1993a: 79, fig. 7 F (distribution);
– *Lymnaea liogyra* — Starobogatov *et al.*, 2004: 312-313, fig. 129: 5 (determination key, distribution);
– *Lymnaea liogyra* — Kruglov, 2005: 218-219, fig. 108: 1, 109-110 (shell and reproductive morphology description, taxonomy, determination key, distribution).

Type locality: "Sibirien. Süd-Ussuri-Gebiet" (Siberia, southern part of the Ussuri River basin).

Type series. A single specimen (syntype) from the type locality is kept in GNM (AN 3805). The hand-written label contains information that this shell was collected in vicinity of "Grigorjewskoje". Measurements of the syntype shell, in mm (shell apex is slightly corroded and the whorls number is unknown): SH = 17.2; SW = 6.0; SpH = 11.6; BWH = 10.6; AH = 5.8; AW = 4.0.

Distribution. Amur drainage and Primorje (Kantor *et al.*, 2010).

19. *Lymnaea pachyta* (Westerlund, 1885) – not illustrated.

Limnaea taurica var. *pachyta* Westerlund, 1885a: 48.

History of the name application:

– *Lymnaea pachyta* — Kruglov, Starobogatov, 1986: 66, fig. 1: 8, 2: 8 (shell and reproductive morphology, taxonomy, distribution);
– *Lymnaea pachyta* — Kruglov, Starobogatov, 1993a: 79, fig. 7 E (distribution);
– *Lymnaea pachyta* — Stadnichenko, 2004: 149-151, fig. 49 (shell and reproductive morphology, determination key, distribution);
– *Lymnaea pachyta* — Starobogatov *et al.*, 2004: 314-315 fig. 131: 1 (determination key, distribution);
– *Lymnaea pachyta* — Kruglov, 2005: 214-215, fig. 99:6, 107 (shell and reproductive morphology description, taxonomy, determination key, distribution).

Type locality: Not specified in the original description. Possibly, Crimean Peninsula (this taxon described as a variety of *Limnaea taurica* Clessin, 1880 with the type locality "Krim" [see Westerlund, 1885a]).

Type series: not traced (absent in GNM, SMNH and ZIN collections).

Distribution: known from the Volga Delta and, possibly, still occurs in Crimea [Kantor *et al.*, 2010].

Remark. Given that the type series is probably lost, it is problematic to identify a single specimen from the Volga delta mentioned by Kruglov and Starobogatov [1986] under the name *Lymnaea* (*Stagnicola*) *pachyta* with *Limnaea taurica* var. *pachyta* sensu Westerlund, 1885.

20. *Lymnaea sibirica* (Westerlund, 1885) – Fig. 5, E-F; 10, A

Limnaea truncatula var. *sibirica* Westerlund, 1885a: 52.

History of the name application:

– *Lymnaea sibirica* — Kruglov, Starobogatov, 1985: 26, fig. 1, *1*; 2, *1* (shell and reproductive morphology description, taxonomy, distribution);
– *Lymnaea sibirica* — Kruglov, Starobogatov, 1993a: 82, fig. 10 B (distribution);
– *Lymnaea sibirica* — Starobogatov *et al.*, 2004: 311, fig. 128:6 (determination key, distribution);

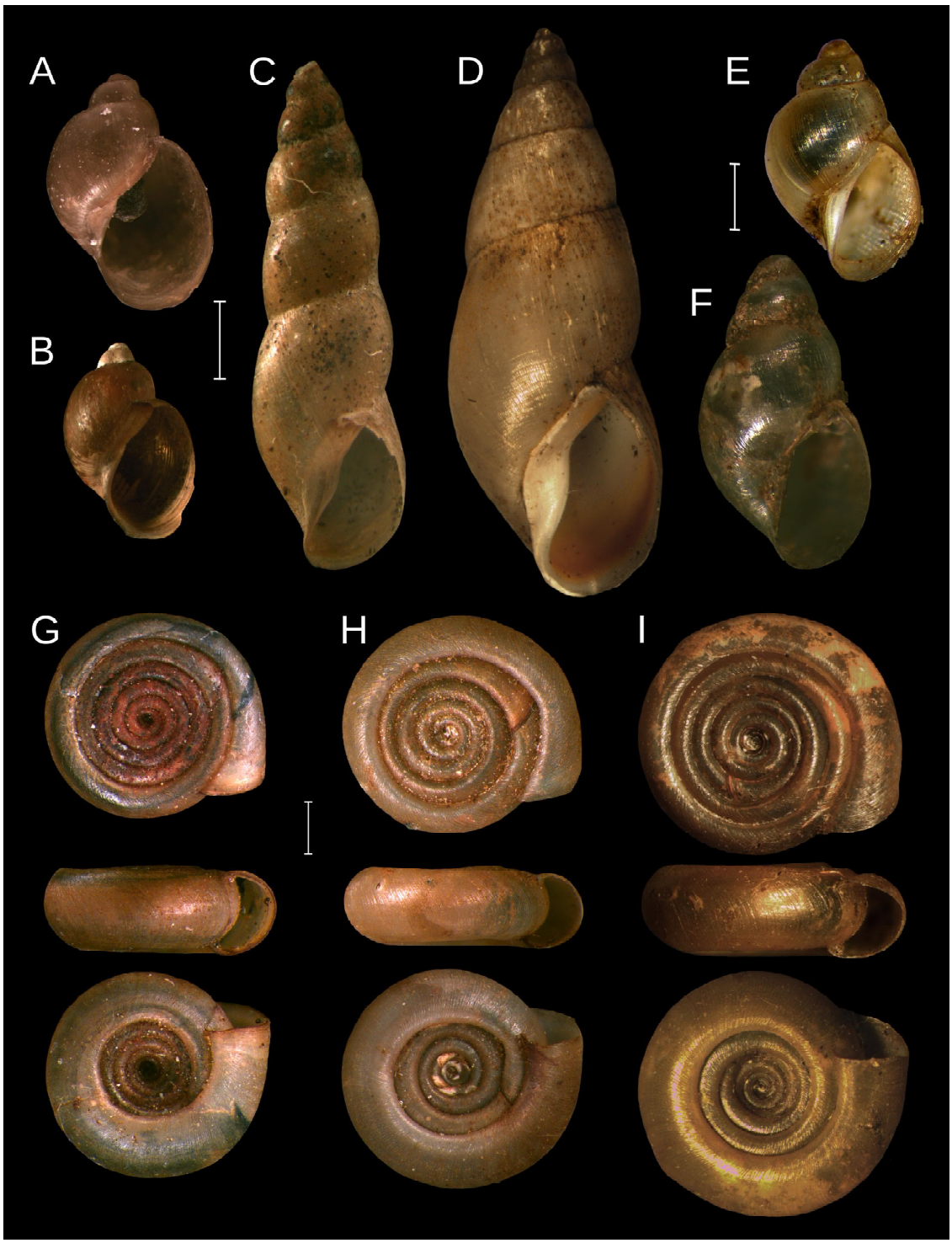

FIG. 5. A. *Limnaea ovata* var. *aberrans,* paralectotype (“Kamtschatka”; GNM). B. *L. ovata* var. *aberrans,* lectotype (“Kamtschatka”; ZIN). C. *L. glabra* var. *clavata*, syntype (Osnabrück; GNM). D. *L. palustris* var. *liogyra,* syntype (“Sib[irien], Süd-Ussuri”; GNM). E. *L. truncatula* var. *sibirica*, lectotype (“Lusino, Sibirica”; SMNH). F. *L. truncatula* var. *sibirica*, paralectotype (“Sibir., Jenissei n. om. Lusino”; GNM). G. *Planorbis contortus* var. *labiatus*, syntype (“Öland, Borgholm”; GNM). H. *Planorbis dispar*, lectotype (“Forsmark, Ruddamen.”; GNM). I. *P. dispar*, paralectotype (the same sample). Scale bars 2 mm.

РИС. 5. A. *Limnaea ovata* var. *aberrans,* паралектотип (“Kamtschatka”; GNM). B. *L. ovata* var. *aberrans,* лектотип (“Kamtschatka”; ZIN). C. *L. glabra* var. *clavata*, синтип (Osnabrück; GNM). D. *L. palustris* var. *liogyra,* синтип (“Sib[irien], Süd-Ussuri”; GNM). E. *L. truncatula* var. *sibirica*, лектотип (“Lusino, Sibirica”; SMNH). F. *L. truncatula* var. *sibirica*, паралектотип (“Sibir., Jenissei n. om. Lusino”; GNM). G. *Planorbis contortus* var. *labiatus*, синтип (“Öland, Borgholm”; GNM). H. *Planorbis dispar*, лектотип (“Forsmark, Ruddamen.”; GNM). I. *P. dispar*, паралектотип из той же выборки. Масштабная линейка 2 мм.

– *Lymnaea sibirica* — Kruglov, 2005: 239-240, fig. 130: 2, 132-133 (shell and reproductive morphology description, taxonomy, determination key, distribution);
– *Lymnaea sibirica* — Khokhutkin *et al.*, 2009: 65-66, fig. 26 (shell morphology, determination key, distribution);
– *Lymnaea sibirica* — Andreeva *et al.*, 2010: 95-97, fig. 43, 46 (shell morphology and reproductive morphology, determination key, distribution).

Type locality: "Sibirien bei Lusino" (Siberia near Luzino village, north of the Yenisei River basin).

Type material: The type series that is divided between GNM and SMNH collections, contains a mixture of two species. In GNM (AN 3839), two juvenile shells of *Lymnaea stagnalis* labeled as "*Limnaea truncatula* v. *sibirica*" by Westerlund himself are kept (see Fig. 5, F, 10, A). In SMNH (AN 12:19), a single juvenile shell more or less corresponding to the original description of *Limnaea truncatula* var. *sibirica* (Westerlund, 1885a), has been found. To avoid taxonomical misunderstandings we designate this shell (see Fig. 5, E) here as the lectotype of *L. truncatula* var. *sibirica*. The lectotype's dimensions are (in mm): SH = 3.6; SW = 2.2; SpH = 1,4; BWH = 3,0; AH = 2.3; AW = 1.4. Judging from dimensions, this shell belonged to a juvenile individual.

Distribution: North of Western Siberia, all of the Eastern Siberia, Primorye, Altay, north-east of China, Alaska [Khokhutkin *et al.*, 2009].

21. *Lymnaea terebra* (Westerlund, 1885) – not illustrated

Limnaea palustris var. *terebra* Westerlund, 1885a: 46.

History of the name application:

– *Limnaea palustris* var. *terebra* — Westerlund, 1885b: 155 (distribution);
–- *Limnaea palustris* var. *terebra* — Kozhov, 1936: 129, pl. II, fig. 22-24 (shell description and illustration);
– *Lymnaea terebra* — Starobogatov, Streletzkaja, 1967: 232, fig. 20-21 (taxonomy, distribution);
– *Lymnaea terebra* — Kruglov, Starobogatov, 1986: 68, fig. 1: 11-14, 2: 11-12 (shell and reproductive morphology, distribution);
– *Lymnaea terebra* — Kruglov, Starobogatov, 1993a: 79, fig. 8 A (distribution);
– *Lymnaea terebra* — Starobogatov *et al.*, 2004: 313, fig. 129: 6 (determination key, distribution);
– *Lymnaea terebra* — Kruglov, 2005: 221-222, fig. 108: 3, 113-114 (shell and reproductive morphology description, taxonomy, determination key, distribution);
–- *Lymnaea terebra* — Vinarski, Glöer, 2008: 180, fig. 1-6 (shell and reproductive morphology, taxonomy, distribution);
– *Lymnaea terebra* — Khokhutkin *et al.*, 2009: 61-64, fig. 25 (shell morphology, determination key, distribution);
– *Lymnaea terebra* — Andreeva *et al.*, 2010: 91-95, fig. 43, 45, Plate 17, 18 (shell morphology and reproductive morphology, determination key, distribution).

Type locality: Podkamennaja Tunguska, Eastern Siberia (sampling site of the neotype).

Type material: The neotype designated and illustrated by Vinarski and Glöer [2008] is kept in GNM (AN 3798). Dimensions of the neotype shell (not provided by Vinarski and Glöer [2008]) at 6.75 whorls are: SH = 23.2; SW = 9.0; SpH = 15.0; BWH = 14.0; AH = 8.2; AW = 6.4.

Distribution: Eastern Europe (outside Russia), Siberia, Primorye, probably absent in European Russia [Vinarski, Glöer, 2008].

22. *Lymnaea torquilla* (Westerlund, 1877) – not illustrated

Limnaea peregra var. *torquilla* Westerlund, 1877: 55.

History of the name application:

– *Lymnaea torquilla* — Kruglov, Starobogatov, 1993b: 166, fig. 6C (distribution);
– *Lymnaea torquilla* — Starobogatov *et al.*, 2004: 319, fig. 134:11 (determination key, distribution);
– *Lymnaea torquilla* — Kruglov, 2005: 350, fig. 236, *3* (shell and reproductive morphology description, taxonomy, determination key, distribution).

Type locality: "Jenissei, Surgutskoj, …. (lat. 62°50')"

Type series: Not found in GNM, SMNH and ZIN. Probably lost.

Distribution: North of Central Siberia [Starobogatov *et al.*, 2004].

Family Planorbidae Rafinesque, 1815

23. *Anisus* (*Bathyomphalus*) *agardhi* Prozorova in Starobogatov, Prozorova, Bogatov et Saenko, 2004 – Fig. 5, G.

Anisus agardhi Starobogatov *et al.*, 2004: 347, fig. 153: 4-6 (nom nov pro *Planorbis contortus* f. *labiatus* Westerlund, 1875: 109 non *Planorbis labiatus* Benson, 1850).

History of the name application:

– *Planorbis contortus* f. *labiatus* — Westerlund, 1875: 109 (shell description, distribution);
– *Planorbis contortus* f. *labiatus* — Westerlund, 1885a: 74 (shell description);
– *Planorbis contortus* f. *labiatus* — Westerlund, 1897a: 118 (shell description, distribution);
– *Anisus agardhi* — Prozorova, 2003: 108 (determination key, distribution);
– *Anisus agardhi* — Starobogatov *et al.*, 2004: 347, fig. 153: 4-6 (determination key, distribution);
– *Anisus agardhi* — Kantor, Sysoev, 2005: 210 (taxonomy, distribution);
– *Anisus agardhi* — Nekhaev, 2006: 794-797, fig. 2 (ecology, distribution).

Type locality: "Oeland, Sueciae" (Öland Island, Sweden).

Type series. Includes 162 specimens: 156 specimens in GNM (AN 3958) and 6 specimens in SMNH (AN 12: 54). The type series, however, contains a mixture of shells belonging to different

Table 2. Morphometric characteristics of specimens (including syntypes and paralectotypes) of some planorbid species described by Westerlund. Numbers of measured shells are given in brackets. All measurements are given in millimeters.

Таблица 2. Морфометрическая характеристика некоторых видов семейства Planorbidae (включая синтипы и паралектотипы), описанные Вестерлюндом. В скобках – число промеренных раковин. Все промеры даны в миллиметрах.

Character/index	*Planorbis borealis* (5)	*Planorbis concinnus* (5)	*Planorbis contortus* f. *labiatus* (10)	*Planorbis dispar* (11)	*Planorbis stroemi* (9)
Whorls number	3.75–4.50* 4.10±0.24	3.75–4.12 3.95±0.14	5.5–6.0 5.8±0.2	5.75–6.75 6.15±0.28	3.75–4.50 4.13±0.22
Shell height (SH)	1.5–1.8 1.6±0.2	1.3–1.4 1.4±0.1	1.4–1.6 1.5±0.1	1.4–1.8 1.6±0.1	1.4–1.7 1.5±0.1
Shell width (SW)	5.0–6.4 5.8±0.6	4.2–4.9 4.5±0.3	3.5–4.5 4.0±0.3	4.8–6.0 5.3±0.4	5.7–7.5 6.7±0.7
Aperture height (AH)	1.7–1.8 1.8±0.1	1.4–1.6 1.4±0.1	1.4–1.7 1.6±0.1	1.6–1.8 1.7±0.1	1.4–2.0 1.8±0.2
Aperture width (AW)	1.6–2.3 2.0±0.3	1.4–1.6 1.5±0.1	0.8–1.4 1.1±0.2	1.1–1.6 1.3±0.2	2.0–2.7 2.3±0.2
Diameter of inner whorls from apical side (IWD_a)	2.2–2.9 2.7±0.3	1.9–2.3 2.0±0.2	2.3–3.1 2.6±0.2	3.1–4.2 3.6±0.3	2.3–3.3 3.0±0.4
Width of the last whorl from apical side (WLW_a)	1.6–1.9 1.7±0.2	1.3–1.5 1.4±0.1	0.6–0.9 0.8±0.1	0.6–1.1 0.9±0.1	1.8–2.5 2.1±0.2
SH/SW	0.27–0.30 0.28±0.01	0.28–0.32 0.30±0.02	0.31–0.43 0.37±0.07	0.28–0.34 0.31±0.02	0.19–0.28 0.23±0.03
AH/SW	1.00–1.20 1.09±0.10	0.96–1.16 1.05±0.07	0.96–1.16 1.08±0.07	0.90–1.16 1.02±0.07	0.24–0.29 0.26±0.02
AH/AW	0.79–1.11 0.91±0.14	0.83–1.07 0.97±0.11	1.20–1.91 1.49±0.21	1.00–1.50 1.30±0.15	0.67–0.91 0.77±0.08
IWD_a/WLW_a	1.33–1.78 1.57±0.17	1.35–1.67 1.48±0.12	2.80–3.88 3.51±0.32	3.17–5.86 4.08±0.70	1.23–1.68 1.45±0.17

*Above line – minimum and maximum values; below line – mean value ± standard deviation.

species. In the GNM part of the type series, only 117 shells bear diagnostic feature of *P. contortus* f. *labiatus,* i.e. clearly visible white lip in the inner part of the aperture, and, thus, are syntypes, while 33 specimens lack this feature, and 4 shells have broken outer lip. Besides, 4 specimens from the type series belong to some species of *Cincinna* (Valvatidae), one – to *Gyraulus* sp., and one more – to a minute pisidiid bivalve.

Distribution: Baltic Sea Basin, Kola Peninsula [Prozorova, 2003; Nekhaev, 2006].

Remark. There are some difficulties concerning the proper authorship of the taxonomic name *Anisus agardhi*. Prozorova [2003] referred this species to as "Starobogatov, 1996", but there is no paper by Starobogatov published before 2003 with mentioning of this binomen [Kantor, Sysoev, 2005]. Kantor and Sysoev [2005] refer this species to as "Starobogatov in Prozorova, 2003", though Prozorova [2003] herself did not introduce this name as intentionally new, and, hence, it is not available in accordance with article 16 of ICZN. Starobogatov *et al.*, 2004 give the authorship of this species as "Prozorova, 2003", in addition they indicate it as nomen novum for *Planorbis contortus* var. *labiatus* Westerlund in caption to the picture of this species. Hence, the proper name and authorship for this species is *Anisus agardhi* Prozorova in Starobogatov, Prozorova, Bogatov et Saenko, 2004.

Morphometric characteristics of syntypes of *P. contortus* f. *labiatus* (with clearly visible white apertural lip) are given in Table 2.

24. *Anisus* (*Bathyomphalus*) *dispar* (Westerlund, 1871) – Fig. 5, H-I.

Planorbis dispar Westerlund, 1871: 131.

History of the name application:

– *Planorbis dispar* — Westerlund, 1873: 390 (shell description, distribution);
– *Planorbis contortus* f. *dispar* — Westerlund, 1875: 109 (shell description, distribution);
– *Planorbis dispar* — Westerlund, 1885a: 74-75 (shell description, distribution);
– *Planorbis dispar* — Westerlund, 1897a: 118-119 (shell description, distribution);
– *Anisus contortus* var. *dispar* — Zhadin, 1952: 188 (shell description);
– *Anisus dispar* — Starobogatov, 1977: 171, fig 401 (determination key, distribution);
– *Anisus dispar* — Stadnichenko, 1990: 175, fig. 171 (shell morphology, differential diagnosis, determination key, distribution, ecology);
– *Anisus dispar* — Prozorova, 2003: 108 (determination key, distribution);

– *Anisus dispar* — Starobogatov *et al.*, 2004: 347, fig 153: 1-3 (determination key, distribution);
– *Anisus dispar* — Kantor, Sysoev, 2005: 212 (taxonomy, distribution);
– *Anisus dispar* — Prozorova *et al.*, 2009: 177 (ecology, distribution).

Type locality: "Forsmark, Ruddammen". The name "Ruddammen" is not in itself a geographical name, but means the pond [dammen = the pond] in which ruda = crucian carp – *Carassius carassius* (L.) is kept. This is probably one of the large ponds at the manor Forsmark that is situated in the province Uppland in Middle Sweden.

Type series. Lectotype (designated here) and 27 paralectotypes (GNM, AN 3960). The hypodigm of *P. dispar* includes also 5 specimens collected in "Westergötl[and], Bäckebol" and kept in SMNH (AN 12: 55). Bäckebol is situated in the province Bohuslän (not Westergötland = Västergötland) close to the west shore of River Göta Älv, about 3 km N of the central part of the town Gothenburg.

Distribution: Northern Europe, Western Siberia, Baikal Lake [Prozorova, 2003].

Remark. According to Westerlund's [1871, 1875] description, shell of this species is more depressed as compared to *Anisus contortus* (L., 1758), and its shell aperture is described as "rotundato-reniformis" (rounded, reniform) [Westerlund, 1875: 109], whereas aperture of *A. contortus* is "parva, oblique depresso-lunari-reniformis" (minor, oblique, depressed, concave-reniform). However, not all shells from the type series of *P. dispar* correspond to the Westerlund's original diagnosis; some of them have apertures of specific for *A. contortus* s.str. shape. In this situation, we designate here the lectotype of *Planorbis dispar* (see Fig. 5, H) that is most corresponding to the original description of *P. dispar* shell and has similar size. The measurements of the lectotype shell at 6.0 whorls (in mm) are: SH = 1.5; SW = 5.1; AH = 1.6; AW = 1.3; IWD_a=3.3; WLW_a=1.0. Morphological characteristics of the paralectotypes is given in Table 2.

25. *Anisus* (*Disculifer*) *carinea* (Westerlund, 1897) – Fig. 6, A-B.

Planorbis vortex var. *carinea* Westerlund, 1897b: 126.

History of the name application:

– *Anisus carinea* — Prozorova, 2003: 106 (determination key, distribution);
– *Anisus carinea* — Starobogatov *et al.*, 2004: 345, fig 151: 16-18 (determination key, distribution);
– *Anisus carinea* — Kantor, Sysoev, 2005: 211 (taxonomy, distribution).

Type locality: "Europäisches Russland. Gouv. Perm, Bilimbajewskaja".

Type series: Six syntypes are kept in ZIN (AN 1, 2). The type locality (European Russia, Perm Gouvermenent, Bilimbayevskaya village) nowadays – Bilimbay settlement near Pervouralsk Town. The hypodigm of this species included also a single shell from GNM (AN 3936) collected in "Russl[and], Perm, Tscheremoskowskaja" (nowadays Cheremysh settlement, Sverdlovsk Region, Urals). Dimensions of this shell at 5.5 whorls (in mm) are: SH = 0.9; SW = 7.5; AH = 1.1; AW = 4.1; IWD_a = 4.8; WLW_a = 1.3.

Distribution: Europe, except the far north regions [Prozorova, 2003; Starobogatov *et al.*, 2004].

Remarks. According to Prozorova [2003], the shell of this species is thin, its whorls are visibly convex from the basal side. Examination of the syntypes has revealed that their shells are relatively thick and have strongly flattened whorls on the basal side (see Fig. 2, A, B). One of shells in ZIN is kept under "lectotype" label but we are unaware that the lectotype was designated for this species by any Russian authors.

26. *Anisus* (*Gyraulus*) *borealis* (Lovén in Westerlund, 1875) – Fig. 6, C, F.

Planorbis borealis Westerlund, 1875: 112-113, pl. 2 fig. 23-25.

History of the name application:

– *Planorbis borealis* — Westerlund, 1885a: 80 (shell description, distribution);
– *Planorbis borealis* — Westerlund, 1897a: 121 (shell description, distribution);
– *Planorbis gredleri* var. *borealis* — Zhadin, 1933: 115 (shell description);
– *Gyraulus gredleri* var *borealis* — Zhadin, 1952: 191 (shell description);
– *Anisus borealis* — Prozorova, 2003: 111 (determination key, distribution);
– *Anisus borealis* — Starobogatov *et al.*, 2004: 350, fig 157: 7-9 (determination key, distribution);
– *Anisus borealis* — Kantor, Sysoev, 2005: 211 (taxonomy, distribution);
– *Anisus borealis* — Nekhaev, 2006: 794-797: fig. 1 (ecology, distribution);
– *Anisus borealis* — Prozorova *et al.*, 2009: 179 (ecology, distribution);
– *Gyraulus borealis* — Soldatenko, Sitnikova, 2009: 72, fig 2 A-E (penis morphology).

Type locality. Originally stated as "Norwegia, Lapponia & Fennia" [Westerlund, 1875]. Locus typicus of the neotype (see below) is: "Lapp. Finland., Kamasjokki" (Finland, province of Lappland, Kaamasjoki River).

Type series. We failed to find the original Lovén materials in both GNM and SMNH collections. Most probably, it is lost, and we based our opinion on shells from the original Westerlund's collection containing 254 specimens (34 samples) from Scandinavia determined by the author as *P. borealis*. However, these samples contain also numerous specimens that may be determined as *Anisus* (*Gyraulus*)

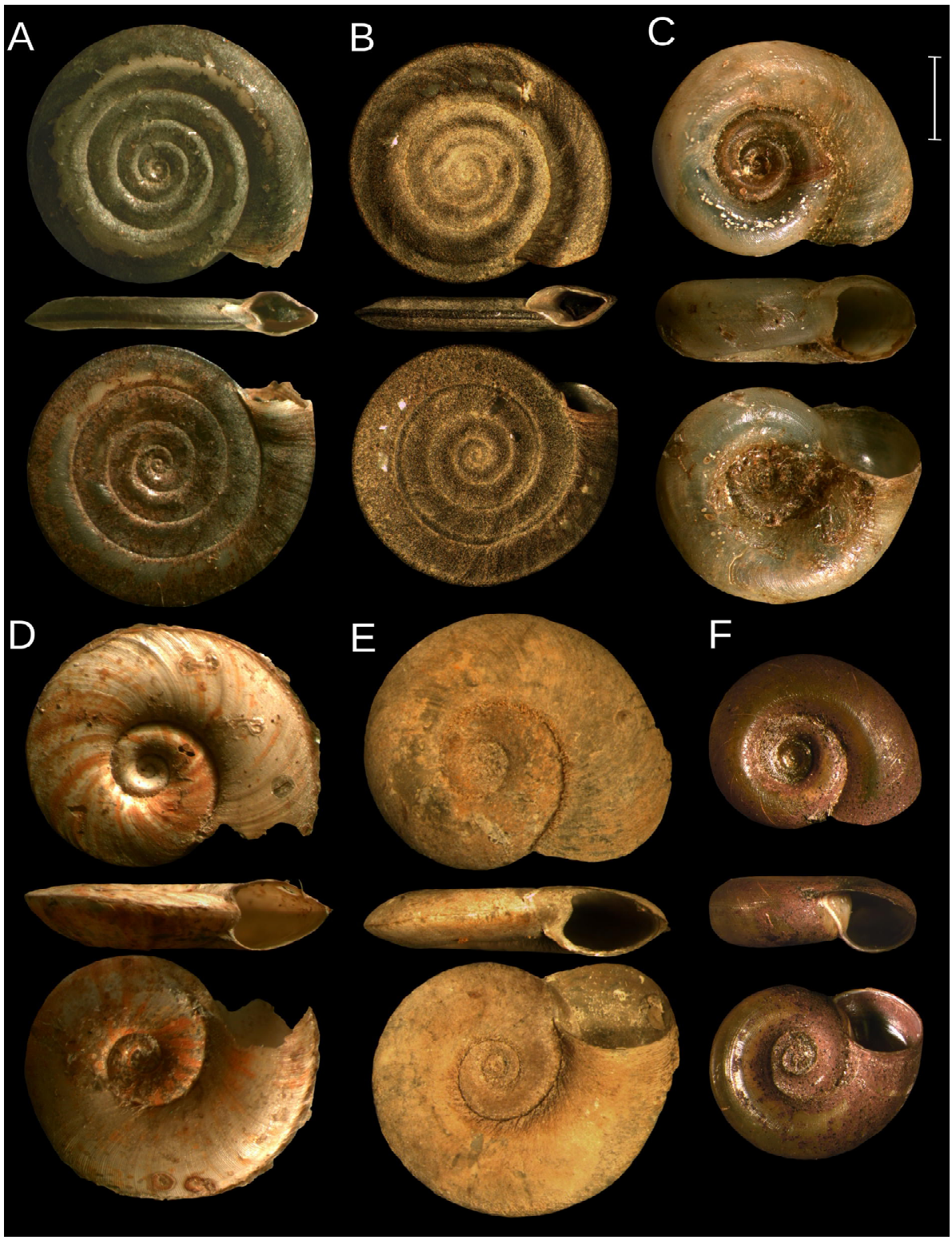

FIG. 6. A. *Planorbis vortex* var. *carinea*, syntype (“Bilimbayewskaya”, ZIN). B. *P. vortex* var. *carinea*, a specimen from the hypodigm (“Russl[and], Perm, Tscheremoskowskaja”; GNM). C. *P. borealis*, neotype (“Lapp[land] Finland, Kamasjokki”; GNM). D. *P. centrifugus*, “lectotype” (“Werchne-Kolymsk”, ZIN). E. *P. centrifugus,* paralectotype (“Sib[eria], Werchne Kolymsk”; GNM). F. *P. borealis* (“Suecia, Östergötland”; GNM). Scale bars 2 mm.

РИС. 6. A. *Planorbis vortex* var. *carinea*, синтип (“Билимбаевская”, ZIN). B. *P. vortex* var. *carinea*, экземпляр из гиподигмы (“Russl[and], Perm, Tscheremoskowskaja”; GNM). C. *P. borealis*, неотип (“Lapp[land] Finland, Kamasjokki”; GNM). D. *P. centrifugus*, “лектотип” (“Верхне-Колымск”, ZIN). E. *P. centrifugus,* паралектотип (“Sib[eria], Werchne Kolymsk”; GNM). F. *P. borealis* (“Suecia, Östergötland”; GNM). Масштабная линейка 2 мм.

Table 3. Measurements of shells of three intact specimens of the type series of *Planorbis centrifugus.* All abbreviations as in the Table 2.

Таблица 3. Промеры раковин трех сохранившихся экземпляров типовой серии *Planorbis centrifugus*. Все сокращения как в таблице 2.

Character/index	Lectotype (ZIN)	Paralectotype 1 (GNM)	Paralectotype 2 (GNM)
Whorls number	3.75	4.37	4.50
Shell height (SH)	1.4	1.6	1.5
Shell width (SW)	6.4	8.4	8.9
Aperture height (AH)	1.5	2.1	2.1
Aperture width (AW)	2.4	3.1	3.6
Diameter of inner whorls from apical side (IWD_a)	2.3	3.6	3.6
Width of the last whorl from apical side (WLW_a)	2.1	2.7	2.9
SH/SW	0.22	0.19	0.17
AH/SW	0.23	0.25	0.24
AH/AW	0.63	0.68	0.58
IWD_a/WLW_a	1.10	1.33	1.24

stroemi (Westerlund, 1881) and some even as *Cincinna* sp. In this situation, we prefer to designate a neotype of *Planorbis borealis* (Fig. 6, C) that was selected from shells most corresponding to the original description (GNM AN 3993).

One of shells of *Planorbis borealis* in the ZIN collection ("Fennia, Lapp. Ross."; AN 1) is kept under "lectotype" label but we are unaware that the lectotype was designated for this species by any of Russian authors. Moreover, it does not belong to original Lovén collection and hence cannot be considered as the lectotype.

Distribution: Northern Eurasia [Prozorova, 2003].

Remarks. Taxonomic status of *Planorbis borealis* is not clear. Usually this species is considered as a synonym of *Anisus* (*Gyraulus*) *acronicus* (Férussac, 1807) [Meier-Brook, 1983; Kruglov, Soldatenko, 2000], though in some recent papers *Anisus* (*G.*) *borealis* is accepted as a distinct species [Prozorova, Starobogatov, 1997; Prozorova, 2003; Starobogatov *et al.*, 2004]. Sitnikova and Takhteev [2006] reported that there are no anatomical differences between *Anisus borealis* from Siberia and the published description of *A.* (= *Gyraulus*) *acronicus* by Meier-Brook [1983].

Shell of neotype corneous, with moderately convex whorls divided by deep suture. Shell surface is covered by thin, oblique growth lines and bears dense periostracal spiral striature near the sutures. Aperture ovoid with rounded outer lip. The sample from which the neotype was selected contains seven other shells which also may be identified as *Planorbis borealis* sensu Westerlund. Dimensions of the neotype shell at 4.5 whorls (in mm) are: SH = 2.0; SW = 7.0; AH = 2.3; AW = 2.7; IWD_a = 3.2; WLW_a = 2.3. Morphometric characteristics of other five shells from Kaamasjoki River is given in Table 2.

27. *Anisus* (*Gyraulus*) *centrifugus* (Westerlund, 1897) – Fig. 6, D-E.

Planorbis centrifugus Westerlund, 1897b: 141-142.

History of the name application:

– *Planorbis centrifugus* — Westerlund, 1897b: 141-142 (shell description, distribution);
– *Gyraulus centrifugus* — Zhadin, 1952: 191, fig. 99 (shell description, determination key, distribution);
– *Anisus centrifugus* — Bogatov, Zatravkin, 1990[1992]: 143, fig. 32, е-з (shell description, distribution);
– *Anisus centrifugus* — Prozorova, Starobogatov, 1997: 49-50, fig 3F (shell description, taxonomy, distribution);
– *Anisus centrifugus* — Prozorova, 2003: 110 (determination key, distribution);
– *Anisus centrifugus* — Starobogatov *et al.*, 2004: 349, fig 156: 4-6 (determination key, distribution);
– *Anisus centrifugus* — Kantor, Sysoev, 2005: 211 (taxonomy, distribution);
– *Anisus centrifugus* — Prozorova *et al.*, 2009: 178 (ecology, distribution);
– *Anisus centrifugus* — Vinarski *et al.*, 2012[2013]: 96 (synonymy, distribution).

Type locality: "Sibirien. Werchne-Kolymsk" (Eastern Siberia, Yakutia, Verkhnekolymsk settlement).

Type series. Prozorova and Starobogatov [1997: 50] designated the lectotype of *A. centrifugus* (ZIN, AN 1) and made reference to two figures (3 F and 3 G) of their article, one of which (3 G) is absent in the paper, whereas another (3 F) depicts a shell which differs from the actual lectotype shell both in its shape and in the position of the peripherical angle. Neither do the lectotype measurements, given by Prozorova and Starobogatov [1997], coincide with the actual lectotype dimentions. Two other shells (paralecotypes) of the *P. centrifugus* type series kept in ZIN, are broken and its taxonomic identity is obscure. Two other specimens from the type series (thus becoming paralectotypes) were

found in GNM (AN 3968). These shells are very similar to each other and differ from the lectotype shell (compare figs. 6 D and 6 E). Measurements of all intact shells from the type series are given in Table 3.

Distribution: Kolyma River basin. Shells from several samples from Southern Siberia and Mongolia (ZIN) labeled as *Anisus centrifugus* do not differ from *A. stroemi* shells. Alleged distribution of *A. centrifugus* in the southern parts of Eastern Siberia [Prozorova *et al.*, 2009] is, thus, doubtful.

28. *Anisus* (*Gyraulus*) *concinnus* (Westerlund, 1881) – Fig. 7, A

Planorbis concinnus Westerlund, 1881: 63.

History of the name application:

– *Planorbis concinnus* — Westerlund, 1885a: 82 (shell description, distribution);
– *Planorbis concinnus* — Westerlund, 1897a: 123 (shell description, distribution);
– *Anisus concinnus* — Prozorova, 2003: 109 (determination key, distribution);
– *Anisus concinnus* — Starobogatov *et al.*, 2004: 348, fig 155: 1-3 (determination key, distribution);
– *Anisus concinnus* — Kantor, Sysoev, 2005: 211 (taxonomy, distribution).

Type locality. Originally stated as "Suecia ad Ronneby; Norvegia in reg. Gudbrandsdal" [Sweden at Ronneby (province of Blekinge, South Sweden); Norway, in the region of the Gudbrandsdalen valley which is situated in the province Oppland Fylke in SE Norway].

The locus typicus of the lectotype (see below) is "Ronneby, Torneryd". Torneryd is a small group of farms, situated approximately 2,5 km WSW of the centre of the city Ronneby.

Type series: lectotype (here designated) and 54 paralectotypes kept in GNM (AN 4011). 12 paralectotypes collected in Ronneby are in SMNH collection (AN 12: 78). Dimensions of the lectotype shell at 4.0 whorls (in mm) are: SH = 1.3; SW = 4.5; AH = 1.2; AW = 1.5; IWD_a = 2.2; WLW_a = 1.4. Morphometric characteristics of five paralectotypes from "Ronneby, Fomeryd" is given in Table 2.

Distribution: Western Europe, in Russia in waterbodies of the Baltic Sea basin [Prozorova, 2003].

Remarks. Features of this species provided by Prozorova [2003] agree with the original Westerlund description (*Gyraulus* species without a periostracal fringe with weak spiral striature). The intensity of the spiral striature is the only difference to distinguish between *A. concinnus* sensu Prozorova and *A.* (*Gyraulus*) *albus* (O.F. Müller, 1774), while differences between *A. concinnus* and *A. borealis* lie in shell measurements only. Original Westerlund's collection in GNM contains shells with periostracal fringe and without it both labeled as "*Planorbis concinnus*". We designated as lectotype a shell without a periostracal fridge, with very weak spiral striature (Fig. 7, A). It should be noted that the prominence of the spiral surface striature under stereomicroscope depends upon the entrance angle and in some conditions these striae are almost not visible.

29. *Anisus* (*Gyraulus*) *illibatus* (Westerlund, 1883) – not illustrated

Planorbis illibatus Westerlund, 1883: 53.

History of the name application:

– *Anisus illibatus* — Prozorova, 1997: 25 (synonymy);
– *Anisus illibatus* — Prozorova, 2003: 112 (determination key, distribution);
– *Anisus illibatus* — Starobogatov *et al.*, 2004: 351, fig 158: 16-18 (determination key, distribution);
– *Anisus illibatus* — Kantor, Sysoev, 2005: 212 (taxonomy, distribution).

Type locality: "Japan, Onuyo".

Type series: SMNH (not examined by us). It was studied by Habe [1984], who illustrated one specimen (syntype) from the Westerlund collection.

Distribution: South Kurile Islands [Prozorova, 1997, 2003], Japan [Habe, 1984].

30. *Anisus* (*Gyraulus*) *infraliratus* (Westerlund, 1877) – Fig. 7, C

Planorbis infraliratus Westerlund, 1877: 59-60.

History of the name application:

– *Planorbis infraliratus* — Westerlund, 1885a: 77 (shell description, distribution);
– *Anisus infraliratus* — Prozorova, 2003: 110 (determination key, distribution);
– *Anisus infraliratus* — Starobogatov *et al.*, 2004: 349, fig 156: 13-15 (determination key, distribution);
– *Anisus infraliratus* — Kantor, Sysoev, 2005: 212 (taxonomy, distribution);
– *Anisus infraliratus* — Prozorova *et al.*, 2009: 179 (ecology, distribution).

Type locality: "Jenissei, Nischnij Inbatsk, … 63°50'"

Type series: Shells identified as "*Planorbis infraliratus*" from the type locality (syntypes) are kept in GNM (4 specimens, AN 3972), SMNH (2 specimens, AN 12:61) and ZIN (1 ex; AN 1)

Distribution: Siberia: from Yenissei to Chukotka, Tuva, Mongolia [Kantor, Sysoyev, 2005].

31. *Anisus* (*Gyraulus*) *kamtschaticus* (Westerlund, 1897) – Fig. 7, E

Planorbis kamtschaticus Westerlund, 1897: 127.

History of the name application:

– *Anisus kamtschaticus* — Starobogatov, Budnikova, 1976: 86, fig. 5, VI (anatomy, shell illustration);

– *Anisus kamtschaticus* — Bogatov, Zatravkin, 1990[1992]: 146, fig. 33 E-Z (shell description, anatomy, determination key, distribution);
– *Anisus kamtschaticus* — Prozorova, 2003: 109-110 (determination key, distribution);
– *Anisus kamtschaticus* — Starobogatov *et al.*, 2004: 348, fig 155: 10-12 (determination key, distribution);
– *Anisus kamtschaticus* — Kantor, Sysoev, 2005: 213 (taxonomy, distribution).

Type locality: "Sibirien. Halbinsel Kamtschatka, im Flusse Kamtschatka" (Siberia, Kamchatka Peninsula, in Kamchatka River).

Type series: There are no specimens of this species in GNM or SMNH. A single broken shell from the original Westerlund collection labeled as "*Planorbis kamtschaticus*" is stored in ZIN (AN 1). Judging from the hand-written ZIN catalogue, originally the type series included three specimens, two of them, however, had been lost.

Distribution: north-east part of Asia, from the Lena River basin to the Amur river basin [Kantor, Sysoev, 2005]

32. *Anisus* (*Gyraulus*) *stroemi* (Westerlund, 1881) – Fig. 7, D

Planorbis strömi Westrlund, 1881: 63.

History of the name application:

– *Planorbis strömi* — Westerlund, 1885a: 79 (shell description, distribution);
– *Planorbis strömi* — Westrlund, 1897a: 120-121 (shell description, distribution);
– *Planorbis gredleri* var. *stroemi* — Zhadin, 1933: 115, fig 80 (shell description);
– *Gyraulus gredleri* var. *stroemi* — Zhadin, 1952: 191 (shell description);
– *Anisus stroemi* — Stadnichenko, 1990: 219-220, fig. 86 (shell morphology, diagnostics, determination key, distribution, ecology);
– *Anisus stroemi* — Bogatov, Zatravkin, 1990[1992]: 146-147, fig. 33 I-L (shell description, anatomy, determination key, distribution);
– *Anisus stroemi* — Kruglov, Soldatenko, 2000: 119, fig. 2 E, 3 E (shell description, anatomy, taxonomy, distribution);
– *Anisus stroemi* — Prozorova, 2003: 109 (determination key, distribution);
– *Anisus stroemi* — Starobogatov *et al.*, 2004: 348, fig. 154: 10-12 (determination key, distribution);
– *Anisus stroemi* — Kantor, Sysoev, 2005: 215 (taxonomy, distribution);
– *Gyraulus stroemi* — Glöer, Vinarski, 2009: 718-723, fig. 1, 3 (taxonomy, shell description, anatomy, distribution);
– *Anisus stroemi* — Prozorova *et al.*, 2009: 178 (ecology, distribution).
– *Anisus stroemi* — Vinarski *et al.*, 2012[2013]: 96 (taxonomic status, synonymy, distribution).

Type locality: "Norge" (lectotype locality)

Type series: lectotype (here designated) and one paralectotype are kept in the GNM (AN 3987).

Distribution: Northern Eurasia: from the Scandinavia to Kamtchatka Peninsula [Glöer, Vinarski, 2009].

Remarks: While redescribing this species, Glöer and Vinarski [2009] referred to two empty shells from GNM collection (AN 3987) sampled in Norway ("Norge") as only syntypes of *Planorbis stroemi*. Actually, the original type locality stated in the first description is much wider ("Norvegia, Fennia, Siberia"), and there are at least 17 samples of *P. stroemi* in GNM and ZIN containing several tens of specimens collected within this range (from Sweden, Norge, Urals, Western and Eastern Siberia) and determined by Westerlund himself. Some of these specimens, however, does not comply with the original diagnosis. It urged us to designate a specimen depicted by Glöer and Vinarski [2009, fig. 1] as the lectotype of *P. stroemi* here. Its dimensions at 4.25 whorls are (in mm): SH = 1.5; SW = 6.8; AH = 1.6; AW = 2.4; IWD_a = 3.3; WLW_a = 2.1. Measurements of nine other specimens from the hypodigm of *P. stroemi* ("Suecia, Carlstadt"[1]) are in Table 2.

33. *Anisus* (*Torquis*) *correctus* (Westerlund, 1897) – Fig. 7, F

Planorbis correctus Westelund, 1897a: 123-124.

History of the name application:

– *Anisus correctus* — Prozorova, 2003: 108 (determination key, distribution);
– *Anisus correctus* — Starobogatov *et al.*, 2004: 347, fig 154: 4-6 (determination key, distribution);
– *Anisus correctus* — Kantor, Sysoev, 2005: 211 (taxonomy, distribution).

Type locality: "Fennia ad Harjula in Kuopio".

Type series: One sample with 12 syntypes is kept in GNM under AN 4005 (see also Table 4). Two syntypes from the type locality are housed in ZIN (AN 1).

Hypodigm: one more sample with 7 shells of *Planorbis correctus* collected in Finland (exact locality is unknown) is in GNM.

Distribution: Basin of the Baltic Sea [Prozorova, 2003].

34. *Anisus* (*Vorticulus*) *bavaricus* (Westerlund, 1875) – Fig. 8, A, B

Planorbis vorticulus f. *bavaricus* Westerlund, 1875: 106, fig 3 (28-30).

History of the name application:

– *Planorbis charteus* var. *bavaricus* — Westerlund, 1885a: 72 (shell description, distribution);
– *Planorbis charteus var. bavaricus* — Westerlund, 1897a: 116-117 (shell description, distribution);

[1] This is the city of Karlstad (modern spelling), situated at the northern shore of Lake Vänern, at the mouth of River Klarälven in the province Värmland.

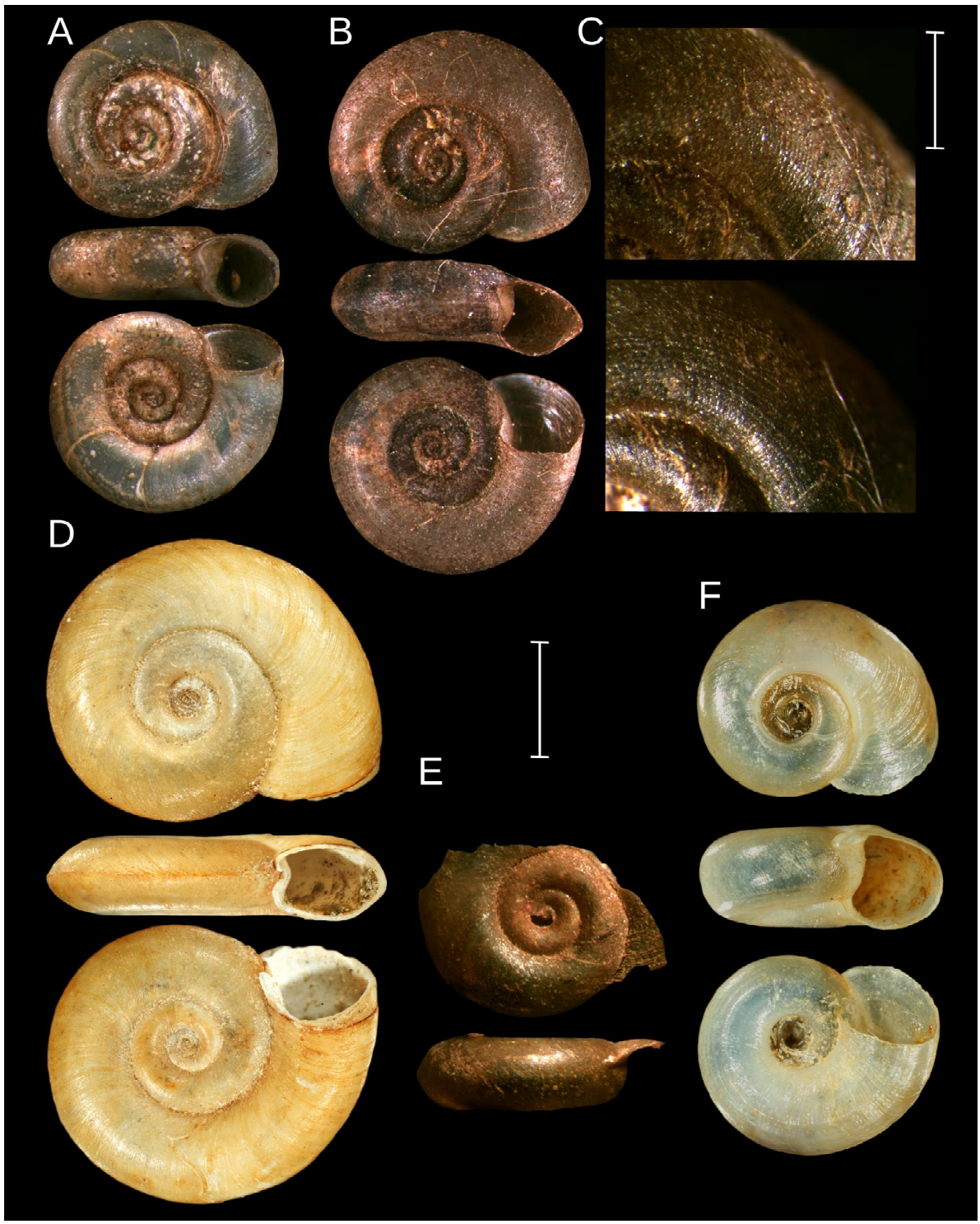

FIG. 7. A. *Planorbis correctus*, syntype (“Fennia, Kuopio, Harjula”; GNM). B-C. *P. concinnus*, lectotype (“Ronneby, Torneryd”; GNM): B – General view of the shell; C – Sculpture details with different entrance angle. D. *P. stroemi*, lectotype (“Norwegia”, GNM). E. *P. kamtschaticus,* lectotype (“Kamtschatka peninsula, Kamstchatka river”; ZIN). F. *P. infraliratus*, syntype (“Sibir, Nischnii Inbatsk”; GNM). Scale bars 0.25 mm (surface sculpture), 2 mm (shells).

РИС. 7. A. *Planorbis correctus*, синтип (“Fennia, Kuopio, Harjula”; GNM). B-C. *P. concinnus*, лектотип (“Ronneby, Torneryd”; GNM): B – общий вид раковины; C – детали скульптуры, видимые под различным углом. D. *P. stroemi*, лектотип (“Norwegia”, GNM). E. *P. kamtschaticus,* лектотип (“Полуостров Камчатка, река Камчатка”; ZIN). F. *P. infraliratus*, синтип (“Sibir, Nischnii Inbatsk”; GNM). Масштабная линейка 0,25 мм (скульптура), 2 мм (раковины).

Table 4. Morphometric characteristics of specimens (including syntypes and paralectotypes) of some planorbid species described by Westerlund. Abbreviations as in Table 2.

Таблица 4.Морфометрическая характеристика некоторых видов семейства Planorbidae (включая синтипы и паралектотипы), описанные Вестерлюндом. Все сокращения как в таблице 2.

Character/ index	*Planorbis bavaricus* (9)	*Planorbis clessini* (4)	*Planorbis correctus* (10)	*Planorbis nitidus* var. *molytes* (15)	*Planorbis nitida* var. *oelandicus* (6)	*Planorbis riparius* (7)
Whorls number	4.50–4.75 4.55±0.09	3.50–4.00 3.69±0.21	4.00–4.50 4.32±0.16	4.00–4.50 4.24±0.21	4.50–5.00 4.60±0.20	2.25–3.00 2.61±0.24
SH	0.5–0.7 0.65±0.7	1.1–1.3 1.2±0.1	1.2–1.3 1.2±0.04	1.2–1.5 1.4±0.1	1.3–1.4 1.4±0.04	0.4–0.6 0.5±0.1
SW	3.8–4.8 4.3±0.3	4.5–6.3 5.2±0.7	4.2–5.0 4.5±0.2	5.1–6.9 6.1±0.5	5.4–6.7 5.8±0.4	1.8–3.1 2.1±0.4
AH	0.7–0.8 0.74±0.04	1.4–1.7 1.6±0.1	1.2–1.6 1.4±0.1	1.4–1.9 1.7±0.1	1.6–1.8 1.7±0.1	0.5–0.6 0.5±0.1
AW	1.0–1.2 1.1±0.1	1.1–2.2 1.5±0.4	1.3–1.8 1.4±0.2	2.3–3.1 2.7±0.2	2.2–2.7 2.4±0.2	0.7–1.3 0.9±0.2
IWD_a	2.1–2.9 2.4±0.2	0.6–1.3 0.9±0.2	2.1–2.8 2.4±0.2	1.4–2.3 1.8±0.2	1.9–2.3 2.0±0.2	0.6–1.2 0.7±0.2
WLW_a	0.9–1.2 1.0±0.9	1.7–2.3 2.0±0.2	1.0–1.4 1.2±0.2	2.1–2.6 2.4±0.1	2.0–2.4 2.2±0.5	0.7–1.1 0.8±0.1
SH/SW	0.13–0.17 0.15±0.01	0.21–0.24 0.23±0.01	0.13–0.17 0.15±0.01	0.22–0.25 0.23±0.01	0.21–0.26 0.24±0.02	0.18–0.28 0.23±0.04
AH/SW	1.03–1.44 1.14±0.13	1.31–1.43 1.34±0.05	1.03–1.44 1.14±0.13	1.09–1.38 1.21±0.08	1.16–1.28 1.20±0.06	0.90–1.35 1.11±0.19
AH/AW	0.62–0.75 0.68±0.05	0.79–1.33 1.12±0.20	0.62–0.75 0.68±0.05	0.53–0.72 0.63±0.06	0.67–0.75 0.70±0.05	0.50–0.80 0.62±0.11
IWD_a/ WLW_a	2.19–2.91 2.46±0.26	0.37–0.54 0.45±0.06	2.19–2.91 2.46±0.26	0.64–0.93 0.73±0.09	0.88–0.96 0.92±0.03	0.72–1.08 0.87±0.12

– *Anisus bavaricus* — Prozorova, 2003: 105 (determination key, distribution);
– *Anisus bavaricus* — Starobogatov *et al.*, 2004: fig 344, fig. 151: 1-3 (determination key, distribution);
– *Anisus bavaricus* — Kantor, Sysoev, 2005: 210 (taxonomy, distribution).

Type locality: "Bavaria".

Type series: 15 syntypes collected in "Dinkelscherben, Bavaria" (one of them belongs to the genus *Segmentina* Fleming, 1818) are kept in GNM under AN 3940 (see also Table 4). Other six syntypes from the same locality are in ZIN (AN 1).

Remarks: Usually the year of description of this species is mistakenly referred to as "1885" [Prozorova, 2003; Kantor, Sysoev, 2005; Kantor *et al.*, 2010]. According to Prozorova [2003], this species is characterized by a distinct angle in the central part of shell periphery, whereas all the specimens examined by us in GNM have an angle placed close to the basal part of the periphery (see Fig. 8, A, B).

35. *Choanomphalus riparius* (Westerlund, 1865) – Fig. 8, C, D

Planorbis riparius Westerlund, 1865: 106-107.

History of the name application:

– *Planorbis riparius* — Westerlund, 1873: 404-405 (shell description, distribution);
– *Planorbis riparius* — Westerlund, 1885a: 85 (shell description, distribution);
– *Planorbis riparius* — Zhadin, 1933: 118, fig. 86 (shell description, determination key, distribution);
– *Choanomphalus riparius* — Starobogatov, 1977: 168, fig. 395 (determination key, distribution);
– *Gyraulus riparius* — Meier-Brook, 1983: 41-42, fig. 57, 58 (shell and reproductive morphology, determination key, distrbution);
– *Choanomphalus riparius* — Stadnichenko, 1990: 235-238, fig. 92, 93 (shell and reproductive system morphology, diagnostics, determination key, distribution, ecology);
– *Choanomphalus riparius* — Prozorova, Starobogatov, 1999: 1013 (determination key, distribution);
– *Gyraulus* (*Lamorbis*) *riparius* — Glöer, 2002: 274, Abb. 295 (shell description and illustration, ecology, distribution, determination key);
– *Choanomphalus riparius* — Starobogatov *et al.*, 2004: 342, fig. 149: 16-18 (determination key, distribution);
– *Choanomphalus riparius* — Kantor, Sysoev, 2005: 219 (taxonomy, distribution);
– *Gyraulus riparius* — Uvaeva, Gural, 2008: 34 (distribution, ecology);
– *Choanomphalus riparius* — Soldatenko, Petrov, 2012: 188-190, 192, fig. 3, 5D, 7 C-D (mating behavior, morphology of the copulatory organ).

Type locality: "Förekommer fästad på trästycken, stenar o. s. v. på östra stranden af Härstorps sjö vid Ronneby" ["On stones and pieces of wood on the east shore of Lake Härstorpasjön, Ronneby, province Blekinge, Sweden"]. Härstorpasjön is situ-

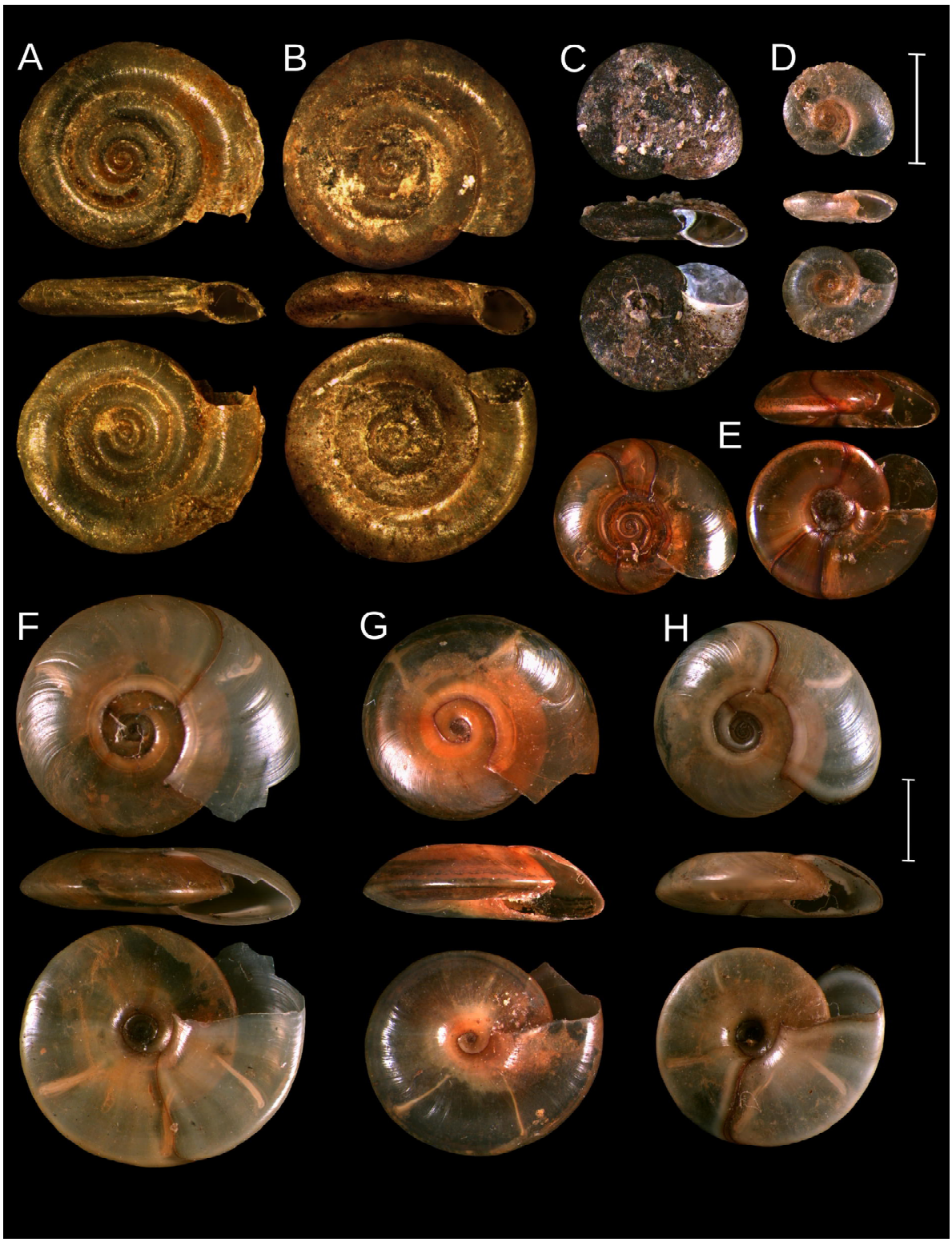

FIG. 8. A, B. *Planorbis charteus* var. *bavaricus*, syntype (“Dinkelscherben, Bavaria”; GNM). C-D. *P. riparius*, syntypes (“Ronneby”; GNM). E. *P. nitidus* var. *clessini*, specimen from the hypodigm (“Blekinge”; GNM). F. *P. nitidus* var. *clessini*, specimen from the hypodigm (“Britania”; GNM). G. *P. nitidus* var. *molytes*, syntype (“Heidelberg”; GNM). H. *P. nitidus* var. *oelandicus,* syntype (“Öl[and], Borgholm”; GNM). Scale bars 2 mm (A–E the same scale; F–H the same scale).

РИС. 8. A, B. *Planorbis charteus* var. *bavaricus*, синтип (“Dinkelscherben, Bavaria”; GNM). C-D. *P. riparius*, синтипы (“Ronneby”; GNM). E. *P. nitidus* var. *clessini*, экземпляр из гиподигмы (“Blekinge”; GNM). F. *P. nitidus* var. *clessini*, экземпляр из гиподигмы (“Britania”; GNM). G. *P. nitidus* var. *molytes*, синтип (“Heidelberg”; GNM). H. *P. nitidus* var. *oelandicus,* синтип (“Öl[and], Borgholm”; GNM). Масштабная линейка 2 мм (A–E в одинаковом масштабе; F–H в одинаковом масштабе).

ated about 1 km W of the centre of the town Ronneby.

Type series: 23 syntypes are kept in the GNM (AN 4026), majority of them are juvenile (see also Table 3).

Hypodigm: there are three shells collected in "Donse, Dania" and determined as *P. riparius* by Westerlund himself in SMNH (AN 12:86). Donse is a farm (and also a small stream – Donse Aa) on the northern part of the Danish island Sjælland (Zealand, see comment in previous notes). Donse is situated SW of the town Helsingør, between the villages Hillerød and Hørsholm.

Distribution: Europe, except Far North, Urals, Altay, Western Siberia [Kantor *et al.*, 2010].

Taxonomic remark. Some authors [Clessin, 1884; Zhadin, 1933; Uvaeva, 2007] describe and illustrate this species as having a *Hippeutis*-like shell with almost triangular aperture and well developed periferal angle. However, the shape of the syntype shells is obviously not similar to *Hippeutis* and is closer to shells of *Gyraulus* (see Fig. 8, C, D).

36. *Planorbarius pinguis* (Westerlund, 1885) – not illustrated

Planorbis pinguis Westerlund, 1885a: 66.

History of the name application:

– *Planorbarius pinguis* — Starobogatov *et al.*, 2004: 331, fig. 141: 10-12 (determination key, distribution);
– *Planorbarius pinguis* — Kantor, Sysoev, 2005: 208 (taxonomy, distribution).

Type locality: "Königsberg" [now Kaliningrad, Russia].

Type material: Not found both in GNM and SMNH, probably lost.

Distribution: South and West of Europe [Starobogatov *et al.*, 2004].

37. *Segmentina clessini* (Westerlund, 1873) – Fig. 8, E, F

Planorbis clessini Westerlund, 1873: 613-614.

History of the name application:

– *Planorbis nitidus* var. *clessini* — Westerlund, 1885a: 86 (shell description, distribution);
– *Segmentina clessini* — Starobogatov, 1977: 166, fig 390 (determination key, distribution);
– *Segmentina clessini* — Stadnichenko, 1990: 260-262, fig. 105 (shell morphology, determination key, distribution, ecology);
– *Segmentina clessini* — Kruglov, Soldatenko, 1997: 128-129, fig. 5 A, 8 B, 12 A (shell and reproductive morphology, taxonomy, determination key, distribution);
– *Segmentina clessini* — Starobogatov *et al.*, 2004: 338, fig. 147: 4-6 (determination key, distribution);
– *Segmentina clessini* — Kantor, Sysoev, 2005: 223 (taxonomy, distribution).

Type locality: "Sverige pä Öland i en bäck söder om byn Kohlstad nära Borgholm" [Sweden, Island Öland, in a brook south of the village Kolstad (modern spelling) village near Borgholm City].

Type series: We failed to find specimens from the type locality both in GNM and SMNH. A sample labeled as "Collectio Molluscorum Typica" (GNM AN 4029) and containing 12 juvenile shells is from Blekinge, the small province of Sweden adjacent south of the south-eastern part of the Småland province. Thus, the type series is most probably lost.

Hypodigm: includes several tens of shells determined as *P. clessini* by Westerlund himself (GNM, SMNH). Most of these specimens were collected outside Scandinavia (labeled as "Galizien", "England", "Patschkau" and so on). Measurements of four specimens collected in "Jönköping, Suecia"[2] are given in Table 4.

Distribution: Europe except the far north and the Mediterranean region, north of Kazakhstan and Altay Region [Kruglov, Soldatenko, 1997].

38. *Segmentina molytes* (Westerlund, 1885) – Fig. 8, G

Planorbis nitidus var. *molytes* Westerlund, 1885a: 86.

History of the name application:

– *Segmentina molytes* — Kruglov, Soldatenko, 1997: 122, fig. 4 A, 7 A, 10 B (shell and reproductive morphology, taxonomy, determination key, distribution);
– *Segmentina molytes* — Starobogatov *et al.*, 2004: 340, fig. 147: 34-36 (determination key, distribution);
– *Segmentina molytes* — Kantor, Sysoev, 2005: 223 (taxonomy, distribution).

Type locality: "Deutschland bei Heidelberg u. Vegesack" (Germany, near Heidelberg and Vegesack).

Type series: A single syntype is stored in the GNM (AN 4030). Its shell dimensions at 4.25 whorls are (in mm): SH = 1.4; SW = 6.3; AH = 2.0; AW = 2.8; IWD_a = 1.8; WLW_a = 2.6.

Hypodigm: There are three more samples in the original Westerlund collection, two collected in 1891 in "Dümmersee, Germ[ania]" (GNM AN 4030; SMNH AN 12:87, 35 shells in total; see also Table 4) and the rest sampled in Ronneby, Sweden (47 specimens; GNM AN 4030).

Distribution: Europe except the Far North, North of Kazakhstan [Kruglov, Soldatenko, 1997].

39. *Segmentina oelandica* (Westerlund, 1885) – Fig. 8, H

Planorbis nitidus var. *oelandicus* Westerlund, 1885a: 86.

History of the name application:

[2] The city of Jönköping is situated in the northern part of the province Småland, at the southern end of Lake Vättern.

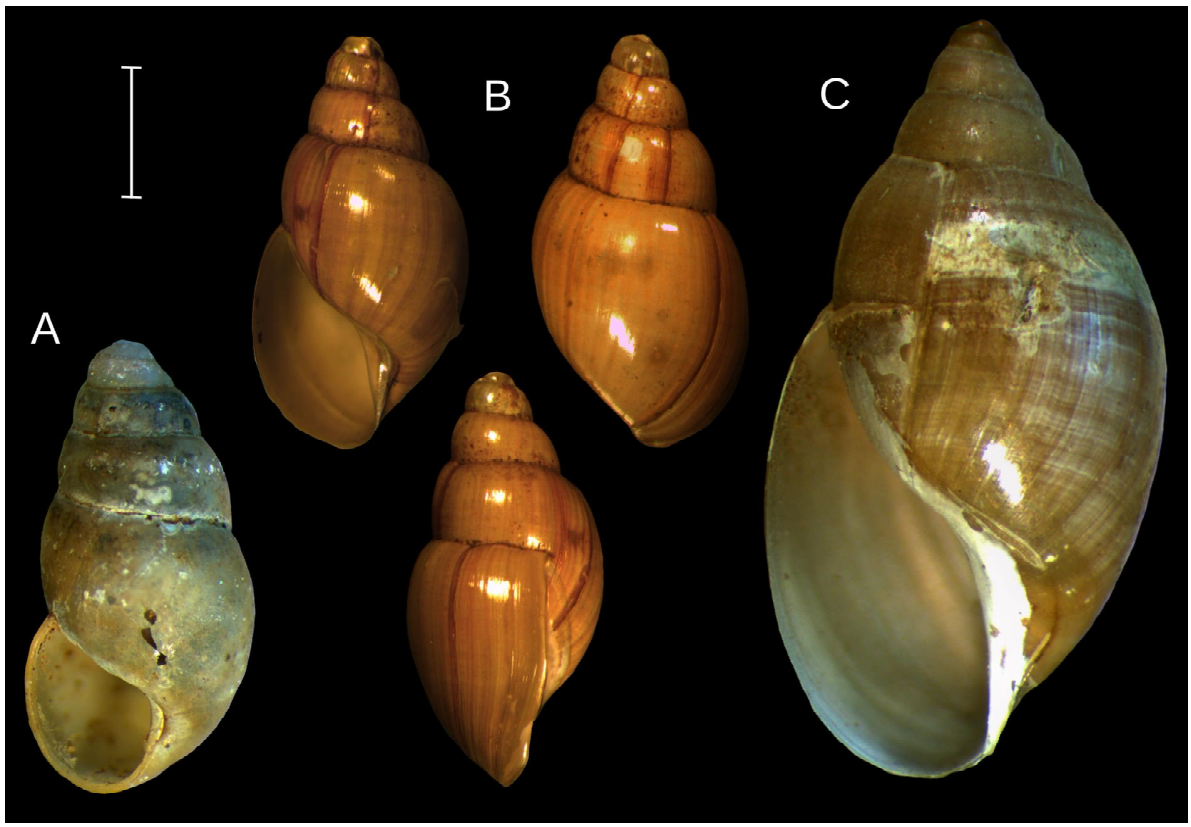

FIG. 9. A. *Physa aenigma*, holotype ("Sibir. Podk[amennojes] Tunguskas inflode i Jenissei"; SMNH). B. *Ph. sibirica*, paralectotype ("Sib[eria] Jenissej, Kap Sopotschnoje Korga"; GNM). C. *Ph. sibirica*, lectotype ("Jenissey Sopotschnoje Korga"; SMNH). Scale bars 2 mm.

РИС. 9. A. *Physa aenigma*, голотип ("Sibir. Podk[amennojes] Tunguskas inflode i Jenissei"; SMNH). B. *Ph. sibirica*, паралектотип ("Sib[eria] Jenissej, Kap Sopotschnoje Korga"; GNM). C. *Ph. sibirica*, лектотип ("Jenissey Sopotschnoje Korga"; SMNH). Масштабная линейка 2 мм.

– *Segmentina oelandica* — Kruglov, Soldatenko, 1997: 118-121, fig., 3 E, 6 C, 9 C (shell and reproductive morphology, taxonomy, determination key, distribution);
– *Segmentina oelandica* — Starobogatov *et al.*, 2004: 339, fig 147: 22-24 (determination key, distribution);
– *Segmentina oelandica* — Kantor, Sysoev, 2005: 223 (taxonomy, distribution);
– *Segmentina oelandica* — Soldatenko, Petrov, 2009: 198-202, fig. 1-3 (mating behavior, morphology of copulatory organ);
– *Segmentina oelandica* — Soldatenko, Petrov, 2012: 190, 192, fig. 2C, 4A, 5E (mating behavior, morphology of copulatory organ).

Type locality: "Schweden, Borgholm" (Borgholm Town, Öland Island, Sweden).

Type series: 6 syntypes are kept in GNM (AN 4031; see also Table 4).

Distribution: North of Western Europe, Romania, Ukraine, European part of Russia, except the far north [Kruglov, Soldatenko, 1997].

Family Physidae Fitzinger, 1833

40. *Sibirenauta aenigma* (Westerlund, 1877) – Fig. 9, A

Physa (?) *aenigma* Westerlund, 1877: 104-105.

History of the name application:

– ? *Physa aenigma* — Westerlund, 1885a: 61 (shell description, distribution);
– *Sibirenauta aenigma* — Starobogatov *et al.*, 1989: 67-68, fig. 1:8, 2:7 (shell and reproductive morphology description, taxonomy, diagnostics, distribution);
– *Sibirenauta aenigma* — Starobogatov *et al.*, 2004: 326, fig. 138: 9 (determination key, distribution);
– *Sibirenauta aenigma* — Kantor, Sysoev, 2005: 224-225 (taxonomy, distribution);
– *Sibirenauta aenigma* — Prozorova *et al.*, 2009: 187 (distribution).

Type locality: "Podkamennojes Tunguskas in flode i Jenissei" (Podkamennaya Tunguska River near its inflowing into Yenisei River).

Type series: A single specimen is kept in SMNH (AN 16: 52). Taylor [2003] considered it is the holotype (by monotypy). Its dimensions are: SH = 5,7; SW = 2,8; SpH = 3,5; BWH = 3,9; AH = 2,2; AW = 1,5.

Distribution: South of Central and Eastern Siberia, Altay [Kantor *et al.*, 2010].

Remarks: This name was used for designation of a physid species inhabiting South Siberia by Starobogatov *et al.* [1989] without examination of

FIG. 10. Labels of specimens designated here as either lectotypes or neotype. A. *Limnaea truncatula* var. *sibirica*. B. *Planorbis borealis*. C. *P. dispar*. D. *P. concinnus*. E. *P. stroemi*. F. *Physa sibirica*.

РИС. 10. Этикетки экземпляров, обозначаемых здесь как нео- или лектотипы. A. *Limnaea truncatula* var. *sibirica*. B. *Planorbis borealis*. C. *P. dispar*. D. *P. concinnus*. E. *P. stroemi*. F. *Physa sibirica*.

the type series. Later, Taylor [2003] has shown that the holotype of *Ph. aenigma* represents nothing but a sinistral shell of some species of land snails (most probably belonging to the genus *Cochlicopa* Férussac, 1821) and, thus, this taxonomic name is not available for any physid species. Possibly, the species *Sibirenauta aenigma* sensu Starobogatov *et al.* [1989] should be named *Sibirenauta kultukiana* (B. Dybowski, 1913) since the latter was regarded as a junior synonym of *S. aenigma* by Starobogatov *et al.* [1989].

41. *Sibirenauta sibirica* (Westerlund, 1877) – Fig. 9, B, C

Physa (? *Isidora*) *sibirica* Westerlund, 1877: 55-56.

History of the name application:

– *Physa sibirica* — Westerlund, 1885a: 61 (shell description, distribution);
– *Sibirenauta sibirica* — Starobogatov *et al.*, 1989: 67 (distribution);
– *Sibirenauta sibiricus* — Taylor, 2003: 71, pl. 5, fig. 5;
– *Sibirenauta sibirica* — Starobogatov *et al.*, 2004: 326, fig. 138: 10 (determination key, distribution);
– *Sibirenauta sibirica* — Kantor, Sysoev, 2005: 225 (taxonomy, distribution).

Type locality: "Jenissei, Sopotchnaya Korga … (lat 71°40')".

Type series: the lectotype (designated here) and three paralectotypes kept in SMNH (AN 1651; 12: 31), ten further paralectotypes from the same locality are in GNM (AN 3877). Taylor [2003: 71] believes that, perhaps, the shell from SMNH belong to two different species of *Sibirenauta*, but it is quite possible that conchological differences mentioned by Taylor may be explained by ontogenic variation in shell proportions.

Distribution: Subarctic and Arctic parts of Asia, Alaska [Starobogatov *et al.*, 2004]. Recently recorded by Sitnikova *et al.* [2010] from the southern part of Eastern Siberia.

Remarks: Typically, relatively large (shell height up to 19 mm) *Aplexa*-like snails are included to the genus *Sibirenauta* [Starobogatov, Streletzkaya, 1967; Vinarski *et al.*, 2013b]. However, all shells from the type series of *Physa sibirica* kept in GNM are rather small and cannot be identified surely as belonging to *Sibirenauta*. The Stockholm specimen is larger and almost decidedly belongs to this genus. Hence we designate this specimen here as the lectotype of *Physa sibirica* (see Fig. 9, C; 10, F). Its dimensions at 4.75 whorls are (in mm): SH = 8,8; SW = 4,7; SpH = 5,0; BWH = 7,3; AH = 5,3; AW = 2.8.

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Типовые материалы видов пресноводных брюхоногих моллюсков, описанных К.А. Вестерлюндом и принятых в современной систематике моллюсков: таксономическое и номенклатурное исследование

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РЕЗЮМЕ. Карл Агард Вестерлюнд (1831–1908) – выдающийся шведский малаколог, изучавший систематику и географическое распространение континентальных моллюсков (наземных и пресноводных). Он установил большое число новых таксонов, некоторые из них до сих пор признаются в систематике валидными. В работе приводится информация о типовых материалов 41 вида пресноводных моллюсков, описанных Вестерлюндом и принятых в качестве валидных в современной российской малакологической систематике. Исследование проведено с использованием оригинальной коллекции Вестерлюнда, части которой в настоящее время хранятся в нескольких крупных научных учреждениях (Гетеборгский естественноисторический музей, Шведский музей естественной истории в Стокгольме, Зоологический институт РАН). Приводятся очерки для каждого из семнадцати видов, где дана вся релевантная информация об их типовых сериях. Также представлены таксономические и номенклатурные замечания по отдельным видам. Для большинства обсуждаемых таксонов приведены фотографии раковин типовых экземпляров. Обозначены лектотипы для *Limnaea truncatula* var. *sibirica* Westerlund 1885, *Planorbis dispar* Westerlund 1871, *Planorbis concinnus* Westerlund 1881, *Planorbis stroemi* Westerlund 1881 и *Physa sibirica* Westerlund 1881 а также неотип для *Planorbis borealis* Lovén in Westerlund, 1875.