

Bivalve mollusks of Ussuriysky Bay (Sea of Japan). Part 1

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The bivalve molluscan fauna of Ussuriysky Bay (Peter the Great Bay, Sea of Japan) includes 124 species belonging to 76 genera and 36 families. An annotated list of species is supplemented with data on local distribution, depth ranges, and bottom type preferences, separately for living specimens and empty shells. 78 species are illustrated with photographs.

Двустворчатые моллюски Уссурийского залива (Японское море). Часть 1

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Изучена фауна двустворчатых моллюсков Уссурийского залива (зал. Петра Великого, Японское море), в составе которой зарегистрировано 124 вида, относящихся к 76 родам и 36 семействам. Для всех видов приведены сведения о локальном распространении, глубинах обитания, приуроченности к грунтам, раздельно для находок живых особей и пустых раковин; для 78 видов даны фотоизображения.

The bivalve molluscan fauna of Peter the Great Bay, one of the largest bays of the Sea of Japan (East Sea), is known insufficiently, although this area along with southern Sakhalin [Golikov, Scarlato, 1985; Ivanova, 1985] have received the most study in the Russian Far Eastern seas. Significant unevenness in explorations of the fauna within Peter the Great Bay led to a number of poorly grounded biogeographical conclusions. Previous researches on the bivalve mollusks were carried out mainly in the western part of Peter the Great Bay, namely, Possjet Bay

[Golikov, Scarlato, 1967, 1971; Scarlato, 1981], in the area of the Far East Marine Reserve [Moskaletz, 1984, 1990], and in Vostok Bay [Evseev, 1976]. Only recently, the fauna of other large embayments – Amursky and Nakhodka Bays – received attention [Lutaenko, 1999, 2002, 2003]. This paper describes the fauna of Ussuriysky Bay (Fig. 1), which is inadequately studied in this respect. This study is a part in series of faunal surveys of large bays of the Sea of Japan, including Amursky Bay [l.c.] and Yeongil Bay [Lutaenko et al., 2003].

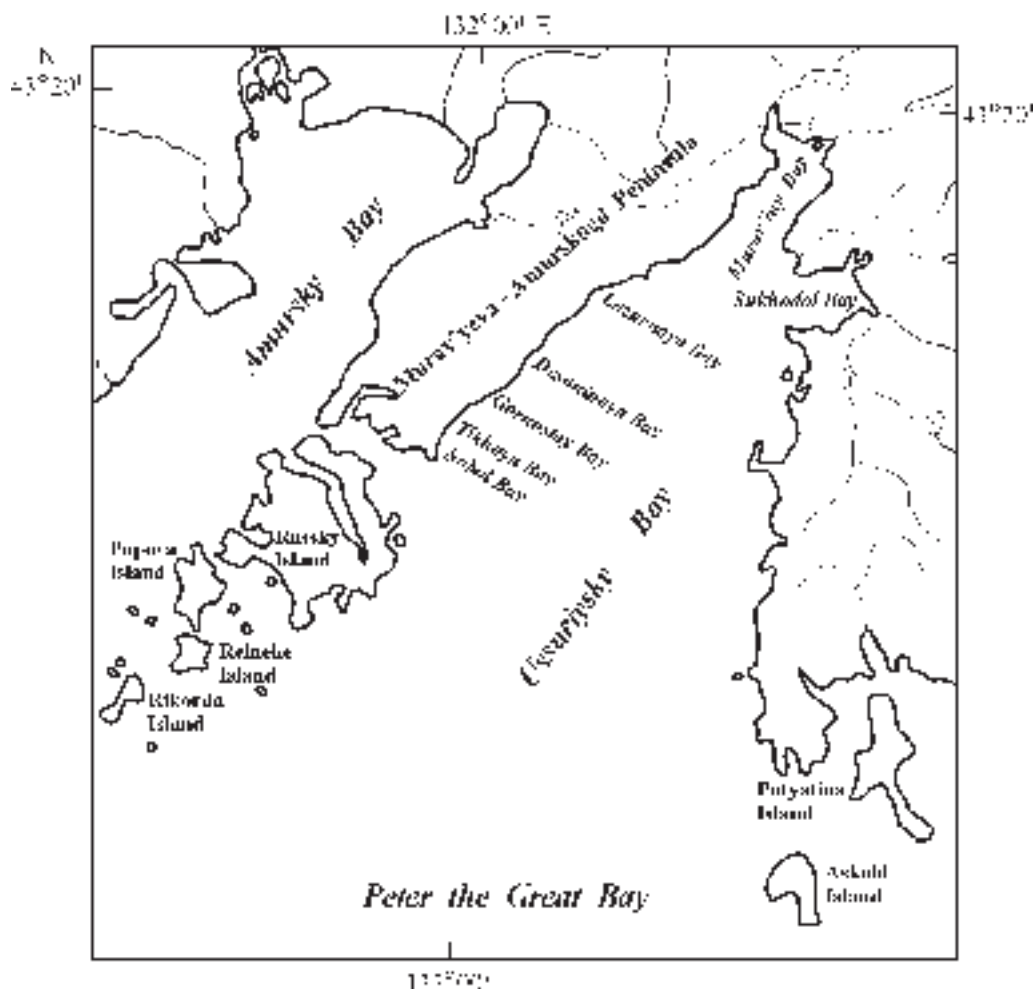


Fig. 1. Map of Ussuriysky Bay.

Previous molluscan studies and collecting activity in Ussuriysky Bay

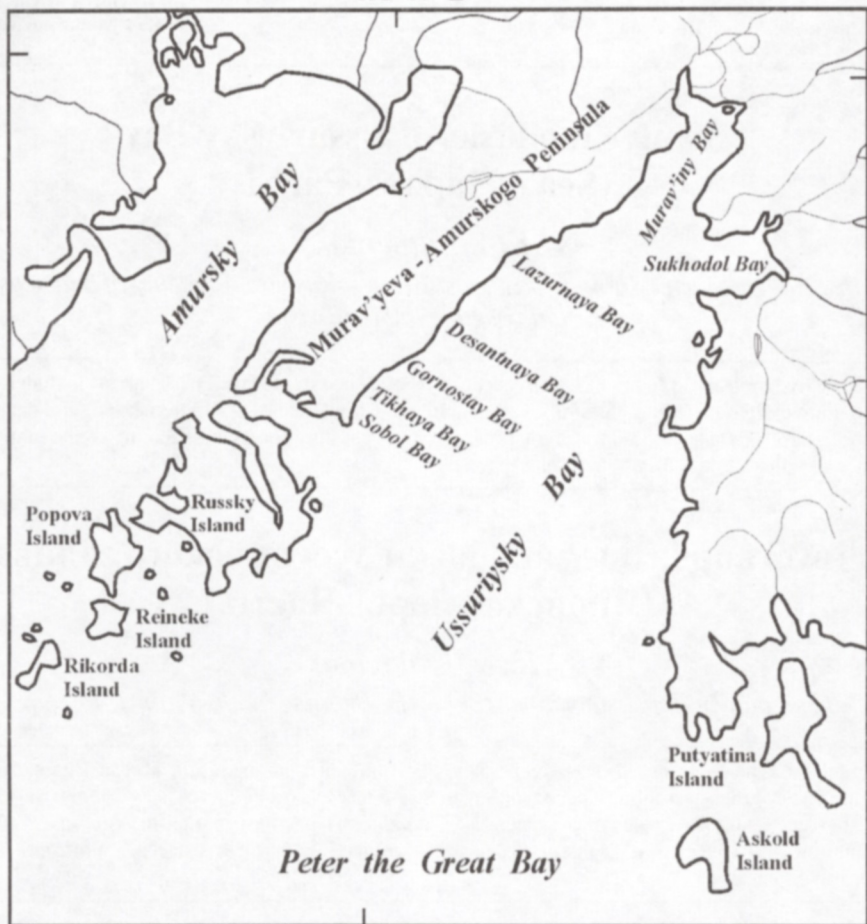
Special molluscan studies on composition, biology, and commercial importance in Peter the Great Bay had been begun relatively late – in the 1920s by A.I. Razin [1927, 1934]. This author surveyed all secondary bays inside Peter the Great Bays and gave descriptions, largely without illustrations, of a number of commercial bivalves with indications of their local distributions. He also compiled a rather detailed map of concentrations of

Pecten yessoensis (= *Mizuhopecten yessoensis* (Jay, 1857)), *Mytilus dunkeri* (= *Crenomytilus grayanus* (Dunker, 1853)), *Spisula sachalinensis* (Schrenck, 1862), *Ostrea gigas* (= *Crassostrea gigas* (Thunberg, 1793)) and *Arca inflata* (= *Anadara broughtonii* (Schrenck, 1867)), which included Ussuriysky Bay too. Part of his collections is stored in the Zoological Institute (ZIN) of the Russian Academy of Sciences (St.-Petersburg).

N
43°20'

132°00' E

43°20'



Peter the Great Bay

132°00' E

Pioneer hydrobiological studies, mainly prior to zoological research proper, were also begun in Peter the Great Bay in the 1920s, with a quantitative estimation of distribution of mollusks along with other animal groups [Zachs, 1927; Derjugin, 1939; Derjugin, Somova, 1941]. Part of the collection made by K.M. Derjugin was identified by American malacologist P. Bartsch [1929]; he found 18 species, and among them four species were described as new for science, but later proved to be synonyms. Although species names mentioned by K.M. Derjugin are outdated and difficult to refer to current species, his collections were treated subsequently by O.A. Scarlato [1981], as is clear from the catalogue cards of the ZIN's malacological depository.

After World War II, some data on the spatial and quantitative distribution of benthic organisms in the eastern part of Peter the Great Bay and modifications of bottom communities due to environmental changes were published by K.I. Gordeeva [1949] and Z.I. Kobjakova [1962]. E.B. Markovskaya [1952] studied age-growth relationships, reproduction, and distribution of *C. grayanus* in some areas of Ussuriysky Bay, and I. Sadykhova [1968] provided some data on biology and growth of the same species in the vicinity of Putyatina Island. In the 1940–1950s, Institute of Oceanology of the USSR Academy of Sciences (Moscow) carried out detailed quantitative investigations of the intertidal zone (and partly upper subtidal) of Putyatina Island in the neighbouring Strelok Bay [Stschapova et al., 1957; Mokyevesky, 1960]. In this area, the authors found 33 bivalve species and provided also data on depths and substrate distribution; however, a number of species names

are archaic, and location of their zoological materials is unknown. G.N. Volova [1972] undertook a hydrobiological survey of brackish-water lakes and lagoons of southern Primorye and recorded ten bivalve species.

Large-scale hydrobiological subtidal surveys in Peter the Great Bay and Ussuriysky Bay were renewed in the 1970s in the course of expeditions of the Pacific Research Institute of Fisheries and Oceanography, Institute of Marine Biology of the USSR Academy of Sciences (IMB), FERHRI, and partly Pacific Oceanological Institute of the USSR Academy of Sciences (all in Vladivostok). V.L. Klimova [1971, 1974, 1976] described long-term changes in the composition and quantitative distribution of benthos, including mollusks, as compared to the 1930s, and related them to increasing mud sedimentation. Her studies revealed a decline of population density of abundant infaunal boreal-arctic bivalve *Liocyma fluctuosum* (Gould, 1841) and even its complete disappearance at depths down to 70 m [Klimova, 1975]. Population characteristics and distribution of *M. yessoensis* were studied by M.G. Biryulina and N.A. Rodionov [1972], Yu.E. Bregman [1979] and A.V. Silina [1990, 1996]. Commercial stocks and distribution of the mussel *C. grayanus*, two mactrids (*S. sachalinensis*, *Mactra chinensis* Philippi, 1846), one venerid (*Mercenaria stimpsoni* (Gould, 1861)), and two tellinid species of the genus *Megangulus* (formerly, *Peronidia*) in Ussuriysky Bay were described by M.G. Biryulina [1972, 1975]. In addition, distribution of *C. grayanus* in the 1990s and its size-frequency structure in Ussuriysky Bay were described by G.S. Gavrilova and S.Yu. Zhembrovsky [2000] and G.S. Gavrilova [2002].

D.D. Gabaev and L.S. Olifirenko [2001] described growth, stocks and production of the ark shell *A. broughtonii* and Afeichuk et al. [2004] provided data on the ecological conditions of reproduction and distribution of this species in Sukhodol Bay. M.B. Ivanova et al. [1994] examined faunal composition as well as trophic and biogeographical characteristics of the red alga *Ahnfeltia tobuchiensis* in exploited natural beds in Stark Strait, and enumerated twenty bivalve species. V.G. Tarasov et al. [2005] briefly described intertidal and subtidal communities of Sobol' Bay.

Ussuriysky Bay along with Amursky Bay is subjected to pollution from the Russian Far East largest city, Vladivostok, and its environmental conditions are rapidly changing [Ogorodnikova, 2001]. The influence of pollution of bottom sediments on the species composition and abundance of bivalves in this area was studied by E.V. Oleynik et al. [2004] and E.V. Oleynik and A.V. Moshchenko [2001, 2004].

Special actuopaleontological and taphonomic studies of bivalve mollusks in Ussuriysky Bay and its immediately neighbouring areas were undertaken by the IMB researchers. G.A. Evseev et al. [1990] investigated species composition

and size distribution of dominant bivalves and their transportation in the nearshore zone of Popov Island. Yu.Ya. Latypov et al. [1990] described species composition, distribution, and types of thanatocoenoses of organic remains in depths down to 40 m between Popova and Naumova Islands and around Verkhovskogo and De-Livron Islands; in total, 30 species of common bivalves were recorded. K.A. Lutaenko [1990; 1994] carried out actuopaleontological studies of the beach thanatocoenoses of bivalve mollusks and found 59 species. S.P. Plekhov [2000] studied beach stranding in Sukhodol Bay but he did not publish a species list. More than twenty species are known from the mid- and late-Holocene deposits in the head part of Ussuriysky Bay, and among them two regionally extinct bivalves of the genus *Anadara* [Lutaenko, 1988, 1993]. G.A. Evseev and S.I. Kiyashko [1995] found 32 species of bivalves in boreholes samples made in bottom deposits at a depth range of 50–90 m in the open part of Ussuriysky Bay; this material has mixed character and it includes some Recent, Holocene and Late Pleistocene shells. However, a complete list of bivalves living in Ussuriysky Bay has never been published.

Material and methods

For the purpose of assessment of the biodiversity in Ussuriysky Bay, we used a «find-them-all» approach which implies collection of as many as possible species record information. First of all, we sorted and identified materials of five expeditions: cruise with R/V *Ametist* (IMB, July 1984, 8 stations at a depth range of 28–74 m; Table 1), two cruises with R/Vs owned by FERHRI (July and September 1986, July–September 1987, 14 sta-

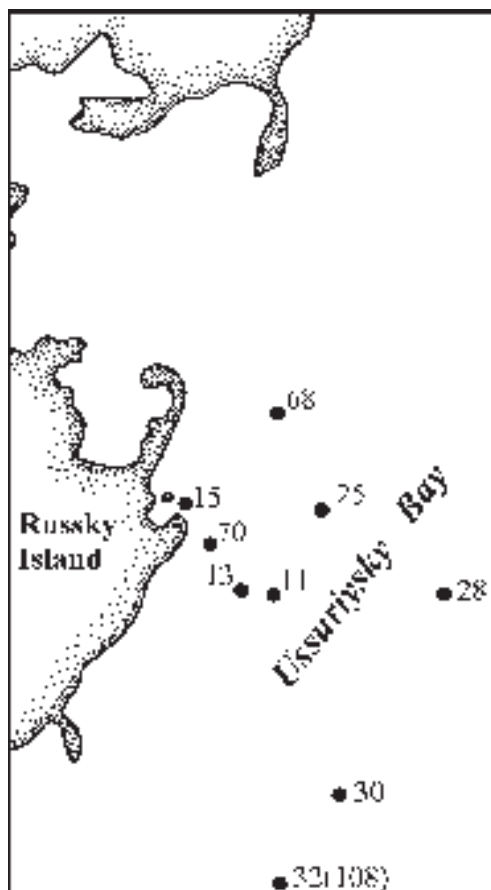
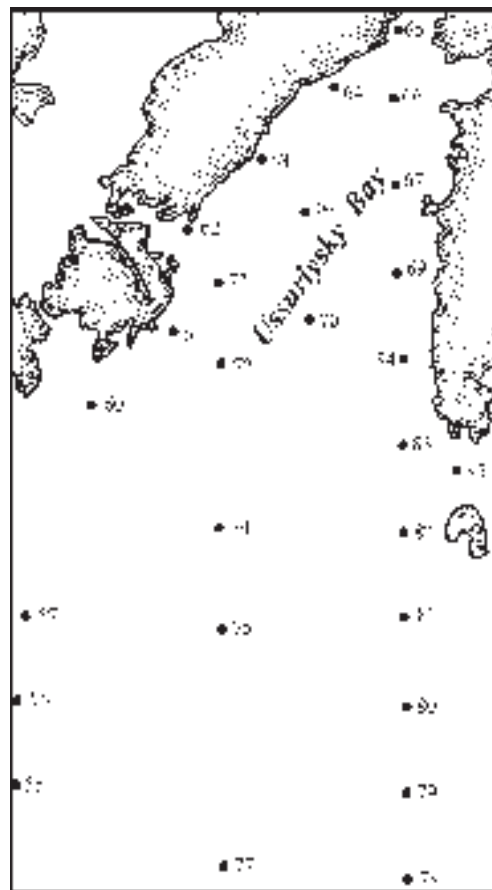
tions at a depth range of 4–75 m; partly shown in Fig. 2; Table 2), cruise with R/V *Akademik Oparin* (September 1997, 3 stations at a depth range of 40–122 m; Table 3), and cruise with R/V *Lugovoye* (Pacific Oceanological Institute FEB RAS, November–December 1999, 26 stations at a depth range of 15–240 m; Fig. 3; Table 4). On cruises of R/V *Ametist* and *Akademik Oparin*, samples were taken by a trawl; FERHRI, with a bottom sampler;

Table 1

Sampling stations of R/V *Ametist* in Ussuriysky Bay and adjacent areas

Date, d/m/y	Sta.	Latitude, N	Longitude, E	Depth, m	Bottom deposits
21.07.1984	16	42°42'7''	132°12'5''	70	Fine muddy sand
21.07.1984	17	42°46'	132°18'7''	62–70	Fine muddy sand
23.07.1984	18	43°03'00''	132°00'	28	–
21.07.1984	20	42°53'7''	132°00'25''	50–52	Muddy sand
21.07.1984	21	42°50'0''	132°00'0''	70	Muddy sand
21.07.1984	23	42°41'5''	132°16'5''	70	–
07.1984	24	42°42'0''	132°24'5''	74	Muddy sand
21.07.1984	40	42°50'3''	131°54'5''	60	Muddy sand

Note. «—» – data are not available.

**Fig. 2.** Sampling stations of the FERHRI in Ussuriysky Bay (1986–1987).**Fig. 3.** Sampling stations of R/V *Lugovoye* in Ussuriysky Bay and adjacent areas (1999).

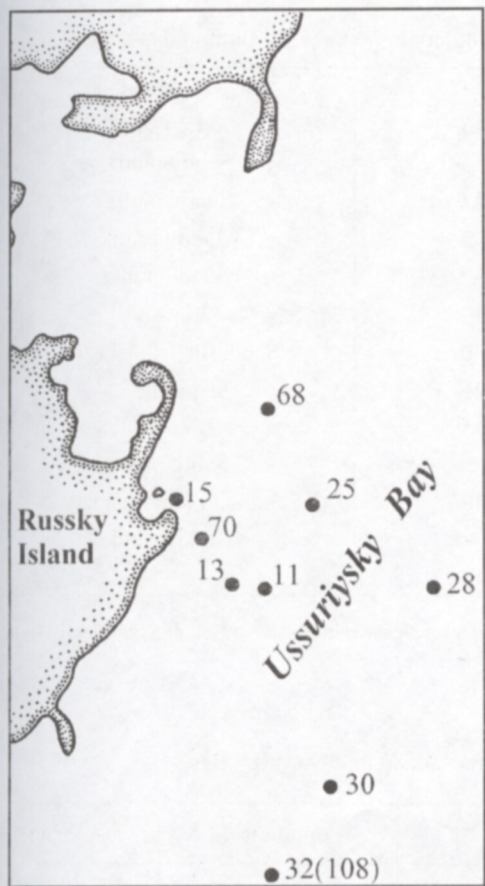


Fig. 2. Sampling stations of the FERHRI in Ussuriysky Bay (1986–1987).

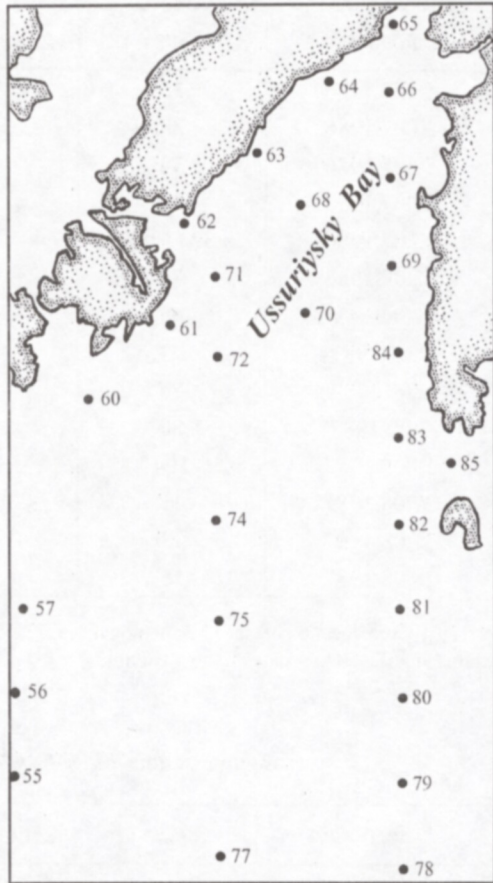


Fig. 3. Sampling stations of R/V *Lugovoye* in Ussuriysky Bay and adjacent areas (1999).

and on a cruise of R/V *Lugovoye*, with a small (36-cm-wide) simple dredge having a nylon sack (mesh of 0.15 x 0.15 mm) and an inserted sieve (mesh of 1.5 x 1.5 mm), designed by Dr. E.I. Schornikov (IMB).

Another part of the material was taken in the 1980s–2003s (Fig. 1), during beach collecting in 9 selected areas along the western coast of Ussuriysky Bay, in its inner part (Murav'iny Bay) and in Sukhodol Bay (eastern part of the bay). A large portion of these data was published

[Lutaenko, 1990, 1994]. Beach drift is a good complimentary source of faunal data as some species could hardly be found subtidally due to inadequate sampling technique. The beach drift collection of bivalves is mostly stored in ZMFU and is completely catalogued. The museum- and institution-held specimens (ZMFU and IMB) coming from various sources were the third part of the material involved in our study. And, finally, limited literature data were used.

Table 2

Sampling stations of FERHRI in Ussuriysky Bay

Date, d/m/y	Sta.	Depth, m	Bottom deposits
18.07.1986	25	36	Mud, sand
22.07.1986	28	46	Muddy sand
22.07.1986	30	55	Sandy mud
22.07.1986	31	57	Sandy mud
23.07.1986	32 (108)	75	Muddy sand
13.09.1986	70	30	Sand, mud
19.06.1987	68	30	Grey silt
2.07.1987	77	30	Sand, shells, aleurite
2.07.1987	78	26	Aleurite
3.09.1987	80	25	Aleurite
19.08.1987	104	5	Sand, mud
27.08.1987	11	40	Sand with organic matter
27.08.1987	13	4	Muddy sand
28.08.1987	15	19	—

Note. Exact location of sta. 31 is unknown; sta. 77, 78 and 80 are located in Bolshogo Kamnya Bay, sta. 104 – in Murav'iny Bay; «—» – data are not available.

Table 3

Sampling stations of R/V *Akademik Oparin* in Ussuriysky Bay

Date, d/m/y	Sta.	Latitude, N	Longitude, E	Depth, m
5.09.1997	26	42°26'08''	132°11'07''	122
7.09.1997	33	42°51'5''	131°41'6''	45
7.09.1997	34	42°53'9''	131°46'6''	40

Abbreviations used throughout the paper:

IMB – Institute of Marine Biology, Far East Branch of the Russian Academy of Sciences (Vladivostok)

ZMFU – Zoological Museum, Far East National University (Vladivostok)

Ametist – cruise with R/V *Ametist* (1984), Institute of Marine Biology, FESC USSR Academy of Sciences

FERHRI – cruises in 1986–1987 with research vessels of Far Eastern Regional

Hydrometeorological Institute

Akad. Oparin – cruise with R/V *Akademik Oparin* (1997), Pacific Institute of Bioorganic Chemistry, FEB RAS, Far East State University and Institute of Marine Biology, FEB RAS

Lugovoye – cruise with R/V *Lugovoye* (1999), Pacific Oceanological Institute, FEB RAS

Spec. – specimen(s)

Sta. – station(s)

Isl. – island(s).

Table 4

Sampling stations of R/V *Lugovoye* in Ussuriysky Bay and adjacent areas

Date, d/m/y	Sta.	Latitude, N	Longitude, E	Depth, m	Bottom deposits
29.11.1999	55	42°31'3''	131°41'6''	81	Muddy sand
29.11.1999	56	42°36'2''	131°41'6''	69	Muddy sand
29.11.1999	57	42°41'0''	131°41'6''	71	Muddy sand
29.11.1999	60	42°52'9''	131°49'2''	52	Mud
29.11.1999	61	42°57'2''	131°56'1''	44	Muddy sand
29.11.1999	62	43°03'2''	131°57'4''	27	Mud
29.11.1999	63	43°07'2''	132°03'5''	21	Mud
29.11.1999	64	43°11'0''	132°09'5''	15	Mud
30.11.1999	66	43°10'5''	132°15'0''	27	Mud
30.11.1999	67	43°05'5''	132°15'0''	26	Muddy sand
30.11.1999	68	43°04'3''	132°07'0''	37	Fine-grained sand
30.11.1999	69	43°00'5''	132°15'0''	23	Muddy sand
30.11.1999	70	42°57'5''	132°07'5''	39	Muddy sand
30.11.1999	71	43°00'0''	132°00'0''	37	Mud
30.11.1999	72	42°55'4''	132°00'0''	53	Mud
30.11.1999	74	42°45'7''	132°00'0''	62	Muddy sand
30.11.1999	75	42°40'0''	132°00'0''	67	Muddy sand
30.11.1999	77	42°26'2''	132°00'0''	161	Muddy sand
1.12.1999	78	42°25'5''	132°15'5''	240	Sand
1.12.1999	79	42°30'5''	132°15'5''	88	Muddy sand
1.12.1999	80	42°35'5''	132°15'5''	88	Mud and sand
1.12.1999	81	42°40'6''	132°15'5''	74	Mud
1.12.1999	82	42°45'5''	132°15'5''	69	Mud
1.12.1999	83	42°50'5''	132°15'5''	66	Mud
1.12.1999	84	42°55'5''	132°15'5''	46	Mud
1.12.1999	85	42°49'0''	132°20'0''	56	Muddy sand

List of species of bivalve mollusks collected in Ussuriysky Bay, Sea of Japan

Class Bivalvia	Occurrence: Livespec.: 70–74 m, muddy sand.
Subclass Protobranchia Pelseneer, 1889	
Order Nuculoida Dall, 1889	Family Yoldiidae Habe, 1977
Superfamily Nuculoidea Gray, 1824	<i>Yoldia (Yoldia) hyperborea</i> (Gould, 1841) Plate 1, fig. O
Family Nuculidae Gray, 1824	Material Examined: <i>Ametist</i> (sta. 40); 1 specimen.
<i>Acila (Truncacila) insignis</i> (Gould, 1861) Plate 1, figs. I, J	Occurrence: Live spec.: 60 m, muddy sand.
Material Examined: <i>Lygovoye</i> (sta. 64, 66); ZMFU; 7 spec.	<i>Yoldia (Cnesterium) notabilis</i> Yokoyama, 1922 Plate 1, figs. A, B
Occurrence: Live spec.: 5–27 m, mud, sand; beach drift: Gornostay (ZMFU) and Sukhodol Bays (IMB).	Material Examined: <i>Ametist</i> (sta. 20); <i>Akad. Oparin</i> (sta. 34); 9 spec.
<i>Nucula (Ennucula) ovatotruncata</i> (Scarlato in Volova et Scarlato, 1980) Plate 1, figs. T, U	Occurrence: Livespec.: 50–52 m, muddy sand; empty shells: 40–52 m, muddy sand.
Material Examined: <i>Ametist</i> (sta. 40); FERHRI (sta. 15, 28, 30, 31, 70, 78); 105 spec.	<i>Yoldia (Cnesterium) keppeliana</i> (Sowerby III, 1904) Plate 1, fig. M
Occurrence: Livespec.: 19–60 m, sandy mud, sand, mud; beach drift: Gor- nostay Bay.	Material Examined: <i>Ametist</i> (sta. 18); <i>Akad. Oparin</i> (sta. 34); 2 spec.
<i>Nucula (Ennucula) tenuis</i> (Montagu, 1808) Plate 1, figs. P, Q, V	Occurrence: Live spec.: 28 m; empty shells: 45 m.
Material Examined: <i>Ametist</i> (sta. 21, 24); 4 spec.	<i>Yoldia (Cnesterium) johanni</i> Dall, 1925 Plate 1, figs. C, D
Occurrence: Live spec.: 70 m, muddy sand; empty shells: 74 m, muddy sand.	Material Examined: FERHRI (sta. 77, 78); 3 spec.
Superfamily Nuculanoidea H. et A. Adams, 1858	Occurrence: Livespec.: 26–30 m, sand, mud with shells.
Family Nuculanidae H. et A. Adams, 1858	<i>Yoldia (Cnesterium) seminuda</i> Dall, 1871 Plate 1, figs. E, F
<i>Nuculana (Nuculana) sadoensis</i> (Yokoama, 1926) Plate 1, figs. G, H, L	Material Examined: <i>Ametist</i> (sta. 20, 40); FERHRI (sta. 28, 31); <i>Akad.</i> <i>Oparin</i> (sta. 34); 15 spec.
Material Examined: <i>Ametist</i> (sta. 23, 24); 2 specimens.	

Occurrence: Livespec.: 46–60 m, muddy sand; empty shells: 40 m.

Yoldia (Cnesterium) toporoki

Scarlato, 1981

Plate 1, fig. N

Material Examined: *Ametist* (sta. 23); 1 spec.

Occurrence: Live spec.: 70 m.

Portlandia toyamaensis

(Kuroda, 1929)

Plate 1, fig. K

Material Examined: *Ametist* (sta. 21, 23, 40); FERHRI (sta. 31); 52 spec.

Occurrence: Livespec.: 50–70 m, sandy mud.

Yoldiella derjugini

Scarlato, 1981

Plate 1, figs. R, S

Material Examined: *Ametist* (sta. 21, 40); FERHRI (sta. 28, 31); 17 spec.

Occurrence: Live spec.: 46–70 m, muddy sand.

Subclass **Pteriomorphia** Beurlen, 1944

Order **Arcoidea** Stoliczka, 1871

Superfamily **Arcoidea** Lamarck, 1809

Family **Arcidae** Lamarck, 1809

Arca boucardi

Jousseau, 1894

Plate 4, figs. K, L

Material Examined: ZMFU; 21 spec.

Occurrence: Live spec.: juveniles intertidally, Sobol' and Tikhaya Bays; beach drift: Sobol', Tikhaya, Gornostay, Lazurnaya, Murav'iny, Sukhodol Bays [Lutaenko, 1990; ZMFU].

Anadara (Scapharca) kagoshimensis

(Tokunaga, 1906)

Material Examined: ZMFU;

20 spec. (including from the Holocene deposits).

Occurrence: Regionally extinct in the Late Holocene species found in beach drift: Murav'iny Bay [Lutaenko, 1988; 1993; as *A. subcrenata*].

Anadara (Scapharca) inaequalvis

(Bruguière, 1789)

Plate 9, figs. A, B

Material Examined: ZMFU; 103 spec. [including from the Holocene deposits].

Occurrence: Regionally extinct in the Late Holocene species found in beach drift: Murav'iny and Sukhodol Bays [Lutaenko, 1988 (as *A. subcrenata*; part.); Lutaenko, 1993].

Anadara (Scapharca) broughtonii

(Schrenck, 1867)

Plate 9, fig. C

Material Examined: ZMFU; 27 spec.

Occurrence: Beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays [Lutaenko, 1990, as *Scapharca broughtoni*; ZMFU].

Superfamily **Glycymeridoidea**

Newton, 1916

Family **Glycymerididae** Newton, 1916

Glycymeris (Glycymeris) yessoensis

(Sowerby III, 1889)

Plate 4, figs. A–H

Material Examined: FERHRI (sta. 70); 2 spec.

Occurrence: Empty shells: 30 m, sand and mud; beach drift: Gornostay and Lazurnaya Bays; Desantnaya Bay – Zeleny Cape [Lutaenko, 1990; ZMFU].

Order **Mytiloida** Ferussac, 1822

Superfamily **Mytiloidea** Rafinesque, 1815

Family **Mytilidae** Rafinesque, 1815

- Mytilus (Mytilus) galloprovincialis*
Lamarck, 1819
Plate 3, fig. K
Material Examined: ZMFU; 1 spec.
Occurrence: Tikhaya Bay [Ivanova, Lutaenko, 1998].
- Mytilus (Mytilus) trossulus*
A.A. Gould, 1850
Material Examined: FERHRI (sta. 60, 62, 68); ZMFU; 11 spec.
Occurrence: Live spec.: Sobol' and Tikhaya Bays, intertidally; empty shells: 27–52 m, grey silt, mud; beach drift: Sobol', Tikhaya, Gornostay, Lazurnaya, Murav'iny, Sukhodol Bays, Desantnaya Bay – Zeleny Cape [Lutaenko, 1990; as *Mytilus edulis*; ZMFU].
- Mytilus (Crassimytilus) coruscus*
Gould, 1861
Plate 2, figs. E, F
Material Examined: ZMFU; 1 spec.
Occurrence: Beach drift: Sobol', Gornostay, Lazurnaya Bays, Desantnaya Bay – Zeleny Cape [Lutaenko, 1990].
- Crenomytilus grayanus*
(Dunker, 1853)
Plate 2, figs. A, B
Material Examined: ZMFU; 3 spec.
Occurrence: Sobol', Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays, Desantnaya Bay – Zeleny Cape [Lutaenko, 1990].
- Musculista senhousia*
(Benson in Kantor, 1842)
Material Examined: ZMFU; 1 spec.
Occurrence: Sukhodol Bay.
- Musculus niger* (Gray, 1824)
Plate 3, fig. N
Material Examined: *Ametist* (sta. 16, 17, 20, 23, 40); 9 spec.
Occurrence: Live spec.: 50–70 m, fine muddy sand and muddy sand.
- Musculus laevigatus*
(Gray, 1824)
Plate 2, figs. G, H
Material Examined: *Ametist* (sta. 16); 1 spec.
Occurrence: Live spec.: 70 m, fine muddy sand.
- Musculus discors* (L., 1767)
Plate 3, figs. A–D
Material Examined: *Ametist* (sta. 16, 23); 4 spec.
Occurrence: Live spec.: 70 m, fine muddy sand.
- Musculus glacialis* (Leche, 1883)
Plate 3, fig. O
Material Examined: *Ametist* (sta. 20, 40); 6 spec.
Occurrence: Live spec.: 50–60 m, muddy sand.
- Musculus koreanus*
Ockelmann, 1983
Plate 2, fig. I
Material Examined: *Ametist* (sta. 23, 24); 2 spec.
Occurrence: Empty shells: 70–74 m; muddy sand.
- Vilasina pillula* Scarlato, 1960
Material Examined: ZMFU; 1 spec.
Occurrence: Empty shell: Sobol' Bay, intertidally.
- Modiolus (Modiolus) kurilensis*
Bernard, 1983
Plate 2, figs. C, D
Material Examined: ZMFU; 8 spec.
Occurrence: Live spec.: Sobol' Bay, intertidally; beach drift: Sobol',

Tikhaya, Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny [Lutaenko, 1990].

Septifer (Mytilisepta) keenae

Nomura, 1936

Plate 3, figs. E–J

Material Examined: ZMFU; 10 spec.

Occurrence: Live spec.: Sobol' and Tikhaya Bays, intertidally to 5 m deep; beach drift: Sobol', Tikhaya, Gornostay and Sukhodol Bays [Lutaenko, 1990].

Adula falcatoidea

Habe, 1955

Plate 3, figs. L, M

Material Examined: ZMFU; IMB; 2 spec.

Occurrence: Empty shells: 2.5–3 m in Sobol' Bay, and beach drift in Gornostay Bay.

Order **Ostreoida** Ferussac, 1822

Superfamily **Ostreioidea** Wilkes, 1810

Family **Ostreidae** Wilkes, 1810

Crassostrea gigas

(Thunberg, 1793)

Plate 4, figs. M, N

Material Examined: FERHRI (sta. 70); ZMFU; 7 spec.

Occurrence: Live spec.: intertidally in Tikhaya Bay, subtidally in Desantnaya Bay (abundant); empty shells: 30 m, sand and mud; beach drift: Sobol', Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays.

Superfamily **Pectinoidea** Wilkes, 1810

Family **Pectinidae** Wilkes, 1810

Chlamys (Chlamys) chosenica

Kuroda, 1932

Plate 9, fig. G

Material Examined: ZMFU; 2 spec.

Occurrence: Exact locality within Ussuriysky Bay is not indicated in museum labels; probably, specimens were collected as live.

Chlamys (Azumapecten) farreri

(Jones et Preston, 1904)

Material Examined: ZMFU; 9 spec.

Occurrence: Tikhaya Bay, intertidally; beach drift: Tikhaya, Gornostay, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny [Lutaenko, 1990].

Chlamys (Swiftopecten) swiftii

(Bernardi, 1858)

Plate 4, figs. I, J

Material Examined: ZMFU; 2 spec.

Occurrence: Beach drift: Sobol', Gornostay, Lazurnaya and Sukhodol Bays, Desantnaya Bay – Cape Zeleny [Lutaenko, 1990; as *Swiftopecten swiftii*].

Mizuhopecten yessoensis

(Jay, 1857)

Occurrence: Beach drift: Sobol', Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny [Lutaenko, 1990].

Superfamily **Anomioidea**

Rafinesque, 1815

Family **Anomiidae** Rafinesque, 1815

Pododesmus (Monia) macrochisma

(Deshayes, 1839)

Material Examined: IMB; 1 spec.

Occurrence: Beach drift: Gornostay Bay (juv.).

Subclass **Heterodonta** Neumayr, 1884

Order **Veneroida** H. et A. Adams, 1856

Superfamily **Lucinoidea** Fleming, 1828

Family **Lucinidae** Fleming, 1828

Pillucina pisidium
(Dunker, 1860)
Plate 5, figs. J, K
Material Examined: ZMFU;
2 spec.

Occurrence: Beach drift: Gornostay Bay [Lutaenko, 1990].

Family **Thyasiridae** Dall, 1900

Conchocele scarlatoi
Ivanova et Moskaletz, 1984
Material Examined: IMB;
1 spec.

Occurrence: eastern coast of Ussuriysky Bay, subtidally.

Axinopsida subquadrata
(A. Adams, 1842)
Plate 5, figs. L–N, O
Material Examined: *Ametist*
(sta. 21, 40); FERHRI (sta. 25, 28, 30, 31,
70, 78, 104); Lugovoye (sta. 60, 62, 63,
64, 70, 71, 72, 84, 85); ZMFU; 156 spec.

Occurrence: Live spec.: 5–70 m,
sandy mud, muddy sand and mud; Sobol'
Bay, intertidally.

Adontorhina filatovae
(Ivanova et Moskaletz, 1984)
Plate 5, figs. D, E, R
Material Examined: *Ametist*
(sta. 40); Lugovoye (sta. 74, 79, 80, 81, 82,
83); 39 spec.

Occurrence: Live spec.: 60–88 m,
mud and muddy sand.

Mendicula ferruginosa
(Forbes, 1844)
Plate 5, figs. P, Q
Material Examined: *Lugovoye*
(sta. 79); 6 spec.

Occurrence: Live spec.: 88 m,
muddy fine-grained sand.

Thyasira flexuosa (Montagu, 1803)
Plate 5, figs. G–I

Material Examined: *Lugovoye*
(sta. 72); 2 spec.

Occurrence: 53 m, mud.

Family **Ungulinidae** H. et A. Adams, 1857

Felaniella (Felaniella) usta
(Gould, 1861)
Plate 7, figs. K, L, O, P
Material Examined: ZMFU;
4 spec.

Occurrence: Beach drift: Gornostay and Lazurnaya Bays, Desantnaya Bay – Cape Zeleny.

Diplodonta semiasperoides
Nomura, 1932
Material Examined: ZMFU;
5 spec.

Occurrence: Sobol' and Gornostay Bays, Desantnaya Bay – Cape Zeleny.

Superfamily **Galeommatoidea** Gray, 1840
Family **Lasaeidae** Gray, 1847

Nipponomysella obesa
Habe, 1960
Material Examined: ZMFU;
1 spec.

Occurrence: Sobol' Bay, intertidally.

Mysella planata (Krause, 1885)
Plate 5, figs. A–C, F
Material Examined: *Ametist*
(sta. 20, 21, 40); 50 spec.

Occurrence: Live spec.: 60–70 m,
muddy sand; empty shell: 50–52 m, muddy sand.

Superfamily **Glossoidae** Gray, 1847
Family **Kelliellidae** P.-H. Fischer I, 1887

Alvenius ojanus (Yokoyama, 1927)
Material Examined: *Lugovoye*
(sta. 64, 70, 72, 81); ZMFU; 21 spec.

Occurrence: Live spec.: 0–74 m, mud and fine-grained sand; Tikhaya Bay – 10–16 m, abundant; intertidally in Sobol' Bay.

Superfamily **Astartoidea** d'Orbigny, 1844
Family **Astartidae** d'Orbigny, 1844

Astarte elliptica (T. Brown, 1827)

Plate 9, fig. F

Material Examined: *Akad. Oparin* (sta. 34); 4 spec.

Occurrence: Empty shells: 40 m.

Astarte montagui

(Dillwyn, 1817)

Material Examined: *Akad. Oparin* (sta. 34); 1 spec.

Occurrence: Empty shell: 40 m.

Superfamily **Carditoidea** Fleming, 1828
Family **Carditidae** Fleming, 1828

Cyclocardia (*Cyclocardia*) *rjabiniinae*
(Scarlato, 1955)

Plate 8, fig. V; Plate 9, fig. E

Material Examined: *Akad. Oparin* (sta. 26); 1 spec.

Occurrence: Live spec.: 122 m.

Cyclocardia (*Crassiscardia*) *crassidens*
(Broderip et Sowerby I, 1829)

Material Examined: *Akad. Oparin* (sta. 34); 2 spec.

Occurrence: Empty shells: 40 m.

Superfamily **Cardioidea** Lamarck, 1809
Family **Cardiidae** Lamarck, 1809

Clinocardium (*Keenocardium*)
californiense (Deshayes, 1839)

Material Examined: ZMFU; 1 spec.

Occurrence: Empty shells: Popova Isl. – Naumova Isl., subtidally [Latypov et al., 1990]; beach drift: Sobol', Gornostay and Sukhodol Bays, Desantnaya

Bay – Cape Zeleny [Lutaenko, 1990].

Clinocardium (*Ciliatocardium*) *ciliatum*
(Fabricius, 1790)

Plate 9, fig. H

Material Examined: *Ametist* (sta. 21); 1 spec.

Occurrence: Live spec.: 70 m, muddy sand.

Clinocardium (*Ciliatocardium*) *likharevi*
Kafanov in Scarlato, 1981

Plate 9, fig. D

Material Examined: *Ametist* (sta. 16, 20, 24, 24); *Akad. Oparin* (sta. 33, 34); 18 spec.

Occurrence: Livespec.: 45–74 m, muddy sand; empty shells: 40–52 m, muddy sand.

Serripes (*Serripes*) *groenlandicus*
(Mohr, 1796)

Material Examined: *Ametist* (sta. 17, 18, 20, 21, 23, 40); FERHRI (sta. 25); *Akad. Oparin* (sta. 33, 34); *Lugovoye* (sta. 56, 60, 61, 63, 71, 74, 84); 45 spec.

Occurrence: Livespec.: 21–70 m, muddy sand, mud; empty shells: 40–45 m.

Serripes (*Yagudinella*) *notabilis*
(Sowerby III, 1915)

Plate 8, fig. X

Material Examined: ZMFU; 2 spec.

Occurrence: ?Live spec.: 68–71 m, near Askold Isl.

Superfamily **Arcticoidea** Newton, 1891
Family **Trapezidae** Lamy, 1920

Trapezium (*Neotrapezium*) *liratum*
(Reeve, 1843)

Plate 8, figs. M, N

Material Examined: ZMFU; 2 spec.

Occurrence: Beach drift: Sukhodol Bay.

Superfamily **Corbiculoidea** J.E. Gray, 1847
Family **Corbiculidae** J.F. Gray, 1847

Corbicula japonica Prime, 1864 s.l.
Plate 8, figs. T, Z

Material Examined: ZMFU;
4 spec.

Occurrence: Beach drift:
Murav'iny and Sukhodol Bays.

Subfamily **Veneroidea** Rafinesque, 1815
Family **Veneridae** Rafinesque, 1815

Callista (Ezocallista) brevisiphonata
(Carpenter, 1864)

Material Examined: ZMFU;
1 spec.

Occurrence: Live spec.: Russky
Isl., Shkota Peninsula, 8 m; beach drift:
Sobol', Gornostay and Lazurnaya Bays,
Desantnaya Bay – Zeleny Cape.

Saxidomus purpurata
(Sowerby II, 1852)

Plate 6, figs. A, B

Material Examined: ZMFU;
3 spec.

Occurrence: Beach drift: Sobol',
Gornostay, Murav'iny and Sukhodol Bays,
Desantnaya Bay – Cape Zeleny.

Dosinia (Asa) japonica
(Reeve, 1850)

Material Examined: ZMFU;
5 spec.

Occurrence: Gornostay, Lazur-
naya and Sukhodol Bays, Desantnaya
Bay – Zeleny Cape.

Dosinia (Dosinella) penicillata
(Reeve, 1850)
Plate 6, fig. K

Material Examined: FERHRI
(sta. 104); ZMFU; 33 spec.

Occurrence: Empty shell: 5 m,
sand and mud; beach drift: Murav'iny and
Sukhodol Bays.

Venerupis (Ruditapes) philippinarum
(Adams et Reeve, 1843)

Material Examined: ZMFU;
7 spec.

Occurrence: Live spec.: Tikhaya
Bay, 3–6 m; beach drift: Sobol', Gornos-
tay, Lazurnaya, Murav'iny and Sukhodol
Bays, Desantnaya Bay – Cape Zeleny.

Liocyma fluctuosum (Gould, 1841)
Plate 9, fig. O

Material Examined: *Ametist*
(sta. 16, 17, 18, 20, 21, 23, 40); FERHRI
(sta. 25, 28, 30); *Akad. Oparin* (sta. 33,
34); *Lugovoye* (sta. 56, 60, 61, 63, 70, 74,
78, 79, 80, 81, 83, 85); 110 spec.

Occurrence: Live spec.: 21–
240 m, muddy sand, mud, medium–
grained sand; empty shells: 40–45 m.

Mercenaria stimpsoni (Gould, 1861)

Material Examined: ZMFU;
4 spec.

Occurrence: Live spec.: Russky
Isl., Shkota Peninsula, 8 m, Tikhaya
Bay, 5–8 m; beach drift: Gornostay Bay,
Desantnaya Bay – Cape Zeleny.

Protothaca (Protothaca) euglypta
(Sowerby III, 1914)

Plate 6, figs. G, H

Material Examined: ZMFU;
3 spec.

Occurrence: Live spec.: Tikhaya
Bay, 3–6 m; beach drift: Sobol', Tikhaya,
Gornostay and Lazurnaya Bays, Desant-
naya Bay – Cape Zeleny.

Protothaca (Novathaca) jedoensis
(Lischke, 1874)

Plate 6, figs. D, E

Material Examined: ZMFU;
3 spec.

Occurrence: Beach drift: Sobol',
Gornostay, Lazurnaya and Sukhodol Bays,
Desantnaya Bay – Cape Zeleny.

Callithaca adamsi

(Reeve, 1863)

Material Examined: FERHRI (sta. 25, 78, 104); *Akad. Oparin* (sta. 33); *Lugovoye* (sta. 63, 64, 66, 69); 20 spec.

Occurrence: Livespec.: 26–36 m, mud and sand; empty shells: 5–45 m, mud and muddy sand; beach drift: Tikhaya, Gornostay, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny.

Meretrix lusoria

(Röding, 1798)

Plate 6, fig. L

Material Examined: ZMFU; 1 spec.

Occurrence: Regionally extinct in the Middle–Late Holocene species found in beach drift: Sukhodol Bay.

Family **Turtoniidae** W. Clark, 1855

Turtonia minuta

(Fabricius, 1780)

Material Examined: ZMFU; 5 spec.

Occurrence: Live spec.: intertidally in Sobol' and Tikhaya Bays; beach drift: Sobol' Bay.

Superfamily **Tellinoidea** Blainville, 1814

Family **Tellinidae** Blainville, 1814

Cadella lubrica

(Gould, 1861)

Occurrence: Empty shells: subtidally, Popova Isl. – Naumova Isl. [Latypov et al., 1990].

Megangulus luteus

(Wood, 1828)

Material Examined: *Akad. Oparin*; 2 spec.

Occurrence: Empty shells: 40 m; subtidally, Popova Isl. – Naumova Isl. [Latypov et al., 1990].

Megangulus venulosus

(Schrenck, 1861)

Plate 7, figs. M, N

Material Examined: ZMFU; 5 spec.

Occurrence: Beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays.

Megangulus zyonoensis

(Hatai et Nisiyama, 1939)

Occurrence: Beach drift: Gornostay and Lazurnaya Bays [Lutaenko, 1990].

Macoma (Macoma) calcaria

(Gmelin, 1791)

Material Examined: *Ametist* (sta. 24); FERHRI (sta. 32, 68); *Akad. Oparin* (sta. 33); *Lugovoye* (sta. 55, 82); 9 spec.

Occurrence: Livespec.: 30–75 m, silt, muddy sand; empty shells: 45–81 m, mud and fine muddy sand.

Macoma (Macoma) balthica

(L., 1758) s.l.

Plate 7, figs. A–H

Material Examined: ZMFU; 16 spec.

Occurrence: Beach drift: Murav'iny Bay.

Macoma (Macoma) incongrua

(Martens, 1865)

Material Examined: FERHRI (sta. 70, 104); ZMFU; 19 spec.

Occurrence: Live spec.: Tikhaya Bay, 3–6 m; empty shells: 5–30 m, sand, mud; beach drift: Murav'iny and Sukhodol Bays.

Macoma (Macoma) loveni

(Jensen, 1905)

Material Examined: *Akad. Oparin* (sta. 34); 1 spec.

Occurrence: Empty shell: 40 m.

- Macoma (Macoma) lama* Bartsch, 1929
Plate 9, fig. K
Material Examined: ZMFU; 1 spec.
Occurrence: Beach drift: Lazurnaya Bay.
- Macoma (Macoma) golikovi*
Scarlato et Kafanov, 1988
Occurrence: Empty shells were found in bottom deposits below – 50 m at the entrance of Ussuriysky Bay [Evseev, Kiyashko, 1995; as *M. orbiculata*]; Holocene or Pleistocene in age.
- Macoma (Macoma) nipponica*
(Tokunaga, 1906)
Material Examined: ZMFU; 1 spec.
Occurrence: Beach drift: Gornostay Bay.
- Macoma (Macoma) scarlatoi*
Kafanov et Lutaenko, 1997
Plate 7, fig. T; Plate 9, fig. L
Material Examined: FERHRI (sta. 15, 31, 78, 80); *Akad. Oparin* (sta. 33, 34); *Lugovoye* (sta. 66); ZMFU; 26 spec.
Occurrence: Livespec.: 19–26 m, mud; empty shells: 27–50 m, mud and sandy mud; beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays.
- Macoma (Macoma) tokyoensis*
Makiyama, 1927
Material Examined: FERHRI (sta. 104); ZMFU; 39 spec.
Occurrence: Empty shells: 5 m, sand, mud; beach drift: Murav'iny and Sukhodol Bays.
- Macoma (Macoma) contabulata*
(Deshayes, 1854)
Plate 9, fig. J
Material Examined: ZMFU; 17 spec.
- Occurrence: Beach drift: Sukhodol Bay.
- Macoma (Macoma) coani*
Kafanov et Lutaenko, 1999
Plate 9, fig. I
Material Examined: ZMFU; 2 spec.
Occurrence: Beach drift: Gornostay Bay [Kafanov, Lutaenko, 1999] and Lazurnaya Bay [Lutaenko, 1990; as *Macoma* cf. *praetexta*].
- Macoma (Rexithaerus) hokkaidoensis*
Amano et Lutaenko in
Amano, Lutaenko et Matsubara, 1999
Plate 9, fig. M
Material Examined: ZMFU; 3 spec.
Occurrence: Empty shells: 1.5–2 m, Lazurnaya Bay; beach drift: Gornostay and Lazurnaya Bays.
- Macoma (Heteromacoma) irus*
(Hanley, 1844)
Plate 7, figs. I, J
Material Examined: ZMFU; 4 spec.
Occurrence: Beach drift: Tikhaya, Sobol', Gornostay, Desantnaya and Sukhodol Bays, Desantnaya Bay – Cape Zeleny.
- Macoma* sp.
Plate 7, fig. X
Material Examined: *Ametist* (sta. 20); 1 spec.
Occurrence: Empty shells: 50–52 m, sandy mud.
- Family **Psammobiidae** Fleming, 1828
- Gari (Gobraeus) californica*
Conrad, 1849
Plate 7, figs. S, W
Material Examined: ZMFU; 2 spec.

Occurrence: Empty shells: subtidally, Popova Isl. – Naumova Isl. [Latypov et al., 1990; as *G. kazusensis*]; beach drift: Sobol', Gornostay Bays, Desantnaya Bay – Cape Zeleny.

Nuttallia obscurata (Reeve, 1857)
Plate 9, fig. N

Material Examined: ZMFU; 9 spec.

Occurrence: Beach drift: Murav'iny and Sukhodol Bays.

Nuttallia ezonis
(Kuroda et Habe, 1955)
Plate 7, figs. Q, R, U, V

Material Examined: ZMFU; 5 spec.

Occurrence: Beach drift: Sobol', Gornostay and Sukhodol Bays, Desantnaya Bay – Cape Zeleny.

Nuttallia commoda (Yokoyama, 1925)
Material Examined: *Akad. Oparin* (sta. 33, 34); 2 spec.

Occurrence: Empty shells: 40–45 m; subtidally, Popova Isl. – Naumova Isl. [Latypov et al., 1990].

Family **Semelidae** Stoliczka, 1870

Theora (Endopleura) lubrica
Gould, 1861

Material Examined: *Lugovoye* (sta. 66); 3 spec.

Occurrence: Live spec.: 27 m, mud.

Superfamily **Solenoidea** Lamarck, 1809

Family **Solenidae** Lamarck, 1809

Solen (Solen) strictus Gould, 1861
Plate 8, fig. H

Material Examined: ZMFU; 19 spec.

Occurrence: Beach drift: Murav'iny and Sukhodol Bays.

Solen (Ensisolen) krusensterni
Schrenck, 1867
Plate 8, fig. C

Material Examined: ZMFU; 9 spec.

Occurrence: Beach drift: Lazurnaya, Murav'iny and Sukhodol Bays.

Family **Pharidae**

H. Adams et A. Adams, 1858

Siliqua alta
(Broderip et Sowerby I, 1829)
Plate 7, figs. Y, Z

Material Examined: ZMFU; 8 spec.

Occurrence: Beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays.

Superfamily **Mactroidea** Lamarck, 1809

Family **Mactridae** Lamarck, 1809

Mactra chinensis Philippi, 1846
Plate 6, figs. F, I

Material Examined: ZMFU; 11 spec.

Occurrence: Live spec.: Gornostay Bay, intertidally; beach drift: Sobol', Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays.

Mactra quadrangularis
Deshayes in Reeve, 1854
Plate 6, fig. C

Material Examined: ZMFU; 37 spec.

Occurrence: Beach drift: Murav'iny and Sukhodol Bays.

Remarks: This species known for a long time as *Mactra veneriformis* Deshayes, 1854 should be cited as *Mactra quadrangularis* Deshayes in Reeve, 1854 due to preoccupation of the former name by *Mactra veneriformis* Wood, 1828 [Matsukuma, 2001].

Spisula (Pseudocardium) sachalinensis
(Schrenck, 1861)

Plate 6, figs. J, M

Material Examined: ZMFU;
6 spec.

Occurrence: Beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny.

Mactromeris polynyma (Stimpson, 1860)

Occurrence: Empty shells were found in bottom deposits below – 50 m at the entrance of Ussuriysky Bay [Evseev, Kiyashko, 1995; as *Spisula voyi*]; Holocene or Pleistocene in age.

Raeta (Raetellops) pulchella

(Adams et Reeve, 1850)

Plate 8, figs. A, B, D, E

Material Examined: *Lugovoye* (sta. 62, 66, 70); ZMFU; 42 spec.

Occurrence: Live spec.: 27 m, mud; empty shells: 27–39 m, mud and fine muddy sand; beach drift: Murav'iny and Sukhodol Bays.

Order **Myoida** Goldfuss, 1820

Superfamily **Myoidea** Lamarck, 1809

Family **Myidae** Lamarck, 1809

Mya (Mya) truncata L., 1758

Plate 9, fig. S

Material Examined: *Akad. Oparin* (sta. 34); 2 spec.

Occurrence: Empty shells: 40 m.

Mya (Mya) uzenensis

Nomura et Zinbo, 1937

Material Examined: *Akad. Oparin* (sta. 33); *Lugovoye* (sta. 66); ZMFU; 6 spec.

Occurrence: Live spec.: Russky Isl., Shkota Peninsula, 8 m; empty shells: 27–45 m, mud; beach drift: Sobol' and Gornostay Bays, Desantnaya Bay – Cape Zeleny.

Mya (Arenomya) japonica

Jay, 1858

Material Examined: *Ametist* (sta. 18, 20, 21, 40); FERHRI (sta. 30, 31, 70); ZMFU; 37 spec.

Occurrence: Live spec.: 28–70 m, muddy sand; beach drift: Gornostay, Lazurnaya, Murav'iny and Sukhodol Bays, Desantnaya Bay – Cape Zeleny.

Cryptomya busoensis

(Yokoyama, 1922)

Material Examined: *Lugovoye* (sta. 63); 1 spec.

Occurrence: Empty shell: 21 m, mud.

Family **Corbulidae** Lamarck, 1818

Anisocorbula venusta (Gould, 1861)

Material Examined: FERHRI (sta. 70); ZMFU; 10 spec.

Occurrence: Live spec.: 30 m, sand, mud; beach drift: Sobol', Tikhaya, Gornostay and Sukhodol Bays.

Potamocorbula amurensis

(Schrenck, 1861)

Plate 8, figs. I–L, O, P; Plate 9, fig. R

Material Examined: *Lugovoye* (sta. 66); ZMFU; 65 spec.

Occurrence: Live spec.: Sukhodol Bay, intertidally; empty shell: 27 m, mud (subfossil spec. – ?); beach drift: Murav'iny and Sukhodol Bays.

Superfamily **Hiatelloidea** J.E. Gray, 1824

Family **Hiatellidae** J.E. Gray, 1824

Hiatella arctica (L., 1767) s.l.

Material Examined: *Ametist* (sta. 20, 23, 24); *Lugovoye* (sta. 61); 4 spec.

Occurrence: Live spec.: 44–74 m, muddy sand and Sobol' and Tikhaya Bays, intertidally; empty shells: 50–70 m, muddy sand.

- Panomya norvegica* (Spengler, 1793)
Plate 9, fig. Q
Material Examined: ZMFU;
1 spec.
Occurrence: Beach drift: Sukhodol Bay.
- Panomya nipponica*
Nomura et Hatai, 1935
Material Examined: *Akad. Oparin* (sta. 33); 1 spec.
Occurrence: Empty shell: 45 m.
- Panopea abrupta*
(Conrad, 1849)
Material Examined: ZMFU;
1 spec.
Occurrence: Beach drift: Gornostay and Lazurnaya Bays.
- Superfamily **Pholadoidea** Lamarck, 1809
Family **Pholadidae** Lamarck, 1809
- Barnea (Anchomasa) manilensis*
(Philippi, 1847)
Material Examined: ZMFU;
6 spec.
Occurrence: Beach drift: Sobol', Gornostay and Sukhodol Bays.
- Barnea (Umitakea) japonica*
(Yokoyama, 1920)
Material Examined: ZMFU;
5 spec.
Occurrence: Beach drift: Murav'iny and Sukhodol Bays.
- Zirfaea cf. subconstricta*
(Yokoyama, 1924)
Plate 8, fig. R
Material Examined: IMB;
1 spec.
Occurrence: Beach drift: Sukhodol Bay.
- Family **Teredinidae** Rafinesque, 1815
- Teredo navalis* L., 1758
Occurrence: Live spec. were found in Andreeva and Bolshogo Kamnya Bays [Ryabchikov, 1957].
- Bankia setacea*
(Tryon, 1863)
Occurrence: Uncommon in Ussuriysky Bay [Ryabchikov, 1957].
- Zachsia zenkewitschi*
Bulatoff et Rjabtschikoff, 1933
Occurrence: Sobol' Bay, subtidally (0.5–0.6 m) in roots of *Phyllospadix* (A.V. Chernyshev, pers. comm.).
- Subclass **Anomalodesmata** Dall, 1889
Order **Pholadomyoida** Newell, 1965
Superfamily **Pandoroidea**
Rafinesque, 1815
Family **Pandoridae** Rafinesque, 1815
- Pandora (Heteroclidus) pulchella*
Yokoyama, 1926
Plate 8, figs. F, G; Plate 9, fig. P
Material Examined: ZMFU;
1 spec.
Occurrence: Beach drift: Sukhodol Bay.
- Family **Lyonsiidae** P.-H. Fischer I, 1886
- Lyonsia arenosa* (Moller, 1842)
Plate 8, fig. S
Material Examined: *Ametist* (sta. 16); 1 spec.
Occurrence: Live spec.: 70 m, fine muddy sand.
- Entodesma navicula*
(A. Adams et Reeve, 1850)
Plate 8, figs. Q, U
Material Examined: ZMFU; IMB; 9 spec.
Occurrence: Live spec.: Sobol' Bay, intertidally; beach drift: Sobol', Gornostay Bays, Desantnaya Bay – Cape Zeleny.

Superfamily **Thracioidea** Stoliczka, 1870

Family **Thraciidae** Stoliczka, 1870

Thracia itoi Habe, 1961

Plate 8, figs. W, Y

Material Examined: ZMFU;
1 spec.

Occurrence: Beach drift: Sukhodol Bay.

Thracia kakumana

(Yokoyama, 1927)

Occurrence: Empty shells were

found in bottom deposits below – 50 m at the entrance of Ussuriysky Bay [Evseev, Kiyashko, 1995]; Holocene or Pleistocene in age.

Family **Laternulidae** Hadley, 1918

Laternula (Exolaternula) marilina

(Reeve, 1860)

Occurrence: Beach drift: Sukhodol Bay [Lutaenko, 1990].

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Plate 1

- Figs. A, B.** *Yoldia (Cnesterium) notabilis* Yokoyama, 1922. Sea of Japan, Ussuriysky Bay, off Reineke Isl., 42° 53' 9" N, 131° 46' 6" E, depth 40 m, *Akad. Oparin*, sta. 34. Shell length 35.3 mm. IMB.
- Figs. C, D.** *Yoldia (Cnesterium) johanni* Dall, 1925. Sea of Japan, Ussuriysky Bay, Bolshogo Kamnya Bay, depth 30 m, FERHRI, sta. 77. Shell length 28.4 mm. IMB.
- Fig. E.** *Yoldia (Cnesterium) seminuda* Dall, 1871. Sea of Japan, entrance of Ussuriysky Bay, 42° 53' 7" N, 132° 00' 25" E, depth 50-52 m, *Ametist*, sta. 20. Shell length 15.4 mm. IMB.
- Fig. F.** *Yoldia (Cnesterium) seminuda* Dall, 1871. Sea of Japan, entrance of Ussuriysky Bay, 42° 53' 7" N, 132° 00' 25" E, depth 50-52 m, *Ametist*, sta. 20. Shell length 13.3 mm. IMB.
- Figs. G, H.** *Nuculana (Nuculana) sadoensis* (Yokoyama, 1926). Sea of Japan, Peter the Great Bay, north-west of Askold Isl., 42° 42' 0" N, 132° 24' 5" E, depth 74 m, *Ametist*, sta. 24. Shell length 16.4 mm. IMB.
- Figs. I, J.** *Acila (Truncacila) insignis* (Gould, 1861). Sea of Japan, Ussuriysky Bay, Tikhaya Bay, depth 5-7 m. Shell length 9.0 mm. ZMFU no. 13652/Bv-1750.
- Fig. K.** *Portlandia toyamaensis* (Kuroda, 1929). Sea of Japan, Ussuriysky Bay, depth 50 m, FERHRI, sta. 31. Shell length 8.8 mm. IMB.
- Fig. L.** *Nuculana (Nuculana) sadoensis* (Yokoyama, 1926). Sea of Japan, entrance of Ussuriysky Bay, south of Askold Isl., 42° 41' 5" N, 132° 16' 5" E, depth 70 m, *Ametist*, sta. 23. Shell length 12.6 mm. IMB.
- Fig. M.** *Yoldia (Cnesterium) keppeliana* (Sowerby III, 1904). Sea of Japan, Ussuriysky Bay, off Cape Basargina, 43° 03' 00" N, 132° 00' E, depth 28 m, *Ametist*, sta. 18. Shell length 22.7 mm. IMB.
- Fig. N.** *Yoldia (Cnesterium) toporoki* Scarlato, 1981. Sea of Japan, entrance of Ussuriysky Bay, south of Askold Isl., 42° 41' 5" N, 132° 16' 5" E, depth 70 m, *Ametist*, sta. 23. Shell length 7.6 mm. IMB.
- Fig. O.** *Yoldia (Yoldia) hyperborea* (Gould, 1841). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 13.4 mm. IMB.
- Figs. P, Q.** *Nucula (Ennucula) tenuis* (Montagu, 1808). Sea of Japan, Peter the Great Bay, north-west of Askold Isl., 42° 42' 0" N, 132° 24' 5" E, depth 74 m, *Ametist*, sta. 24. Shell length 8.1 mm. IMB.
- Fig. R.** *Yoldiella derjugini* Scarlato, 1981. Sea of Japan, Ussuriysky Bay, depth 57 m, FERHRI, sta. 31. Shell length 2.8 mm. IMB.
- Fig. S.** *Yoldiella derjugini* Scarlato, 1981. Sea of Japan, Ussuriysky Bay, depth 57 m, FERHRI, sta. 31. IMB.
- Figs. T.** *Nucula (Ennucula) ovatotruncata* (Scarlato in Volova et Scarlato, 1980). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 6.4 mm. IMB.
- Fig. U.** *Nucula (Ennucula) ovatotruncata* (Scarlato in Volova et Scarlato, 1980). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 8.0 mm. IMB.
- Fig. V.** *Nucula (Ennucula) tenuis* (Montagu, 1808). Sea of Japan, Peter the Great Bay, north-west of Askold Isl., 42° 42' 0" N, 132° 24' 5" E, depth 74 m, *Ametist*, sta. 24. Shell length 10.7 mm. IMB.

Plate 2

- Figs. A, B.** *Crenomytilus grayanus* (Dunker, 1853). Sea of Japan, Ussuriysky Bay, Desantnaya Bay, beach drift. Shell length 91.4 mm. ZMFU no. 20394/Bv-3235.
- Figs. C, D.** *Modiolus (Modiolus) kurilensis* Bernard, 1983. Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 62.1 mm. ZMFU no. 20395/Bv-3236.

Figs. E, F. *Mytilus (Crassimytilus) coruscus* Gould, 1861. Sea of Japan, Ussuriysky Bay, Gornostay Bay, beach drift. Shell length 108.1 mm. ZMFU no. 20393/Bv-3234.

Figs. G, H. *Musculus laevigatus* (Gray, 1824). Sea of Japan, Ussuriysky Bay, 42° 42' 7" N, 132° 12' 5" E, depth 70 m, *Ametist*, sta. 16. Shell length 57.4 mm. IMB.

Fig. I. *Musculus koreanus* Ockelmann, 1983. Sea of Japan, entrance of Ussuriysky Bay, south of Askold Isl., 42° 41' 5" N, 132° 16' 5" E, depth 70 m, *Ametist*, sta. 23. Shell length 26.6 mm. IMB.

Plate 3

Figs. A, C. *Musculus discors* (L., 1767). Sea of Japan, entrance of Ussuriysky Bay, south of Askold Isl., 42° 41' 5" N, 132° 16' 5" E, depth 70 m, *Ametist*, sta. 23. Shell length 26.4 mm. IMB.

Figs. B, D. *Musculus discors* (L., 1767). Sea of Japan, entrance of Ussuriysky Bay, south of Askold Isl., 42° 41' 5" N, 132° 16' 5" E, depth 70 m, *Ametist*, sta. 23. Shell length 37.2 mm. IMB.

Figs. E, F. *Septifer (Mytilisepta) keenae* Nomura, 1936. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 18.7 mm. ZMFU no. 9885/Bv-427.

Figs. G-J. *Septifer (Mytilisepta) keenae* Nomura, 1936. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 27.9 mm. ZMFU no. 9885/Bv-427.

Fig. K. *Mytilus (Mytilus) galloprovincialis* Lamarck, 1819. Sea of Japan, Ussuriysky Bay, Tikhaya Bay. Shell length 46.9 mm. ZMFU no. 9791/Bv-388.

Figs. L, M. *Adula falcatooides* Habe, 1955. Sea of Japan, Ussuriysky Bay, Sobol' Bay, depth 2.5-3 m. Length of the fragment 37.0 mm. ZMFU no. 9912/Bv-431.

Fig. N. *Musculus niger* (Gray, 1824). Sea of Japan, Ussuriysky Bay, western coast of Askold Isl., 42° 46' N, 132° 18' 7" E, depth 62-70 m, *Ametist*, sta. 17. Shell length 12.7 mm. IMB.

Fig. O. *Musculus glacialis* (Leche, 1883). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 8.8 mm. IMB.

Plate 4

Figs. A, B, E, F. *Glycymeris (Glycymeris) yessoensis* (Sowerby III, 1889). Sea of Japan, Peter the Great Bay, Reineke Isl., beach drift. Shell length 33.3 mm. ZMFU no. 10855/Bv-1088.

Figs. C, D, G, H. *Glycymeris (Glycymeris) yessoensis* (Sowerby III, 1889). Sea of Japan, Peter the Great Bay, Reineke Isl., beach drift. Shell length 32.7 mm. ZMFU no. 10855/Bv-1088.

Figs. I, J. *Chlamys (Swiftopecten) swiftii* (Bernardi, 1858). Sea of Japan, Peter the Great Bay, Popova Isl. Shell length 102.2 mm. ZMFU.

Figs. K, L. *Arca boucardi* Jousseaume, 1894. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 51.6 mm. ZMFU no. 10116/Bv-553.

Figs. M, N. *Crassostrea gigas* (Thunberg, 1793). Sea of Japan, Ussuriysky Bay, beach drift. Shell height 109.6 mm. ZMFU no. 20392/Bv-3233.

Plate 5

Figs. A, B. *Mysella planata* (Krause, 1885). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 7.2 mm. IMB.

Figs. C, F. *Mysella planata* (Krause, 1885). Sea of Japan, Ussuriysky Bay, south-west of Russky Isl., 42° 50' 0" N, 132° 00' 0" E, depth 70 m, *Ametist*, sta. 21. Shell length 8.9 mm. IMB.

Figs. D, E. *Adontorhina filatovae* (Ivanova et Moskaletz, 1984). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, *Ametist*, sta. 40. Shell length 2.7 mm. IMB.

Figs. G-I. *Thyasira flexuosa* (Montagu, 1803). Sea of Japan, Ussuriysky Bay, 42° 55' 4" N, 132° 00' 0" E, Lugovoye, depth 53 m, sta. 72. Shell length 4.4 mm. IMB.

Figs. J, K. *Pillucina pisidium* (Dunker, 1860). Sea of Japan, Ussuriysky Bay, Gornostay Bay, beach drift. Shell length 7.9 mm. ZMFU no. 10351/Bv-727.

Figs. L, O. *Axinopsida subquadrata* (A. Adams, 1842). Sea of Japan, Peter the Great Bay, south of Russky Isl., 42° 50' 3" N, 131° 54' 5" E, depth 60 m, Ametist, sta. 40. Shell length 4.3 mm. IMB.

Figs. M, N. *Axinopsida subquadrata* (A. Adams, 1842). Sea of Japan, Ussuriysky Bay, 43° 03' 2" N, 131° 57' 4" E, depth 27 m, Lugovoye, sta. 62. Shell length 3.1 mm. IMB.

Fig. P. *Mendicula ferruginosa* (Forbes, 1844). Sea of Japan, Peter the Great Bay, 42° 30' 5" N, 132° 15' 5" E, depth 88 m, Lugovoye, sta. 79. Shell length 2.8 mm. IMB.

Fig. Q. *Mendicula ferruginosa* (Forbes, 1844). Sea of Japan, Peter the Great Bay, 42° 30' 5" N, 132° 15' 5" E, depth 88 m, Lugovoye, sta. 79. Shell length 3.2 mm. IMB.

Fig. R. *Adontorhina filatovae* (Ivanova et Moskaletz, 1984). Sea of Japan, Ussuriysky Bay, 42° 50' 5" N, 132° 15' 5" E, depth 66 m, Lugovoye, sta. 83. IMB.

Plate 6

Figs. A, B. *Saxidomus purpurata* (Sowerby II, 1852). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 67 mm. ZMFU no. 20383/Bv-3224.

Fig. C. *Macra quadrangularis* Deshayes in Reeve, 1854. Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 41.4 mm. ZMFU no. 10399/Bv-756.

Figs. D, E. *Protothaca (Novathaca) jedoensis* (Lischke, 1874). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 35.7 mm. ZMFU no. 20384/Bv-3225.

Figs. F, I. *Macra chinensis* Philippi, 1846. Sea of Japan, Ussuriysky Bay, Gornostay Bay, beach drift. Shell length 55.2 mm. ZMFU no. 20382/Bv-3223.

Figs. G, H. *Protothaca (Protothaca) euglypta* (Sowerby III, 1914). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 36.5 mm. ZMFU no. 20385/Bv-3226.

Fig. J. *Spisula (Pseudocardium) sachalinensis* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 71.3 mm. ZMFU.

Fig. K. *Dosinia (Dosinella) penicillata* (Reeve, 1850). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, depth 5 m, FERHRI, sta. 104. Shell length 45.1 mm. IMB.

Fig. L. *Meretrix lusoria* (Rüding, 1798). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift [locally extinct Holocene species]. Shell length 52.1 mm. IMB.

Fig. M. *Spisula (Pseudocardium) sachalinensis* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 65.2 mm. ZMFU.

Plate 7

Figs. A, B, E, F. *Macoma (Macoma) balthica* (L., 1758) s.l. Sea of Japan, Ussuriysky Bay, Murav'iny Bay, near Shkotovka River mouth, beach drift. Shell length 30.4 mm. ZMFU no. 9350-Bv-246.

Figs. C, D, G, H. *Macoma (Macoma) balthica* (L., 1758) s.l. Sea of Japan, Ussuriysky Bay, Murav'iny Bay, near Shkotovka River mouth, beach drift. Shell length 28.2 mm. ZMFU no. 9350-Bv-246.

Figs. I, G. *Macoma (Heteromacoma) irus* (Hanley, 1844). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 42.2 mm. ZMFU no. 20386/Bv-3227.

Figs. K, L, O, P. *Felaniella (Felaniella) usta* (Gould, 1861). Sea of Japan, Ussuriysky Bay, Gornostay Bay, beach drift. Shell length 22.6 mm. ZMFU no. 10487/Bv-814.

Figs. M, N. *Megangulus venulosus* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Ambabosa Bay. Shell length 61.2 mm. ZMFU no. 9305/Bv-201.

Figs. Q, R, U, V. *Nuttallia ezonis* (Kuroda et Habe, 1955). Sea of Japan, Ussuriysky Bay, beach drift. Shell length 42.8 mm. ZMFU no. 10154/Bv-589.

Figs. S, W. *Gari (Gobreaeus) californica* (Conrad, 1849). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 52.4 mm. ZMFU no. 20388/Bv-3229.

Fig. T. *Macoma (Macoma) scarlatoi* Kafanov et Lutaenko, 1997. Sea of Japan, Ussuriysky Bay, Bolshogo Kamnya Bay, depth 26 m, FERHRI, sta. 78. Shell length 34.1 mm. IMB.

Figs. Y, Z. *Siliqua alta* (Broderip et Sowerby I, 1829). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 38.7 mm. ZMFU no. 8981/Bv-82.

Fig. X. *Macoma* sp. Sea of Japan, entrance of Ussuriysky Bay, 42° 53' 7" N, 132° 00' 25" E, depth 50-52 m, *Ametist*, sta. 20. Shell length 8.8 mm. IMB.

Plate 8

Figs. A, B. *Raeta (Raetellops) pulchella* (Adams et Reeve, 1850). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 13.9 mm. ZMFU no. 20396/Bv-3237.

Fig. C. *Solen (Ensisolen) krusensterni* Schrenck, 1867. Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 69.2 mm. ZMFU no. 10133/Bv-568.

Figs. D, E. *Raeta (Raetellops) pulchella* (Adams et Reeve, 1850). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 11.4 mm. ZMFU no. 20396/Bv-3237.

Figs. F, G. *Pandora (Heteroclidus) pulchella* Yokoyama, 1926. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 44.8 mm. ZMFU no. 10818/Bv-1060.

Fig. H. *Solen (Solen) strictus* Gould, 1861. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length of the upper valve 99.6 mm, lower valve – 98.0 mm. ZMFU no. 10130/Bv-565.

Figs. I, J. *Potamocorbula amurensis* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 14.8 mm. ZMFU.

Figs. K, L. *Potamocorbula amurensis* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 15.9 mm. ZMFU.

Figs. M, N. *Trapezium (Neotrapezium) liratum* (Reeve, 1843). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 36.0 mm. ZMFU no. 10116/Bv-553.

Figs. O, P. *Potamocorbula amurensis* (Schrenck, 1861). Sea of Japan, Ussuriysky Bay, Murav'iny Bay, beach drift. Shell length 13.9 mm. ZMFU.

Fig. R. *Zirfaea* cf. *subconstricta* (Yokoyama, 1924). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 43.4 mm (fragment). IMB.

Fig. S. *Lyonsia arenosa* (Moller, 1842). Sea of Japan, Ussuriysky Bay, 42° 42' 7" 132° N, 12' 5" E, depth 70 m, *Ametist*, sta. 16. Shell length 9.5 mm. IMB.

Fig. T, Z. *Corbicula japonica* Prime, 1864 s.l. Primorye Territory, lower reaches of Artyomovka River. Shell length 43.3 mm. ZMFU.

Figs. Q, U. *Entodesma navicula* (A. Adams et Reeve, 1850). Sea of Japan, Ussuriysky Bay, Sobol' Bay, beach drift. Shell length 38 mm. ZMFU no. 20387/Bv-3228.

Fig. V. *Cyclocardia (Cyclocardia) rjabinae* (Scarlato, 1955). Sea of Japan, outer part of Vostok Bay, 42° 28' 07" N, 131° 32' 05" E, 20th cruise of R/V Akademik Oparin (1997), sta. 25, depth 183 m. Shell length 18.9 mm. IMB. [Given for comparison]

Figs. W, Y. *Thracia itoi* Habe, 1961. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 42.0 mm. ZMFU no. 10159/Bv-594.

Fig. X. *Serripes (Yagudinella) notabilis* (Sowerby III, 1915). Sea of Japan, Ussuriysky Bay, near Askold Isl., depth 68-71 m. Shell length 113.1 mm. ZMFU no. 16575/Bv-2269.

Plate 9

Fig. A. *Anadara (Scapharca) inaequalis* (Bruguere, 1789). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift [locally extinct Holocene species]. Shell length 31 mm. ZMFU no. 10822/Bv-1064.

Fig. B. *Anadara (Scapharca) inaequalis* (Bruguere, 1789). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift [locally extinct Holocene species]. ZMFU no. 10822/Bv-1064.

Fig. C. *Anadara (Scapharca) broughtonii* (Schrenck, 1867). Sea of Japan, coastal plain in the inner part of Ussuriysky Bay, Holocene deposits. Shell length 76 mm. ZMFU no. 8947/Bv-47.

Fig. D. *Clinocardium (Ciliatocardium) likharevi* Kafanov in Scarlato, 1981. Sea of Japan, Ussuriysky Bay, 42° 53' 9" N, 131° 46' 6" E, depth 40 m, *Akad. Oparin*, sta. 34. Shell length 25.9 mm. ZMFU.

Fig. E. *Cyclocardia (Cyclocardia) rjabinae* (Scarlato, 1955). Sea of Japan, Ussuriysky Bay, 42° 26' 08" N, 132° 11' 07" E, depth 122 m, *Akad. Oparin*, sta. 26. Shell length 14 mm. ZMFU.

Fig. F. *Astarte elliptica* (T. Brown, 1827). Sea of Japan, Ussuriysky Bay, 42° 53' 9" N, 131° 46' 6" E, depth 40 m, *Akad. Oparin*, sta. 34. Shell length 28.4 mm. ZMFU.

- Fig. G.** *Chlamys (Chlamys) chosenuka* Kuroda, 1932. Sea of Japan, Ussuriysky Bay. ZMFU no. 10244/Bv-633.
- Fig. H.** *Clinocardium (Ciliatocardium) ciliatum* (Fabricius, 1790).). Sea of Japan, Ussuriysky Bay, 42° 53' 9" N, 131° 46' 6" E, depth 40 m, Akad. Oparin, sta. 34. Shell length 47 mm. ZMFU.
- Fig. I.** *Macoma (Macoma) coani* Kafanov et Lutaenko, 1999. **Paratype.** Sea of Japan, Ussuriysky Bay, Gornostay Bay, beach drift. Shell length 22.4 mm. IMB [originally figured in: Kafanov, Lutaenko, 1999, pl. 36, fig. 2].
- Fig. J.** *Macoma (Macoma) confabulata* (Deshayes, 1854). Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 55.3 mm. ZMFU no. 9513/Bv-310.
- Fig. K.** *Macoma (Macoma) lama* Bartsch, 1929. Sea of Japan, Ussuriysky Bay, Lazurnaya (Shamora) Bay, beach drift. Shell length 41 mm. ZMFU no. 11460/Bv-1444.
- Fig. L.** *Macoma (Macoma) scarlati* Kafanov et Lutaenko, 1997. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 59.8 mm. ZMFU no. 10113/Bv-550.
- Fig. M.** *Macoma (Rexithaerus) hokkaidoensis* Amano et Lutaenko in Amano, Lutaenko et Matsubara, 1999. Sea of Japan, Ussuriysky Bay, Gornostay Bay. Shell length 55.1 mm. ZMFU no. 9324/Bv-220.
- Fig. N.** *Nuttallia obscurata* (Reeve, 1857). Sea of Japan, coastal plain in the inner part of Ussuriysky Bay, Holocene deposits. Shell length 36 mm. ZMFU no. 12908/Bv-1699.
- Fig. O.** *Liocyma fluctuosum* (Gould, 1841). Sea of Japan, Ussuriysky Bay, 42° 51' 5" N, 131° 41' 6" E, depth 45 m, Akad. Oparin, sta. 33. Shell length 32 mm. ZMFU.
- Fig. P.** *Pandora (Heteroclidus) pulchella* Yokoyama, 1926. Sea of Japan, Ussuriysky Bay, Sukhodol Bay, beach drift. Shell length 44.8 mm. ZMFU no. 10818/Bv-1060. [Same photo as in Pl. 8, fig. F].
- Fig. Q.** *Panomya norvegica* (Spengler, 1793). Sea of Japan, Peter the Great Bay, Reineke Isl., beach drift. Shell length 54 mm. ZMFU no. 10111/Bv-548.
- Fig. R.** *Potamocorbula amurensis* (Schrenck, 1861). Sea of Japan, coastal plain in the inner part of Ussuriysky Bay, Holocene deposits. ZMFU.
- Fig. S.** *Mya (Mya) truncata* L., 1758. Sea of Japan, Ussuriysky Bay, 42° 53' 9" N, 131° 46' 6" E, depth 40 m, Akad. Oparin, sta. 34. Shell length 24.1 mm. ZMFU.

Plate 1

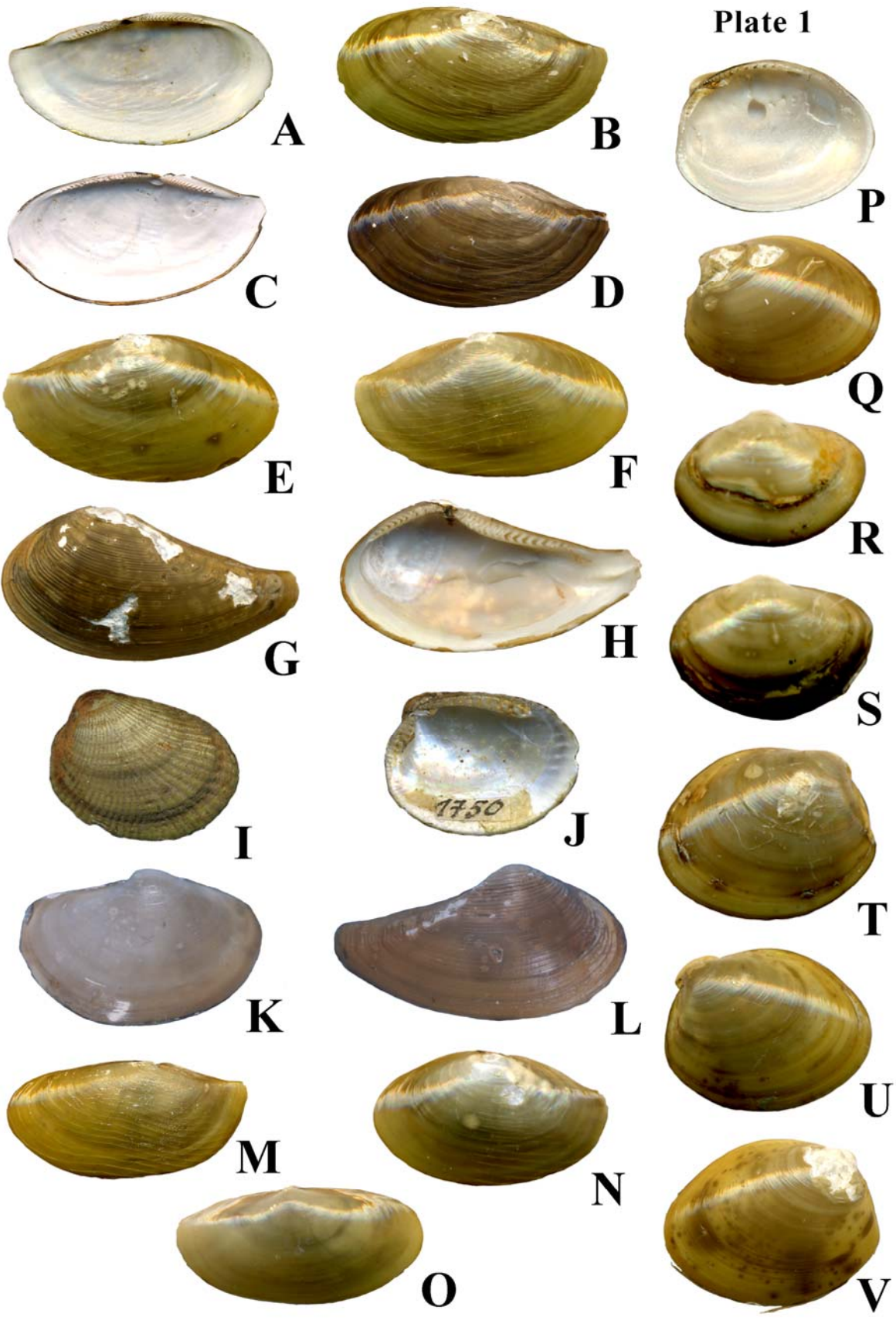


Plate 2



A



B



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H



I

Plate 3



A



B



N



C



D



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J



K



L



M

Plate 4



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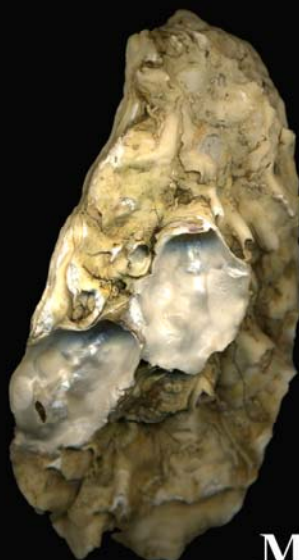
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Plate 5



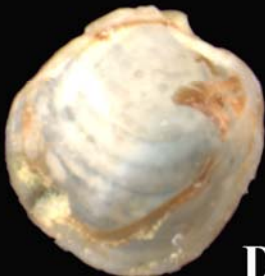
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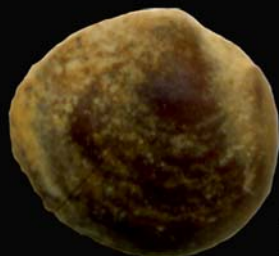
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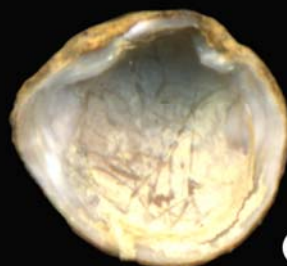
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Plate 6



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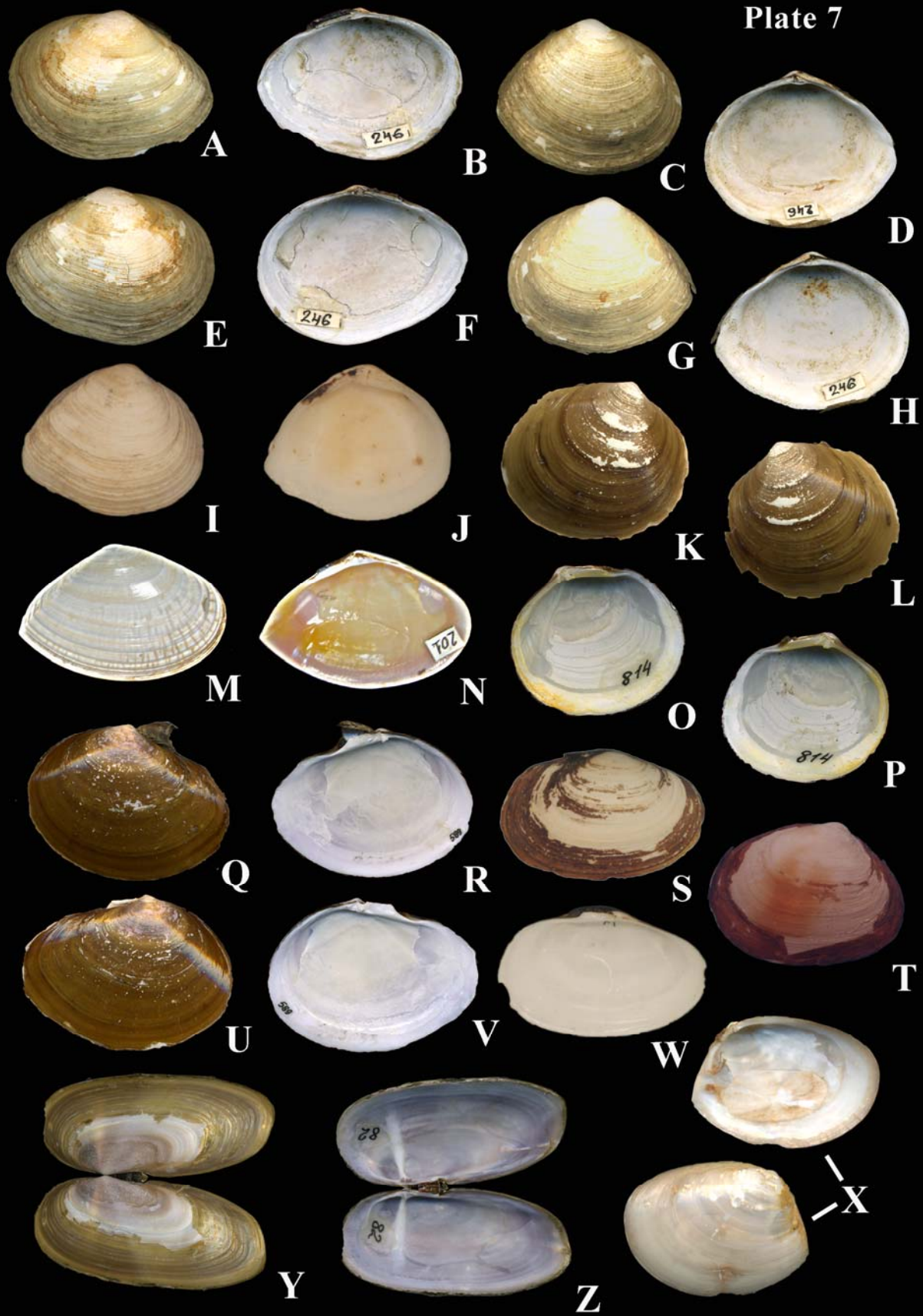


Plate 8



