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# Check list of Cenozoic marine Bivalvia (Mollusca) of Sakhalin and Kurile Islands described by Japanese paleontologists during 1925-1990

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**Abstract**

This is an alphabetically arranged check list of all figured and/or described specimens of the Paleogene, Neogene and Quaternary bivalve molluscs from Sakhalin and Kurile Islands published by Japanese authors from 1925 to 1990. The check list presents the original latin names for taxa with the respective reference to the literature, depositories of the type specimens for new species, geographic and stratigraphic locations (their contemporary equivalents given in square brackets). In the end of each entries, contemporary status of taxon is given in square brackets if such status is established from the collections study or other type of material. In the required cases, taxonomic and/or nomenclatorial notes are presented.

*Key words*: Mollusca, Bivalvia, Cenozoic, Sakhalin, Kurile Islands, Check list.

## Introduction

Cenozoic (Paleogene and Neogene) deposits show the widest development in Sakhalin. They are associated with most promising oil, gas and coal deposits, hence a large number of relevant publications by Russian and Japanese geologists. However, a known political tension in the relations between Russia and Japan, later between the USSR and Japan, complexity of geopolitical and ideological problems, joint linguistic difficulties have resulted in a fact that paleontological studies of Cenozoic marine bivalve molluscs of Sakhalin and Kurile Islands so far retaining primary importance for Cenozoic stratigraphy of the northern part of the Pacific belt (Gladenkov, 1988) were independently conducted by the Russian and Japanese experts.

The Russian authors often practically completely ignored the previous studies made by the Japanese geologists and the priority of the latter in substantiation of various stratigraphic subdivisions of Sakhalin and Kurile Islands was basically lost.

Despite the availability of spacious reviews published by Makiyama (1934, 1959) and Takeda (1953), this prolific information urgently needed for the revision of Cenozoic marine Bivalvia of the Russian Far East has not been yet adequately summarized. Data on Cenozoic Sakhalin and Kurile molluscs are particularly missing in Slodkewitsch (1938a, b), Hatai and

Nisiyama (1952), Oyama *et al.* (1960), and Masuda and Noda (1976). All the foregoing proves the need for a critical check list of marine Bivalvia species introduced by Japanese paleontologists for Cenozoic deposits of Sakhalin and Kurile Islands.

### Format

This check list involve all the Japanese publications, dealing with descriptions and/or illustrations on the Cenozoic marine Bivalvia from Sakhalin and the Kurile Islands. All entries in the check-list are arranged in alphabetic order, with original author's statement as to genus, species and author, and bibliographic reference. All illustrated specimens are supplied with the data on locality and stratigraphical position being reported. If the illustrated shells come from Japan or some other adjacent areas, they are supplied with the data on locality and stratigraphic position, cited from the text with its description.

All the Japanese toponyms are supplied with their present-day Russian equivalents (in square brackets), legislated by the Act of the RSFSR Suprime Parliament (Verkhovnyi Sovet) from 15 October 1947 and according to the present-day Sakhalin's administrative subdivision (Fig. 1).

The stratigraphical units, reported in any publications, are supplied with their present-day equivalents. We took into consideration that the position of some stratigraphical units might be disscussed further (*e.g.* Kafanov and Savizky, 1995), and made our mind to avoid giving them any geological age.

For new species and subspecies described from Sakhalin and the Kurile Islands, the depositories of the type-specimens are reported. Some figures of shells were supplied, if it was possible, with the name of its depository and the register number. If necessary, the notes on taxonomy and/or nomenclature are given, too. Every taxa are accompanied with the present-day taxonomic status of the species and subspecies in square brackets.

We tries to present the bibliographic descriptions as full as possible. After the year of publication, signed on the title-page, the date of issue was indicated in parenthises, if it was known. The Russian papers

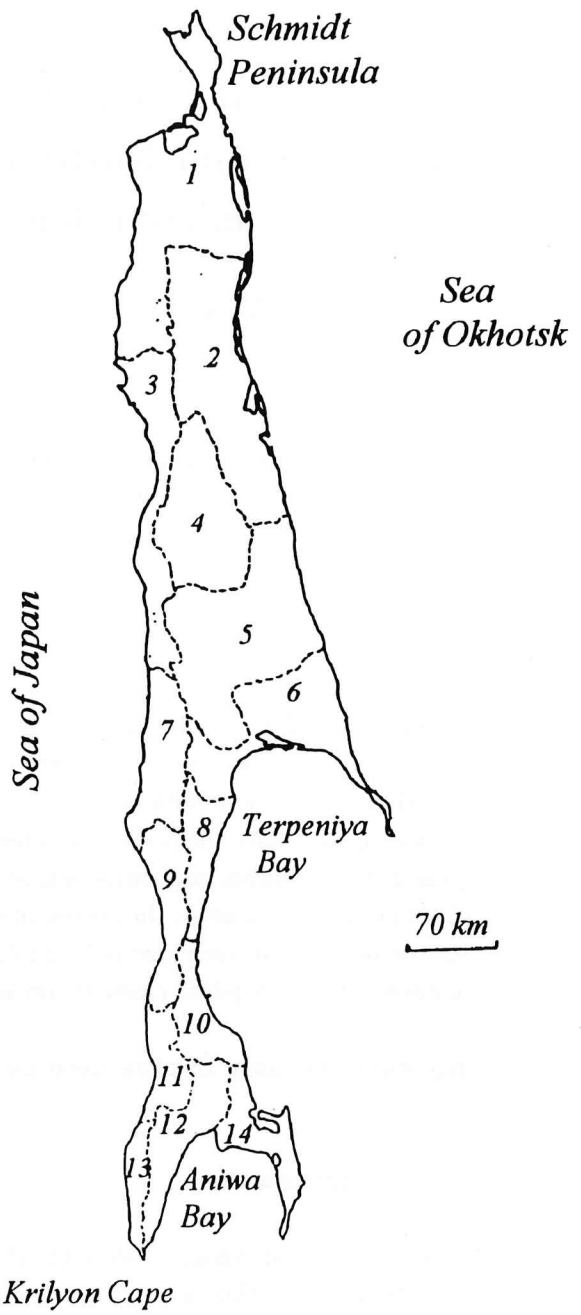



Fig. 1. Indexmap of the contemporary administrative division of Sakhalin Island. Districts: 1 - Okha, 2 - Nogliki, 3 - Aleksandrovsk-Sakhalinskiy, 4 - Tymovsk, 5 - Smirnykhov (former - Pogranichny), 6 - Poronaysk (Sisuka-gun), 7 - Uglegorsk (Esutoru-gun and/or Nayosi-gun), 8 - Makarov (Shiritori-gun), 9 - Tomari (Tomarioru-gun), 10 - Dolinsk (Ochiai, Otiai-gun and/or Sakaehama-gun), 11 - Kholmsk (Maoka-gun and/or Noda-gun), 12 - Aniwa (former - Yuzhno-Sakhalinsk) (Rutaka-gun and/or Toyohara-gun), 13 - Nevel'sk (Honto-gun), 14 - Korsakov (Otomari-gun).

make up great problems at that point, as far as there is no habit of dating the publication in them. The only way out such situations might be the notation of the "podpisano k pechati" (*i.e.* the date, when the paper was assigned to press in the publishing house). This notation means only, that the paper was published after the indicated date. The lag between the "podpisano k pechati" date and the real date of the paper's issue (indicated in the square brackets) might make up several years. For example, in the classical work of Krishtofovich and Ilyina (1954) the "podpisano k pechati" date is April, 1954, while the work became available for a public use May, 12, 1957, only.

**Abbrebiation of repository of specimens**

GSJ - The Geological Survey of Japan; according to Hatai and Nisiyama (1952), all collections were totally destroyed during the World War II.

IGPS - Institute of Geology and Paleontology, Faculty of Science, Tohoku University, Sendai.

JC - Department of Geology and Mineralogy, Faculty of Science, Kyoto University, Kyoto.

UH (=GH) - Department of Geology and Mineralogy, Faculty of Science, Hokkaido University, Sapporo.

UMUT - Department of Historical Geology and Palaeontology, The University Museum, The University of Tokyo, Tokyo.

**Abbreviation for papers in bibliography**

*Bull. Com. Quart. Res.* - Bulletin of the Commission on the Quarternary Period Research, Academy of Sciences of the USSR, Moscow.

*Bull. Mizunami Foss. Mus.* - Bulletin of the Mizunami Fossil Museum, Mizunami.

*Bull. Russ. Far East Malacol. Soc.* - Bulletin of the Russian Far East Malacological Society, Vladivostok.

*Cenoz. Res.* - The Cenozoic Research, The Bulletin of the Association for the Geological Collaboration in Japan, Sapporo.

*Jap. J. Geol. Geogr.* - Japanese Journal of Geology and Geography, the Japan Academy, Tokyo.

*J. Coll. Sci.* [*Imp.*] *Univ. Tokyo* - Journal of the College of Science, [Imperial] University of Tokyo, Tokyo.

*J. Fac. Sci. Hokkaido* [Imp.] *Univ.*, ser. 4 - Journal of the Faculty of Science, Hokkaido [Imperial] University, Series 4 (Geology and Mineralogy), Sapporo.

*J. Fac. Sci.* [*Imp.*] *Univ. Tokyo*, Sect. 2 - Journal of the Faculty of Science, [Imperial] University of Tokyo, Section 2 (Geology, Mineralogy, Geography and Seismology), Tokyo.

*J. Geol. Soc. Jap.* - The Journal of the Geological Society of Japan, Tokyo.

*Mem. Coll. Sci. Kyoto* [*Imp.*] *Univ.*, ser. B - Memoirs of the College of Science, Kyoto [Imperial] University, Series B (Geology and Mineralogy), Kyoto.

*Palaeontology* - Palaeontology, The Palaeontological Association, London.

*Paleontol. J.* - Paleontological Journal [Paleontologicheskiy Zhurnal], Academy of Sciences of the USSR, Moscow.

*Prof. E. Kon'no Mem. Vol.* - The Science Reports of the Tohoku University, Second Series (Geology). Special volume, no. 5 (Professor Enzo Kon'no Memorial volume), Sendai.

*Records. Geol. Miner. Rec. Far East* - Records of the Geology and of the Mineral Records of Far East, The Far East Geological Trust, Khabarovsk.

*Repts. Geol. Surv. Oil-field S. Sakh.* - Reports on the Geological Survey in Oil-field of the South Sakhalin [Karafuto yuden tishitsu tyosa hokoku], Toyohara [Yuzhno-Sakhalinsk] (in Japanese, title translated).

*Repts. Imp. Geol. Surv. Jap.* - Reports of the Imperial Geological Survey of Japan, Kawasaki.

*Saito Ho-on Kai Mus. Res. Bull.* - Saito Ho-on Kai Museum, Research Bulletin, Sendai.

*Sci. Repts. Tohoku* [*Imp.*] *Univ.*, 2nd ser. - The Science Reports of the Tohoku [Imperial] University, Second Series (Geology), Sendai.

*Spec. Pap. Geol. Soc. Amer.* - Geological Society of America, Special Papers, Boulder, Colorado.

*Spec. Pap. Palaeontol. Soc. Jap.* - Palaeontological Society of Japan, Special Papers, Tokyo.

*Transact. GIN* - Transaction of the Geological Institute, Academy of Sciences of the USSR, Moscow.

*Transact. PIN* - Transaction of the Paleontological Institute, Academy of Sciences of the USSR, Moscow.

*Transact. VNIGRI* - Transaction of the All-Union [All-Russia, since 1992] Petroleum Scientific-Research Geological-Exploration Institute (VNIGRI), Leningrad [St.-Petersburg].

*Univ. Mus. Tokyo Mater. Repts.* - The University Museum, The University of Tokyo, Material Reports, Tokyo.

*Venus* - Venus, The Japanese Journal of Malacology, Malacological Society of Japan, Tokyo.

## Check List

*Acila* (*Truncacila*) *gottschei* (Böhm, 1916) - Nagao and Huzioka, 1941, p. 121, pl. 29(1), figs. 10, 15 (both for specimens from Hokkaido): Taihei, Esutoru-mati, Nayosi-gun, Karahuto [Udarnyi, near Uglegorsk Town, Uglegorsk District], Arakai beds [Arakayskaya Formation]: Hatuyuki-zawa, a tributary of the Keton-gawa [Orlovka River], Sisuka-gun [Poronaisk District], Upper Miocene: Motiku, Esutoru-mati [Uglegorsk Town], Nayosi-gun [Uglegorsk District], Motiku beds [Maruyamskaya Formation]. Taxonomical notes *see* Schenck, 1936, p. 88 and Krishtofovich, 1964, p. 43 [=*Acila* (*Truncacila*) *gottschei* (Böhm, 1916)].

*Acila insignis* (Gould) - Yokoyama, 1930, p. 417, pl. 80, fig. 5 (UMUT no. CM25740; **Pl. 9, fig. 2**): Higashi-Sakutan, Motodomari-gun [Tumanovo, Makarov District], Naikawa Beds [Kurasiyskaya Formation]. Reproduced: Makiyama, 1959, pl. 79, fig. 5 (indicated as *Acila* (*Truncacila*) *gottschei*). [=*Acila* (*Truncacila*) *gottschei* (Böhm, 1916)].

*Acila mirabilis* (Adams *et* Reeve) - Yokoyama, 1929, p. 395, pl. 76, fig. 2 (reproduced: Makiyama, 1959, pl. 74, fig. 2): Sannosawa, Chitose, Odomari [Korsakov District], "beds A" [Kholmskaya Formation?]. [=*Acila* (*Acila*) *kholmskensis* L. Krishtofovich, 1964].

*Acila* (*Truncacila*) *gottschei* (Böhm) var. *osugii* nov. - Nagao and Huzioka, 1941, p. 125, pl. 29(1), figs. 19 (lectotype), 18, 18a: Rettan-gawa [Kostroma River], Konotoro-mura [Kostromskoe], Kholmsk District, Arakai beds? [Arakayskaya Formation?]. Lectotype (designated by Slodkewitsch, 1967, p. 42) - UH reg. no.? Redescription and taxonomical notes *see* Slodkewitsch, 1967, p. 42, pl. 6, fig. 9, pl. 7, figs. 1-14. [=*Acila* (*Truncacila*) *osugii* Nagao and Huzioka, 1941]

*Acila* (*Acila*) *praedivaricata* nov. - Nagao and Huzioka, 1941, p. 137, pl. 31(3), figs. 7, 7a, 7b (lectotype), 5, 5a, 6, 8: Arakai-zawa [Yazychnitsa River] and Karumai-zawa near Maoka-mati [Kholmsk Town], Kholmsk District, Upper Nisi-Sakutan beds [Takaradayskaya Formation]. Lectotype (designated: Oyama *et al.*, 1960, p. 104, pl. 21, figs. 5c-e) - UH reg. no. 8928. [=*Acila* (*Acila*) *praedivaricata* Nagao and Huzioka, 1941].

*Acila* (*Truncacila*) sp. indet. b - Nagao and Huzioka, 1941, p. 124, pl. 29(1), figs. 21, 21a: Kami-Esutoru [Solntsevo], Esutoru-mati [Uglegorsk Town], Uglegorsk District, Hure beds (Poronai series) [Kholmskaya Formation]. [=*Acila* (*Truncacila*) sp.].

*Anadara* (*Anadara*) *watanabei* (Kanehara) - Noda, 1966, p. 103, pl. 5, fig. 13, pl. 8, fig. 3 (IGPS no. 17495): Miocene of Karafuto, [=*Anadara* (*Anadara*) *watanabei* (Kanehara, 1936)].

*Astarte bennettii* Dall - Nomura, 1933, p. 4; Paramushir Island, northern Kurile Islands, exact locality and stratigraphic position unknown [Neogene]. IGPS no. 49910.

*Astarte chishimana* n. sp. - Nomura, 1933, p. 4, pl. 1 figs. 7, 7a: Paramushir Island, northern Kurile Islands, exact locality and stratigraphic position unknown [Pliocene Okeanskaya Formation, according to Basilian, 1989] [=*Tridonta chishimana* (Nomura, 1933)].

*Batissa sakakibarai* n. sp. - Otatume, 1943a, p. 24, pl. 4, figs. 1, 1a (holotype, reproduced: Oyama *et al.*, 1960, pl. 50, figs. 3a, b), 2-6; Fig. 1: Manui River, Shiranui-mura, Sakaehama-gun [Starodubskoe, Dolinsk District], Naibuchi Group [Nizhneduyskaya and/or Krasnopolievskaya Formations]. Holotype - UH reg. no. 9309. [=*Corbicula* (*Cyrenobatissa*) *sakakibarai* (Otatume, 1943)].

*Batissa sakakibarai* Otatume - Otatume, 1943b, p. 222:

Manui River, Shiranui-mura, Sakaehama-gun [Starodubskoe, Dolinsk District], Naibuchi Group [Nizhneduyskaya and/or Krasnopolievskaya Formations]. [=*Corbicula* (*Cyrenobatissa*) *sakakibarai* (Otatume, 1943)].

*Batissa sitakaraensis* (Suzuki) - Otatume, 1943a, p. 23, pl. 4, figs. 7-9 (reproduced: Oyama *et al.*, 1960, pl. 48, figs. 3d, e): middle course of Manui river, Shiranui-mura, Sakaehama-gun [Starodubskoe, Dolinsk District], Naibuchi Formation [Nizhneduyskaya and/or Krasnopolievskaya Formations]. [=*Corbicula* (*Batissa*) *sitakaraensis* Suzuki, 1941].

*Batissa sitakaraensis* (Suzuki) - Otatume, 1943b, p. 221: middle course of Manui River, Shiranui-mura, Sakaehama-gun [Starodubskoe, Dolinsk District], Naibuchi Formation [Nizhneduyskaya and/or Krasnopolievskaya Formations]. [=*Corbicula* (*Batissa*) *sitakaraensis* Suzuki, 1941].

*Brachidontes matchgarensis* n. sp. - Makiyama, 1934, p. 135, pl. 4, figs. 10 (holotype), 9 (reproduced: Oyama *et al.*, 1960, pl. 25, figs. 7a, b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 5 [lower part of Machigarskaya Formation]. Holotype - JC reg. no. 100026. Krishtofovich (1964, p. 191) erroneously considered this species and *Mytilus tichanovitchi* Makiyama, 1934 as possible synonymes. [=*Brachidontes*? *matchgarensis* Makiyama, 1934].

*Cardium* (*Cerastoderma*) *asagaiense* n. sp. - Makiyama, 1934, p. 139, pl. 5, figs. 23 (holotype,), 20, 22 (all specimens figured are from Yotukura, Fukushima Prefecture); along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, horizon 5 [lower part of Machigarskaya Formation]. Holotype - JC no. 350011. About stratigraphic and taxonomic position *see* Kafanov and Savizky, 1982. [=*Ciliatocardium asagaiense* (Makiyama, 1934)].

*Cardium groenlandicum* Chemnitz - Yokoyama, 1929, p. 390 (part.), pl. 73, fig. 2, *non* fig. 3: Shiraishizawa, Mototomari [Travyanaya, Makarov District], "dark grey sandstone" [?]. Reproduced: Makiyama, 1959, pl. 71, fig. 2 [=*Serripes* cfr. *nodai* Kafanov, 1980].

*Cardium groenlandicum* Chemnitz - Yokoyama, 1929, p. 390 (part.), pl. 73, fig. 3 *non* fig. 2.: The Great Uinii [Bol'shaya Uin'i] River [51 55'N, Nogliki District], "beds I" ["Prumi bed" according Noda, 1962] [Nutovskaya Formation]. Reproduced: Makiyama, 1959, pl. 71, fig. 3. [=*Serripes groenlandicus* (Mohr, 1786)].

*Cardium* (*Papyridea*) *harrimani* (Dall) - Makiyama, 1934, p. 141, pl. 6, figs. 32-34; Fig. 34: along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizons 1, 2, 5 [Machigarskaya Formation]. [=*Papyridea* (*Profulvia*) *harrimani* Dall, 1904].

*Cardium* (*Nemocardium*) *iwakiense* n. sp. - Makiyama, 1934, p. 144, pl. 5, fig. 29 (holotype, from Yotukura, Fukushima Prefecture), 25-28; Figs. 27, 28 (reproduced: Oyama *et al.*, 1960, pl. 53, figs. 3a, b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 5 [lower part of Machigarskaya Formation]. [=*Nemocardium* (*Nemocardium*) *iwakiense* (Makiyama, 1934)].

*Cardium* (*Trachycardium*?) *kinsimarae* n. sp. - Makiyama, 1934, p. 141, pl. 6, fig. 35 (holotype, reproduced: Oyama *et al.*, 1960, pl. 55, fig. 1): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Matchgar (horizon unknown) [Machigarskaya Formation]. [=*Trachycardium kinsimarae* (Makiyama, 1934)].

*Cardium* (*Cerastoderma*) *matchgarense* n. sp. - Makiyama, 1934, p. 137, pl. 5, fig. 30 (holotype), 31 (reproduced: Oyama *et al.*, 1960, pl. 54, figs. 4a, b): along the shore of Cape Mary [Marii], near abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 5 [lower part of Machigarskaya or Vengeriyskaya Formation]. Holotype - JC no. 100007. About stratigraphic and taxonomic position *see* Kafanov and Savizky, 1982. [=*Ciliatocardium matchgarense* (Makiyama, 1934)].

*Cardium nuttalii* [sic!] Conrad - Yokoyama, 1929, p.

390, pl. 74, fig. 8 (reproduced: Makiyama, 1959, pl. 72, fig. 8): Pohle River [between 50°20′ and 50°40′N, Smirnykhov District], "beds II (Sandy Shale)" [Okobykayskaya Formation]. [=*Ciliatocardium shinjiense* (Yokoyama, 1923)].

*Cardium* (*Cerastoderma*) *shinjiense* Yokoyama? - Kanehara, 1937, fig. 1: Langari, North Karafto [Langeri, Smirnykhov District], Upper sandstone, Pliocene [Nutovskaya Formation]. [=*Ciliatocardium* cfr. *shinjiense* (Yokoyama, 1923)].

*Cardium* (*Cerastoderma*) *shinjiense* Yokoyama - Kanehara, 1937, fig. 10: River Pohle [between 50°20′ and 50°40′N, Smirnykhov District], Sandy shale [Okobykayskaya Formation]. [=*non Cardium shinjiense* Yokoyama].

*Cardium taracaicum* sp. nov. - Yokoyama, 1930, p. 414, pl. 77, figs. 1, 2 (reproduced: Oyama *et al.*, 1960, pl. 54, figs. 2b-e; Makiyama, 1959, pl. 76, figs. 1, 2); fig. 1: (lectotype, herein designated), Near Lake Tobuchi, Nagahama-gun [near Busse Lagoon, Ozerskiy, Korsakov District], "Neogene": fig. 2: Higashi-Sakutan, Motodomari-gun [Tumanovo, Makarov District], "Neogene greenish-grey sandstone" [?]. Lectotype - UMUT no. CM25698 (**Pl. 9, fig. 4**). About stratigraphical distribution in Sakhalin *see* Kafanov and Savizky, 1983. [=*Laevicardium taracaicum* (Yokoyama, 1930)].

*Cardium* (*Laevicardium*) *tristiculum* Yokoyama - Yokoyama, 1930, p. 415, pl. 78, figs. 3, 4 *non* 5, 6: Shiromizu Hot Springs, Kawakami-mura, Toyohara-gun [hot springs between Teplovodskiy and Klyuchi, Yuzhno-Sakhalinsk District], "dark greenish grey hard sandstone" [Kholmskaya or Arakayskaya Formation]. Reproduced: Makiyama, 1959, pl. 77, figs. 3, 4. Figured specimens - UMUT no. CM25700, CM25701 (Ichikawa, 1983). [=*Laevicardium tristiculum* (Yokoyama, 1924), *see* Kafanov and Amano, 1996].

*Cardium* (*Laevicardium*) *tristiculum* Yokoyama - Yokoyama, 1930, p. 415, pl. 78, figs. 5, 6 *non* 3, 4: Shiromizu Hot Springs, Kawakami-mura, Toyohara-gun [hot springs between Teplovodskiy and Klyuchi, Yuzhno-Sakhalinsk District], "dark greenish grey hard sandstone" [Kholmskaya or Arakayskaya Formation]. Reproduced: Makiyama, 1959, pl. 77, figs. 5, 6. Figured specimens - UMUT no. CM5702, CM5703 (Ichikawa, 1983). [=*Nemocardium* (*Nemocardium*) *yokoyamai* Takeda, 1953, *see* Kafanov and Amano, 1996a].

*Cardium* (*Cerastoderma*) *uyemurai* sp. nov. - Kanehara, 1937, p. 175, figs. 6-8: Great Fuhdji, North Karafto [between Bol'shaya Khuzi and Vengeri Rivers, 50° 20′ and 50°40′N, *fide* Krasnoi, 1937; Smirnykhov District], "sandy shale of the Congi Series (Pliocene)" [upper part of the Maruyamskaya Formation, layers with *Fortipecten takahashii*]. Syntypes - ? GSJ. About biostratigraphical significance *see* Kafanov and Savizky, 1982 [=*Ciliatocardium uyemurai* (Kanehara, 1937)].

*Cardium* (*Cerastoderma*) *yamasakii* n. sp. - Makiyama, 1934, p. 138, pl. 5, fig. 21 (holotype), 24 (reproduced: Oyama *et al.*, 1960, pl. 54, figs. 5a, b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Matchgar (horizon 6) Miocene: *Mya cuneiformis* horizon at Mgatch [Vengeriyskaya Formation]. Holotype - JC no. 100005. About stratigraphic and taxonomic position *see* Kafanov and Savizky, 1982. [=*Ciliatocardium yamasakii* (Makiyama, 1934)].

*Chione astartoides* (Beck) - Yokoyama, 1929, p. 389, pl. 74, figs. 4-7; Kydylanii [Kadylan'i] (figs. 4, 6, 7) and Moktov (fig. 5) Rivers [between 53 and 52°50′ N, Okha District], "beds I" (middle zone of the "Lower Quartz Sandstone") [Nutovskaya Formation]. Reproduced: Makiyama, 1959, pl. 72, figs. 4-7. We do not accept the Savizky (1980)'s opinion that *Liocyma aniwana* Dall, 1907, *L. hokkaidoensis* Habe, 1951 and *L. viridis* Dall, 1871 are distinct species. Status of *Venus astartoides* Beck *in* Middendorff, 1849 *non* d'Orbigny, 1852 and *L. beckii* Dall, 1870 remain doubtful [=*Liocyma fluctuosa* (Gould, 1841)].

*Chione astartoides* (Beck) - Yokoyama, 1930, p. 414, pl. 77, fig. 6 (UMUT no. CM25686; **Pl. 9, fig. 1**; reproduced: Makiyama, 1959, pl. 76, fig. 6): Shirutor, Motodomari-gun [Makarov, Makarov District], "Neogene" [Maruyamskaya Formation?]. [=*Liocyma fluctuosa* (Gould, 1841)].

*Chlamys matchgarensis* n. sp. - Makiyama, 1934, p.

133, pl. 3 figs. 7, 8 (holotype; reproduced: Oyama *et al.*, 1960, pl. 29, figs. 3a, b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 5 [lower part of Machigarskaya Formation]. Holotype - JC reg. no. 100011. Redescription and taxonomic notes also *see* Krishtofovich, 1964. [=*Chlamys* (*s.s.*) *matchgarensis* Makiyama, 1934].

*Corbicula hukayai* n. sp. - Otatume, 1943a, p. 26, pl. 4, figs. 10-17 (reproduced: Oyama *et al.*, 1960, pl. 48, figs. 2a-f): Nayoshi-mura, Nayoshi-gun [Lesogorsk Town, Uglegorsk District], Naibuchi Group [Nizhneduyskaya and/or Krasnopolievskaya Formations]. Lectotype (designated by Oyama *et al.*, 1960, p. 160, pl. 48, figs. 2a, b) - UH reg. no. 9311. [=*Corbicula* (*?Batissa*) *hukayai* Otatume, 1943].

*Corbicula hukayai* Otatume - Otatume, 1943b, p. 221: Nayoshi-mura, Nayoshi-gun [Lesogorsk Town, Uglegorsk District], Naibuchi Group [Nizhneduyskaya and/or Krasnopolievskaya Formations]. [=*Corbicula* (*?Batissa*) *hukayai* Otatume, 1943].

*Corbula konotoroensis* n. sp. - Yokoyama, 1932, p. 12, pl. 2, fig. 2: Tofutsu-gawa [Krasnoyarka River, Kholmsk District], "beds I of the Tofutsu region" [? Krasnopolievskaya Formation]. Holotype - possibly at UMUT. [=?*Pitar konotoroensis* (Yokoyama, 1932)].

*Cuspidaria* (*Cardiomya*) *interstitialis* sp. nov. - Takeda, 1953, p. 87, pl. 8, fig. 22 (holotype, reproduced: Oyama *et al.*, 1960, pl. 66, fig. 4): UH Loc. no. T355 (locality not registered in the paper, according to Oyama *et al.*, 1960, p. 216: upper course of Tokombo [near Kazakevichi village] River, 4050 m east from the junction with the 2nd branch, Honto-gun [Nevel'sk District], Maoka group [Takaradayskaya and /or Arakayskaya Formations]. Holotype- UH reg. no. 6599. [=*Cardiomya interstitialis* (Takeda, 1953)].

*Dosinia* (*Kaneharaia*) *kaneharai kannoi* Masuda, 1963 - Masuda, 1967, p. 22, Pl. 2, fig. 9 (IGPS no. 18760): "Aushi-gawa, Saghalien" [Topkaya River, north of Chekhov Town, Chekhov District], Naihoro formation [Ausinskaya Formation]. [=*Dosinia* (*Kaneharaia*) *ausiensis* Ilyina, [1957]].

*Fortipecten takahashii* (Yokoyama) - Fujie *et al.*, 1964, pl. 3, fig. 8 (reproduction of pl. 25, fig. 2 from Fujie, 1958): "Karafto, Maruyama sandy shale" [Sakhalin, middle and/or upper part of Maruyamskaya Formation] [=*Fortipecten takahashii* (Yokoyama, 1930)]

*Fortipecten takahashii* (Yokoyama) - Hayami and Hosoda, 1988: the adaptive morphology and mode of life of this species from the Pliocene of north Japan and Sakhalin were examined mainly from the standpoint of relative growth. Specimens examined - UMUT [=*Fortipecten takahashii* (Yokoyama, 1930)].

*Gari* (*Psammocola*) sp. aff. *californica* (Conrad) - Makiyama, 1934, p. 154, pl. 7, fig. 53 (reproduced: Oyama *et al.*, 1960, pl. 60, fig. 3): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 2 [Machigarskaya Formation]. [=*Gari* (*Gobraeus*) cfr. *kazusensis* (Yokoyama, 1922)].

*Glycimeris* [sic!] *chitanii* sp. nov. - Yokoyama, 1929, p. 394, pl. 75, fig. 3 (reproduced: Makiyama, 1959, pl. 73, fig. 3): Petroleum [Neftyanaya] River, Karafto [between 50°20′ and 50°40′N, Smirnykhov District], "beds II (Sandy Shale)" [Borskaya Formation]. Holotype - UMUT no. CM26944, missing (Ichikawa, 1983). [=*Glycymeris* (*Glycymeris*) *chitanii* (Yokoyama, 1929) *fide* Matsukuma, 1986].

*Glycymeris septentrionalis* (Middendorff) - Nomura, 1933, p. 2, pl. 1 fig. 6 (IGPS no. 49894): Paramushir Island, northern Kurile Islands, exact locality and stratigraphic position unknown [Neogene]. [=? *Glycymeris* (*Glycymeris*) *yessoensis* (Sowerby, 1888)].

*Leda confusa* Hanley - Yokoyama, 1929, p. 394, pl. 76, fig. 5 (reproduced: Makiyama, 1959, pl. 74, fig. 5): Nampi River [50°55′N, Nogliki District], "beds II (lower Kongi Beds)" [Daginskaya Formation]. [=*Nuculana pernula* (Muller, 1779)].

*Leda* sp. - Yokoyama, 1929, p. 394: the third branch of the Ochiho [Ochepukha] River, Tonai [Lesnoe, Korsakov District], "beds C (dark grey shale)" [?].

*Liocyma furtiva* (Yokoyama) - Makiyama, 1934, p. 152, pl. 6, figs. 41-43, 45-48; Figs. 41, 42 (reproduced:

Oyama *et al.*, 1960, pl. 59, figs. 6c, d), 48: along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 4 [Machigarskaya Formation]. [=*Liocyma furtiva* (Yokoyama, 1924)].

*Lucina* sp. - Yokoyama, 1929, p. 392: Kydylanii [Kadylan'i] River [between 53° and 52°50'N, Okha District], "beds I (middle zone of the "Lower Quartz Sandstone")" [Nutovskaya Formation]; Nampi River [50°55'N, Nogliki District], "beds III (Nampi Beds)" [Daginskaya Suite]; Otomari [Korsakov Town, Korsakov District], "grey shale" [?].

*Macoma dissimilis* (Martens) - Yokoyama, 1929, p. 388, pl. 74, fig. 2 (reproduced: Makiyama, 1959, pl. 72, fig. 2): Kongi River, North Karafto [51°55'N, Nogliki District], "beds II (lower Kongi Beds)" [Daginskaya Suite]. [=*Macoma tokyoensis* Makiyama, 1927].

*Macoma sejugata* (Yokoyama) - Makiyama, 1934, p. 155, pl. 4, fig. 18 (reproduced: Oyama *et al.*, 1960, pl. 60, fig. 8d): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 6 [Machigarskaya Formation]. [=*Macoma sejugata* (Yokoyama, 1924)].

*Macrocallista brevisiphonata* (Carpenter) - Yokoyama, 1929, p. 388, pl. 75, fig. 4 (reproduced: Makiyama, 1959, pl. 73, fig. 4): Kawakami Hot Spring [Teplye Klyuchi, near Teplovodskiy and Klyuchi, Aniwa District], "dark grey hard sandstone" [Maruyamskaya Formation]. [=*Callista* (*Ezocallista*) *brevisiphonata* (Carpenter, 1865)].

*Mactra* aff. *ovalina* Lamarck - Yokoyama, 1929, p. 386: Tchamgu [Chamgu] River, [Nogliki District], beds II, in the "Sandy Shale" (Lower Kongi Beds) [Daginskaya Formation]. [?].

*Mactra sachalinensis* Schrenck - Yokoyama, 1929, p. 368, pl. 73, fig. 1 (reproduced: Makiyama, 1959, pl. 71, fig. 1): Sannosawa [Tret'ya pad'], Chitose, Odomari-gun [Korsakov District], "Pleistocene". [=*Spisula* (*Pseudocardium*) *sachalinensis* (Schrenck, 1862)].

*Mactra semmiana* Yokoyama - Yokoyama, 1929, p. 368, pl. 74, fig. 10 (reproduced: Makiyama, 1959, pl. 72, fig. 10): Paromai River, North Karafto [Paromay River, between 53° and 52°50'N, Okha District], "beds I (grey sandstone, "*Mactra*-zone")" [Nutovskaya Formation]. [=*Serripes groenlandicus* (Mohr, 1786)].

*Mactra sulcataria* "Deshayes" [Reeve] - Yokoyama, 1929, p. 386: Paromay oil-field [between 53° and 52° 50'N; Okha District], "beds I (yellowish brown soft weathered sandstone)" [Nutovskaya Formation]. [=?*Mactra* (*Mactra*) *chinensis* Philippi, 1846].

*Mya arenaria* L. - Yokoyama, 1929, p. 385, pl. 74, fig. 3 (reproduced: Makiyama, 1959, pl. 72, fig. 3): Chagama River, Shirtor, Niitoi-gun [Krinka River, Makarov District], "Neogene grey sandstone" [Maruyamskaya or Ausinskaya Formation]. [=*Mya* (*Mya*) *cuneiformis* (Böhm, 1916)].

*Mya crassa* Grewingk - Yokoyama, 1932, p. 12, pl. 1, figs. 1, 3; fig. 1: the third tributary of the Hishitori on its north side [Novotambovka River, Aniwa District], beds III of the Dorogawa-Hishitori region [?Krasnopolievskaya Formation]; fig. 3: Koganesawa, Odasam [Firsovo, Dolinsk District], beds IV of the Odasam region [?Ausinskaya Formation]. [=*Mya* (*Arenomya*) *grewingki* Makiyama, 1934].

*Mya cuneiformis* (Böhm) - Nagao and Inoue, 1941, p. 151, pl. 34(3), figs. 1, 3-6; Figs. 1, 5, 6: lower course of the Hatuyuki-zawa, a tributary of the Ketongawa [Orlovka River, Smirnykhov District], "Oiwake series" [Maruyamskaya Formation]. [=*Mya* (*Mya*) *cuneiformis* (Böhm, 1916)].

*Mya grewingki* Makiyama var. *elongata* nov. var. [*non* Jeffreys, 1865 nec Locard, 1886] - Nagao and Inoue, 1941, p. 150, pl. 33(2), figs. 1-4 (reproduced: Oyama *et al.*, 1960, pl. 64, figs. 3a-d): Siinai-gawa, Honto-gun [Lopatinka River near Gornozavodsk Town, Nevel'sk District], Nisisakutan beds [Takaradayskaya Formation] [=*Mya* (*Arenomya*) *grewingki nagaoi* Oyama and Mizuno, 1958].

*Mya grewingki* n. sp. - Makiyama, 1934, p. 156, pl. 7, figs. 50-52; Figs. 51, 52: along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizons 1, 2, 3, 5 [Machigarskaya Formation]. Proposed as the new name for

*Mya crassa, non* Grewingk in: Yokoyama, 1924, p. 12, pl. 1, figs. 14-16 *non* figs. 11-13. All the syntypes are now missing (Ichikawa, 1983). [=*Mya* (*Arenomya*) *grewingki* Makiyama, 1934].

*Mya* cfr. *grewingki* Makiyama - Nagao and Inoue, 1941, p. 147, pl. 32(1), figs. 1, 7-10; pl. 33(2), figs. 7, 8; Pl. 32, fig. 1, pl. 33, figs. 7, 8: Budo-zawa, Esutorumati [Konstantinovka River, Uglegorsk Town, Uglegorsk District], Nisisakutan beds [Takaradayskaya Formation]; pl. 32, figs. 7-9 (reproduced: Oyama *et al.*, 1960, pl. 64, figs. 4d, e): near Maoka [Kholmsk Town], Nisisakutan beds [Takaradayskaya Formation]. [=*Mya* (*Mya*) *cuneiformis* (Böhm, 1916)].

*Mya* sp. aff. *truncata* L. - Nagao and Inoue, 1941, p. 157, pl. 33(2), figs. 6, 11: Kusyunnai [Ilyinskiy, Tomari District], Middle Kusyunnai beds [Takaradayskaya Formation] [=*Mya* (*Mya*) cfr. *uzenensis* Nomura *et* Zinbo, 1937].

*Mytilus edulis* L. - Yokoyama, 1929, p. 392, pl. 75, fig. 1 (reproduced: Makiyama, 1959, pl. 73, fig. 1); "Sandy shale of a locality not named, but probably of the Pohle, North Karafto" [between 50°20′ and 50°40′N, Smirnykhov District], "beds II" [?Borskaya Formation]. [=*Mytilus* (*Tumidimytilus*) *tichanovitchi* Makiyama, 1934].

*Mytilus grayanus* Dunker - Yokoyama, 1929, p. 393, pl. 76, fig. 3 (reproduced: Makiyama, 1959, pl. 74, fig. 3): Pohle River, North Karafto [between 50°20′ and 50°40′N, Smirnykhov District], "beds II (sandy shale)" [?Borskaya Formation]. [=*Mytilus* (*Crenomytilus*) *grayanus* (Dunker, 1853)].

*Mytilus tichanovitchi* n. sp. - Makiyama, 1934, p. 134, pl. 4, figs. 12 (holotype), 11: along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Sakhalin; from the basal bed of the Miocene; non Asagaian species [?Machigarskaya Formation]. Holotype - JC reg. no. 1000014. A characteristic species for Asahi regional stage in central Hokkaido (Uozumi, 1966, pl. 9, figs. 2-4, 8). About taxonomic position *see* Kafanov, 1987 and Gladenkov, 1988, p. 33 (footnote). [=*Mytilus* (*Tumidimytilus*) *tichanovitchi* Makiyama, 1934].

*Nemocardium ezoense* sp. nov. - Takeda, 1953, p. 82, pl. 9, figs. 1-6, 8, 9; pl. 10, figs. 1, 2; pl. 11, fig. 1; 3050 m upstream from the month of Hiroti [Pravda] river, Maoka-gun [Kholmsk District], [Takaradayskaya Formation]; railroad cutting, entrance of the tunnel, 500 m west from Takaradai [Kamyshevo] station, the Hosin line, [Kholmsk District], [Takaradayskaya Formation]. Holotype - UH no. 9199. [=*Nemocardium* (*Nemocardium*) *ezoense* Takeda, 1953].

*Nemocardium yokoyamai* sp. nov. - Takeda, 1953, p. 84, pl. 9, figs. 10-12 (reproduced: Oyama *et al.*, 1960, pl. 53, figs. 5a-c); pl. 11, fig. 4. Established for *Cardium tristiculum* Yokoyama, 1930 *non* 1924. Pl. 9, fig. 11 (UH no. 11084): railroad cutting 2000 m east from the mouth of Tei [Tiy] River, south of Maoka-mati [Kholmsk Town, Kholmsk District], [Takaradayskaya Formation]. Lectotype (designated by Oyama *et al.*, 1960, p. 175, pl. 66, fig. 6a) - UMUT reg. no. CM25702. Taxonomical notes *see* Kafanov and Amano, 1996. [=*Nemocardium* (*Nemocardium*) *yokoyamai* Takeda, 1953].

*Nuculana pseudoscissurata* sp. nov. - Takeda, 1953, p. 67, pl. 6, figs. 19, 20 (Kusiro Province, Hokkaido); near Maoka-mati [Kholmsk Town] along foot road to Harukaze mountain, 400 m south from the mouth of southern branch of Maoka River, Maoka-gun [Kholmsk District], [Takaradayskaya or Arakayskaya Formation]; basin of the Ohadomari [Sova] River, Maoka-gun [Kholmsk District] [Takaradayskaya or Arakayskaya Formation]; 1300 m east from along the main stream 2260 m east from the junction of 1st tributary with Oko [Yasnomorka] River, Honto-gun [Nevel'sk District], [Takaradayskaya or Arakayskaya Suites]. Holotype (erroneously designated as "lectotype" by Oyama *et al.*, 1960, p. 89, pl. 19, fig. 5a) - UH no. 11154 [=*Saccella pseudoscissurata* (Takeda, 1953)].

*Ostrea gigas* Thunberg - Yokoyama, 1929, p. 393, pl. 76, fig. 1 (reproduced: Makiyama, 1959, pl. 74, fig. 1): Sannosawa, [Tret'ya pad'], Chitose, Odomari [Korsakov] District, "Pleistocene". [=*Crassostrea gigas* (Thunberg, 1793)].

*Palliolum* (*Delectopecten*) *peckhami* (Gabb) - Takeda, 1953, p. 74: upper course of the Oko [Yasnomorka] river, Honto-gun [Nevel'sk District], [Arakay-

skaya Formation]. [=*Delectopecten peckhami* (Gabb, 1869)].

*Papyridea* (*Fulvia*) cf. *nipponica* Yokoyama - Yokoyama, 1932, p. 13, pl. 2, figs. 3-5: a tributary of the west branch of the Hachikonai [Kamenka, Ul' yanovka River, Aniwa District], beds III of the Dorogawa-Hishitori region [?Krasnopolievskaya Formation]. [=*Papyridea* (*Profulvia*) cfr. *nipponica* Yokoyama, 1924].

*Patinopecten* (*Fortipecten*) *takahashii* (Yokoyama) - Fujie, 1958, p. 37, pl. 25, fig. 2 ; distribution in Sakhalin [=*Fortipecten takahashii* (Yokoyama, 1930)].

*Pecten agnatus* sp. nov. - Yokoyama, 1930, p. 417, pl. 80, fig. 1 (reproduced: Makiyama, 1959, pl. 79, fig. 1): Isos, Higashi-Sakutan, Motodomari-gun [near Tumanovo, Makarov District], "Neogene" [upper member, horizon III of Maruyamskaya Formation]. Holotype - UMUT no. CM25730 (**Pl. 9, fig. 7**). [=*Fortipecten takahashii* (Yokoyama, 1930)].

*Pecten* (*Pseudamusium*) *peckhami* Gabb - Yokoyama, 1932, p. 14, pl. 2, figs. 1, 1a (reproduced: Oyama *et al.*, 1960, pl. 27, fig. 1b): Kushunnai [Il'insk, Tomari District], unknown beds [=*Delectopecten peckhami* (Gabb, 1869)].

*Pecten* (*Pseudamussium*) *peckhami* Gabb - Ose, 1934, p. 125, pl. 4, figs. 1-6; Figs. 1-3: Taihei coal-mine along Esutoru River, South Sakhalin [Udarnyi, along Lesogorka River, Uglegorsk District], Paleogene Nagashima shell bed [Arakayskaya or Takaradayskaya Formation]. [=*Delectopecten peckhami* (Gabb, 1869)].

*Pecten* sp. - Yokoyama, 1929, p. 393: Siifon River, a tributary of the Nampi River [Nogliki District], "beds III (Siliceous Shale)" [Daginskaya Formation].

*Pecten* sp. indet. - Nomura, 1933, p. 3, pl. 1, fig. 1: Paramushir Island, northern Kurile Islands, exact locality and stratigraphic position unknown [Neogene].

*Pecten subyessoensis* sp. nov. - Yokoyama, 1930, p. 416, pl. 80, figs. 3, 4; fig. 3 (lectotype, herein designated): Haushigawa, Nairo-Naikawa coal-field [between Tikhmenevo and Vakhrushev, Poronaysk District], "Naikawa Beds" [Kurasiyskaya Formation]; fig. 4: Sakikawa, ibid. Reproduced: Makiyama, 1959, pl. 79, figs. 3, 4. Lectotype - UMUT no. CM25722 (**Pl. 9, fig. 9**). Krishtofovich (1964, p. 149) erroneously designated *Thracia* sp. figured on pl. 80, fig. 2 as the "lectotype" [=*Mizuhopecten subyessoensis* (Yokoyama, 1930)].

*Pecten takahashii* sp. nov. - Yokoyama, 1930, p. 416, pl. 78, figs. 1, 2, pl. 79, figs. 1 (lectotype), 2: Isos, Higashi-Sakutan, Motodomari-gun [near Tumanovo, Makarov District], "Neogene" [upper member of Maruyamskaya Formation, according to: Krishtofovich, 1964]. Reproduced: Makiyama, 1959, pl. 77, figs. 1, 2; pl. 78, figs 1, 2. Lectotype (herein designated) - UMUT no. CM25724 (**Pl. 9, fig. 6**). [=*Fortipecten takahashii* (Yokoyama, 1930)].

*Pecten* (*Fortipecten*, subgen. nov.) *takahashii* Yokoyama - Yabe and Hatai, 1940, p. 149-160, pl. 34 (1), figs. 1-9, pl. 35(2), figs. 1-9; pl. 34(1), figs. 3, 7-9, pl. 35(2), figs. 1-3, 6-9: Horokanai, Shiritori-mati [Makarov], Makarov District, Maruyama sandy shale [Maruyamskaya Formation]. IGPS no. 63405. [=*Fortipecten takahashii* (Yokoyama ,1930].

*Pecten watanabei* sp. nov. - Yokoyama, 1929, p. 393, pl. 76, fig. 4 (reproduced: Makiyama, 1959, pl. 74, fig. 4): Tcharnikka [Chernika] River, [Nogliki District], "beds III (Nampi Beds)" [Daginskaya Formation]. Holotype - UMUT no. CM26941, missing (Ichikawa, 1983). [=*Delectopecten peckhami* (Gabb, 1869) *fide* Masuda, 1962].

*Pedalion murayamai* n. sp. - Yokoyama, 1932, p. 14, pl. 3, fig. 3: the third tributary of the Hishitori [Novotambovka River, Aniwa District], beds III of the Dorogawa-Hishitori Region [?Krasnopolievskaya Formation]. Holotype - possibly in UMUT. [=*Isognomon murayamai* (Yokoyama, 1932)].

*Periploma besshoensis* Yokoyama - Takeda, 1953, pl. 13, fig. 6 (UH reg. no. 11148): UH Loc. no. T140 (locality not registered in the paper). [=*Periploma* (*Aelga*) *besshoensis* (Yokoyama, 1924)].

*Periploma yokoyamai* n. sp. - Makiyama, 1934, p. 153. New name for *Tellina besshoensis* Yokoyama (1929, p. 388, pl. 74, fig. 1) *non* Yokoyama, 1924; Sandy shale of the river Pohle, North Karafto [between 50°20′ and 50°40′N, Smirnykhov District], "beds II

(Sandy Shale)" [Borskaya Formation]. Lectotype (herein designated) - UMUT no. CM26915, missing [=*Periploma* (*Aelga*) *yokoyamai* Makiyama, 1934].

*Placunanomia* sp. - Yokoyama, 1930, p. 416, pl. 77, fig. 5 (UMUT no. CM25721; **Pl. 9, fig. 5**; reproduced: Makiyama, 1959, pl. 76, fig. 5): Shiromizu Hot Springs, Kawakami-mura, Toyohara-gun [hot springs between Teplovodskiy and Klyuchi, Aniwa District], "Neogene". [=*Monia macrochisma* (Deshayes, 1839)].

*Saxicava sakhalinensis* sp. nov. - Takeda, 1953, p. 88, pl. 7, figs. 15 (lectotype, designated by: Oyama *et al.*, 1960, p. 207, pl. 63, fig. 1a), 11-14, 16 (reproduced: Oyama *et al.*, 1960, pl. 63, figs. 1a-d); Fig. 15: road cliff of 400 m north from Tei station, Maoka-gun [Kholmsk District], [?Arakayskaya Formation]. Lectotype - UH reg. no. 11151-3. [=*Hiatella sakhalinensis* (Takeda, 1953)].

*Serripes groenlandicus* (Bruguière) - Noda, 1962, p. 223, pl.36, fig. 4 (IGPS no. 17454a); pl.37, fig. 1 (IGPS no. 17367a); "Pliocene Prumi bed, in North Saghalien" [?Nogliki District], [Nutovskaya Formation] [=*Serripes groenlandicus* (Mohr, 1786)].

*Serripes notabilis* (Sowerby) - Noda, 1962, p. 227, pl. 38, fig. 2 (IGPS no. 17350f): "Pliocene Prumi Bed in North Saghalien" [?Nogliki District], [Nutovskaya Formation]. [=*Yagudinella notabilis* (Sowerby, 1915)].

*Serripes notabilis* (Sowerby) - Noda, 1962, p. 227, pl. 38, fig. 3 (IGPS no. 17350g): "Pliocene Prumi Bed in North Sakhalin" [?Nogliki District], [Nutovskaya Formation]. [=*Yagudinella notabilis* (Sowerby, 1915)].

*Siliqua costata* (Say) - Yokoyama, 1929, p. 387, pl. 52 [72], figs. 3-5 (reproduced: Makiyama, 1959, pl. 70, figs. 3-5); Paromay oil-field (fig. 3) and Etchesko Hill (figs. 4, 5) [between 53° and 52°50′N, Okha District], "beds I" [Nutovskaya Formation]. [=*Siliqua alta* (Broderip and Sowerby, 1829)].

*Spisula grayana* (Schrenck) - Yokoyama, 1929, p. 387, pl. 74, fig. 11 (reproduced: Makiyama, 1959, pl. 72, fig. 11): Kydylanii River, North Karafto [Kadylan'i River, between 53° and 52°50′N, Okha District], "beds I" [Nutovskaya Formation]. [=*Spisula* (*Mactromeris*) *polynyma* (Stimpson, 1860)].

*Tellina besshoensis* Yokoyama - Yokoyama, 1929, p. 388, pl. 74, fig. 1 (UMUT no. CM26915; reproduced: Makiyama, 1959, pl. 72, fig. 1): Sandy shale of the river Pohle, North Karafto [between 50°20′ and 50° 40′N, Smirnykhov District], "beds II (Sandy Shale)" [Borskaya Formation]. [=*Periploma* (*Aelga*) *yokoyamai* Makiyama, 1934].

*Tellina venulosa* Schrenck - Yokoyama, 1929, p. 387, pl. 72, fig. 6 (reproduced: Makiyama, 1959, pl. 70, fig. 6): Mouth of the Kydylanii [Kadylan'i] River [between 53° and 52°50′N, Okha District], "beds I (middle zone of the "Lower Quartz Sandstone"]", [Nutovskaya Formation]. [=*Megangulus protovenulosus* (Nomura, 1935)].

*Teredo* sp. - Yokoyama, 1929, p. 385: seashore south of the Kongi River [51°55′N; Nogliki District], "beds I (sandy shale)" [Nutovskaya Formation].

*Thracia* sp. - Yokoyama, 1930, p. 415, pl. 80, fig. 2 (UMUT no. CM25718; **Pl. 9, fig. 8**; reproduced: Makiyama, 1959, pl. 79, fig. 2): Shirutor, Motodomari-gun [Makarov, Makarov District], "Neogene" [?Maruyamskaya Formation]. [=*Thracia kakumana* (Yokoyama, 1927)].

*Thyasira bisecta* (Conrad) - Yabe and Nomura, 1925, p. 84, pl. 23(1), figs. 2, 7-10; Figs. 2a, b, 9, 10: a little north of the mouth of the river Machi, on the west coast of Russian Saghalin [Aleksandrovsk-Sakhalinsky District]; stratigraphic position unknown. [=*Conchocele bisecta* (Conrad, 1849)].

*Thyasira bisecta* (Conrad) - Yokoyama, 1929, p. 391, pl. 72, fig. 9. [as var. *nipponica* Yabe; reproduced: Makiyama, 1959, pl. 70, fig. 9]: Pohle River [between 50°20′ and 50°40′N, Smirnykhov District], "beds II (Sandy Shale)" [?Borskaya Formation]. [=*Conchocele bisecta* (Conrad, 1849)].

*Thyasira gouldii* (Philippi) - Yokoyama, 1929, p. 391, pl. 74, fig. 9 (reproduced: Makiyama, 1959, pl. 72, fig. 9): Kongi River, North Karafto [51°55′N, Nogliki District], "beds I" [Nutovskaya Formation]. [=*Thyasira gouldii* (Philippi, 1845)].

*Venericardia elliptica* sp. nov. [*non* Schafhoutl, 1863]-Takeda, 1953, p. 80, pl. 8, figs. 13, 18; pl. 11, figs. 7-12, 14-23; pl. 12, figs. 6, 20, 24; P. 80: 13 individuals were found in South Sakhalin. Holotype (erroneously designated as "lectotype" by Oyama *et al.*,

1960, p. 147, pl. 43, figs. 8a, b) - UH no. 11185. [= *Cyclocardia takedai* Honda, 1980].

*Venericardia expansa* sp. nov. - Takeda, 1953, p. 77, pl. 8, figs. 15, 16, 19-21; pl. 9, fig. 13; pl. 12, figs. 1, 2, 4, 5, 7, 8, 10-12, 14-16, 18, 19, 22, 23, 25; p. 79: 19 individuals were found in South Sakhalin. Holotype (erroneously designated as "lectotype" by Oyama *et al.*, 1960, p. 148, pl. 44, figs. 2a, c) - UH no. 11186. [= *Cyclocardia expansa* (Takeda, 1953)].

*Venericardia ezoensis* sp. nov. - Takeda, 1953, p. 81, pl. 11, figs. 2, 3, 5, 6; pl. 12, fig. 3; p. 81: 13 individuals were found in South Sakhalin. Holotype (erroneously designated as "lectotype" by Oyama *et al.*, 1960, p. 151, pl. 45, fig. 2a) - UH no. 3386. [= *Cyclocardia ezoensis* (Takeda, 1953) *fide* Popov, 1983].

*Venericardia* (*Cyclocardia*) *laxata* Yokoyama - Makiyama, 1934, p. 145, pl. 6, figs. 36-40, 49; Figs. 37-40 (reproduced: Oyama *et al.*, 1960, pl. 43, fig. 7d): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Sakhalin; Marie Formation, horizons 5 and 6 [lower part of Machigarskaya Formation]. [= *Megacardita matschigarica* (Khomenko, 1938) *fide* Popov, 1983].

*Venericardia tokunagai* Yokoyama - Yokoyama, 1929, p. 392, pl. 75, fig. 2 (reproduced: Makiyama, 1959, pl. 73, fig. 2): about one kilometer upstream of Dorogawa [Ul'yanovskaya] River, Notoro [Kril'on] Peninsula, Rutaka [Aniwa] District, "dark greenish grey sandstone" [?]. [= *Cyclocardia tokunagai* (Yokoyama, 1924)].

*Volsella* sp. - Makiyama, 1934, p. 136, pl. 4, fig. 17 (reproduced: Oyama *et al.*, 1960, pl. 25, fig. 3b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 5 [lower part of Machigarskaya Formation]. [=? *Modiolus yokoyamai* (Hatai *et* Nisiyama, 1949)].

*Volsella yamasakii* n. sp. - Makiyama, 1934, p. 136, pl. 4, figs. 14 (holotype), 13 (reproduced: Oyama *et al.*, 1960, pl. 25, figs. 3a, b): along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 6 [Machigarskaya Formation]. Holotype - JC reg. no. 100017 [= *Modiolus yamasakii* (Makiyama, 1934)].

*Yoldia asagaiensis* n. sp. - Makiyama, 1934, p. 129, pl. 3, figs. 1 (holotype), 2, 3 (all specimens figured are from Yotukura, Fukushima Prefecture); along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 1 [lower part of Machigarskaya Formation]. Holotype - JC reg. no? On taxonomic position *see* Kafanov and Savizky, 1995. [= *Yoldia* (*Nampiella*) *asagaiensis* Makiyama, 1934].

*Yoldia* cf. *johanni* Dall - Yokoyama, 1932, p. 15, pl. 3, fig. 1: Minami-Pekere, Shiranui-mura [near Dudino Dolinsk District], beds III of the Odasam region [? Kholmskaya Formation] [= *Yoldia* (*Cnesterium*) cfr. *johanni* Dall, 1925].

*Yoldia laudabilis* Yokoyama - Makiyama, 1934, p. 131, pl. 3, figs. 2, 5, 6 (all specimens figured are from Yotukura, Fukushima Prefecture); along the shore of Cape Mary [Marii], near the abandoned village Matchgar [Monchigar], Schmidt Peninsula, Okha District, Marie Formation, horizon 4 [lower part of Machigarskaya Formation]. On taxonomic position *see* Kafanov and Savizky, 1995. [= *Yoldia* (*Nampiella*) *laudabilis* Yokoyama, 1924].

*Yoldia notabilis* Yokoyama - Yokoyama, 1929, p. 395, pl. 75, fig. 8 (reproduced: Makiyama, 1959, pl. 73, fig. 8): Moktov River [between 53 and 52°50′N, Okha District], "beds I (upper zone of the "Lower Quartz Sandstone")". [Nutovskaya Formation]. [= *Yoldia* (*Cnesterium*) *notabilis* Yokoyama, 1922 ?].

*Yoldia* (*Cnesterium*) *notabilis* Yokoyama - Uozumi, 1957, p. 555, pl. 6, figs. 3, 3a, 4, 5; fig. 5 (UH no. 6003): "near Shiretori in the eastern coast of Sakhalin" [near Makarov, Makarov District], [?Maruyamskaya Formation]. [= *Yoldia* (*Cnesterium*) *notabilis* Yokoyama, 1922].

*Yoldia sagittaria* Yokoyama - Yokoyama, 1929, p. 395, pl. 75, fig. 7: Tcharnikka [Chernika] River [Nogliki District], "beds III (Nampi beds)" [Daginskaya Formation]. [= *Yoldia* (*Nampiella*) cfr. *laudabilis* Yokoyama, 1924].

*Yoldia scapha* Yokoyama - Yokoyama, 1929, p. 394,

pl. 75, fig. 5 (reproduced: Makiyama, 1959, pl. 73, fig. 5 *non* 6): Odomari [Korsakov Town, Korsakov District], "beds A" [Kholmskaya or Nevel'skaya Formation]. [=*Megayoldia gratiosa* (Yokoyama, 1923)].

*Yoldia scapha* Yokoyama - Yokoyama, 1929, p. 394, pl. 75, fig. 6 (reproduced: Makiyama, 1959, pl. 73, fig. 6 non 5): Odomari [Korsakov Town, Korsakov District], "beds A" [Kholmskaya or Nevel'skaya Formation]. [=*Hataiyoldia tokunagai* (Yokoyama, 1925)].

*Yoldia* (*Yoldia*) sp. nov? - Uozumi, 1957, p. 587, pl. 4, figs. 15, 16 (UH no. 12229, 12298): "sea-cliff on the southern coast of the Asase, Shisuka-Shicho, South Sakhalin" [near the mouth of Melkaya River, Poronaysk District], "Asase formation" [Kurasiyskaya Formation]. [=*Yoldia* (*Yoldia*) sp.].

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## 日本の古生物学者により1925年から1990年までに記載されたサハリンおよびクリル諸島の新生代海生二枚貝（軟体動物）のチェック・リスト

**Alexander I. Kafanov・天野和孝**

### 要旨

本論文は日本人研究者により1925年から1990年までに図示または記載されたサハリンおよびクリル諸島の古第三系，新第三系，第四系産二枚貝のすべての標本についてアルファベット順に配列したチェック・リストである．記載された時の学名を載せ，文献，新種の模式標本所在地，地理的，層位学的分布（それらの現況は四角カッコ中に示してある）も示した．もし分類群の地位が標本の

検討などで確立された場合，各分類群項の末尾の四角カッコ中に各分類群の現在の状態を示した．また，必要に応じて，分類または学名についてのコメントを追記した．

Plate 9

The following species were described by Yokoyama (1930). All figures are illustrated in natural size unless otherwise stated.

Fig. 1. *Chione astartoides* (Beck). UMUT no. CM25686. ***Liocyma fluctuosa*** **(Gould)**.

Fig. 2. *Acila insignis* (Gould). UMUT no. CM25740, ×1. 2. ***Acila*** **(*Truncacila*)** ***gottschei*** **(Böhm)**.

Figs. 3, 9. *Pecten subyessoensis* Yokoyama. Fig. 3, UMUT no. CM25723. Fig. 9, UMUT no. CM 25722, lectotype. ***Mizuhopecten subyessoensis*** **(Yokoyama)**.

Fig. 4. *Cardium taracaicum* Yokoyama. UMUT no. CM25698, lectotype. ***Laevicardium taracaicum*** **(Yokoyama)**.

Fig. 5. *Placunanomia* sp. UMUT no. CM25721. ***Monia macrochisma*** **(Deshayes)**.

Fig. 6. *Pecten takahashii* Yokoyama. UMUT no. CM25724, ×0.6. ***Fortipecten takahashii*** **(Yokoyama)**.

Fig. 7. *Pecten agnatus* Yokoyama. UMUT no. CM25730, holotype. ***Fortipecten takahashii*** **(Yokoyama)**.

Fig. 8. *Thracia* sp. UMUT no. CM25718. ***Thracia kakumana*** **(Yokoyama)**.



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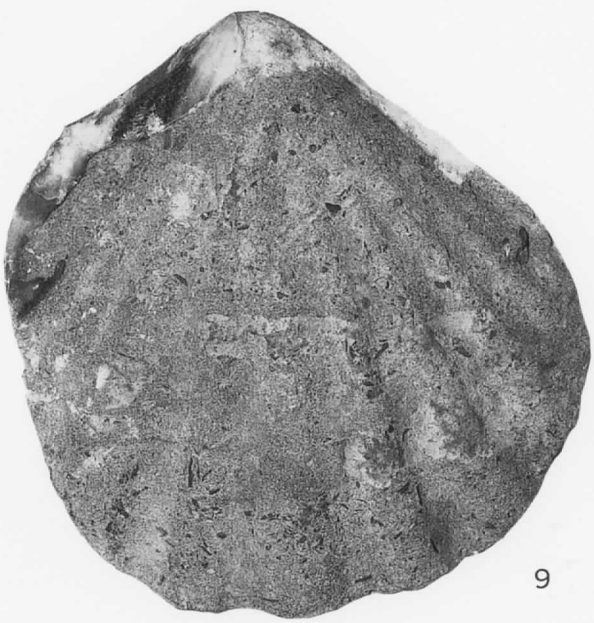
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