

A catalogue of name-bearing type specimens of fossil Bivalvia (Mollusca) registered in the Tohoku University Museum

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Abstract: Since 1911, more than 110,000 fossil specimens have been studied and registered in the Institute of Geology and Paleontology, Tohoku University, Sendai (IGPS). This catalogue includes 452 name-bearing type specimens (i.e. holotype, lectotype, syntype and neotype) of fossil Bivalvia, registered in the Tohoku University Museum. Each taxon data includes the following items: 1) species name with its author name(s) and date of publication, 2) bibliographic data of the original description, 3) kind of type specimen(s) and present condition of specimen(s), 4) type locality, 5) stratigraphic unit, 6) geologic age. This database and color pictures of the existing type specimens are searchable on the website of the Tohoku University Museum (http://webdb2.museum.tohoku.ac.jp/t_bivalve/). The lectotype of *Thyasira tokunagai* Kuroda and Habe, 1951 is designated herein.

Key words: database, fossil bivalves, name-bearing type specimens, the Tohoku University Museum

Introduction

Tohoku University was established in 1907 as the third Imperial University of Japan, and the Institute of Geology and Paleontology (abbreviated as IGPS) was founded in 1911 with Hisakatsu Yabe as the first professor. Since then, the institute has produced a number of distinguished molluscan paleontologists, such as Ichiro Hayasaka, Takumi Nagao, Sitihei (or Shichihei) Nomura, Saburo Shimizu, Katora Hatai, Tamio Kotaka, Yasuhiko Kamada, Kôichirô Masuda, Masafumi Murata, Hiroshi Noda, Kenshiro Ogasawara, and Yutaka Honda, and until today, a lot of new molluscan taxa have been described by the professors and students of the institute.

The type and referred molluscan fossil specimens had been deposited in the institute with the IGPS registration numbers. In 1998, more than 110,000 paleontological specimens deposited in the institute were moved to the Tohoku University Museum, which was newly established in this year. The details of each IGPS molluscan type specimen

can be seen in the past checklists and monographs such as Hatai and Nisiyama (1952), Oyama *et al.* (1960), Masuda and Noda (1976) and Ogasawara (2001, 2002) for Cenozoic; Hayami (1975), Tanaka and Toshimitsu (2003), Toshimitsu and Tanaka (2003) for Mesozoic; and Nakazawa and Newell (1968), Hayami and Kase (1977) and Kase (2004) for Paleozoic; in addition to Hanzawa *et al.* (eds., 1961). However, no institutional or museum catalogue of the IGPS molluscan collection has been published, and the present condition of the specimens has not been clear. Moreover, we can not find the precise morphological characters of the type specimens from some original descriptions, because of the indistinct pictures. Therefore, the thoroughly curatorial survey of the IGPS paleontological collection is needed.

As a first step of the making the complete catalogue of the IGPS paleontological collection, we herein present a catalogue of fossil Bivalvia, which occupies the large amount of the collection. The present catalogue includes all information about the name-bearing type specimens of fossil Bivalvia in the IGPS collection with photographs.

Methods

On the basis of Ogasawara (2001, 2002), Matsuoka and Ugai (2001), Toshimitsu and Tanaka (2003), Tanaka and Toshimitsu (2003) and Kase (2004), we compiled a basic checklist of name-bearing type specimens of fossil Bivalvia preserved in the Tohoku University Museum. Several species-group names missing in these previous catalogues were added with their name-bearing type specimen data. All data were rechecked by the bibliographic survey of the original descriptions. To confirm the present condition (existing or missing) of the name-bearing type specimens, we compared the candidate type specimens and their registration numbers with figures and registration numbers shown in the original description. We also checked for consistency of taxon name, locality, lithostratigraphic unit (or formation name), geologic age between label attached to the specimens and original description. Recent Bivalvia was excluded from the present catalogue. The photographs of all existing name-bearing type specimens were taken to make database, and they were illustrated in the plates of the present catalogue.

Format

The name-bearing type specimens were arranged alphabetically in the genus- and species-group names to make easy for reference. Each taxonomic entry in the present catalogue is composed of the following data as given in descending order: 1) original spelling of the taxon name, together with author name(s) and publication date, 2) plate number and figure number(s) in the plates of the present catalogue, 3) bibliographic data of the original description, including abbreviation of the publication, volume, page, plate number(s) and figure number(s), 4) category of the name-bearing type specimen (holotype, lectotype, syntype or neotype), together with IGPS (Institute of Geology and Paleontology, Faculty of Science, Tohoku University, Sendai) registration number and present condition (existing or missing), 5) type locality given as names of prefecture, city, town, village and more details both in the way they appeared in the original description and currently known, 6) stratigraphic unit (formation name) from which the type specimen was obtained, 7) geologic age, 8) taxonomic remarks including synonymous status of a given taxon and correction for original spelling and registration number.

The name-bearing type specimen shifted from DGS (abbreviation of the Department of Geology, Faculty of Education, Tohoku University, Sendai; abolished in 1994) to IGPS, the previous DGS registration number was indicated in round brackets behind the IGPS registration number. The literature in which the lectotype or neotype was designated was also added in round brackets. We indicated current

names of city, town and village in square brackets, as well as correction of them from the original description. The updated information on stratigraphic unit and geologic age were also added in square brackets.

The photographs of existing name-bearing type specimens were illustrated in the plates at the end of the present catalogue.

The database and color pictures of the existing type specimens are also searchable on the website of the Tohoku University Museum (http://webdb2.museum.tohoku.ac.jp/t_bivalve/).

Abbreviation of publications

- Bull. Biogeogr. Soc. Japan: *Bulletin of the Biogeographical Society of Japan*.
- Bull. Tohoku Univ. Mus.: *Bulletin of the Tohoku University Museum*.
- Geol. Palaeont. Southeast Asia: *Geology and Palaeontology of Southeast Asia*.
- Illust. Cat. Jpn. Shells: *Illustrated Catalogue of Japanese Shells*.
- Japan. Jour. Geol. Geogr.: *Japanese Journal of Geology and Geography*.
- Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4: *Journal of the Faculty of Science, Hokkaido Imperial University. Series 4, Geology and Mineralogy*.
- Jour. Fac. Sci., Imp. Univ. Tokyo, Sec. 2: *Journal of the Faculty of Science, Imperial University of Tokyo, Section 2, Geology, Mineralogy, Geography, Seismology*.
- Jour. Geol. Soc. Japan: *Journal of the Geological Society of Japan*.
- Jour. Paleont.: *Journal of Paleontology*.
- Jub. Publ. Commem. Prof. H. Yabe 60th Birthday: *Jubilee Publication in the Commemoration of Professor H. Yabe, M.I.A. Sixtieth Birthday*.
- Mem. Coll. Sci. Univ. Kyoto, Ser. B: *Memoirs of the College of Science, Kyoto University, Series B*.
- Miner. Geol.: *Kôbutu-to-Tisitu (Mineral and Geology)*.
- Paleontol. Res.: *Paleontological Research*.
- Palaeont. Soc. Japan, Spec. Pap.: *Palaeontological Society of Japan, Special Papers*.
- Proc. Imp. Acad.: *Proceedings of the Imperial Academy*.
- Prof. S. Kanno Mem. Vol.: *Professor Saburo Kanno Memorial Volume*.
- Rep., Geol. Surv. Japan: *Report, Geological Survey of Japan*.
- Res. Rep. Kochi Univ., Nat. Sci.: *Research Reports of the Kochi University, Natural Science*.
- Saito Ho-on Kai Mus. Nat. Hist. Res. Bull.: *Saito Ho-on Kai Museum of Natural History Research Bulletin*.
- Saito Ho-on Kai Mus. Res. Bull.: *Saito Ho-on Kai Museum Research Bulletin*.

- Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.): *Saito Ho-on Kai Special Publication, no. 2 (Professor Tamio Kotaka Commemorative Volume on Molluscan Paleontology)*.
- Sci. Rep., Fac. Arts and Liter., Nagasaki Univ.: *Science Reports of the Faculty of Arts and Literature, Nagasaki University*.
- Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.): *Science Reports of the Tôhoku Imperial University, Second Series (Geology)*.
- Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.): *Science Reports of the Tohoku University, Second Series (Geology)*.
- Sci. Rep. Tôhoku Univ., 2nd Ser. (Geol.), Spec. Vol.: *Science Reports of the Tôhoku University, Second Series (Geology), Special Volume*.
- Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol.: *Science Reports of the Tohoku University, Second Series (Geology), Special Volume*.
- Short Pap. Inst. Geol. Paleont., Tôhoku Univ.: *Short Papers from the Institute of Geology and Paleontology, Tôhoku University, Sendai*.
- Trans. Proc. Palaeont. Soc. Japan, N.S.: *Transactions and Proceedings of the Palaeontological Society of Japan, New Series*.
- U.S. Geol. Surv., Prof. Pap.: *United States Geological Survey Professional Paper*.
- Venus: *Venus (Japanese Journal of Malacology)*.

registered in the Tohoku University Museum. Among them, 412 specimens are still existing.

Details of the type of the name-bearing types are as follows (Fig. 1):

Holotypes:	381 specimens
Lectotypes:	36 specimens
Syntypes:	34 specimens
Neotype:	1 specimen.

Details on geologic ages are as follows (Fig. 2):

Cenozoic:	366
Quaternary:	71
Holocene:	3
Pleistocene:	68
Neogene:	191
Pliocene:	35
Miocene:	156
Paleogene:	104
Oligocene:	58
Eocene:	46
Mesozoic:	60
Cretaceous:	52
Jurassic:	1
Triassic:	7
Paleozoic:	23
Permian:	20
Carboniferous:	1
Devonian:	0
Silurian:	0
Ordovician:	2
Unknown:	3.

Summary

As a result of the present survey, it became obvious that 452 name-bearing type specimens of fossil Bivalvia are

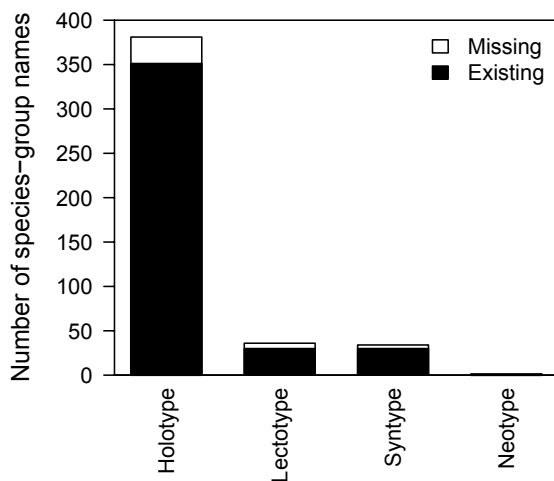


Fig. 1. Total number of species-group names in each category of the name-bearing type specimens of fossil Bivalvia deposited in the Tohoku University Museum and their present conditions.

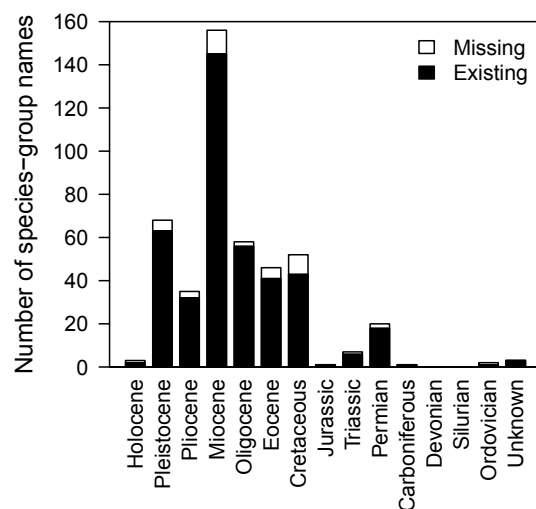


Fig. 2. Total number of species-group names in each geologic age, from which the name-bearing type specimens of fossil Bivalvia deposited in the Tohoku University Museum were obtained.

The chronologic succession of the number of the bivalve studies, in which new species-group names were proposed and the name-bearing types were repositated at IGPS, are as follows (Fig. 3):

1911–1920:	6
1921–1930:	115
1931–1940:	87
1941–1950:	23
1951–1960:	42
1961–1970:	128
1971–1980:	25
1981–1990:	15
1991–2000:	9
2000–2010:	1
2011 and later:	1.

These results suggest that 1) 91.2% of the name-bearing type specimens of fossil Bivalvia of the IGPS collection are still existing in the Tohoku University Museum, 2) 81.0% of them were obtained from Cenozoic, and 34.5% were from Miocene, and 3) 25.4% and 28.3% of them were proposed in 1921–1930 mainly by I. Hayasaka, T. Nagao and H. Yabe and in 1961–1970 by K. Masuda, M. Murata and H. Noda, respectively.

A total of 33 researchers proposed new species-group names of fossil Bivalvia as the first author, and deposited the name-bearing type specimens in IGPS. Of them, T. Nagao described 76 new species-group names as the first author during 1928 and 1943, and S. Nomura and K.

Masuda described 63 species-group names in 1932–1939 and 1952–1994, respectively (Fig. 4). H. Yabe and H. Noda described 40 new species-group names in 1926–1942 and 1962–1971 respectively, and K. Hatai also described 32 species-group names in 1940–1974.

Among the name-bearing type specimens of fossil Bivalvia in the IGPS collection, 26 specimens were those of members of the genus *Anadara*, followed by those of the genus *Chlamys* (22 species-group names) and *Pecten* (20 species-group names) (Fig. 5). Nineteen new species-group names of *Anadara* were described by H. Noda, and 20 of *Chlamys* were described by K. Masuda. In the genus *Glycymeris*, *Patinopecten* and *Venericardia*, 13 new species-group names and their name-bearing type specimens were also proposed and registered in IGPS.

According to Ogasawara (2004), 68 species-group names described under the genus *Chlamys* and 54 species-group names of *Anadara* were described from Japanese Islands and its adjacent areas during the 20th Century. Among their name-bearing type specimens, 32.3% of *Chlamys* and 48.1% of *Anadara* were deposited in the Tohoku University Museum.

These results suggest that many researchers of Tohoku University especially proposed new species-group names of *Anadara*, *Chlamys* and *Pecten* for their studies on the taxonomy, biostratigraphy, paleobiogeography, evolutionary paleobiology and paleoenvironmental analyses. In particular, a number of new species-group names were proposed during the two "golden ages", namely 1921–1940 and 1961–1970 (Fig. 3), in this university.

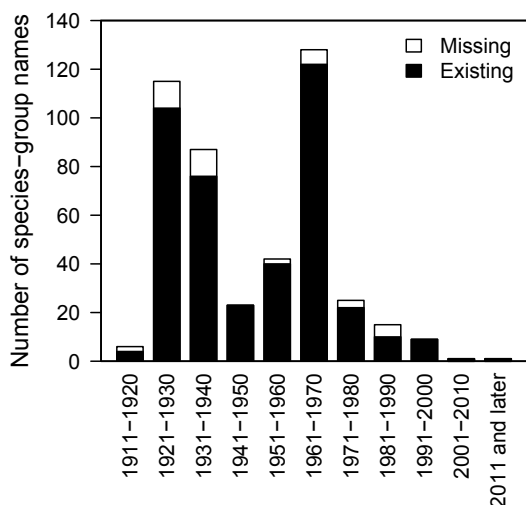


Fig. 3. Total number of species-group names in each chronological period, in which new species-group names of fossil Bivalvia were proposed and their name-bearing type specimens were deposited in the Tohoku University Museum.

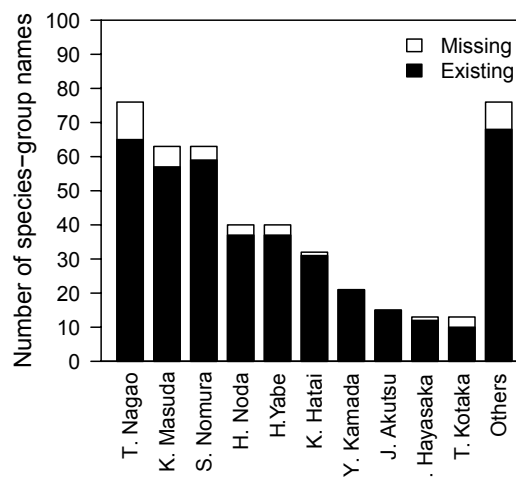


Fig. 4. Total number of species-group names in each author, who proposed new species-group names of fossil Bivalvia as the first author and deposited their name-bearing type specimen in the Tohoku University Museum.

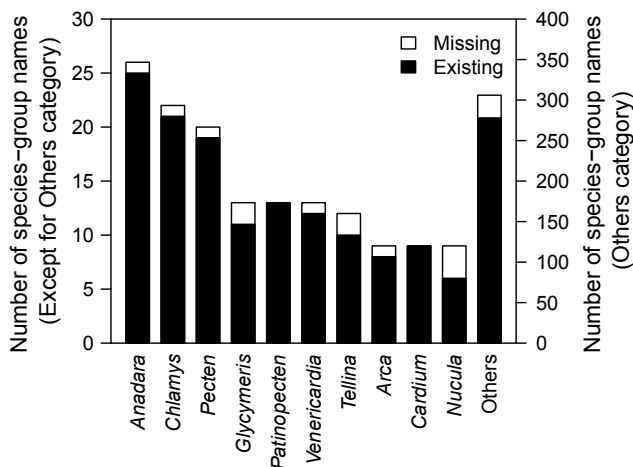


Fig. 5. Total number of species-group names in each genus of the name-bearing type specimens of fossil Bivalvia deposited in the Tohoku University Museum.

Catalogue

***Acanthopecten onukii* Murata, 1964**

Plate 1, Figure 1

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 222, pl. 35, fig. 1a–b. Holotype: IGPS no. 85745 (Existing). Type locality: IGPS loc. no. Mi 117 (Murata, 1964), Shigejizawa, Kamiyasse, Kesenuma City, Miyagi Prefecture. Stratigraphic unit: Lower part of Kanokura Formation. Geologic age: Middle Permian.

***Acanthopecten spinosus* Hayasaka, 1925b**

Plate 1, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 10, pl. 8, fig. 6. Lectotype: IGPS no. 22388 (designated by Murata, 1964; Existing). Type locality: Imô, Yahagi-mura, Kesen-gôri, prov. Rikuzen [currently Imo, Yahagicho, Rikuzentakata City, Iwate Prefecture]. Stratigraphic unit: Lower part of Kanokura Formation. Geologic age: Lower Permian [Middle Permian].

***Acila divaricata chitosensis* Noda, 1962b**

Plate 1, Figure 3

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 227, pl. 16, fig. 9. Holotype: IGPS no. 79060 (Existing). Type locality: Loc. No. 344 (Noda, 1962b), cliff of the Shibumi River, just under the Chitose Bridge, Chitose, Matsudai-machi, Higashikubiki-gun [currently Tokamachi City], Niigata Prefecture. Stratigraphic unit: Higashigawa Formation. Geologic age: "Middle" Pliocene.

***Acila (Acila) kiiensis* Masuda and Katto, in Katto and Masuda, 1978**

Plate 1, Figures 4a–b

Res. Rep. Kochi Univ., Nat. Sci., vol. 27, p. 104, pl. 3, figs. 1a–3b. Holotype: IGPS no. 96071 (Existing). Type locality: Loc. no. 2 (Katto and Masuda, 1978), Tanozaki, about 1 km SWS of Tanami, Kushimoto-cho, Nishimuro-gun [currently Higashimuro-gun], Wakayama Prefecture. Stratigraphic unit: Tanami Formation. Geologic age: Oligocene [Early Miocene].

***Aequipecten matsunagiensis* Masuda, 1966b**

Plate 1, Figure 5

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 323, pl. 35, figs. 4–6. Holotype: IGPS no. 90089 (formerly DGS no. 4506; Existing). Type locality: No. 32 (Masuda, 1966a), small road side exposure, about 200 m S of the Matsunagi Primary School, [Matsunagi-machi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Amussiopecten akiyamae* Masuda, 1962a**

Plate 1, Figure 6

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 33, p. 224, pl. 27, figs. 1–3. Holotype: IGPS no. 90658 (formerly DGS no. 3854; Existing). Type locality: Sea cliff at Fudôwa, Kanaya, Amaha-machi, Kimitsu-gun [currently Futtsu City], Chiba Prefecture. Stratigraphic unit: Inagozawa Formation [Nokogiriyama Formation]. Geologic age: Miocene [latest Late Miocene–earliest Early Pliocene].

***Anadara (Scapharca) akitaensis* Noda, 1966a**

Plate 1, Figures 7a–d

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 106, pl. 5, figs. 9, 10, 19, 20. Holotype: IGPS no. 16330 (Existing). Type locality: Tayazawa, Wakimoto-mura, Minamiakita-gun [sic, Wakimoto, Oga City], Akita Prefecture. Stratigraphic unit: Sasaoka Formation. Geologic age: Pliocene [latest Late Pliocene–early Early Pleistocene].

***Anadara (Anadara) amicula elongata* Noda, 1966a**

Plate 1, Figures 8a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 84, pl. 5, figs. 2–7. Holotype: IGPS no. 85907 (originally stated IGPS no. 62435; Existing). Type locality: Upstream of Kanakusare [sic, Kanakusari] River, Makimachi, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Omma Formation. Geologic age: Pliocene [Early Pleistocene].

***Anadara (Anadara) arasawaensis* Noda, 1966a**

Plate 1, Figures 9a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1,

p. 86, pl. 4, figs. 13, 15–17. Holotype: IGPS no. 90046 (Existing). Type locality: Arasawa, Gomyojin-mura [*sic*, Omyojin], Shizukuishi-machi [*sic*, Shizukuishi-cho], [Iwate-gun], Iwate Prefecture. Stratigraphic unit: Sakamotogawa Formation. Geologic age: Miocene.

***Anadara (Anadara) gentaroensis* Noda, 1966a**

Plate 1, Figure 10

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 87, pl. 7, figs. 19–21. Holotype: IGPS no. 86411 (Existing). Type locality: Gentaro, Kozai-mura [*sic*, Kosai], Ouchimachi [*sic*, Marumori-machi], Igu-gun, Miyagi Prefecture. Stratigraphic unit: Yoshizawa Formation [*sic*, Yoshigasawa Formation]. Geologic age: Miocene [latest Early–earliest Middle Miocene].

***Anadara (Anadara) hataii* Noda, 1966a**

Plate 1, Figures 11a–c; Plate 2, Figures 1a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 88, pl. 6, figs. 1, 4–7. Holotype: IGPS no. 73210 (Existing). Type locality: Nishigoto [*sic*, Nishigodo], Hanawamachi, Higashishirakawa-gun, Fukushima Prefecture. Stratigraphic unit: Tanagura Formation [=Kubota Formation]. Geologic age: Miocene [early Late Miocene].

***Anadara (Anadara) hokkaidoensis* Noda, 1966a**

Plate 2, Figures 2a–c

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 90, pl. 4, figs. 18, 19, pl. 5, fig. 14, pl. 8, figs. 1, 8. Holotype: IGPS no. 86408 (Existing). Type locality: Upstream of the Ishii-sawa [*sic*, Ishiizawa], Atsunai, Horonobe-machi [*sic*, Urahor-cho], Tokachi-gun, Tokachi Province, Hokkaido. Stratigraphic unit: Chokubetsu Formation [=Ishiizawa Formation]. Geologic age: Miocene [early Middle Miocene].

***Anadara (Scapharca?) iwashibaraensis* Noda, 1965**

Plate 2, Figure 3

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 59, p. 104, pl. 10, fig. 15. Holotype: IGPS no. 29050 (Existing). Type locality: Iwashibara, Kamitareki-mura, Ogasa-gun [*sic*, Yashibara, Shimotaruki, Kakegawa City], Shizuoka Prefecture. Stratigraphic unit: Dainichi Formation. Geologic age: Pliocene [Early Pleistocene].

***Anadara (Anadara) iwatensis* Noda, 1966a**

Plate 2, Figures 4a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 91, pl. 4, figs. 21, 22. Holotype: IGPS no. 90048 (Existing). Type locality: Arasawa, Myojin-mura, Shizukuishi-machi [*sic*, Omyojin, Shizukuishi-cho], Iwate-gun, Iwate Prefecture. Stratigraphic unit: Sakamotogawa Formation.

Geologic age: Miocene.

***Anadara (Anadara) iwatonoensis* Noda, 1966a**

Plate 2, Figures 5a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 92, pl. 9, fig. 21, pl. 11, fig. 19. Holotype: IGPS no. 63342 (Existing). Type locality: Jakotsuzawa, Saruhashi, Kita-Tsuru-gun [*sic*, Saruhashimachi, Otsuki City], Yamanashi Prefecture. Stratigraphic unit: Iwatono Formation. Geologic age: Miocene.

***Anadara (Anadara) kakehataensis* Hatai and Nisiyama, 1949**

Plate 2, Figures 6a–d

Jour. Paleont., vol. 23, no. 1, p. 88, pl. 23, figs. 8–10. Holotype: IGPS no. 72510 (Existing). Although Ogasawara (2001) stated IGPS no. 72511 as the holotype, it is the holotype of *Anadara (Anadara) kurosedaniensis* Hatai and Nisiyama, 1949. Type locality: West cliff, about 50 m S of the bridge at Kakehata, Unohana-mura, Nei-gun [currently Yatsuomachi, Toyama City], Toyama Prefecture. Stratigraphic unit: Susahara Formation [=Kurosedani Formation]. Geologic age: Miocene [latest Early Miocene]. Remarks: The present species is a type species of *Hataiarca* Noda, 1966a (by original designation).

***Anadara (Hataiarca) kogachiensis* Noda, 1971**

Plate 2, Figures 7a–c; Plate 3, Figures 1a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 81, p. 37, pl. 6, figs. 1–5, 8–17. Holotype: IGPS no. 86757 (Existing). Type locality: Loc. no. 109 (Noda, 1971), west of Kogachi, Haneji-son, [Kunigami-gun] [currently Kogachi, Nago City], Okinawa-jima, Okinawa Prefecture. Stratigraphic unit: Kogachi Member of Haneji Formation. Geologic age: Pliocene [Pleistocene].

***Anadara (Anadara) kurosedaniensis* Hatai and Nisiyama, 1949**

Plate 3, Figures 2a–b

Jour. Paleont., vol. 23, no. 1, p. 89, pl. 23, figs. 11, 12. Holotype: IGPS no. 72511 (Existing). Type locality: West cliff, about 50 m south of the bridge at Kakehata, Unohana-mura, Nei-gun [currently Yatsuomachi, Toyama City], Toyama Prefecture. Stratigraphic unit: Susahara Formation [=Kurosedani Formation]. Geologic age: Miocene [latest Early Miocene].

***Anadara makiyamai* Hatai and Nisiyama, 1939 [“1938”]**

Japan. Jour. Geol. Geogr., vol. 16, nos. 1–2, p. 143–144, pl. 9, fig. 7. Holotype: IGPS no. 62430 (Missing). Type locality: Nanseki, Meisen-gun, Kankyō-dō, North Tyōsen [currently Myongchon-gun, Hamgyongpuk-to, North

Korea]. Stratigraphic unit: Heiroku Beds of Meisen Series [Heiroku Formation of Meisen Group]. Geologic age: Miocene [latest Early–earliest Middle Miocene]. Remarks: This species is a junior synonym of *Anadara abdita* (Makiyama, 1926).

***Anadara (Scapharca) masudai* Noda, 1966a**

Plate 3, Figures 3a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 118, pl. 5, figs. 16–17, pl. 13, figs. 2, 4. Holotype: IGPS no. 51550 (Existing). Type locality: Subsurface about 4–5 m below the Star Hotel, Honmoku, [Naka-ku], Yokohama City, Kanagawa Prefecture. Stratigraphic Unit: Tokyo Formation. Geologic age: Pleistocene [Late Pleistocene].

***Anadara (Anadara) naganoensis* Noda, 1966a**

Plate 3, Figure 4

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 95, pl. 3, fig. 8. Holotype: IGPS no. 86410 (Existing). Type locality: Stream cliff of a tributary of the Saikawa, Fukudo, about 10 m E of the Fukudo Bridge, Shinanoshin-machi [*sic*, Shinshushin-machi], Kamiminochi-gun [currently Shinshushinmachi, Nagano City], Nagano Prefecture. Stratigraphic unit: Gonda Formation. Geologic age: Late Miocene.

***Anadara (Tegillarca) obessa* Kotaka, 1953**

Plate 3, Figures 5a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 10, p. 35, pl. 4, figs. 1a–6c. Holotype: IGPS no. 66536 (Existing). IGPS no. 66356 given by original description as the holotype is incorrect. Type locality: Coast near Nago-machi [*sic*, Nago-cho], Kunigami-gun, [Government of the Ryukyu Islands] [currently Nago City, Okinawa Prefecture]. Stratigraphic unit: Raised beach deposits. Geologic age: [Late Pleistocene or Holocene].

***Anadara (Scapharca) omaruensis* Sasaki, 1991**

Plate 3, Figures 6a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 161, p. 710, figs. 11.2a–b, 12.5a–12.8b. Holotype: IGPS no. 101325 (Existing). Type locality: Iwasebashi, Matsubara, [Heida], Kawaminami-machi [*sic*, Kawaminami-cho], Koyu-gun, Miyazaki Prefecture. Stratigraphic unit: Koyu Formation. Geologic age: Pliocene [late Late Pliocene–early Early Pleistocene].

***Anadara (Hataiarca) pseudosubcrenata* Ogasawara, 1977**

Plate 3, Figures 7a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 47, no. 2, p. 92, pl. 6, figs. 1–2b, 5a–6. Holotype: IGPS no. 95070 (Existing). Type locality: Loc. no. KO-01 (Ogasawara, 1977), river floor

of Sai-gawa, 350 m SE of Okuwa Bridge, Okuwa, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Omma Formation. Geologic age: Pliocene [Early Pleistocene].

***Anadara (Scapharca?) shizuokaensis* Noda, 1965**

Plate 3, Figures 8a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 59, p. 103, pl. 11, figs. 7, 8. Holotype: IGPS no. 78919 (Existing). Type locality: Hosoya, Kitaogasa-mura, Ogasa-gun [currently Kakegawa City], Shizuoka Prefecture. Stratigraphic unit: Nango Sandstone and Mudstone Alternation. Geologic age: Pliocene.

***Anadara (Scapharca) taiwanica* Noda, 1966a**

Plate 3, Figure 9; Plate 4, Figures 1a–c

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 112, pl. 10, figs. 1, 4–6. Holotype: IGPS no. 42357 (Existing). Type locality: About 1,450 m W of Hoko [*sic*, Hokkō, Ōbokō], Byoritsu-gun, Shinchiku-shu [currently Yamukeng, Jinshih Village, Hsihu Township, Miaoli County], Taiwan. Lithostratigraphic unit: Tokazan Formation [=Toukoushan Formation]. Geologic age: Pliocene. Remarks: *Anadara taiwanica* Hu, 1992, from the raised coral reefs in Taiwan, is a junior homonym (Huang and Masuda, 2001).

***Anadara (Scapharca) takanabensis* Sasaki, 1991**

Plate 4, Figures 2a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 161, p. 710, figs. 11.4a–b, 12.1a–12.4b. Holotype: IGPS no. 101327 (Existing). Type locality: Toriyama, [Heida], Kawaminami-machi [*sic*, Kawaminami-cho], Koyu-gun, Miyazaki Prefecture. Stratigraphic unit: Koyu Formation. Geologic age: Pliocene [late Late Pliocene–early Early Pleistocene].

***Anadara (Hataiarca) takayamai* Noda, 1966a**

Plate 4, Figures 3a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 120, pl. 2, figs. 18, 22, pl. 13, figs. 5, 6, 17, 18. Holotype: IGPS no. 86403 (Existing). Type locality: Kubusu River cliff, Kakehata, Yatsuo-machi, Nei-gun [currently Yatsuomachi, Toyama City], Toyama Prefecture. Stratigraphic unit: Kurosedani Formation. Geologic age: Miocene [latest Early Miocene].

***Anadara (Anadara) tanakuraensis* Noda, 1966a**

Plate 4, Figures 4a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 100, pl. 8, figs. 11, 12. Holotype: IGPS no. 28404 (Existing). Type locality: Kamitoyonosawa, [Nagare], Tanagura-machi, Higashishirakawa-gun, Fukushima Prefecture. Stratigraphic unit: Tanagura Formation [=Kubota

Formation]. Geologic age: Miocene [early Late Miocene].

***Anadara (Tosarca) tosaensis* Noda, 1965**

Plate 4, Figure 5

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 59, p. 105, pl. 11, figs. 11–13. Holotype: IGPS no. 54609 (Existing). Type locality: Oono, Yasuda-mura [*sic*, Yasuda-machi], Aki-gun, Kochi Prefecture. Stratigraphic unit: Ananai Formation. Geologic age: Pliocene [late Late Pliocene–early Early Pleistocene]. Remarks: The present species is a type species of *Tosarca* Noda, 1965 (by original designation).

***Anadara (Anadara) tsudai* Noda, 1966a**

Plate 4, Figures 6a–c

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 103, pl. 2, figs. 19–21. Holotype: IGPS no. 86396 (Existing). Type locality: Hirabayashi, Yatsuo-machi, Nei-gun [currently Yatsuomachi, Toyama City], Toyama Prefecture. Stratigraphic unit: Joyama Formation. [=Higashibessho Formation]. Geologic age: Miocene [latest Early–early Middle Miocene].

***Anadara (Hataiarca) yatsuoensis* Noda, 1966a**

Plate 4, Figures 7a–c

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 122, pl. 13, figs. 1, 3, 9, 16, 19–20. Holotype: IGPS no. 86402 (Existing). Type locality: Kubusu River cliff, Kakehata, Yatsuo-machi, Nei-gun [currently Yatsuomachi, Toyama City], Toyama Prefecture. Stratigraphic unit: Kurosedani Formation. Geologic age: Miocene [latest Early Miocene].

***Angulararca yubaensis* Noda, 1966b**

Saito Ho-on Kai Mus. Res. Bull., no. 35, p. 16, figs. 7, 8, 17, 18. Holotype: IGPS no. 72884 (Missing). Type locality: Road side cliff, west of Yuba, Rifu-mura [currently Sugaya, Rifu-cho], Miyagi-gun, Miyagi Prefecture. Stratigraphic unit: Aoso Formation. Geologic age: Miocene [Late Miocene]. This species is the type species of *Angulararca* Noda, 1966b.

***Angulus maximus submaximus* Mizuno, 1964**

Plate 5, Figures 1a–b

Rep., Geol. Surv. Japan, no. 204, p. 60. Syntypes: IGPS no. 36452 (Existing) [=paratypes of *Tellina maxima* Nagao, 1928b figured in Nagao, 1928b, pl. 4, figs. 8, 11]. Type locality: Taya, [Yamaga], Ashiya-machi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

***Anisocorbula ohiroi* Masuda, 1966b**

Plate 5, Figures 2a–c

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 329, pl. 35, figs. 35a–36b. Holotype: IGPS no. 90734 (formerly DGS no. 4546; Existing). Type locality: Loc. No. 36 (Masuda, 1966a), river cliff near small road, about 600 m SSE of Kakuma, [Otanimachi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Annuliconcha kitakamiensis* Murata, 1964**

Plate 5, Figure 3

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 227, pl. 34, fig. 12a, b. Holotype: IGPS no. 22389 (Existing). Type locality: IGPS loc. no. It 044 (Murata, 1964), Imô, Yahagi-machi, Rikuzen-takada City [currently Imo, Yahagicho, Rikuzentakata City], Iwate Prefecture. Stratigraphic unit: Lower part of Kanokura Formation. Geologic age: Middle Permian.

***Anomia pseudotruncata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 5, Figures 4–5

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 62, pl. 12, figs. 26, 27, pl. 13, figs. 26, 27, 36, 37. Syntypes: IGPS no. 22522 (Existing). Type locality: Bômekizawa, Ôhinata[-mura], [currently Ohinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidô Group [Shiroi Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Arca (Arca) andoi* Nomura, 1933**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 33, pl. 3, fig. 8a–b. Holotype: IGPS no. 48383 (Missing). Type locality: Station no. 42 (Nomura, 1933), 550 m E of Sankwakô, Tsûshô-shô, Byôritsu-gun, Shinchiku-shû [currently Sanwo-kou, Tongwan Village, Tongsiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Arca (Arca) kikaizimana* Nomura and Zinbô, 1934**

Plate 5, Figures 6a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 152 (44), pl. 5 (1), figs. 4a–5b. Holotype: IGPS no. 50198 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: "Ryûkyû Limestone". Geologic age: Pleistocene. Remarks: This species is the type species of *Kikaiarca* Noda, 1966a (by original designation).

***Arca (Arca) miurensis* Noda, 1966a**

Plate 5, Figures 7a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p.

57, pl. 12, figs. 11, 12, 14, 15. Holotype: IGPS no. 23846 (Existing). Type locality: Urago, Taura-machi, Miura-gun [currently Uragocho, Yokosuka City], Kanagawa Prefecture. Stratigraphic unit: Miyata Formation. Geologic age: Pliocene [Pleistocene]. Remarks: Because Noda (1966) thought *Arca miyatensis* Oyama, 1951b to be unavailable, he proposed *Arca (Arca) miyatensis* for the same taxon. However, *A. miyatensis* Oyama, 1951b is available, because Oyama (1951b) proposed this new name in association with a bibliographic reference to *Arca kobeltiana* Pilsbry *sensu* Yokoyama (1920). Habe (1967) considered these two species are hardly distinguished from the Recent *Arca boucardi* Jousseume, 1894.

***Arca (Noetia) pondaungensis* var. *transversa* Nagao, 1928b**

Plate 17, Figure 13

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 26, pl. 6, figs. 8–10. Holotype: IGPS no. 36012 (Existing). Type locality: Hôshuyama Mine, Hôshuyama-mura [currently Tôhō-mura], Asakura-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Doshi Beds [=Doshiyama Formation]. Geologic age: Eocene [Late Eocene]. Remarks: A new replacement name, *Noetia nagaoui* MacNeil, 1938, was proposed for this taxon since it is a primary junior homonym of *Arca transversa* Say, 1822.

***Arca sakamizuensis* Hatai and Nisiyama, 1952**

Plate 5, Figure 8

Sci. Rep. Tôhoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 3, p. 30. Holotype: IGPS no. 35996 (Existing). Type locality: Beach-rocks along the sea coast [about 500 m N of] Sakamizu, Shimago-mura, Onga-gun [currently An'ya, Wakamatsuku, Kitakyushu City], Fukuoka Prefecture. Stratigraphic unit: Sakamizu Formation. Geologic age: Oligocene. Remarks: This species was proposed as “n. sp.” without description, but is regarded to be elected as “nom. nov.” for *Arca (Arca) sp. a* of Nagao (1928b: Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 27, pl. 3, figs. 9, 9a).

***Arca shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 5, Figures 9–11

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 42, pl. 13, figs. 33–35. Syntypes: IGPS no. 22521 (Existing). Type locality: Bômekizawa, Ôhinata[-mura], [currently Ohinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]; and Shiroi, [Narahara], Ueno-mura, Tano-gun, Province of Kôzuke [Gumma Prefecture]. Stratigraphic unit: Ishidô Group [Shiroi Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Arca (Arca) sokeishiensis* Nomura, 1933**

Plate 5, Figure 12

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 38, pl. 2, fig. 10a, b. Holotype: IGPS no. 47770 (Existing). Type locality: Sôkeishi, Kwanden-shô, Sobun-gun, Tainan-shû [currently Shuangshih, Daci Village, Kuantien District, Tainan City], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Arca (Arca) takaoensis* Nomura, 1933**

Plate 5, Figure 13

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 39, pl. 3, figs. 2–5. Holotype: IGPS no. 37444 (Existing). Type locality: Shinsui, Ensô-shô, Okayama-gun, Takao-shû [currently Shengshui, Shengshui Village, Yangchao District, Kaohsiung City], Taiwan. Stratigraphic unit: “Kaizan Beds”. Geologic age: Miocene [Late Miocene].

***Arca (Barbatia) yokoyamai* Nomura, 1933**

Plate 5, Figures 14a–e

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 41, pl. 1, fig. 3a–d. Holotype: IGPS no. 42588 (Existing). Type locality: Station no. 38 (Nomura, 1933), Wangwa, Kôryû-shô, Chikunan-gun, Shinchiku-shû [currently Wanwa, Jhonghe Village, Houlong Township, Miaoli County], Taiwan. Lithostratigraphic unit: “Byôritsu Beds”. Geologic age: Pliocene [Pleistocene]. Remarks: This species is thought to be a junior synonym of *Striarca interplicata* (Grabau and King, 1928) (Habe, 1958; Noda, 1966a).

***Astarte minor* Nagao, 1934**

Plate 17, Figures 12a–b

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 2, no. 3, p. 220, pl. 28, figs. 5–10. Lectotype: IGPS no. 66425 (designated by Hayami, 1965b; Existing). Type locality: Southern coast of Hiraiga Inlet [Wano, Tanohata-mura, Shimohei-gun, Iwate Prefecture]. Stratigraphic unit: Hiraiga Sandstone [Hiraiga Formation]. Geologic age: Cretaceous [Early Cretaceous]. Remarks: The species name is preoccupied by *Astarte sulcata* var. *minor* Jeffreys, 1864 [“1863”]. See *Nicaniella (Trautscholdia) nagaoui* Matsubara, 2016.

***Astarte miyakoensis* Nagao, 1934**

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 2, no. 3, p. 218, pl. 30, fig. 8, pl. 32, figs. 1, 3–5. Lectotype: IGPS no. 7105 (designated by Hayami, 1965b; Missing). Type locality: Southern coast of Hiraiga [Raga, Tanohata-mura, Shimohei-gun, Iwate Prefecture]. Stratigraphic unit: Hiraiga Sandstone [Hiraiga Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Astarte shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 5, Figure 15

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 47, pl. 13, figs. 29, 30. Lectotype: IGPS no. 22544 (designated by Hayami, 1965b; Existing). Type locality: Ishidō, near Ōhinata[-mura] [currently Ōhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidō Group [Ishidō Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Astarte subomalioides* Nagao, 1934**

Plate 5, Figure 16

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 2, no. 3, p. 219, pl. 27, figs. 3, 4. Lectotype: IGPS no. 66446 (designated by Hayami, 1965b; Existing). Type locality: Southern coast of Hiraiga Inlet [Wano, Tanohata-mura, Shimohei-gun, Iwate Prefecture]. Stratigraphic unit: Hiraiga Sandstone [Hiraiga Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Astarte subsenecta* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 47, pl. 13, figs. 14–16, pl. 14, fig. 11. Lectotype: IGPS no. 22534 (designated by Hayami, 1965b; Missing). Type locality: Ishidō, near Ōhinata[-mura] [currently Ishidō, Ōhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidō Group [Ishidō Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Astarte subsenecta* var. *costata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 5, Figure 17

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 48, pl. 14, fig. 10. Holotype: IGPS no. 22483 (Existing). Type locality: Ōze, near Kagahara, Nakazato-mura [currently Kanna-machi], Tano-gun, Province of Kōzuke [Gumma Prefecture]. Stratigraphic unit: Kawarazawa Group [Ishido Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Aviculopecten hataii* Murata, 1964**

Plate 5, Figures 18a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 221, pl. 34, fig. 10a, b. Holotype: IGPS no. 85732 (Existing). Type locality: IGPS loc. no. Mi 116 (Murata, 1964), Toya-zawa [Toyasawa], Kamishishiori [Shiraishi], Kesenuma City, Miyagi Prefecture. Stratigraphic unit: Shigeji-zawa Member, Kanokura Formation. Geologic age: Middle Permian.

***Aviculopecten hayasakai* Murata, 1964**

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 219, pl.

34, fig. 4a, b. Holotype: IGPS no. 85737 (Missing). Type locality: IGPS loc. no. Mi 116 (Murata, 1964), Toya-zawa [Toyasawa], Kamishishiori [Shiraishi], Kesenuma City, Miyagi Prefecture. Stratigraphic unit: Shigeji-zawa Member, Kanokura Formation. Geologic age: Middle Permian.

***Aviculopecten minoensis* Hayasaka, 1925b**

Plate 5, Figure 19

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 5, pl. 8, fig. 1. Lectotype: IGPS no. 22412 (designated by Nakazawa, 1967; Existing). Type locality: Kinshōzan, Akasaka-machi, Province of Mino [currently Akasakacho, Ogaki City, Gifu Prefecture]. Lithostratigraphic unit: the *Fusulina* limestone [Akasaka Limestone]. Geologic age: Middle Permian. Remarks: The name of species was originally spelled as *minōensis*, and is corrected.

***Aviculopecten?* *onukii* Murata, 1969**

Plate 5, Figures 20a–b

Saito Ho-on Kai Mus. Res. Bull., no. 38, p. 17, pl. 3, figs. 1a–d, 2a, b. Holotype: IGPS no. 91380 (Existing). Type locality: Senmatsu, [Okago], Fujisawa-cho, Higashi-Iwai-gun [currently Fujisawacho, Ichinoseki City], Iwate Prefecture. Stratigraphic unit: Upper part of Toyoma Formation. Geologic age: Late Permian.

***Aviculopecten reticularis* Hayasaka, 1925b**

Plate 5, Figure 21

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 6, pl. 8, fig. 2. Holotype: IGPS no. 22227 (Existing). Type locality: Kinshōzan, Akasaka-machi, Province of Mino [currently Akasakacho, Ogaki City, Gifu Prefecture]. Lithostratigraphic unit: the *Fusulina* limestone [Akasaka Limestone]. Geologic age: Middle Permian.

***Aviculopecten sasakii* Murata, 1964**

Plate 5, Figures 22a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 218, pl. 34, fig. 1a, b. Holotype: IGPS no. 85730 (Existing). Type locality: IGPS loc. no. Mi 117 (Murata, 1964), the upper course of the Shigeji-zawa, Kamiyasse, Kesenuma City, Miyagi Prefecture. Stratigraphic unit: Kanokura Formation. Geologic age: Middle Permian.

***Azorius philippianus* Kotaka and Noda, 1977**

Plate 5, Figure 23

Geol. Palaeont. Southeast Asia, vol. 18, p. 142, pl. 25, figs. 9, 10. Holotype: IGPS no. 95087 (Existing). Type locality: Road-side cliff, about 500 m S of Amuntay [Tagkawayan Municipality, Province of Quezon], western part of the Bondoc Peninsula, Philippines. Stratigraphic unit: "Gumaca Formation". Geologic age: Miocene.

***Barbatia (Acar) hayasakai* Noda, 1966a**

Plate 5, Figures 24a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 67, pl. 4, figs. 10, 11. Holotype: IGPS no. 76249 (Existing). Ogasawara (2001) erroneously cited IGPS no. 76429 as the holotype. Type locality: Ogi, Nishikoshi-mura [currently Izumozaki-machi], Santo-gun, Niigata Prefecture. Stratigraphic unit: Funabashi Sandstone [=Haizume Formation]. Geologic age: Late Pliocene [Pleistocene].

***Barbatia kanezawaensis* Akutsu, 1964**

Plate 5, Figure 25

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 282, pl. 59, fig. 2. Holotype: IGPS no. 85501 (Existing). Type locality: About 1.8 km upstream from Kanezawa, the Fukasawa valley, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Barbatia (Acar) numaensis* Noda, 1966a**

Plate 5, Figures 26a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 68, pl. 5, figs. 11–12. Holotype: IGPS no. 86137. (Existing) Type locality: Numa, Tateyama City, Chiba Prefecture. Stratigraphic unit: Numa Coral Bed. Geologic age: Holocene.

***Barbatia (Pugilarca) tsurushizakiensis* Noda, 1966a**

Plate 5, Figure 27

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 70, pl. 10, figs. 9, 10. Holotype: IGPS no. 17271 (Existing). Type locality: Sea cliff, Tsurushizaki [*sic*, Tsurushu-misaki], [Higashicho], Hitachi City, Ibaragi [*sic*, Ibaraki] Prefecture. Stratigraphic unit: Hatsuzaki Formation [=Hitachi Formation]. Geologic age: Pliocene [Early Pliocene].

***Barbatia (Barbatia) uetsukiensis* Hatai and Nisiyama, 1949**

Plate 5, Figure 28

Jour. Paleont., vol. 23, no. 1, p. 89, pl. 23, figs. 6, 7. Holotype: IGPS no. 72522 (Existing). Type locality: Road side cutting about 100 m NE of the shrine at Dainichi-saka, Uetsuki-mura [*sic*, Uetsuki-son] [currently Sho'o-cho], Katsuta-gun, Okayama Prefecture. Stratigraphic unit: Uetsuki Formation [=Yoshino Formation]. Geologic age: Miocene [latest Early Miocene].

***Barbatia (Pugilarca) yabei* Noda, 1966a**

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 38, no. 1, p. 71, pl. 2, figs. 14, 15. Holotype: IGPS no. 25787 (Missing). Type locality: Sea cliff, Tsurushizaki [*sic*, Tsurushu-misaki], [Higashicho], Hitachi City, Ibaragi [*sic*, Ibaraki] Prefecture. Stratigraphic unit: Hatsuzaki Formation [=Hitachi

Formation]. Geologic age: Pliocene [Early Pliocene].

***Bassina (Callanatis) hayasakai* Kotaka, 1977**

Geol. Palaeont. Southeast Asia, vol. 18, p. 128, pl. 22, figs. 3–15. Holotype: IGPS no. 94933 (Missing). Type locality: Yuanli Shell Mound, near Miaoli, [currently Yuanli Township, Miaoli County], Taiwan. Geologic age: Holocene.

***Batissa nagaoi* Suzuki, 1941**

Plate 5, Figures 29a–b; Plate 6, Figure 1

Jour. Fac. Sci., Imp. Univ. Tokyo, Sec. 2, vol. 6, no. 3, p. 46, text-figs. 1a–3b, pl. 1, figs. 1a–2. Holotype: IGPS no. 35777 (Existing). Type locality: Kakize Mine, Takashima, Takashima-machi [*sic*, Takashima-cho], Nishisonogi-gun [currently Takashimacho, Nagasaki City], Nagasaki Prefecture. Stratigraphic unit: Hashima Formation. Geologic age: Eocene [Middle Eocene]. Remarks: This species was proposed as nom. nov. for *Cyrena (Batissa) ponderosa* Nagao, 1928a, non *Cyrena ponderosa* Prime, 1860.

***Batissa taiwanensis* Nomura, 1933**

Plate 6, Figures 2a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 68, pl. 1, figs. 1a–d. Holotype: IGPS no. 45087 (Existing). Type locality: Sôkeishi, Kwanden-shô, Sobun-gun, Tainan-shû [currently Shuangsi, Daci Villege, Kuantien District, Tainan City], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Brachidontes takiensis* Kamada, 1962**

Plate 6, Figure 3

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 73, pl. 3, figs. 15, 16. Holotype: IGPS no. 79380 (Existing). Type locality: Sorida, Shimotaki, Tonomachi, Iwaki City, Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Callista chinensis takagii* Masuda, 1955**

Plate 6, Figure 4

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 20, p. 121, pl. 19, fig. 7. Holotype: IGPS no. 90885 (formerly DGS no. 2501; Existing). Type locality: Tokunari, Machino-machi, Fugeshi-gun [currently Wajima City], Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Callista pseudoplana* Yabe and Nagao, 1925**

Plate 6, Figure 5

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 120, pl. 28, figs. 9, 10, pl. 29, figs. 2, 4. Lectotype: IGPS

no. 8553 (designated by Ichikawa and Maeda, 1963; Existing). Type locality: The upper course of Ponnebets[u], a tributary of the Horomui, province of Ishikari [Manji, Kurisawacho, Iwamizawa City], Hokkaido. Stratigraphic unit: The *Trigonia* Sandstone [Middle Yezo Group in Manji area]. Geologic age: Cretaceous [Cenomanian–Turonian].

***Callista sekiyaensis* Akutsu, 1964**

Plate 6, Figure 6

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 285, pl. 59, figs. 8, 12. Syntypes: IGPS no. 85506 (Existing). Type locality: Cliff of the Hoki River, about 100 m down stream from Daikoku-iwa, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Cardiomya (Cardiomya) kotakai* Honda, 1989**

Plate 6, Figure 7

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 90, pl. 5, fig. 6. Holotype: IGPS no. 99278 (Existing). Type locality: NB-17 (Honda, 1989), riverside cliff along the lowerstream of the Sakudano-sawa, a tributary of the Chambetsu-gawa, Ombetsu-machi [*sic*, Ombetsu-cho], Shiranuka-gun [currently Onbetsu-cho, Kushiro City], Hokkaido. Stratigraphic unit: Nuibetsu Formation. Geologic age: Oligocene.

***Cardita katsumatai* Nagao, 1928b**

Plate 6, Figures 8a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 54, pl. 9, fig. 17. Holotype: IGPS no. 36331 (Existing). Type locality: Namazuta Mine near Iizuka-machi, Kahogun [currently Iizuka City], Province of Hizen [Fukuoka Prefecture]. Stratigraphic unit: Namazuta Fossil Bed [=Honso Formation]. Geologic age: Eocene.

***Cardita kondoi* Nagao, 1928b**

Plate 6, Figure 9

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 53, pl. 9, figs. 4–6. Holotype: IGPS no. 36407 (Existing). Type locality: Tokuman, Ōshima, Province of Hizen [currently Oshimacho, Saikai City, Nagasaki Prefecture]. Stratigraphic unit: Kakinoura Beds [Kakinoura Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Cardium (Acanthocardia) cancellatum* Nomura, 1933**

Plate 29, Figures 12a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 81, pl. 3, fig. 9a, b. Holotype: IGPS no. 46500 (Existing). Type locality: Station no. 14 (Nomura, 1933), exposure,

550 m SE of Jō-tsūshō-wan, Tsūshō-shō, Byōritsu-gun, Shinchiku-shū [currently Shangtongsiaowan, Tongwan Village, Tongsiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene]. Remarks: A new replacement name *Trifarcidium nomurai* Kuroda and Habe, 1951 was proposed for this species, as it is a primary junior homonym of *Cardium cancellatum* Gmelin, 1791.

***Cardium (Trachycardium) hanpeizanense* Nomura, 1933**

Plate 6, Figure 10

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 77, pl. 1, figs. 7a–8b, pl. 2, figs. 8, 9. Holotype: IGPS no. 37455 (Existing). Type locality: Hanpeizan, Okayama-gun, Takao-shū [currently Ban Pin Shan, Kaohsiung City], Taiwan. Lithostratigraphic unit: “Riukiu Limestone” [correlative of the Ryukyu Limestone]. Geologic age: Pleistocene.

***Cardium (Cerastoderma) hanzawai* Nomura, 1933**

Plate 6, Figures 11a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 79, pl. 3, figs. 18a–19b. Holotype: IGPS no. 46803 (Existing). Type locality: Station no. 25 (Nomura, 1933), exposure, 1,050 m E of Hakushaton, Kōryū-shō, Chikunan-gun, Shinchiku-shū [currently Baishaton, Tongsiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Cardium (Cerastoderma) hizenense* Nagao, 1928b**

Plate 6, Figure 12

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 61, pl. 10, figs. 15–17. Holotype: IGPS no. 36369 (Existing). Type locality: Iō-jima, off Nagasaki, [=Iōjima-mura, Nishisonogi-gun][currently Iōjimamachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Iō-jima Beds [=Funazu Formation]. Geologic age: Eocene [Late Eocene].

***Cardium (Trachycardium) infantile* Nomura and Zinbō, 1934**

Plate 6, Figures 13a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 156 (48), pl. 5 (1), fig. 17a, b. Holotype: IGPS no. 50386 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [currently Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryūkyū Limestone”. Geologic age: Pleistocene.

***Cardium ishidoense* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 6, Figure 14

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no.

2, p. 48, pl. 12, figs. 9, 16, 18. Lectotype: IGPS no. 22553 (designated by Hayami, 1965b; Existing). IGPS no. 22533 cited by Tanaka and Toshimitsu (2003) is incorrect. Type locality: Ishidô, near Ôhinata [currently Ishidô, Ôhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidô Group [Ishidô Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Cardium (Cerastoderma?) kishimaense* Nagao, 1928b**

Plate 6, Figures 15a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 63, pl. 10, figs. 23, 25, 25a–b. Holotype: IGPS no. 36367 (Existing). Type locality: Hanjô, Asahi-mura, Kishima-gun [currently Takeo City], Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Cardium miikense* Nagao, 1928a**

Plate 6, Figure 16

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 111, pl. 18, figs. 5, 5a–b. Lectotype: IGPS no. 35733 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Ôura [*sic*, Ôuramachi], Ômuta City, Fukuoka Prefecture. Stratigraphic unit: “Upper *Orthaulax japonicus* Zone” [=Nanaura Formation]. Geologic age: Eocene [Middle Eocene].

***Cardium (Nemocardium) torii* Nomura, 1933**

Plate 6, Figures 17a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 79, pl. 2, fig. 6a, b. Holotype: IGPS no. 49000 (Existing). Type locality: Fûsuirei, Station no. 26, Sachin-shô, Shinkwa-gun, Tainan-shû [currently Fengchuiling, Jhongjheng Village, Tsuochen Township], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Caryocorbula saikawai* Kotaka, 1955**

Plate 6, Figure 18

Saito Ho-on Kai Mus. Res. Bull., no. 24, p. 27, pl. 2, figs. 5, 6. Holotype: IGPS no. 74010 (Existing). Type locality: IGPS loc. no. Ao-15 (Kotaka, 1955), upper course of the Isomatsu-gawa, Wakimoto-mura, Kitatsugaru-gun [currently Wakimoto, Goshogawara City], Aomori Prefecture. Stratigraphic unit: Isomatsu Formation. Geologic age: Oligocene [Early Miocene]. Remarks: The present species is a junior synonym of *Nipponomarcia nakamurai* (Ikebe, 1941) (Matsubara, 1995).

***Chlamys (Chlamys) akutsui* Masuda, 1962a**

Plate 7, Figure 1

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 160, pl. 18, fig. 29. Holotype: IGPS no. 28293 (Existing). Type locality: River cliff of the Naka-gawa, south of Ogawa-machi [currently Ogawa, Nakagawa-machi], Nasu-gun, Tochigi Prefecture. Stratigraphic unit: Ogane Formation. Geologic age: Middle Miocene [Late Miocene].

***Chlamys chinkopensis* Masuda and Sawada, 1961**

Plate 7, Figure 2

Japan. Jour. Geol. Geogr., vol. 32, no. 1, p. 21, pl. 4, figs. 6, 7. Holotype: IGPS no. 90595 (formerly DGS no. 3896; Existing). Ogasawara (2001) erroneously cited IGPS no. 90965 as the holotype. Type locality: Right river cliff of the Toshibetsu-gawa, about 1.5 km SE of Chinkope-toge, [=Hanaishi-toge], Imagane-machi [*sic*, Imakane-cho], Setana-gun, Shiribeshi Province, Hokkaido. Stratigraphic unit: Setana Formation. Geologic age: Pliocene [Early Pleistocene].

***Chlamys cosibensis hanzawae* Masuda, 1959**

Plate 7, Figure 3

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 35, p. 125, pl. 13, figs. 10a–15. Holotype: IGPS no. 90648 (formerly DGS no. 3690; Existing). Type locality: Ukibuta, Higashiyuri-mura, Yuri-gun [currently Oikata, Higashiyuri, Yurihonjô City], Akita Prefecture. Stratigraphic unit: Sugota Formation. Geologic age: Early Miocene [early Middle Miocene].

***Chlamys daishakaensis* Masuda and Sawada, 1961**

Plate 7, Figure 4

Japan. Jour. Geol. Geogr., vol. 32, no. 1, p. 23, pl. 4, figs. 8, 9. Holotype: IGPS no. 90708 (formerly DGS no. 3880; Existing). Type locality: Right stream cliff, about 2.3 km N of Daishaka Station along the Ou Line, Namioka-machi, Minamitsugaru-gun [currently Namioka, Aomori City], Aomori Prefecture. Stratigraphic unit: Daishaka Formation. Geologic age: Pliocene [Early Pleistocene]. Remarks: This species is a junior synonym of *Chlamys (Leochlamys) tanassevitschi* (Khomenko, 1934) (Amano, 1994).

***Chlamys (Chlamys) hanaishiensis* Masuda, 1962a**

Plate 7, Figure 5

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 166, pl. 22, figs. 1, 2. Holotype: IGPS no. 90565 (formerly DGS no. 3935; Existing). Type locality: Left floor of the Toshibetsu River, about 1 km SW of Pirika Station of the Setana Line, Imagane-machi [*sic*, Imakane-cho], Setana-gun, Shiribeshi Province, Hokkaido. Stratigraphic unit: Setana Formation. Geologic age: Early Pliocene [Early Pleistocene].

***Chlamys (Chlamys) hasimotoi* Masuda, 1962a**

Plate 7, Figure 6

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 167, pl. 19, figs. 1, 2. Holotype: IGPS no. 90527 (formerly DGS no. 3867; Existing). IGPS no. 90600 cited as the holotype by Ogasawara (2001) is the paratype. Type locality: Natsukawa-en [=Honbetsu Koen], upstream of the Honbetsu River [Higashihonbetsu], Honbetsu-machi [*sic*, Honbetsu-cho], Nakagawa-gun, Tokachi Province, Hokkaido. Stratigraphic unit: Rawan Conglomerate of Okuashiyoro Formation [=Honbetsu Formation]. Geologic age: Early Pliocene.

***Chlamys hataii* Masuda and Akutsu, 1956**

Plate 7, Figure 7

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 21, p. 130, pl. 20, figs. 1a–6b. Holotype: IGPS no. 90726 (formerly DGS no. 1370; Existing). Type locality: Niiya, Tawara, Kawachi-mura, Kawachi-gun [currently Ishii machi, Utsunomiya City], Tochigi Prefecture. Stratigraphic unit: Nagaoka Formation. Geologic age: Early Miocene [early Middle Miocene]. Remarks: The present species is synonymous with *Chlamys (Nomurachlamys) meisensis* (Makiyama, 1926) (Kurihara, 2010).

***Chlamys (Chlamys) hatakeyamae* Masuda, 1962a**

Plate 7, Figure 8

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 168, pl. 18, figs. 18–20. Holotype: IGPS no. 27563 (Existing). Type locality: Ikatsuchi-zawa at Kanayama, Higashi-Takizawa, Yuri-mura, Yuri-gun [currently Ikazuchi, Yurihonjō City] Akita Prefecture. Stratigraphic unit: Sugota Formation. Geologic age: Early Miocene [Middle Miocene].

***Chlamys imanishii* Masuda and Sawada, 1961**

Plate 7, Figures 9a–b

Japan. Jour. Geol. Geogr., vol. 32, no. 1, p. 25, pl. 4, figs. 10a–11. Holotype: IGPS no. 72555 (Existing). Type locality: Sea cliff at Hamada, Yokohama-machi, Kamikita-gun, Aomori Prefecture. Stratigraphic unit: Hamada Formation. Geologic age: Early Pliocene [Early Pleistocene].

***Chlamys (Chlamys) ishidae* Masuda, 1962a**

Plate 7, Figure 10

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 171, pl. 18, figs. 21–24. Holotype: IGPS no. 90676 (formerly DGS no. 3909; Existing). Type locality: Left cliff of the Do River, Tsuzara, Osawano-machi, Kaminikawa-gun [*sic*, Kaminiikawa-gun] [currently Tsuzuhara, Toyama City], Toyama Prefecture. Stratigraphic unit: Kashio Alternation of Kurosedani Formation. Geologic age: Early Miocene [latest Early Miocene].

***Chlamys (Chlamys) itoigawae* Masuda, 1962a**

Plate 7, Figure 11

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 172, pl. 18, figs. 25, 26. Holotype: IGPS no. 90538 (formerly DGS no. 3819; Existing). Type locality: Floor of the Toki River, about 300 m upstream of the Relay Station of Wireless Telegraph at Kamado [Kamadocho], Mizunami City, Gifu Prefecture. Stratigraphic unit: Shukunohora Formation. Geologic age: Early Miocene [latest Early–earliest Middle Miocene].

***Chlamys kitamurai* Kotaka, 1955**

Plate 7, Figure 12

Saito Ho-on Kai Mus. Res. Bull., no. 24, p. 26, pl. 2, fig. 2. Holotype: IGPS no. 74009 (only a plastic cast is existing). Type locality: IGPS loc. no. Ao-15 (Kotaka, 1955), upper course of the Isomatsu-gawa, Wakimoto-mura, Kitatsugaru-gun [currently Wakimoto, Goshogawara City], Aomori Prefecture. Stratigraphic unit: Isomatsu Formation. Geologic age: Oligocene [late Early Miocene].

***Chlamys (Chlamys) kotakae* Masuda, 1962a**

Plate 8, Figure 1

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 175, pl. 20, figs. 8, 9. Holotype: IGPS no. 90646 (formerly DGS no. 3832; Existing). Type locality: Cliff of the left side valley of Kamifutamata-zawa, upper course of Biu River, about 5.5 km NE of Biu, Niikappu-machi [*sic*, Niikappu-cho], Niikappu-gun, Hidaka Province, Hokkaido. Stratigraphic unit: Noya Formation. Geologic age: Early Miocene.

***Chlamys kumanodoensis* Masuda, 1953a**

Plate 8, Figure 2

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 12, p. 85, pl. 8, figs. 9a–12b. Holotype: IGPS no. 90522 (formerly DGS no. 1049; Existing). Type locality: Hill side about 500 m W of the Kumano Shrine, Kumanodō, Takadate-mura, Natori-gun, [currently Takadate, Natori City], Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Early Miocene [early Middle Miocene].

***Chlamys (Chlamys) matsunoi* Masuda, 1962a**

Plate 8, Figure 3

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 176, pl. 19, fig. 20, pl. 21, figs. 2–4. Holotype: IGPS no. 90627 (formerly DGS no. 3831; Existing). Type locality: Cliff of the left side valley of Kamifutamata-zawa, upper course of Biu River, about 5.5 km NE of Biu, Niikappu-machi [*sic*, Niikappu-cho], Niikappu-gun, Hidaka Province, Hokkaido. Stratigraphic unit: Noya Formation. Geologic age: Early Miocene.

***Chlamys (Chlamys) nagaoui* Masuda, 1962a**

Plate 8, Figure 4

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 179, pl. 20, figs. 4–6. Holotype: IGPS no. 36440 (Existing). Type locality: Beach, west of the Hachiman-zaki [*sic*, Yahatamisaki], about 300 m N of Wakita [*sic*, Waita], Wakamatsu City [currently An'ya, Wakamatsu-ku, Kitakyushu City], Fukuoka Prefecture. Stratigraphic unit: Wakita [*sic*, Waita] Formation. Geologic age: Late Oligocene.

***Chlamys (Chlamys) niikappuensis* Masuda, 1962a**

Plate 8, Figure 5

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 180, pl. 21, fig. 5. Holotype: IGPS no. 90536 (formerly DGS no. 3835; Existing). Type locality: Cliff of the left side valley of the Kamifutamata-zawa, upper course of the Biu River, about 5.5 km NE of Biu, Niikappu-machi [*sic*, Niikappu-cho], Niikappu-gun, Hidaka Province, Hokkaido. Stratigraphic unit: Noya Formation. Geologic age: Early Miocene.

***Chlamys oidensis* Hatai, Masuda and Noda, 1974**

Plate 8, Figures 6a–b

Saito Ho-on Kai Mus. Res. Bull., no. 43, p. 36, pl. 4, figs. 1a–2. Holotype: IGPS no. 64419 (Existing). Type locality: Oido, Motowakuya, Wakuya-machi, Toda-gun, Miyagi Prefecture. Stratigraphic unit: Oido Formation. Geologic age: Early Miocene [Middle Miocene]. Remarks: The present species is a junior synonym of *Chlamys (Leochlamys) arakawai* (Nomura, 1935b) (Matsubara, in Matsubara *et al.*, 2014).

***Chlamys otukae* Masuda and Sawada, 1961**

Plate 8, Figures 7a–b

Japan. Jour. Geol. Geogr., vol. 32, no. 1, p. 19, pl. 4, figs. 1a–5. Holotype: IGPS no. 90607 (formerly DGS no. 2616; Existing). Type locality: Road-side exposure at Oido, Motowakuya [currently Kozuka], Wakuya-machi [*sic*, Wakuya-cho], Tōda-gun, Miyagi Prefecture. Stratigraphic unit: Oido Formation. Stratigraphic unit: Oido Formation. Geologic age: Early Miocene [Middle Miocene].

***Chlamys (Chlamys) setsukoeae* Masuda, 1962b**

Plate 8, Figures 8a–b

Saito Ho-on Kai Mus. Res. Bull., no. 31, p. 20, pl. 1, figs. 1a–8, pl. 2, figs. 6–8. Holotype: IGPS no. 90477 (formerly DGS no. 4230; Existing). Type locality: Road-side cutting, about 900 m WSW of the Ken'yoshi Station of the Tohoku Main Line, Ken'yoshi, Nagawa-machi [currently Nanbu-cho], Sannohe-gun, Aomori Prefecture. Stratigraphic unit: Togawa Formation. Geologic age: Early Pliocene.

***Chlamys shitakaraensis* Honda, 1980**

Plate 8, Figures 9a–c

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 117, p. 258, pl. 30, figs. 1, 2, 5, 6. Holotype: IGPS no. 95439 (Existing). Type locality: Loc. B-06 (Honda, 1980), a small northeastern tributary of the Urahoro-gawa, about 3.8 km N of Rushin, Urahoro-machi [*sic*, Urahoro-cho], Tokachi-gun, Hokkaido. Stratigraphic unit: Shitakara Formation. Geologic age: Oligocene [Middle–Late Eocene].

***Chlamys tamurae* Masuda and Sawada, 1961**

Plate 8, Figure 10

Japan. Jour. Geol. Geogr., vol. 32, no. 1, p. 27, pl. 4, figs. 12a–15. Holotype: IGPS no. 90550 (formerly DGS no. 3862; Existing). Type locality: Small hill-side exposure at Maruyama [Shinsei], Kitahiyama-machi [*sic*, Kitahiyama-cho], Setana-gun [currently Kitahiyama-ku, Setana-cho, Kudo-gun], Shiribeshi Province, Hokkaido. Stratigraphic unit: Setana Formation. Geologic age: Pliocene [Early Pleistocene].

***Circe (Circe) triangulus* Kotaka and Noda, 1977**

Plate 8, Figure 11

Geol. Palaeont. Southeast Asia, vol. 18, p. 137, pl. 25, figs. 5, 6, text-fig. 2-2. Holotype: IGPS no. 95085 (Existing). Type locality: Road-side cliff, about 500 m S of Amuntay, [Tagkawayan Municipality, Province of Quezon], western part of the Bondoc Peninsula, Philippines. Stratigraphic unit: "Gumaca Formation". Geologic age: Miocene.

***Clementia japonica* Masuda, 1955**

Plate 8, Figure 12

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 20, p. 121, pl. 19, fig. 8. Holotype: IGPS no. 90405 (formerly DGS no. 1382; Existing). Although Ogasawara (2001) stated IGPS no. 90880 as the holotype, it is a paratype. Type locality: Tokunari, Machino-machi, Fugeshi-gun [currently Wajima City], Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Clementia (Clementia) nakosoensis* Kamada, 1962**

Plate 8, Figures 13a–b

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 119, pl. 13, figs. 15a, b. Holotype: IGPS no. 79385 (Existing). Type locality: Kokozura, Nakoso City [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Kokozura Formation. Geologic age: Miocene [latest Early Miocene].

***Clinocardium asagaiense arakawae* Kamada, 1962**

Plate 9, Figures 1a–b

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 105, pl. 10, figs. 15–17. Holotype: IGPS no. 79383 (Existing). Type

locality: Mukaida, Yumoto-machi, Joban City [currently Joban-Yumotomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Asagai Formation. Geologic age: Oligocene [Early Oligocene].

***Clinocardium asagaiense makiyamae* Kamada, 1962**

Plate 9, Figures 2a–b

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 104, pl. 10, figs. 18–21. Holotype: IGPS no. 15800 (Existing). Type locality: Nabezuka [*sic*, Nabetsuka], [Kamikitaba], Hirono-machi, Futaba-gun, Fukushima Prefecture. Stratigraphic unit: Asagai Formation. Geologic age: Oligocene [Early Oligocene].

***Clinocardium chikagawaense* Kotaka, 1950**

Plate 9, Figures 3a–b

Short Pap. Inst. Geol. Paleont., Tôhoku Univ., no. 2, p. 46, pl. 5, figs. 1–6. Holotype: IGPS no. 72999 (Existing). Type locality: IGPS loc. no. Ao-51 (Kotaka, 1950), a sea cliff at the outlet of the Chikagawa River at Chikagawa, Tanabumachi, Shimokita-gun [currently Okunai, Mutsu City], Aomori Prefecture. Stratigraphic unit: Hamada Formation. Geologic age: Pliocene [Early Pleistocene].

***Clinocardium hataii* Hayasaka, 1956**

Plate 9, Figure 4

Saito Ho-on Kai Mus. Res. Bull., no. 25, p. 18, pl. 2, fig. 3a, b. Holotype: IGPS no. 77375 (Existing). Type locality: Loc. No. 1 (Hayasaka, 1956), cliff of the Takasegawa River west of Takakura, [Ide], about 5 km SW of the Namie-machi Railroad station on the Joban Line, Namie-machi, Futaba-gun, Fukushima Prefecture. Stratigraphic unit: Ishiguma Formation. Geologic age: Pliocene.

"*Clinocardium*" *nomurai* Hayasaka, 1956

Plate 9, Figure 5

Saito Ho-on Kai Mus. Res. Bull., no. 25, p. 18, pl. 2, fig. 4a, b. Holotype: IGPS no. 77376 (Existing). Type locality: Loc. 2 (Hayasaka, 1956), path side cutting at Onoda, Namie-machi, Futaba-gun, Fukushima Prefecture. Stratigraphic unit: Ishiguma Formation. Geologic age: Pliocene.

***Clinocardium omagariense* Honda, 1981b**

Plate 9, Figures 6a–c

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 122, p. 130, pl. 15, figs. 1–13. Holotype: IGPS no. 95740-1 (Existing). Type locality: Loc. no. OM-32 (Honda, 1981b), riverside cliff along the Urahorogawa, about 1,250 m NNE from the junction between the Urahorogawa and the Tokomurogawa, Urahoromachi [*sic*, Urahorochô], Tokachi-gun, Hokkaido. Stratigraphic unit: Omagari Formation. Geologic age: Oligocene.

***Codakia kitamurai* Hatai and Nisiyama, 1949**

Plate 9, Figure 7

Jour. Paleont., vol. 23, no. 1, p. 91, pl. 24, figs. 5, 6. Holotype: IGPS no. 72526 (Existing). Type locality: Shukunohora, Hiyoshi-mura, Toki-gun [currently Hiyoshicho, Mizunami City], Gifu Prefecture. Stratigraphic unit: Hiyoshi Formation [=Shukunohora Member of Akeyo Formation]. Geologic age: Miocene [latest Early–earliest Middle Miocene].

***Codakia (Jagonia) okinawazimana* Nomura and Zinbô, 1936**

Plate 9, Figures 8a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 241, pl. 11, figs. 9a–b. Holotype: IGPS no. 51319 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Codakia semipolita* Nomura, 1933**

Plate 9, Figures 9a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 73, pl. 1, figs. 9a–10b. Holotype: IGPS no. 45086 (Existing). Type locality: The upper course of Sairyôkyô, Sachin-shô, Shinkawa-gun, Tainan-shû [currently Yseilliao Bridge, Yseilliao, Ronghe Village, Tsuochen District, Tainan City], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Conularia rectangularis* Hayasaka, 1920**

Plate 9, Figures 10a–c

Jour. Geol. Soc. Japan, vol. 27, no. 327, p. 87, text-figs. 1–3. Lectotype: IGPS no. 7320 (designated by Sugiyama, 1942; Existing). Type locality: Iimô, Yahagimura, Kesen-gôri, prov. Rikuchyû [*sic*, Rikuzen] [currently Imo, Yahagicho, Rikuzentakata City, Iwate Prefecture]. Stratigraphic unit: Lower part of Kanokura Formation. Geologic age: Middle Permian. Remarks: This species was originally thought a conulariid (Cnidaria), and a genus *Neoconularia* Sugiyama, 1942 was proposed with *Conularia rectangularis* Hayasaka, 1920 as the type species. However, it is referable to *Aviculopinna* Meek, 1864, and thus *Neoconularia* Sugiyama, 1942 is a junior synonym of *Aviculopinna* (Nakazawa and Newell, 1968; Hayami and Kase, 1977).

***Corbicula (Corbicula) kotakai* Honda, 1981a**

Plate 9, Figures 11a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 121, p. 22, pl. 2, figs. 6, 9, 10, 13–17. Holotype: IGPS no. 96758 (Existing). Type locality: Loc. no. YB-10 (Honda, 1981a), river side cliff along the Rubeshube-zawa, a tributary

of the Chokubetsu-gawa, Urahoromachi [*sic*, Urahorochō], Tokachi-gun, Hokkaido. Stratigraphic unit: Yubetsu Formation. Geologic age: Oligocene [Middle Eocene].

***Corbicula (Veloritina?) sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 9, Figures 12–15

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 53, pl. 12, figs. 8, 8a, pl. 13, figs. 8–10, 17, 17a. Syntypes: IGPS nos. 22449, 22467 (Existing). Type locality: Bōmeki-zawa, Ōhinata[-mura], [currently Ōhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Shiroy Group [Shiroy Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Corbicula (Corbicula) sachalinensis* Suzuki, 1943**

Plate 9, Figures 16a–b

Venus, vol. 12, nos. 3–4, p. 163–165 (in Japanese), p. 167–169 (in Germany), pl. 8, figs. 1–3, 5, 6. Holotype: IGPS no. 8353c (Existing). Type locality: Mittellauf des Tuimis, Nord-Sachalin, USSR [currently Middle reaches of T'ym River in Tymovskoe or Nogliki District, Sakhalin Oblast, Russia (precise locality unknown)]. Stratigraphic unit: Mäch-Gruppe. Geologic age: earliest Miocene (Aquitanian).

***Corbicula (Corbicula) shimizui* Suzuki, 1943**

Plate 9, Figures 17a–b

Venus, vol. 12, nos. 3–4, p. 161–162 (in Japanese), p. 166–167 (in Germany), pl. 7, pl. 8, figs. 4, 7. Holotype: IGPS no. 8353a (Existing). Type locality: Mittellauf des Tuimis, Nord-Sachalin, USSR [currently Middle reaches of T'ym River in Tymovskoe or Nogliki District, Sakhalin Oblast, Russia (precise locality unknown)]. Stratigraphic unit: Mäch-Gruppe. Geologic age: earliest Miocene (Aquitanian).

***Corbicula takasago* Nomura, 1933**

Plate 9, Figure 18

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 69, pl. 2, figs. 1a–2b. Holotype: IGPS no. 45079 (Existing). Type locality: Station no. 34 (Nomura, 1933), Wangwa, Kōryū-shō, Chikunan-gun, Shinchiku-shū [currently Wanwa, Jhonghe Village, Houlong Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Corbula (Cunaecorbula) kyushuensis* Nagao, 1928a**

Plate 9, Figure 19

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 116, pl. 21, fig. 16. Lectotype: IGPS no. 35834 (designated by Hatai and Nisiyama, 1952; Existing). Type

locality: Akase, Ōda-mura, Uto-gun, Province of Higo [currently Akasemachi, Uto City, Kumamoto Prefecture]. Stratigraphic unit: “Lower *Orthaulax japonicus* Zone” [=Fukuregi Formation]. Geologic age: Eocene [early Middle Eocene].

***Corbula (Corbula) subtumida* Nagao, 1928a**

Plate 9, Figure 20

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 115, pl. 22, fig. 6. Lectotype: IGPS no. 35828 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Takesaki, Kōyagi-jima, [Koyagi-mura], Nishisonogi-gun, [currently Koyagimachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: “Lower *Orthaulax japonicus* Zone” [=Futagojima Formation]. Geologic age: Eocene [Middle Eocene].

***Corbula (Corbula) taiwanensis* Nomura, 1933**

Plate 9, Figures 21a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 106, pl. 3, figs. 10a–11b. Holotype: IGPS no. 48966 (Existing). Type locality: Station no. 18 (Nomura, 1933), Wangwa, Kōryū-shō, Chikunan-gun, Shinchiku-shū [currently Wanwa, Jhonghe Village, Houlong Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Crassatellites asakuraensis* Nagao, 1928b**

Plate 9, Figure 22

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 49, pl. 2, fig. 22. Holotype: IGPS no. 36258 (Existing). Type locality: Hōshuyama Mine, Hōshuyama-mura [currently Tōhō-mura], Asakura-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Doshi Beds [Doshiyama Formation]. Geologic age: Eocene [Late Eocene].

***Crassatellites formosanus* Nomura, 1933**

Plate 9, Figure 23

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 66, pl. 1, figs. 14, 15. Holotype: IGPS no. 37441 (Existing). Type locality: About 1,500 m NNW of the Police station of Shinsui, Ensō-shō, Okayama-gun, Takao-shū [currently Shengshui, Shengshui Village, Yangchao District, Kaohsiung City], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Crassatellites inconspicuus* Nagao, 1928b**

Plate 10, Figures 1a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 50, pl. 2, figs. 14, 14a. Holotype: IGPS no. 36308 (Existing). Type locality: Tokuman, Ōshima, [Kurose-mura, Nishisonogi-gun], Province of Hizen [currently Oshimacho,

Saikai City, Nagasaki Prefecture]. Stratigraphic unit: Kakinoura Beds [Kakinoura Formation]. Geologic age: Oligocene [latest Eocene–earliest Oligocene].

***Crassatellites matsuraensis* Nagao, 1928b**

Plate 10, Figures 2a–c
 Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 50, pl. 3, figs. 20, 20a. Holotype: IGPS no. 36310 (Existing). Type locality: Ôbô, near Arita-machi [currently Arita-cho], Nishimatsura-gun [*sic*, Nishimatsuura-gun], Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Eocene–earliest Oligocene].

***Crassatellites tosanus* Nomura, 1937**

Plate 10, Figures 3a–b
 Japan. Jour. Geol. Geogr., vol. 14, nos. 3–4, p. 81, pl. 6, fig. 8a, b. Lectotype: IGPS no. 54638 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Tônohama, Yasuda-mura [*sic*, Yasuda-cho], Aki-gun, Kôti [=Kochi] Prefecture. Stratigraphic unit: Tosa Pliocene [=Ananai Formation]. Geologic age: Pliocene [latest Late Pliocene–early Early Pleistocene].

***Crassatellites yabei* Nagao, 1928b**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 48, pl. 2, figs. 19, 19a, b. Holotype: IGPS no. 36388 (Missing). Type locality: Iwaya, Shimagô-mura, [Ongagun] Province of Hizen [currently Arige, Wakamatsu-ku, Kitakyushu City, Fukuoka Prefecture]. Stratigraphic unit: Wakita Beds [=Waita Formation]. Geologic age: Oligocene.

***Crassostrea gravitesta eoilensis* Kim, Noda and Yoon, 1974**

Plate 10, Figures 4a–b
 Trans. Proc. Palaeont. Soc. Japan, N.S., no. 93, p. 274, pl. 38, fig. 15, pl. 39, fig. 1a–c. Holotype: IGPS no. 92938 (Existing). Type locality: Loc. no. 1-1 (Kim *et al.*, 1974), S of Songjeon-ri, Yangbug-myeon, Weolseong-gun [currently Gyeongju City], Gyeongsangbuk-do, Korea. Stratigraphic unit: Eoil Formation. Geologic age: Miocene [latest Early–earliest Middle Miocene]. Remarks: This “subspecies” is thought an ecophenotype of *Crassostrea gravitesta* (Yokoyama, 1926) (Matsubara *et al.*, 2011).

***Crassostrea sunakozakaensis* Ogasawara, 1976**

Plate 10, Figures 5a–b
 Sci. Rep. Tôhoku Univ., 2nd Ser. (Geol.), vol. 46, no. 2, p. 45, pl. 11, figs. 19–21, pl. 12, figs. 15, 20. Holotype: IGPS no. 95018 (Existing). Type locality: Loc. no. Su-01 (Ogasawara, 1976), river side cliff of Asano-gawa at Higashi-Ichise [*sic*, Higashi-ichinosemachi], Kanazawa

City, Ishikawa Prefecture. Stratigraphic unit: Sunakozaka Formation. Geologic age: Miocene [latest Early Miocene].

***Crenella (Megacrenella) nuibetsuensis* Honda, 1989**

Plate 10, Figure 6
 Sci. Rep. Tôhoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 60, pl. 4, figs. 4, 17. Holotype: IGPS no. 97096 (Existing). Type locality: Loc. NB-08 (Honda, 1989), Muri-kawa, Ombetsu-machi [*sic*, Ombetsu-cho], Shiranuka-gun [currently Onbetsucho, Kushiro City], Hokkaido. Stratigraphic unit: Nuibetsu Formation. Geologic age: Oligocene.

***Crenella (Megacrenella) shitakaraensis* Honda, 1989**

Plate 10, Figure 7
 Sci. Rep. Tôhoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 61, pl. 4, fig. 18. Holotype: IGPS no. 97111 (Existing). Type locality: Loc. SK-46 (Honda, 1989), upstream of Chokubetsu-gawa, Urahoro-machi [*sic*, Urahoro-cho], Tokachi-gun, Hokkaido. Stratigraphic unit: Shitakara Formation. Geologic age: Oligocene [Middle–Late Eocene].

***Crenella striatocostata* Nagao, 1928b**

Plate 10, Figure 8
 Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 46, pl. 6, figs. 20, 21. Holotype: IGPS no. 36291 (Existing). Type locality: Kojôbaru, Hôshuyama-mura, Province of Chikuzen [currently Tôhō-mura, Asakura-gun, Fukuoka Prefecture]. Stratigraphic unit: Kawamagari Beds [Kawamagari Formation]. Geologic age: Eocene [Middle Eocene].

***Crenella subfornicata* Nagao, 1928b**

Plate 10, Figures 9a–c
 Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 46, pl. 5, figs. 8–9b. Holotype: IGPS no. 36288 (Existing). Type locality: Taya, [Yamaga], Ashiya-machi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

***Crenella tomiyaensis* Hatai and Nakamura, 1940**

Plate 10, Figure 10
 Bull. Biogeogr. Soc. Japan, vol. 10, no. 7, p. 113, fig. 1. Holotype: IGPS no. 61354 (Existing). Type locality: Tomiya, Tomiya-mura [currently Tomiya-machi], Kurokawa-gun, Miyagi Prefecture. Stratigraphic unit: Nanakita Beds [Nanakita Formation]. Geologic age: Miocene [late Late Miocene].

***Crenipecten kesenensis* Hayasaka, 1925b**

Plate 10, Figure 11
 Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 11, pl. 8, figs. 8, 8a. Holotype: IGPS no. 22383

(Existing). Type locality: Imô, [Yahagi-mura], Kesen-gôri, prov. Rikuzen [currently Imo, Yahagi-cho, Rikuzentakata City, Iwate Prefecture]. Stratigraphic unit: Kanokura Formation. Geologic age: Middle Permian. Remarks: The name of genus was originally spelled as *Cenipecten*, and is corrected.

***Ctena hataii* Masuda, 1966b**

Plate 10, Figures 12a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 325, pl. 35, figs. 15–20. Holotype: IGPS no. 90729 (formerly DGS no. 4524; Existing). IGPS no. 90865 (=formerly DGS no. 4523) cited as the holotype by Ogasawara (2001) is the paratype. Type locality: Loc. No. 30 (Masuda, 1966a), road side cutting near Koeiji Temple, Otani [*sic*, Otanimachi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Ctenodonta manchuriensis* Endo, 1935**

Plate 10, Figures 13a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 4, p. 197, pl. 14, figs. 7–8. Holotype: IGPS no. 55582 (Existing). Type locality: In the black banded limestone at the northern foot of San-len hill, near the Wu-hu-tsui colliery, [Fuzhou County, Fengtian Province], Liaotung, Manchoukuo [currently Wafangdian, Dalian City, Liaoning Province, China]. Stratigraphic unit: Kangyao Formation. Geologic age: Early Ordovician.

***Ctenodonta takahashii* Endo, 1935**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 4, p. 196, pl. 14, figs. 1–6. Syntype: IGPS no. unknown (Missing). Type locality: In the black banded limestone at the northern foot of San-leng hill, near the Wu-hu-tsui colliery, [Fuzhou County, Fengtian Province], Liaotung, Manchuokuo [currently Wafangdian, Dalian City, Liaoning Province, China]. Stratigraphic unit: Kangyao Formation. Geologic age: Early Ordovician.

***Cucullaea delicatostriata* Yabe and Nagao, 1925**

Plate 10, Figure 14

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 113, pl. 28, fig. 1. Lectotype: IGPS no. 8555 (designated by Hayami, 1975; Existing). Type locality: The Cape Khoi Bed, exposed along the sea-cliff 1 km S of Cape Khoi, near Alexandrovsk, north Saghalin [currently Alexandrovsk-Sakhalinsky District, Sakhalin Oblast, Russia]. Stratigraphic unit: Werblud Group ("Cape Khoi beds") in Alexandrovsk area. Geologic age: Cenomanian–Turonian, Cretaceous.

***Cucullaea ezoensis* Yabe and Nagao, 1928**

Plate 10, Figure 15

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 81, pl. 16, figs. 1–3. Syntypes: IGPS nos. 22601, 22611 (Existing). Type locality: Futamatano-sawa, Miruto, [Kurisawa-mura], Sorachi-gun, province of Ishikari [currently Kurisawacho, Iwamizawa City, Hokkaido]. Stratigraphic unit: Mikasa Formation. Geologic age: Cenomanian–Turonian, Cretaceous.

***Cucullaea iriomotensis* Masuda and Sato, 1988**

Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.), p. 442, pl. 1, figs. 3–7. Holotype: IGPS no. 99713 (Missing). Type locality: Sea cliff at Nishizaki, about 1 km NW of Nakano, Taketomi-cho, Iriomote-jima, [Yaeyama-gun], Okinawa Prefecture. Stratigraphic unit: Iriomote Formation. Geologic age: early Middle Miocene [latest Early–earliest Middle Miocene].

***Cucullaea nipponica* Nagao, 1928b**

Plate 11, Figures 1a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 25, pl. 6, figs. 1, 1a, b. Holotype: IGPS no. 35999 (Existing). Type locality: Western sea cliff, about 400 m W of the primary school at Ipponmatsu, Iô-jima, Iô-jima-mura, Nishisonogi-gun [currently Nagasaki City], Nagasaki Prefecture. Stratigraphic unit: Funatsu Formation. Geologic age: Eocene [Late Eocene].

***Cultellus? brevis* Nagao, 1928a**

Plate 11, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 114, pl. 22, fig. 1. Holotype: IGPS no. 35788 (Existing). Type locality: Koyagi-jima, [Koyagi-mura], Nishisonogi-gun, Province of Hizen [currently Koyagimachi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: "Upper *Orthaulax japonicus* Zone" [=Futagojima Formation]. Geologic age: Eocene [early Middle Eocene].

***Cultellus? leguminoides* Nagao, 1928b**

Plate 11, Figure 3

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 84, pl. 4, fig. 21. Holotype: IGPS no. 36447 (Existing). Type locality: Iô-jima, off Nagasaki [Iojima-mura], Nishisonogi-gun [currently Iojimamachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Iôjima Beds [Funatsu Formation]. Geologic age: Eocene [Late Eocene].

***Cyclina (Cyclina) asagaiensis* Kamada, 1952**

Plate 11, Figures 4a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 6, p. 169,

pl. 15, fig. 3a–c. Holotype: IGPS no. 72955 (Existing). Type locality: IGPS loc. no. Fs-11, in the Ômachi abandoned shaft of the Joban Coal Mining Co., N of Takasaka, Uchigô-machi, Iwaki-gun [currently Uchigotakasakamachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Asagai Formation. Geologic age: Oligocene [Early Oligocene].

***Cyclina compressa* Nagao, 1928b**

Plate 11, Figure 5

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 76, pl. 10, fig. 11. Holotype: IGPS no. 36415 (Existing). Type locality: Ôbô, Arita-machi [currently Arita-cho], Nishimatsuura-gun, Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Cyclina (Cyclina) japonica* Kamada, 1952**

Plate 11, Figures 6a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 6, p. 168, pl. 15, figs. 1a–b, 2 [non fig. 4; =*Cyclina (Cyclina) jobanica* (Yokoyama, 1924), *fide* Kamada, 1962]. Holotype: IGPS no. 72952 (Existing). Type locality: IGPS loc. no. Iw-3 (Kamada, 1952), 200 m W of Tokunari, Machino-machi, Fugeshi-gun [currently Machinomachi, Wajima City], Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Cyclina? nodai* Nagao, 1928b**

Plate 11, Figures 7a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 75, pl. 7, figs. 19, 20, 26. Holotype: IGPS no. 36442 (Existing). Type locality: The Namazuta Mine near Iizuka-machi, Kaho-gun [currently Iizuka City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Namazuta Fossil Bed [=Honso Formation]. Geologic age: Eocene [Middle Eocene].

***Cyclina (Cyclina) umbonata* Kotaka and Noda, 1977**

Plate 11, Figure 8

Geol. Palaeont. Southeast Asia, vol. 18, p. 141, pl. 25, fig. 15. Holotype: IGPS no. 95090 (Existing). Type locality: Road-side cliff, about 500 m S of Amuntay, [Tagkawayan Municipality, Province of Quezon], western part of the Bondoc Peninsula, Philippines. Stratigraphic unit: "Gumaca Formation". Geologic age: Miocene.

***Cyclocardia fujinaensis* Ogasawara and Nomura, 1980**

Plate 11, Figure 9

Prof. S. Kanno Mem. Vol., p. 90, pl. 9, figs. 11a–17. Holotype: IGPS no. 96024 (Existing). Type Locality: Loc. no. Fj-10 (Ogasawara and Nomura, 1980), road side

cliff about 400 m E of Shinji Station of National Railway, Shinji-cho, Yatsuka-gun [currently Shinjicho, Matsue City], Shimane Prefecture. Stratigraphic unit: Fujina Formation. Geologic age: Miocene [late Middle Miocene].

***Cyrena mirabilis* Nagao, 1928b**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 52 (42), pl. 7, fig. 27. Holotype: IGPS no. unknown (Missing). Although Ogasawara (2001) cited the holotype as IGPS no. 36264, it is the paratypes. Type Locality: Iwaya Mine, Kiuragi-mura, Higashimatsura-gun [*sic*, Higashimatsuura-gun] [currently Iwaya, Kyuragimachi, Karatsu City], Saga Prefecture. Stratigraphic unit: Yoshinotani Beds [Yoshinotani Formation]. Geologic age: Oligocene [Late Eocene].

***Cyrena otsukai* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 11, Figures 10–13

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 50, pl. 13, figs. 20–24. Syntypes: IGPS nos. 22453, 22476 (Existing). Type Locality: Bômekizawa, Ohinata[mura] [currently Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]; Kagikake, Ohinata-mura [currently Kagikakezawa, Ohinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]; and Shiroy, Ueno-mura, Tano-gun, Province of Kôzuke [Gumma Prefecture]. Stratigraphic unit: Shiroy Group [Shiroy Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Cyrena (Batissa) ponderosa* Nagao, 1928a**

Plate 5, Figures 29a–b; Plate 6, Figure 1

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 108, pl. 20, figs. 10, 30, pl. 21, fig. 21, pl. 22, figs. 16–19. Syntypes: IGPS nos. 35685, 35691, 35708, 35709, 35777, 35811, 35812 (Existing). Type locality: Urakoshi, Oniki-mura, Amakusa-Shimo-shima [currently Oniki-machi, Ushibuka City, Kumamoto Prefecture]; Kakize Mine, Takashima off Nagasaki, province of Hizen [currently Takashimacho, Nagasaki City, Nagasaki Prefecture]; Kôyagi-jima off Nagasaki, province of Hizen [currently Kouyagi-machi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: Toishi Beds [Toishi Formation]; Hashima Beds [Hashima Formation]. Geologic age: Eocene [early Middle Eocene]. Remarks: Suzuki (1941) proposed *Batissa nagaoi* as nom. nov. for *Cyrena (Batissa) ponderosa* Nagao, 1928a because the latter name is a primary junior homonym of *Cyrena ponderosa* Prime, 1860.

***Cyrena radiostriata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no.

2, p. 51, pl. 12, figs. 29–35. Lectotype: IGPS no. 35523 (designated by Hayami, 1965b; Missing). Type locality: Hachimanzawa [currently Kagahara, Kanna-machi], Tano-gun, Province of Kôzuke [Gumma Prefecture]. Stratigraphic unit: Shiroy Group [Sebayashi Formation]. Geologic age: Cretaceous [late Early Cretaceous (Aptian–Albian)].

***Cyrena shiroiensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 11, Figures 14–16

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 52, pl. 14, figs. 4–6, 19, 20, 22, 25. Syntypes: IGPS no. 22451 (Existing). Type locality: Bômekizawa, Ohinata[-mura], Saku-machi [currently Sakuho-machi], Minamisaku-gun, [Nagano Prefecture], Province of Shinano; and Shiroy, Uenomura, Tano-gun, Province of Kôzuke [Gumma Prefecture]. Stratigraphic unit: Shiroy Group [Shiroy Formation]. Geologic age: Cretaceous (early Early Cretaceous).

***Cyrena shiroiensis* var. *alata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 11, Figures 17–19

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 53, pl. 13, fig. 26, pl. 14, figs. 15, 28. Syntypes: IGPS nos. 22443, 22447 (Existing). Type locality: Shiroy, Uenomura, Tano-gun, Province of Kôzuke [Gumma Prefecture]; and Bômekizawa, Ohinata[-mura], Saku-machi [currently Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Shiroy Group [Sebayashi and Shiroy formations]. Geologic age: Cretaceous [Early Cretaceous].

***Daonella densisulcata* Yabe and Shimizu, 1927**

Plate 11, Figure 20

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 11, no. 2, p. 124, pl. 12, fig. 9a. Holotype: IGPS no. 7571 (Existing). Type locality: Zôhoin near Sakawa, Province of Tosa [currently Ko, Sakawa-cho, Takaoka-gun, Kochi Prefecture]. Stratigraphic unit: Zohoin Group [Kochigatani Group]. Geologic age: Ladinian, Triassic.

***Daonella densisulcata* var. *subquadrata* Yabe and Shimizu, 1927**

Plate 11, Figure 21

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 11, no. 2, p. 124, pl. 12, fig. 8. Holotype: IGPS no. 7890 (Existing). Type locality: Zôhoin near Sakawa, Province of Tosa [currently Ko, Sakawa-cho, Takaoka-gun, Kochi Prefecture]. Stratigraphic unit: Zohoin Group [Kochigatani Group]. Geologic age: Ladinian, Triassic.

***Daonella kotoi* var. *alta* Yabe and Shimizu, 1927**

Plate 11, Figure 22

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 11, no. 2, p. 122, pl. 12, fig. 10. Holotype: IGPS no. 5298 (Existing). Type locality: Zôhoin near Sakawa, Province of Tosa [currently Ko, Sakawa-cho, Takaoka-gun, Kochi Prefecture]. Stratigraphic unit: Zohoin Group [Kochigatani Group]. Geologic age: Ladinian, Triassic.

***Daonella kotoi* var. *multistriata* Yabe and Shimizu, 1927**

Plate 11, Figures 23–24

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 11, no. 2, p. 123, pl. 11, figs. 12, 14, pl. 13, fig. 11. Syntypes: IGPS nos. 22998, 7892, 35278 (Existing). Type locality: Railway cuttings NE of the Rifu Station, Okinoi (IGPS no. 22998), Yawata, Tagajô-mura [currently Tagajo City]; NE of Rifu Station (IGPS no. 7892) and Hamada (IGPS no. 35278), Rifu-mura [currently Rifu-cho], Miyagi-gun, Miyagi Prefecture. Stratigraphic unit: Rifu Formation. Geologic age: Ladinian, Triassic.

***Diplodonta confusa* Nagao, 1928b**

Plate 11, Figure 25

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 60, pl. 10, figs. 8, 10, 10a. Holotype: IGPS no. 36351 (Existing). Type locality: Asakawa, Shimagô-mura, Ongagun [currently Yahatanishi-ku, Kitakyushu City], Prvince of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

***Diplodonta?* *problematica* Nagao, 1928a**

Plate 11, Figure 26

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 110, pl. 22, figs. 4, 4a. Lectotype: IGPS no. 35827 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Mirokudake [=Jiromaru-dake], Amakusa-Kamishima, Amakusa-gun [currently Matsushimamachi, Kamiamakusa City], Kumamoto Prefecture. Stratigraphic unit: “Lower *Orthaulax japonicus* Zone” [=Fukuregi Formation]. Geologic age: Eocene [early Middle Eocene].

***Dosinia chikuzenensis* Nagao, 1928b**

Plate 11, Figure 27

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 64, pl. 10, fig. 5. Holotype: IGPS no. 36277 (Existing). Type locality: Sakamizu, Shimagô-mura, Ongagun [currently Wakamatsu-ku, Kitakyushu City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Sakamizu Beds [Sakamizu Formation]. Geologic age: Oligocene.

***Dosinia ettyuensis* Hatai and Nisiyama, 1939 [“1938”]**

Plate 11, Figure 28

Japan. Jour. Geol. Geogr., vol. 16, nos. 1–2, p. 150,

pl. 9, fig. 4. Holotype: IGPS no. 62429 (Existing). Type locality: A cliff of the Zintu-gawa [=Jintsû-gawa] at Zyônô [=Jônô], Sugihara-mura, Nei-gun, Ettyû Province [currently Jônô, Yatsuomachi, Toyama City, Toyama Prefecture] Stratigraphic unit: Zyônô Beds [=Otogawa Formation]. Geologic age: Pliocene [Late Miocene].

Dosinia (Phacosoma) hataii Masuda, 1963

Plate 12, Figures 1a–c
Trans. Proc. Palaeont. Soc. Japan, N.S., no. 49, p. 34, pl. 6, figs. 1a–2. Holotype: IGPS no. 72476 (Existing). Type locality: Hattomaki, Hanawa-machi, Higashishirakawa-gun, Fukushima Prefecture. Stratigraphic unit: Kubota Formation. Geologic age: Middle Miocene [Late Miocene].

Dosinia (Kaneharaia) kaneharai fujinaensis Masuda, 1967

Plate 12, Figure 2
Saito Ho-on Kai Mus. Res. Bull., no. 36, p. 24, pl. 1, fig. 9, pl. 2, fig. 3. Holotype: IGPS no. 90888 (Existing). Type locality: S of Morinoko [sic, Mominoko], Fujina, Tamayumachi [sic, Tamayu-cho], Yatsuka-gun [currently Tamayucho, Matsue City], Shimane Prefecture. Stratigraphic unit: Fujina Formation. Geologic age: Middle Miocene.

Dosinia (Kaneharaia) kannoi Masuda, 1963

Plate 12, Figures 3a–b
Trans. Proc. Palaeont. Soc. Japan, N.S., no. 49, p. 35, pl. 6, figs. 6a–b, 7a–b. Holotype: IGPS no. 64682 (Existing). Type locality: Kinseidô, Kinshôdô, Eihokumen, Kisshu-gun, Kankyô-hokudo [currently Yonpuk, Kilju-gun, Hamgyongpuk-to], North Korea. Stratigraphic unit: Heiroku Formation. Geologic age: Early Miocene [latest Early–earliest Middle Miocene].

Dosinia (Phacosoma) okinawaensis Masuda and Sato, 1988

Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.), p. 446, pl. 3, figs. 12–17. Holotype: IGPS no. 99716 (Missing). Type locality: Sea cliff at Nishizaki, about 1 km NW of Nakano, Taketomi-cho, Iriomote-jima, [Yaeyama-gun], Okinawa Prefecture. Stratigraphic unit: Iriomote Formation. Geologic age: early Middle Miocene [latest Early–earliest Middle Miocene].

Dosinia tatunokutiensis Nomura, 1938

Plate 12, Figures 4a–b
Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 19, no. 2, p. 256, pl. 34, figs. 2–6, pl. 35, fig. 11a, b. Holotype: IGPS no. 15944 (Existing). Type locality: Gôroku cliff along the right bank of the Hirosegawa-River, western border of Sendai [Gôroku, Hirose-mura, Miyagi-gun] [currently Gôroku, Aoba-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Tatunokuti Shell Bed [=Tatsunokuchi

Formation]. Geologic age: Early Pliocene [latest Late Miocene–earliest Early Pliocene].

Ennuclia praenipponica Kamada, 1962

Plate 12, Figures 5a–c
Palaeont. Soc. Japan Spec. Pap., no. 8, p. 42, pl. 1, figs. 8–11. Holotype: IGPS no. 79375 (Existing). Type locality: Hieda, Shimokajiro, Ena-machi [currently Nagasaki], Iwaki City, Fukushima Prefecture. Stratigraphic unit: Honya Formation. Geologic age: Miocene [Early Miocene].

Entomonotis kurosawai Sakaguti, 1939

Jub. Publ. Commem. Prof. H. Yabe 60th Birthday, vol. 1, p. 229, pl. 15, figs. 1–6. Syntypes: IGPS no. unknown (Missing). Type locality: Nisi-Togaki, Hosoura [currently Shizugawa, Minamisanriku-cho], Motoyosi-gun, Miyagi Prefecture. Stratigraphic unit: Saragai beds [Saragai Group]. Geologic age: Norian, Triassic. Remarks: The name of genus was originally spelled as *Entomotis*, and is corrected.

Ezocallista kurodae Kamada, 1962

Plate 12, Figures 6a–b
Palaeont. Soc. Japan Spec. Pap., no. 8, p. 110, pl. 12, figs. 1a–3. Holotype: IGPS no. 79384 (Existing). Type locality: Karasawa, Kuroda, Tabito-mura [currently Tabitomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

Fimbria yaeyamaensis Masuda and Sato, 1988

Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.), p. 445, pl. 3, figs. 7, 8. Holotype: IGPS no. 99714 (Missing). Type locality: Sea cliff at Nishizaki, about 1 km NW of Nakano, Taketomi-cho, Iriomote-jima, [Yaeyama-gun], Okinawa Prefecture. Stratigraphic unit: Iriomote Formation. Geologic age: early Middle Miocene [latest Early–earliest Middle Miocene].

Fortipecten kuroishiensis Kotaka and Noda, 1967

Plate 13, Figure 1
Saito Ho-on Kai Mus. Res. Bull., no. 36, p. 40, pl. 1, fig. 21. Holotype: IGPS no. 90767 (Existing). Type locality: Loc. no. 10 (Kotaka and Noda, 1967), downstream of the Karasuzawa Dam of Nakano-gawa, [Okawara], Kuroishi City, Aomori Prefecture. Stratigraphic unit: Ogawara Formation. Geologic age: Middle Natotian [Late Miocene].

Gafrarium (Circe) hanzawai Nomura and Zinbô, 1936

Plate 13, Figures 2a–b
Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 245, pl. 11, figs. 14a–15b. Holotype: IGPS no.

51348 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Gari (Gari) pitogoensis* Kotaka and Noda, 1977**

Plate 13, Figure 3

Geol. Palaeont. Southeast Asia, vol. 18, p. 145, pl. 25, fig. 8. Holotype: IGPS no. 95086 (Existing). Type locality: Road-side cliff, about 500 m S of Amuntay, [Tagkawayan Municipality, Province of Quezon], western part of the Bondoc Peninsula, Philippines. Stratigraphic unit: "Gumaca Formation". Geologic age: Miocene.

***Gervillia shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 13, Figure 4

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 59, pl. 14, figs. 17, 18. Syntypes: IGPS no. 22507 (Existing). Type locality: Kagikake and Bômekizawa, Ohinata[-mura] [currently Ohinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Shiroy Group [=Ishido Formation]. Geologic age: Cretaceous [early Early Cretaceous].

***Glans naomiae* Masuda, 1966b**

Plate 13, Figures 5a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 325, pl. 35, figs. 13a–14. Holotype: IGPS no. 90181 (formerly DGS no. 4517; Existing). Type locality: Loc. No. 35 (Masuda, 1966a), sea coast, about 500 m N of the outlet of the Fushimi-gawa, Konami, [Misakimachi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene.

***Gloripallium izurense* Masuda, 1958a**

Plate 13, Figure 6

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 31, p. 227, pl. 32, figs. 4–5b. Holotype: IGPS no. 90541 (formerly DGS no. 3577; Existing). Type locality: Izura, Ôtsu-machi [*sic*, Otsucho], Kitaibaraki City, Ibaraki Prefecture. Stratigraphic unit: Kokozura Formation. Geologic age: Miocene [latest Early Miocene]. Remarks: The name of species was originally spelled as *izurense*. However, the corrected original spelling should be *izurense* because *Gloripallium* is a neuter noun.

***Glycymeris altoumbonata* Nagao, 1928b**

Plate 13, Figure 7

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 28, pl. 3, fig. 14. Holotype: IGPS no. 36013 (Existing). Type locality: Hôshuyama Mine, Hôshuyama-

mura [currently Tôhō-mura], Asakura-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Doshi Beds [=Doshiyama Formation]. Geologic age: Eocene. Remarks: The original spelling of the genus name is an error for *Glycymeris*.

***Glycymeris amakusensis* Nagao, 1930**

Plate 13, Figures 8–10

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 1, no. 1, p. 15, pl. 2, figs. 4–7. Syntypes: IGPS no. 42727 (Existing). Type locality: Wadanohana, Takado-mura, Amakusa-Kamishima [Amakusa-gun] [currently Takado, Ryugatakemachi, Kamiamakusa City, Kumamoto Prefecture]. Stratigraphic unit: Himenoura Group. Geologic age: Coniacian–Santonian, Cretaceous. Remarks: The original spelling of the genus name is an error for *Glycymeris*.

***Glycymeris cisshuensis* var. *compressa* Nagao, 1928b**

Plate 13, Figures 11a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 30, pl. 3, figs. 25, 25a–c. Holotype: IGPS no. 36001 (Existing). Type locality: Sakamizu, Shimagô-mura, Onga-gun, Province of Chikuzen [currently An'ya, Wakamatsuku, Kitakyushu City, Fukuoka Prefecture]. Stratigraphic unit: Wakita Beds [Waita Formation]. Geologic age: Oligocene. Remarks: The original spelling of the genus name is an error for *Glycymeris*. Although this name is a secondary junior homonym of *Glycymeris compressa* (Weller, 1907), a new replacement name is unnecessary, because it is synonymous with *Glycymeris (Veletuceta) cisshuensis* (Makiyama, 1926). *Glycymeris compressa* Kanno, 1956 [non Weller, 1907, *nec* Nagao, 1928b], was renamed as *Glycymeris kannoi* Matsukuma, 1979.

***Glycymeris gorokuensis* Nomura, 1938**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 19, no. 2, p. 246, pl. 33, figs. 12–14. Holotype: IGPS no. 16142 (Missing). Type locality: Gôroku cliff along the right bank of the Hirosegawa-River, [Gôroku, Hirose-mura, Miyagi-gun] [currently Gôroku, Aoba-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Tatunokuti Shell Bed [=Tatsunokuchi Formation]. Geologic age: Pliocene [latest Late Miocene–earliest Early Pliocene].

***Glycymeris hanzawai* Nomura and Zinbô, 1934**

Plate 13, Figures 12a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, p. 152 (44), pl. 5 (1), fig. 3a, b. Holotype: IGPS no. 50196 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: "Ryûkyû Limestone". Geologic age: Pleistocene.

***Glycymeris iriomotensis* Masuda and Sato, 1988**

Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.), p. 443, pl. 1, figs. 8–14. Holotype: IGPS no. 99712 (Missing). Type locality: Sea cliff at Nishizaki, about 1 km NW of Nakano, Taketomi-cho, Iriomote-jima, [Yaeyama-gun], Okinawa Prefecture. Stratigraphic unit: Iriomote Formation. Geologic age: early Middle Miocene [latest Early–earliest Middle Miocene].

***Glycymeris nakosoensis* Hatai and Nisiyama, 1949**

Plate 13, Figures 13a–b
 Jour. Paleont., vol. 23, no. 1, p. 88, pl. 25, figs. 15, 16. Holotype: IGPS no. 72502 (Existing). Type locality: A small cliff in front of the dormitory of the Nippon Coal Mining Company, Nakoso-machi, Iwaki-gun [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Glycymeris nozokiensis* Hatai and Nisiyama, 1951**

Plate 13, Figure 14
 Saito Ho-on Kai Mus. Res. Bull., no. 21, p. 1. Figs. 1, 2. Holotype: IGPS no. 72883 (Existing). Type locality: Road side cutting on the main highway about 500 m S of the Nozoki Primary School, Nozoki-mura [currently Nozoki, Mamurogawa-machi, Mogami-gun], Yamagata Prefecture. Stratigraphic unit: Nozoki Formation. Geologic age: Miocene [early Middle Miocene].

***Glycymeris ogawaraensis* Kotaka and Noda, 1967**

Plate 13, Figure 15
 Saito Ho-on Kai Mus. Res. Bull., no. 36, p. 38, pl. 2, fig. 1. Holotype: IGPS no. 90739 (Existing). Type locality: Loc. no. 10 (Kotaka and Noda, 1967), down stream of the Karasuzawa Dam of the Nakanogawa, Ogawara [*sic*, Okawara], Kuroishi City, Aomori Prefecture. Stratigraphic unit: Ogawara Formation. Geologic age: “Middle Natorian” [Late Miocene].

***Glycymeris oshimaensis* Noda, 1962b**

Plate 13, Figure 16
 Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 229, pl. 16, fig. 8. Holotype: IGPS no. 79057 (Existing). Type locality: Loc. No. 924 (Noda, 1962b), road side cliff, about 300 m E of the pass between Oshima and Hosono, Matsunoyama-machi [*sic*, between Oshimamura and Yasuzuka-machi], Higashikubiki-gun [currently between Kamitate, Oshimaku and Hosono, Yasuzukaku, Joetsu City], Niigata Prefecture. Stratigraphic unit: Kubiki Formation. Geologic age: Middle Miocene.

***Glycymeris rhyconelloides* Nomura and Hatai, 1939 [“1938”]**

Plate 13, Figure 17
 Japan. Jour. Geol. Geogr., vol. 16, nos. 1–2, p. 5, pl. 1, fig. 6. Holotype: IGPS no. 60022 (Existing). Type locality: Husina [*sic*, Huzina][=Fujina], Tamayu-mura Yatuka-gun [=Yatsuka-gun], Izumo [currently Tamayumachi, Matsue City, Shimane Prefecture]. Stratigraphic unit: Izumo Neogene [=Fujina Formation]. Geologic age: Middle Miocene. Remarks: Matsukuma and Okamoto (1986) regarded this species as *nomen dubium* because the holotype is poorly preserved.

***Glycymeris subpectiniformis* Nomura and Zinbō, 1934**

Plate 13, Figures 18a–b
 Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, p. 151 (43), pl. 5 (1), fig. 2a, b. Holotype: IGPS no. 50200 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryūkyū Limestone”. Geologic age: Pleistocene.

***Glycymeris yamaguchii* Hayasaka, 1956**

Plate 13, Figures 19a–b
 Saito Ho-on Kai Mus. Res. Bull., no. 25, p. 16, pl. 2, figs. 1a–2c. Holotype: IGPS no. 77373 (Existing). Type locality: Loc. No. 1 (Hayasaka, 1956), cliff of the Takasegawa River west of Takakura, about 5 km SW of the Namie-machi Railroad Station on the Joban Line, Namie-machi, Futaba-gun, Fukushima Prefecture. Stratigraphic unit: Ishiguma Formation. Geologic age: Pliocene.

***Grammatodon yokoyamai* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 13, Figure 20
 Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 44, pl. 12, figs. 12–13, 25. Lectotype: IGPS no. 22555 (designated by Hayami, 1965a; Existing). Type locality: Ishidō, near Ohinata[-mura] [currently Ishidō, Ōhinata, Sakuho-machi], Minamisaku-gun, Nagano Prefecture. Stratigraphic unit: Ishidō Group [Ishidō Formation]. Geologic age: Cretaceous [late Early–early Late Cretaceous].

***Halicardia akitaensis* Ogasawara and Takayasu, 1982**

Plate 13, Figures 21a–b
 Venus, vol. 41, no. 3, p. 199, pl. 1, fig. 1a–f. Holotype: IGPS no. 96013 (Existing). Originally cited as “monotype”. Type locality: A road-side cliff about 500 m downstream from Fudotaki (water-fall), Iwami-Sannai, Kawabe-machi, Kawabe-gun [currently Kurosawa, Taihei, Akita City], Akita Prefecture. Stratigraphic unit: Sunakobuchi Formation.

Geologic age: late Early–early Middle Miocene.

***Halicardia miyagiensis* Fujiwara, 1992**

Plate 13, Figures 22a–b

Saito Ho-on Kai Mus. Nat. Hist. Res. Bull., no. 60, p. 9, figs. 1–4. Holotype: IGPS no. 101555 (Existing). Type locality: Nishino-iri, Tomiya-cho [*sic*, Tomiya-machi], Kurokawa-gun, Miyagi Prefecture. Stratigraphic unit: Nanakita Formation. Geologic age: late Late Miocene.

***Homomya? dubia* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 14, Figures 1–3

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 55, pl. 12, figs. 11, 39, pl. 14, fig. 1. Syntypes: IGPS no. 22505 (Existing). Type locality: Hachimanzawa [currently Kagahara, Kanna-machi], Tano-gun, Province of Kōzuke [Gumma Prefecture]. Stratigraphic unit: Shiroy Group [Sebayashi Formation]. Geologic age: Cretaceous [late Early Cretaceous (Albian–Aptian)].

***Horiopleura yaegashii* Yehara, 1920**

Jour. Geol. Soc. Japan, vol. 27, no. 321, p. 41, pl. 1, figs. 1–3, pl. 2, figs. 1–3. Syntypes: IGPS nos. 22348, 22349 (Missing). Type locality: Moshi, Iwaizumi [currently Omoto, Iwaizumi-cho] and Hiraiga, Tanohata-mura, Shimohei-gun, Iwate Prefecture. Stratigraphic unit: Miyako Group. Geologic age: Aptian, Cretaceous.

***Inoceramus balticus* var. *toyajoanus* Nagao and Matumoto, 1940**

Plate 14, Figure 4

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 6, no. 1, p. 20, pl. 9, fig. 3. Lectotype: IGPS no. 4540 (designated by Matsumoto in Takai and Matsumoto, 1961; Existing). Type locality: Toyazyō, Province of Kii [currently Toyajo, Aridagawa-cho, Arida-gun, Wakayama Prefecture]. Stratigraphic unit: Toyajo Formation. Geologic age: Santonian–Camapanian, Cretaceous.

***Inoceramus concentricus* var. *nipponicus* Nagao and Matumoto, 1939**

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 4, nos. 3–4, p. 267, pl. 24, fig. 2, pl. 25, figs. 1–6. Lectotype: IGPS no. 58017? (designated by Pergament, 1966; Missing). Type locality: Ugoizawa, a tributary of the Naibuti [*sic*, Ugui-zawa, Naibuchi] [Ochiai-machi, Sakaehama-gun, Karafuto Prefecture], south Sakhalin, [currently Nayba River, Bykov, Dolinsky District, Sakhalin Oblast], Russia. Stratigraphic unit: Middle Yezo Group. Geologic age: Cenomanian–Turonian, Cretaceous.

***Inoceramus pedalionoides* Nagao and Matumoto, 1939 ex Inai (MS)**

Plate 14, Figure 5

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 4, nos. 3–4, p. 277, pl. 26, figs. 8, 9. Syntype: IGPS no. 22720 (Existing). Type locality: Pombetu, [Mikasayama-mura, Sorachi-gun], Province of Ishikari [currently Mikasa City], Hokkaido. Stratigraphic unit: Middle Yezo Group to lowest part of the Upper Yezo Group. Geologic age: Turonian, Cretaceous.

***Inoceramus yabei* Nagao and Matumoto, 1940**

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 4, nos. 3–4, pl. 34, figs. 5–7 [*nomen nudum*]; Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 6, no. 1, p. 1, pl. 1, figs. 1–6. Lectotype: IGPS no. 22685 (designated by Matsumoto and Harada, 1964; Missing). Type locality: Ikusyunbetu district, Province of Isikari [currently Ikushumbetsu, Mikasa City], Hokkaido. Stratigraphic unit: Mikasa Formation. Geologic age: Cenomanian–Turonian, Cretaceous.

***Isognomon (Isognomon) hataii* Noda and Furuichi, 1972**

Plate 14, Figure 6

Venus, vol. 31, no. 3, p. 120, text-fig. 1. Holotype: IGPS no. 91766 (Existing). Type locality: W of Abuzaki, [Teshima], Tonosho-cho, Shozu-gun, Kagawa Prefecture. Stratigraphic unit: Teshima Formation. Geologic age: Miocene [Late Eocene].

***Katelysia (Nipponomarcia) endoi* Hatai and Kotaka, 1952**

Plate 14, Figure 7

Short Pap. Inst. Geol. Paleont., Tōhoku Univ., no. 4, p. 84, pl. 7, fig. 25. Holotype: IGPS no. 74341 (Existing). Type locality: Paiponchon, Shinsoruton, San-u-nanmyon, Myonchon District, Hamukyon-pukuton, Korea [currently Hwasong-gun, Hamgyongpuk-to, North Korea]. Stratigraphic unit: Heiroku Formation. Geologic age: Early Miocene [latest Early–earliest Middle Miocene].

***Leptochondria? hataii* Murata, 1973**

Plate 14, Figure 8

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 6 (Prof. K. Hatai Memorial Vol.), p. 273, pl. 29, figs. 1–3. Holotype: IGPS no. 92661 (Existing). Type locality: Hikado, Motoyoshi-cho, Motoyoshi-gun [currently Motoyoshicho, Kesenuma City], Miyagi Prefecture. Stratigraphic unit: Osawa Formation. Geologic age: Scythian, Triassic.

***Leukomoides nipponicus* Ogasawara, 1976**

Plate 14, Figure 9

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 46, no. 2, p. 52, pl. 11, figs. 3, 4. Holotype: IGPS no. 95190 (Existing). Type locality: Loc. no. Su-3 (Ogasawara, 1976), small

road side cutting, about 1000 m W from Futamata-machi, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Sunakozaka Formation. Geologic age: Miocene [latest Early Miocene]. Remarks: The present species is a type species of *Leukomoides* Ogasawara, 1976 (by original designation).

***Lima amaxensis* var. *kumasoana* Nagao, 1928a**

Plate 14, Figures 10a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 104, pl. 20, figs. 31, 31a, 32. Lectotype: IGPS no. 35808 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Amakusa-Shimoshima, precise locality being unknown (probably cliff behind houses immediately W of the main road, about 450 m NW of the contact point of the main road and the road at Imada, Itchoda-mura, Amakusa-gun [currently Kawauramachi, Amakusa City], Kumamoto Prefecture: Hatai and Nisiyama, 1952). Stratigraphic unit: Sakasegawa Formation. Geologic age: Eocene [Late Eocene].

***Lima eocenica* Nagao, 1928a**

Plate 14, Figure 11

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 105, pl. 21, figs. 1–3. Lectotype: IGPS no. 35817 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Cliff behind the house immediately W of the main road about 450 m NW of the contact point of the main road at Imada, Itchoda-mura, Amakusa-Shimoshima, Amakusa-gun [currently Kawauramachi, Amakusa City], Kumamoto Prefecture. Stratigraphic unit: Sakasegawa Formation. Geologic age: Eocene [Late Eocene].

***Lima (Limatula) ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 14, Figure 12

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 60, pl. 14, figs. 7, 16. Lectotype: IGPS no. 22539 (designated by Hayami, 1965a; Existing). Type locality: Ishidō, near Ōhinata[-mura] [currently Ishidō, Ōhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidō Group. Geologic age: Cretaceous [Early Cretaceous].

***Lima (Limea) limopsis* Nomura and Zinbō, 1934**

Plate 14, Figures 13a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 154 (46), pl. 5 (1), figs. 11a–12b. Holotype: IGPS no. 50368 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: "Ryūkyū Limestone". Geologic age: Pleistocene.

***Limatula satoi* Masuda and Katto, in Katto and Masuda, 1978**

Plate 14, Figure 14

Res. Rep. Kochi Univ., Nat. Sci., vol. 27, p. 104, pl. 5, fig. 13. Holotype: IGPS no. 96073 (Existing). Type locality: Loc. no. 9 (Katto and Masuda, 1978), sea coast of Uematsu, Kushimoto-cho, Nishimuro-gun [currently Higashimuro-gun], Wakayama Prefecture. Stratigraphic unit: Uematsu Formation. Geologic age: Miocene [latest Early–early Middle Miocene].

***Limipecten bandoi* Murata, 1969**

Plate 14, Figures 15a–b

Saito Ho-on Kai Mus. Res. Bull., no. 38, p. 18, pl. 4, fig. 1a–c. Holotype: IGPS no. 91384 (Existing). Type locality: Nagahata [*sic*, Nakahata], Towa-cho, Tome-gun [currently Tome City], Miyagi Prefecture. Stratigraphic unit: The lower part of Toyoma Formation. Geologic age: Late Permian.

***Lioconcha tosana* Nomura, 1937**

Plate 15, Figures 1a–b

Japan. Jour. Geol. Geogr., vol. 14, nos. 3–4, p. 82, pl. 6, fig. 14a–b. Holotype: IGPS no. 54674 (Existing). Type locality: Tōnohama, Yasuda-mura [*sic*, Yasuda-cho], Aki-gun, Kōti [=Kochi] Prefecture. Stratigraphic unit: "Tosa Pliocene" [=Ananai Formation]. Geologic age: Pliocene [latest Late Pliocene–early Early Pleistocene].

***Lithophaga otukai* Nomura and Hatai 1936**

Saito Ho-on Kai Mus. Res. Bull., no. 10, p. 211, text-figs. 1–3. Holotype: IGPS no. 62437 (*fide* Hatai and Nisiyama, 1939 ["1938"]); (Missing). Type locality: Southeast valley of Siratori, Nisatai-mura, Ninohe-gun, Mutu [=Mutsu] Province [currently Shiratori, Ninohe City, Iwate Prefecture]. Stratigraphic unit: Lower Kadonosawa Series [=Tate Sandstone Member of Kadonosawa Formation]. Geologic age: Miocene [latest Early Miocene].

***Loripes tonohamanus* Nomura, 1937**

Plate 15, Figures 2a–b

Japan. Jour. Geol. Geogr., vol. 14, nos. 3–4, p. 82, pl. 6, fig. 5a, b. Holotype: IGPS no. 54645 (Existing). Type locality: Tōnohama, Yasuda-mura [*sic*, Yasuda-cho], Aki-gun, Kōti [=Kochi] Prefecture. Stratigraphic unit: "Tosa Pliocene" [=Ananai Formation]. Geologic age: Pliocene [latest Late Pliocene–earliest Early Pleistocene]. Remarks: Although the name of species was originally spelled as *tonohamana*, it should be corrected as *tonohamanus* because *Loripes* is a masculine noun.

***Lucina kunigamiensis* Nomura and Zinbō, 1936**

Plate 15, Figures 3a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 241, pl. 11, figs. 10a–11b. Holotype: IGPS no. 51350 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun, Okinawa-jima [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Lucinoma otukai* Hatai and Nisiyama, 1949**

Plate 15, Figures 4a–b

Jour. Paleont., vol. 23, no. 1, p. 91, pl. 24, fig. 10.

Holotype: IGPS no. 72501 (Existing). Type locality: Fukuda, Sekimoto-mura, Taga-gun [currently Sekimotocho, Kitaibaraki City], Ibaraki Prefecture. Stratigraphic unit: Kamenoo Formation. Geologic age: Miocene [Early Miocene]. Remarks: This species is a junior synonym of *Lucinoma kamenooensis* (Otuka, 1943).

***Lucinopsis? boshihoensis* Nomura, 1933**

Plate 15, Figures 5a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 98, pl. 2, fig. 17a, b. Holotype: IGPS no. 48007 (Existing). Type locality: Station no. 13 (Nomura, 1933), Bôshiho, Shiko-shô, Byôritsu-gun, Shinchiku-shû [currently Maozhbu, Wuhwu Village, Shihwu Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Lucinopsis kosuiensis* Nomura, 1933**

Plate 15, Figure 6

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 99 (no indication). Holotype: IGPS no. 48001 (Existing; broken). Type locality: Kôsui, Hokuseikwa, Tsûshô-shô, Byôritsu-gun, Shinchiku-shû [currently Peishihwo, Fulong Village, Tongshiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Macoma (Macoma) atsunaiensis* Honda, 1988**

Plate 15, Figures 7a–b

Saito Ho-on Kai Spec. Pub., no. 2, (Prof. T. Kotaka Commem. Vol.), p. 360, pl. 2, figs. 1–6. Holotype: IGPS no. 97106-2 (Existing). Type locality: Loc. no. AN-20 (Honda, 1988), about 4.5 km NNE from Onbetsu-machi, upper stream of the Shakubetsu-gawa, Onbetsu-machi [sic, Onbetsu-cho], Shiranuka-gun [currently Onbetsucho, Kushiro City], Kushiro Province, Hokkaido. Stratigraphic unit: Atsunai Formation. Geologic age: Middle Miocene.

***Macoma hakushatonensis* Nomura, 1933**

Plate 15, Figures 8a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 103, pl. 1, fig. 6a, b. Holotype: IGPS no. 48589

(Existing; broken). Type locality: Station no. 12 (Nomura, 1933), 700 or 800 m NE of Hakushaton, Koryu-sho, Chikunan-gun, Shinchiku-shu [currently Baishaton, Baidong Village, Tongshiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Macoma hokiensis* Akutsu, 1964**

Plate 15, Figure 9

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 287, pl. 60, fig. 8. Holotype: IGPS no. 85512 (Existing). Type locality: Along the Hôki River, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene]. Remarks: This species is synonymous with *Rexithaerus sector* (Oyama, 1950) (Amano *et al.*, 1999).

***Macoma yamadai* Nagao, 1928b**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 81, pl. 6, fig. 3. Holotype: IGPS no. unknown (Missing). Type locality: Third Namazuta Mine near Iizuka-machi, Kaho-gun [currently Iizuka City], Province of Hizen [Fukuoka Prefecture]. Stratigraphic unit: Namazuta Fossil Bed [=Honso Formation]. Geologic age: Eocene [Middle Eocene].

***Macrocallista ariakensis* Nagao, 1928a**

Plate 15, Figure 10

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 112, pl. 18, fig. 16, pl. 20, figs. 26–29. Lectotype: IGPS no. 35758 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Akase, Ôda-mura, Uto-gun, Province of Hizen [currently Akasemachi, Uto City, Kumamoto Prefecture]. Stratigraphic unit: “Lower *Orthaulax japonicus* Zone” [=Fukuregi Formation]. Geologic age: Eocene [early Middle Eocene].

***Macrocallista hanzawai* Nagao, 1928b**

Plate 15, Figure 11

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 69, pl. 13, fig. 7. Holotype: IGPS no. 36236 (Existing). Type locality: Meinohama[-machi], Sawara-gun [currently Nishi-ku, Fukuoka City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Meinohama Sandstone [Meinohama Formation]. Geologic age: Oligocene.

***Macrocallista kahoensis* Nagao, 1928b**

Plate 15, Figures 12a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 67, pl. 11, fig. 8, 8a, b. Holotype: IGPS no. 36389 (Existing). Type locality: Third Namazuta Mine, near Iizuka-

machi, Kaho-gun [currently Iizuka City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Namazuta Fossil Bed [=Honso Formation]. Geologic age: Eocene. Remarks: Original incorrect spelling *kahöensis* is corrected.

***Macrocallista matsuraensis* Nagao, 1928b**

Plate 15, Figures 13a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 66, pl. 11, figs. 7, 7a, b. Holotype: IGPS no. 36209 (Existing). Type locality: Pass-side cutting on the boundary between Oyama-mura and Arita-machi [currently between Hiroseyama and Obo in Arita-cho], about 500 m NW of the shrine at Obo, Arita-machi [currently Arita-cho], Nishimatsuura-gun, Saga Prefecture. Stratigraphic unit: Kishima Formation. Geologic age: Oligocene [latest Eocene–earliest Oligocene].

***Mactra (Spisula) asperaformis* Nomura and Zinbô, 1934**

Plate 15, Figures 14a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 156 (48), pl. 5 (1), fig. 20a, b. Holotype: IGPS no. 50396 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryûkyû Limestone”. Geologic age: Pleistocene.

***Mactra nakayamaensis* Kamada, 1962**

Plate 15, Figures 15a–b

Palaeont. Soc. Japan Spec. Pap. no. 8, p. 123, pl. 14, figs. 1, 2. Holotype: IGPS no. 79386 (Existing). Type locality: W of Tatsuzawa, Iino, Taira City [currently Iwaki City], Fukushima Prefecture. Stratigraphic unit: Nakayama Formation. Geologic age: Miocene [latest Early Miocene].

***Mactra sulcataroides* Akutsu, 1964**

Plate 15, Figure 16

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 286, pl. 59, fig. 5. Holotype: IGPS no. 85509 (Existing). Type locality: Shimotokurazawa, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Margaritifera owadaensis* Noda, 1970**

Plate 15, Figures 17a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 77, p. 240, pl. 25, fig. 3a–c. Holotype: IGPS no. 86893 (Existing). Type locality: Loc. No. 1 (Noda, 1970), exposure along the National Road side near Owada, Rumoi City, Hokkaido. Stratigraphic unit: Owada Formation. Geologic age: Eocene.

***Meretrix deguchii* Hayasaka and Hayasaka, 1960**

Plate 15, Figures 18a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 38, p. 267, pl. 31, fig. 8a–b. Holotype: IGPS no. 77512 (Existing). Type locality: Tungyüping in the Penghu Islands, [Dongping Village, Wang'an Township, Penghu County], Taiwan. Lithostratigraphic unit: “Sandstone bed”. Geologic age: Pleistocene.

***Meretrix meretrix ninohensis* Hatai, 1940**

Plate 15, Figures 19a–b

Bull. Biogeogr. Soc. Japan, vol. 10, no. 9, p. 128, pl. 1, fig. 1. Holotype: IGPS no. 61351 (Existing). Type locality: Yazawa, Nisatai-mura, Ninohe-gun [currently Nisatai, Ninohe City], Iwate Prefecture. Lithostratigraphic unit: Shiratori Beds [=Tate Sandstone Member of Kadonosawa Formation]. Geologic age: Miocene [latest Early Miocene].

***Meretrix pseudomeretrix* Nagao, 1928b**

Plate 15, Figure 20

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 65, pl. 9, figs. 7, 7a. Holotype: IGPS no. 36361 (Existing). Ogasawara (2001) erroneously stated IGPS no. 35381 as the holotype. Type locality: Wakita, Shimagô-mura, Onga-gun [currently Wakamatsu-ku, Kitakyushu City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Wakita Beds [=Waita Formation]. Geologic age: Oligocene.

***Meretrix tochiensis* Akutsu, 1964**

Plate 15, Figures 21a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 285, pl. 60, figs. 1, 2. Holotype: IGPS no. 85507 (Existing). Type locality: Cliff of the Hoki River, about 100 m down stream from Daikoku-iwa, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Miyagipecten matsumoriensis* Masuda, 1952**

Plate 16, Figures 1a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 8, p. 252, pl. 24, figs. 4a–7b. Lectotype: IGPS no. 90690 (formerly DGS 1015; designated by Masuda, 1957; Existing). Type locality: The foot of the dam of the water reservoir at Dôgasawa, about 700 m N of Matsumori, Nanakita-mura, Miyagi-gun [currently Izumi-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Nanakita Formation. Geologic age: Middle Miocene [late Late Miocene]. Remarks: This species is a type species of *Miyagipecten* Masuda, 1952 (by original designation).

***Mizuhopecten kimurai kagaensis* Ogasawara, 1976**

Plate 16, Figure 2

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 46, no. 2, p. 43, pl. 14, figs. 10, 17, pl. 15, figs. 8, 9, 12, 16, 18. Holotype: IGPS no. 95012 (Existing). Type locality: River floor of Sai-kawa, about 1000 m upstream, Omma Bridge [*sic*, Okuwa Bridge], Omma [*sic*, Okuwa], Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Saikawa Formation. Geologic age: Miocene [Middle Miocene].

***Mizuhopecten paraplebejus murataensis* Masuda and Takegawa, 1965**

Plate 16, Figures 3a–b

Saito Ho-on Kai Mus. Res. Bull., no. 34, p. 10, pl. 1, figs. 7–10. Holotype: IGPS no. 90826 (formerly DGS no. 4681; Existing). Type locality: Loc. no. 17 (Masuda and Takegawa, 1965), road cliff at Nanamagari Pass, about 250 m SE of the junction of two main roads at the boundary of Murata-machi and Kawasaki-machi, Shibata-gun, Miyagi Prefecture. Stratigraphic unit: Fukuda Member of Kanagase Formation. Geologic age: Middle Miocene [late Late Miocene].

***Modiola? ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 16, Figure 4

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 63, pl. 13, fig. 42. Holotype: IGPS no. 8570 (Existing). Tanaka and Toshimitsu (2003) erroneously stated IGPS no. 8750 as the holotype. Type locality: Ishidō, near Ōhinata[-mura] [currently Ishido, Ohinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidō Group [Ishido Formation]. Geologic age: Cretaceous [late Early Cretaceous].

***Modiolus ezoensis* Yabe and Nagao, 1928**

Plate 16, Figures 5a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 89, pl. 17, fig. 11. Holotype: IGPS no. 22627 (Existing). Type locality: Washino-sawa, Horomui [currently Kurisawacho, Iwamizawa City], Ishikari Province, Hokkaido. Stratigraphic unit: Mikasa Formation. Geologic age: Cenomanian, Cretaceous.

***Modiolus wanizakiensis* Masuda, 1966b**

Plate 16, Figures 6a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 324, pl. 35, figs. 8a–9. Holotype: IGPS no. 90180 (formerly DGS no. 4510; Existing). Although Ogasawara (2001) stated IGPS no. 90876 as the holotype, it is the paratype. Type locality: Loc. No. 33 (Masuda, 1966a), road cutting at Wanizaki, Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene.

***Modiolus (Modiolatus) yasuiroi* Kamada, 1962**

Plate 16, Figures 7a–b

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 72, pl. 3, figs. 13–14b. Holotype: IGPS no. 79379 (Existing). Type locality: Numanouchi Harbor, Toyoma-machi, Taira City [currently Numanouchi, Taira, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Numanouchi Formation. Geologic age: Miocene [latest Early–earliest Middle Miocene].

***Monia denselineata* Hatai, Masuda and Suzuki, 1961**

Plate 16, Figures 8a–d

Saito Ho-on Kai Mus. Res. Bull., no. 30, p. 26, pl. 2, figs. 1a–3. Holotype: IGPS no. 90505 (Existing). Type locality: Loc. no. M 1 (Hatai *et al.*, 1961), left cliff of Maekawa River, near the outlet of Maekawa, Chikagawa [*sic*, Nakanosawa], Mutsu City, Aomori Prefecture. Stratigraphic unit: Hamada Formation. Geologic age: Pliocene [Early Pleistocene].

***Mya arenaria kitahukuokaensis* Hatai, 1940**

Plate 16, Figure 9

Bull. Biogeogr. Soc. Japan, vol. 10, no. 9, p. 131, pl. 1, fig. 9. Holotype: IGPS no. 61363 (Existing). Type locality: Anaushi, Kitahukuoka-mati [*sic*, Ishikiridokoro-mura], Ninohe-gun [currently Ishikiridokoro, Ninohe City], Iwate Prefecture. Stratigraphic unit: Kadonosawa Beds [Kadonosawa Formation]. Geologic age: Miocene [earliest Middle Miocene].

***Mya convexa* Noda, 1992**

Plate 16, Figure 10

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 62, nos. 1–2, p. 90, pl. 7, figs. 1–9. Holotype: IGPS no. 100877 (Existing). Type locality: Loc. no. SK11 (Noda, 1992), middle stream of the Chepotsunai River [=Chiebotsunai River], a tributary of the Kotanbetsu River, Haboro-machi [*sic*, Kogawa, Tomamae-cho], [Tomamae-gun], Rumoi Province, Hokkaido. Stratigraphic unit: Lower part of Sankebetsu Formation. Geologic age: Early Miocene [Late Eocene]. Remarks: The species name is preoccupied by *Mya convexa* Wood, 1815 (Matsubara, 2016).

***Myadora okadae* Hatai and Masuda, 1960**

Plate 16, Figures 11a–b

Saito Ho-on Kai Mus. Res. Bull., no. 29, p. 33, figs. 1, 2. Holotype: IGPS no. 90184 (Existing). Type locality: Road side cutting south of Takada about 1 km NW of the junction of the two roads at Moniwa, [Taihaku-ku], Sendai City, Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Early Miocene [early Middle Miocene].

***Myadora suzuensis* Masuda, 1966b**

Plate 17, Figure 1

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 324, pl. 35, figs. 10, 11. Holotype: IGPS no. 90776 (formerly DGS no. 4513; Existing). IGPS no. 90777 cited as the holotype by Ogasawara (2001) is the paratype. Type locality: Loc. No. 24 (Masuda, 1966a), river cliff about 500 m E of Fujio, Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Early Miocene [latest Early Miocene].

***Myoconcha hamadaensis* Yabe and Shimizu, 1927**

Plate 17, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 11, no. 2, p. 134, pl. 13, figs. 13–16. Holotype: IGPS no. 35286 (Existing). Type locality: Hamada, Rifu-mura [currently Rifu-cho], Miyagi-gun, Province of Rikuzen [Miyagi Prefecture]. Stratigraphic unit: *Monophyllites* Zone in Rifu Formation. Geologic age: Ladinian, Triassic.

***Myophoria japonica* Hayasaka, 1925b**

Plate 17, Figure 3

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 16, pl. 8, fig. 14. Lectotype: IGPS no. 22422 (designated by Hanzawa *et al.*, 1961; Existing). Type locality: Kinshô-zan, near Akasaka-machi, prov. Mino [currently Akasakacho, Ogaki City, Gifu Prefecture]. Horizon: *Kuro* zone [Akasaka Limestone]. Geologic age: Permian [Middle Permian].

***Myophoria subelegans* var. *tobai* Hayasaka, 1924**

Plate 17, Figures 4–7

Japan. Jour. Geol. Geogr., vol. 2, no. 4, p. 109, pl. 15, figs. 4–8. Syntypes: IGPS nos. 8403–8407 (Existing). Type locality: Yahagi-mura, Kesen-gun, prov. Rikuzen [currently Yahagicho, Rikuzentakata City, Iwate Prefecture]. Stratigraphic unit: Upper *Productus*-limestone [Lower part of Kanokura Formation]. Geologic age: Lower Permian [Middle Permian]. Remarks: The species name was originally spelled as *sub-elegans*.

***Mytilus haboroensis* Noda, 1992**

Plate 17, Figure 8

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 62, nos. 1–2, p. 61, pl. 3, figs. 12a–13. Holotype: IGPS no. 100727 (Existing). Type locality: Loc. no. SS2 (Noda, 1992), upper stream of the Mose-takinai River, Haboro-machi [*sic*, Sakae, Shosanbetsu-mura], Tomamae-gun, Rumoi Province, Hokkaido. Stratigraphic unit: Lower part of Sankebetsu Formation. Geologic age: Miocene [Late Eocene].

***Mytilus ogawaensis* Hatai and Nisiyama, 1949**

Plate 17, Figure 9

Jour. Paleont., vol. 23, no. 1, p. 89, pl. 24, fig. 17. Holotype: IGPS no. 72503 (Existing). Ogasawara (2001)

erroneously cited IGPS no. 722503 as the holotype. Type locality: Stream exposure slightly W of Ogawa, Kawabemura, Ishiki-gun [*sic*, Iwaki-gun] [currently Kawabemachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Nemocardium (Keenaea) yoshidai* Masuda and Miyasaka, 1994**

Plate 17, Figure 10

Saito Ho-on Kai Mus. Nat. Hist., Res. Bull., no. 62, p. 1, pl. 1, figs. 1a–3b. Holotype: IGPS no. 102544 (Existing). Type locality: Cliff along a small stream at Takinosawa, Osawagoshuku, Nishisenboku-machi, Senboku-gun [currently Osawagoshuku, Daisen City], Akita Prefecture. Stratigraphic unit: Tentokuji Formation. Geologic age: Pliocene.

***Neoburmesia iwakiensis* Yabe and Sato, 1942**

Plate 17, Figure 11

Proc. Imp. Acad., vol. 18, no. 5, p. 251, text-figs. 1–3. Holotype: IGPS no. 65274 (Existing). Type locality: 1.5 km W Koike, Kami-mano-mura, Soma-gun [currently Koike, Kashima-ku, Minamisoma City], Hukushima [Fukushima] Prefecture. Stratigraphic unit: Torinosu limestone [Nakanosawa Formation in Soma area]. Geologic age: Upper Jurassic [Kimmeridgian (Upper Jurassic–Lower Cretaceous)].

***Nicaniella (Trautscholdia) nagaoui* Matsubara, 2016**

Plate 17, Figures 12a–b

Bull. Tohoku Univ. Mus., no. 15, p. 107. Holotype: IGPS no. 66425 (Existing). Type locality: Southern coast of Hiraiga Inlet, Tanohata-mura, Shimohei-gun, Iwate Prefecture. Stratigraphic unit: Hiraiga Formation. Geologic age: Early Cretaceous.

***Nipponopagia ommaensis* Ogasawara, 1977**

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 47, no. 2, p. 126, pl. 15, figs. 4, 6, 8, pl. 16, fig. 3. Holotype: IGPS no. 95072 (Missing). Type locality: Loc. no. KO-22 (Ogasawara, 1977); cliff, distant from the road, 300 m W of Kaminakamachi, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Omma Formation. Geologic age: Pliocene [Early Pleistocene]. Remarks: The present species is a type species of *Nipponopagia* Ogasawara, 1977 (by original designation). However, it is thought to be a junior synonym of *Macoma (Macoma) middendorffi* Dall, 1884 (Petrov, 1982; Amano, 1996).

***Noetia nagaoui* MacNeil, 1938**

Plate 17, Figure 13

U.S. Geol. Surv., Prof. Pap., 189-A, p. 30, pl. 4, figs. 19–21. Holotype: IGPS no. 36012 (Existing). Type locality: The

Hoshuyama Mine (about 200 m S of the bridge at E of Kawamagari, and about 600 m W of the village office) at Daigyoji, Hoshuyama-mura [currently Toho-mura], Asakura-gun, Fukuoka Prefecture. Stratigraphic unit: Doshi Formation. Geologic age: Upper Eocene. Remarks: Proposed as nom. nov. for *Arca (Noetia) pondaungensis* var. *transversa* Nagao, 1928b, non *Arca transversa* Say, 1822.

***Nucula fukasawaensis* Akutsu, 1964**

Plate 17, Figure 14

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 282, pl. 59, fig. 1. Holotype: IGPS no. 85500 (Existing). Type locality: Fukasawa, about 1.8 km upstream from Kanezawa, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Nucula hizenensis* Nagao, 1928b**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 19, pl. 7, figs. 18, 18a. Holotype: IGPS no. 35985 (Missing). Type locality: Okino-shima, Iôjima-mura, Nishisonogi-gun [currently Iojimamachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Okino-shima Beds [Okinoshima Formation]. Geologic age: Eocene [late Middle Eocene].

***Nucula (Acila) hokkaidoensis* Nagao, 1932**

Jour. Fac. Sci., Hokkaido Imp. Univ., Ser. 4, vol. 2, no. 1, p. 28, pl. 5, figs. 17–18. Holotype: IGPS no. 6421 (Missing). Type locality: A point about 100 m S of the junction of the Abeshinai with its tributary Sakai River [currently Nakagawa-cho, Nakagawa-gun], Teshio Province, Hokkaido. Stratigraphic unit: Upper Ammonite Beds [Middle Yezo Group and Upper Yezo Group in Teshio area]. Geologic age: Upper Cretaceous [Turonian–Campanian [Santonian], Cretaceous].

***Nucula ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 17, Figures 15a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 41, pl. 13, figs. 46, 47. Syntypes: IGPS no. 7125 (Existing). Type locality: Ishidô, near Ôhinata [currently Ishidô, Ôhinata, Sakuho-machi, Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidô Group [Ishidô Formation]. Geologic age: Cretaceous [Early Cretaceous (late Neocomian)].

***Nucula karatsuensis* Nagao, 1928b**

Plate 17, Figure 16

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 20, pl. 7, fig. 17. Holotype: IGPS no. 35988 (Existing).

Type locality: Obô near Arita-machi, Nishimatsura-gun [*sic*, Nishimatsuura-gun], Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Eocene–earliest Oligocene].

***Nucula kokozuraensis* Hatai and Nisiyama, 1949**

Plate 17, Figures 17a–b

Jour. Paleont., vol. 23, no. 1, p. 87, pl. 25, figs. 1–5. Holotype: IGPS no. 72507 (Existing). Type locality: A small cliff in front of the grocery store at the northern entrance of Kokozura, Nakoso-machi, Ishiki-gun [*sic*, Iwaki-gun] [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Kokozura Formation. Geologic age: Miocene [latest Early Miocene].

***Nucula (Acila) mirabilis* var. *ashiyaensis* Nagao, 1928b**

Plate 17, Figures 18a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 21, pl. 7, figs. 6–7, 10 [non figs. 8, 9; =*Acila (Truncacila) nagaoi* Oyama and Mizuno, 1958]. Holotype: IGPS no. 35981 (Existing). Type locality: Taya, Ashiyamachi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

***Nucula (Ennucula) omagariensis* Honda, 1989**

Plate 17, Figure 19

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 58, pl. 1, figs. 5, 7–9, 11, 12. Holotype: IGPS no. 95576-1 (Existing). Type locality: OM-6 (Honda, 1989), roadside cliff along the Taron-no-sawa, a tributary of the Rushingawa, Urahoromachi [*sic*, Urahoromachi], Tokachi-gun, Hokkaido. Stratigraphic unit: Omagari Formation. Geologic age: Oligocene.

***Nucula (Nucula) shiroyamaensis* Noda, 1962b**

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 226, pl. 16, fig. 7. Holotype: IGPS no. 79061 (Missing). Type locality: Loc. No. 480 (Noda, 1962b), upstream of the Shirono-sawa, a tributary from the Shibumi River, facing the northern slope of the Urugawara-mura [*sic*, Matsudai-machi], Higashikubiki-gun [currently Muro, Tokamachi City], Niigata Prefecture. Stratigraphic unit: Nitta Formation. Geologic age: Early Pliocene.

***Nuculana (Nuculana) karihaensis* Hatai and Nisiyama, 1949**

Plate 17, Figures 20a–c

Jour. Paleont., vol. 23, no. 1, p. 87, pl. 24, figs. 3, 4. Holotype: IGPS no. 72633 (Existing). Type locality: Bridge leading to Takayanagi, Ishiguro-mura, Kariha-gun [*sic*, Kariwa-gun] [currently Ishiguro, Takayanagicho, Kashiwazaki City], Niigata Prefecture. Stratigraphic unit: Ishiguro

Formation. Geologic age: Miocene [Late Miocene].

***Nuculana (Nuculana) matsukuchiensis* Noda, 1962b**

Plate 17, Figure 21

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 227, pl. 16, figs. 4a–5. Holotype: IGPS no. 79059 (Existing). Type locality: Loc. No. 80 (Noda, 1962b), Bed of the Esudo River, about 400 m N of the bridge between Mioke and Matsukuchi, Matsunoyama-machi, Higashikubiki-gun [currently Matsunoyama, Tokamachi City], Niigata Prefecture. Stratigraphic unit: Nitta Formation. Geologic age: Early Pliocene.

***Nuculana sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 17, Figures 22–24

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 42, pl. 12, figs. 21–23. Syntypes: IGPS no. 7115 (Existing). Type locality: Ishidō, near Ōhinata [currently Ishidō, Ōhinata, Sakuho-machi, Minamisaku-gun], Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidō Group [Ishidō Formation]. Geologic age: Cretaceous [Early Cretaceous].

***Nuculites kimurai* Hayasaka, 1925a**

Plate 17, Figures 25a–c

Japan. Jour. Geol. Geogr., vol. 3, no. 2, p. 49, pl. 6, figs. 4–7. Holotype: IGPS no. 22418 (Existing). Type locality: Myōjinyama, Ogachi, Jyūgohama-mura, Monō-gun, prov. Rikuzen [currently Ogatsucho, Ishinomaki City, Miyagi Prefecture]. Stratigraphic unit: Ogachi slate [Toyoma Formation]. Geologic age: Upper Paleozoic [Upper Permian].

***Nuttallia uchigoensis* Kamada, 1962**

Plate 17, Figures 26a–b

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 127, pl. 14, fig. 4a, b. Holotype: IGPS no. 79387 (Existing). Type locality: Goten, Uchigo City [currently Uchigo, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Asagai Formation. Geologic age: Oligocene [Early Oligocene].

***Ostrea cassis* Nagao, 1928b**

Plate 18, Figure 1

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 32, pl. 5, figs. 6, 6a, b. Holotype: IGPS no. 36031 (Existing). Type locality: Kōyagi-jima, [Kōyagi-mura, Nishisonogi-gun] [currently Koyagimachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Beds [Okinoshima Formation]. Geologic age: Eocene [Middle Eocene].

***Ostrea kahoensis* Nagao, 1928b**

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 33, pl. 6, fig. 2. Holotype: IGPS unregistered (Missing). Type locality: The Tadakuma Mine near Iizuka-machi, Province of Chikuzen [currently Iizuka City, Fukuoka Prefecture]. Stratigraphic unit: Namazuta Fossil Beds [=Honso Formation]. Geologic age: Eocene [Middle Eocene].

***Ostrea lunaeformis* Nagao, 1928b**

Plate 18, Figure 2

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 35, pl. 4, fig. 28. Holotype: IGPS no. 36039 (Existing). Type locality: Yanagi, Taira-mura, Nishisonogi-gun [currently Taira, Oosetocho, Saikai City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Kakinoura Beds [Kakinoura Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Ostrea sakitoensis* Nagao, 1928b**

Plate 18, Figures 3a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 34, pl. 5, figs. 17, 17a. Holotype: IGPS no. 36053 (Existing). Type locality: Kaminoura-jima [sic, Kakinourashima], Province of Hizen [currently Kakinourago, Sakitocho, Saikai City, Nagasaki Prefecture]. Stratigraphic unit: Itanoura Beds [Itanoura Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Ostrea (Ostrea) yokoyamai* Kamada, 1962**

Plate 18, Figure 4

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 68, pl. 4, fig. 1. Holotype: IGPS no. 79378 (Existing). Type locality: In the Yumoto-Gokō, Joban Coal-mine, Yumotomachi, Joban City [currently Joban-Yumotomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene]. Remarks: This species is considered as a junior synonym of *Ostrea eorivularis* Oyama and Mizuno, 1958 (Honda, 1989).

***Oxyperas okinawaensis* Masuda and Sato, 1988**

Saito Ho-on Kai Spec. Pub., no. 2 (Prof. T. Kotaka Commem. Vol.), p. 446, pl. 4, figs. 6–14. Holotype: IGPS no. 99715 (Missing). Type locality: Sea cliff at Nishizaki, about 1 km NW of Nakano, Taketomi-cho, [Yaeyama-gun], Iriomote-jima, Okinawa Prefecture. Stratigraphic unit: Iriomote Formation. Geologic age: early Middle Miocene [latest Early –early Middle Miocene].

***Palaeoneilo ogachiensis* Hayasaka, 1925a**

Japan. Jour. Geol. Geogr., vol. 3, no. 2, p. 51, pl. 6, figs. 8–12. Syntypes: IGPS unregistered (Missing). Type

locality: Myōjin-yama, Ogachi, Jyūgohama-mura, Monō-gun, prov. Rikuzen [currently Ogatsucho, Ishinomaki City, Miyagi Prefecture]. Stratigraphic unit: Ogachi slate [Toyoma Formation]. Geologic age: Upper Paleozoic [Upper Permian].

***Panomya izumo* Nomura and Hatai, 1939 [“1938”]**

Plate 18, Figures 5a–b

Japan. Jour. Geol. Geogr., vol. 16, nos. 1–2, p. 6, pl. 1, fig. 2a, b. Holotype: IGPS no. 51884 (Existing). Type locality: Husina [*sic*, Fujina], Tamanoyu-mura [*sic*, Tamayumura], Yatuka-gun [=Yatsuka-gun], Izumo [currently Fujina, Tamayumachi, Matsue City, Shimane Prefecture]. Stratigraphic unit: Izumo Neogene [=Fujina Formation]. Geologic age: Middle Miocene.

***Panope kanomatazawaensis* Akutsu, 1964**

Plate 18, Figure 6

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 288, pl. 60, figs. 3a–5. Holotype: IGPS no. 85513 (Existing). Type locality: A tributary of the Kanomatazawa valley, cliff of the Hoki River, opposite side of the Hokigawa Electric Power Station, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Panope kanomatazawaensis fudozawaensis* Akutsu, 1964**

Plate 18, Figure 7

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 288, pl. 60, fig. 7. Holotype: IGPS no. 85514 (Existing). Type locality: Fudozawa, about 2 km upstream from the entrance of the valley, Fukuwata, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Panopea nomurae* Kamada, 1962**

Plate 18, Figure 8

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 135, pl. 16, figs. 9a–12. Holotype: IGPS no. 79395 (Existing). Type locality: Numanouchi Harbor, Toyoma-machi, Taira City [currently Numanouchi, Taira, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Numanouchi Formation. Geologic age: Miocene [latest Early–earliest Middle Miocene]. Remarks: The present species is a junior synonym of *Panopea tyugokuensis* (Otuka, 1941) (Matsubara, 2011).

***Paphia (Paphia) euglypta ohiroi* Masuda, 1966b**

Plate 18, Figure 9

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 326,

pl. 35, figs. 22, 23. Holotype: IGPS no. 90735 (formerly DGS no. 4527; Existing). Ogasawara (2001) erroneously cited IGPS no. 90736 as the holotype. Type locality: Loc. no. 38 (Masuda, 1966a), small exposure near the stream, about 300 m S of Sotonoyama [currently Sotoyama, Otanimachi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Early Miocene [latest Early Miocene].

***Paphia shimotsukensis* Akutsu, 1964**

Plate 18, Figure 10

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 286, pl. 59, fig. 3. Holotype: IGPS no. 85508 (Existing). Type locality: Cliff of the Hoki River, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Paphia (Paphia) suzuensis* Masuda, 1966b**

Plate 18, Figure 11

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 327, pl. 35, figs. 24, 25. Holotype: IGPS no. 90086 (formerly DGS no. 4530; Existing). Type locality: Loc. no. 30 (Masuda, 1966a), road side cutting near Koeiji Temple, Otani[machi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Early Miocene [latest Early Miocene].

***Parallelodon obsoletiformis* Hayasaka, 1925b**

Plate 18, Figures 12a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 18, pl. 8, figs. 15, 16, 16a. Lectotype: IGPS no. 22392 (designated by Hanzawa *et al.*, 1961; Existing). Type locality: Kinshō-zan, Akasaka-machi, prov. Mino [currently Akasakacho, Ogaki City, Gifu Prefecture]. Stratigraphic unit: *Kuro* zone [Akasaka Limestone]. Geologic age: Permian [Middle Permian].

***Parapholas satoi* Nagao, 1928b**

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 88, pl. 6, figs. 6, 6a, 7. Holotype: IGPS unregistered (Missing). Type locality: Meinohama, Meinohama-machi, Sawara-gun [currently Nishi-ku, Fukuoka City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Meinohama Beds [Meinohama Formation]. Geologic age: Oligocene.

***Patinopecten ibaragiensis* Masuda, 1953b**

Plate 19, Figure 1

Short Pap. Inst. Geol. Paleont. Tohōku Univ., no. 5, p. 44, pl. 5, figs. 1–5, pl. 6, figs. 1–5. Holotype: IGPS no. 90698 (formerly DGS no. 1031; Existing). Type locality:

Cliff below the Sukegawa Gas Company, [Higashicho], Hitachi City, Ibaraki Prefecture. Stratigraphic unit: Hitachi Formation. Geologic age: Late Miocene [Early Pliocene]. Remarks: This species is synonymous with *Mizuhopecten planicostulatus* (Nomura and Niino, 1932) (Tanaka and Amano, 1997).

***Patinopecten kagamianus moniwaensis* Masuda, 1958b**

Plate 19, Figure 2

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 32, p. 276, pl. 41, figs. 3–6b. Holotype: IGPS no. 90700 (formerly DGS no. 3506; Existing). Type locality: Moniwa, [Taihaku-ku], Sendai City, Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Early Miocene [early Middle Miocene].

***Patinopecten kimurai nakosoensis* Masuda, 1960**

Plate 19, Figure 3

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 38, p. 256, pl. 29, figs. 2, 3. Holotype: IGPS no. 90581 (formerly DGS no. 1930; Existing). Type locality: Road-side cliff at Kokozura, Nakoso City [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Kokozura Formation. Geologic age: Middle Miocene [latest Early Miocene].

***Patinopecten kimurai yudaensis* Masuda, 1960**

Plate 19, Figure 4

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 38, p. 256, pl. 30, figs. 1, 2. Holotype: IGPS no. 90661 (formerly DGS no. 1936; Existing). Type locality: Right river side of Mabechi-gawa at Yuda, Kintaichi-mura, Ninohe-gun [currently Kintaichi, Ninohe City], Iwate Prefecture. Stratigraphic unit: Shiratori Formation [=Tate Sandstone Member of Kadonosawa Formation]. Geologic age: Early Miocene [latest Early Miocene].

***Patinopecten kobyamai* Kamada, 1954**

Plate 19, Figures 5a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 15, p. 174, pl. 23, figs. 1a–3b. Holotype: IGPS no. 72963 (Existing). Type locality: IGPS loc. no. Fs-23, about 500 m E of Nakayama, Ono-mura, Iwaki-gun [currently Yotsukuramachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Kabeya Formation [=Honya Formation]. Geologic age: Miocene [late Early Miocene].

***Patinopecten (Kotorapecten) naganoensis* Masuda, 1962a**

Plate 19, Figure 6; Plate 20, Figure 1

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 219, pl. 25, fig. 1a, b. Holotype: IGPS no. 90547 (formerly DGS no. 3888; Existing). Type locality: Floor of a small tributary of the Dojiri River, Shiroshita [*sic*, Joshita],

Nakajo-mura, Kamiminochi-gun [currently Nakajo, Nagano City], Nagano Prefecture. Stratigraphic unit: Shigarami Formation. Geologic age: Late Miocene [Early Pliocene].

***Patinopecten nakajimai* Masuda, 1954b**

Plate 20, Figures 2a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 15, p. 159, pl. 21, figs. 1a–5. Holotype: IGPS no. 90580 (formerly DGS no. 1063; Existing). Ogasawara (2001) erroneously cited the holotype as IGPS no. 95080. Type locality: River cliff of Natori-gawa near the Akiu Car-line Station at Kita-Akaishi, Oide-mura, Natori-gun [currently Moniwa, Taihaku-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Early Miocene [early Middle Miocene]. Remarks: This species is a junior synonym of *Nipponopecten akihoensis* Saga, in Matsumoto, 1930 (Sato, 1991; Matsubara *et al.*, 2014).

***Patinopecten poculum tsudae* Noda, 1962b**

Plate 20, Figures 3a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 228, pl. 16, figs. 1–3. Holotype: IGPS no. 79062 (Existing). Type locality: Loc. No. 1061-c (Noda, 1962b), cliff of the Higashi River, about 250 m S of a junction with Etsudo and Higashi Rivers, Matsunoyama-machi, Higashikubiki-gun [Matsunoyama, Tokamachi City], Niigata Prefecture. Stratigraphic unit: Higashigawa Formation. Geologic age: Middle Pliocene.

***Patinopecten (Patinopecten) tokyoensis hokurikuensis* Masuda, 1962a**

Plate 20, Figure 4

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 211, pl. 25, fig. 6, pl. 27, figs. 6, 7. Holotype: IGPS no. 13430 (Existing). Type locality: Road-side cliff near the Sai River, about 400 m SE of the contact point of the two roads at Onma-machi [currently Okuwamachi], Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Onma [Omma] Formation. Geologic age: Pliocene [early Pleistocene]. Remarks: This subspecies is a junior synonym of *Patinopecten (Patinopecten) tokyoensis hokurikuensis* Akiyama, 1962, as noted by Masuda (1962a: p. 238).

***Patinopecten yamasakii kintaichiensis* Masuda, 1958c**

Plate 20, Figure 5

Saito Ho-on Kai Mus. Res. Bull., no. 27, p. 47, pl. 4, figs. 3a–4. Holotype: IGPS no. 90715 (formerly DGS no. 3610; Existing). Type locality: Entrance to the eastern valley running parallel with the Kamiyama-zawa, Kintaichi-mura, Ninohe-gun [currently Kintaichi, Ninohe City], Iwate Prefecture. Stratigraphic unit: Suenomatsuyama Formation [Tomesaki Formation]. Geologic age:

Late Miocene [early Middle Miocene]. Remarks: The present species is a junior synonym of *Masudapecten iwasakiensis* (Nomura, 1935) (Masuda *et al.*, 1994).

***Patinopecten yamasakii ninohensis* Masuda, 1954a**

Plate 20, Figure 6

Saito Ho-on Kai Mus. Res. Bull., no. 23, p. 13, figs. 1a–3. Holotype: IGPS no. 90684 (formerly DGS no. 2532; Existing). Type locality: River floor of Shiratorizawa [*sic*, Shiratorigawa] in Fukuoka-machi, Ninohe-gun [currently Fukuoka, Ninohe City], Iwate Prefecture. Stratigraphic unit: Suenomatsuyama Formation. Geologic age: Late Miocene [earliest Middle Miocene]. Remarks: IGPS no. 90683 given by Ogasawara (2001) is incorrect.

***Patinopecten (Patinopecten) yessoensis nakatonbetsuensis* Masuda, 1962a**

Plate 20, Figure 7

Sci. Rep. Tohoku Univ., 2nd. Ser. (Geol.), vol. 33, no. 2, p. 214, pl. 24, fig. 4. Holotype: IGPS no. 90662 (formerly DGS no. 3899; Existing). Type locality: Asahidai, Nakatonbetsu-machi [*sic*, Nakatonbetsu-cho], Esashi-gun, Kitami Province, Hokkaido. Stratigraphic unit: Nakatonbetsu Formation. Geologic age: Late Miocene [Middle Miocene]. Remarks: This taxon is a junior synonym of *Patinopecten (Patinopecten) nakatombetsuensis* Akiyama, 1962 *ex* Masuda (MS), as noted by Masuda (1962a: p. 238).

***Patinopecten (Patinopecten) yessoensis yokoyamae* Masuda, 1962a**

Plate 21, Figure 1

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 215, pl. 25, figs. 2, 3, pl. 26, fig. 7, pl. 27, fig. 12. Holotype: IGPS no. 90543 (formerly DGS 3836; Existing). Type locality: Left cliff of the Chikagawa River, about 200 m from the sea shore at Chikagawa [*sic*, Nakachikagawa, Nakanosawa], Mutsu City, Aomori Prefecture. Stratigraphic unit: Hamada Formation. Geologic age: Pliocene [Early Pleistocene].

***Pecten (Pseudamusium) akihoensis* Saga, in Matsumoto, 1930**

Plate 21, Figures 2a–b

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 13, no. 3, p. 106, pl. 40, figs. 7, 8. Neotype: IGPS no. 90586 (formerly DGS 1001, designated by Masuda, 1952; Existing). Matsumoto's (1930) syntypes are missing (Masuda, 1952). Type locality: 100 m W of the Kumanodo-shrine, Takadate-mura [currently Takadate-Kumanodo, Natori City], Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Late Miocene [early Middle Miocene]. Remarks: Originally spelled as *akihoënsis*

(Matsumoto, 1930).

***Pecten (Chlamys) ashiyaensis* Nagao, 1928b**

Plate 21, Figure 3

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 39, pl. 9, figs. 2, 2a. Holotype: IGPS no. 36448 (Existing). Type locality: Yamaga, Ashiya-machi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Formation. Geologic age: Oligocene [latest Early–earliest Late Oligocene].

***Pecten (Chlamys) ashiyaensis var. denselineatus* Nagao, 1928b**

Plate 21, Figure 4

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 40, pl. 8, fig. 9. Holotype: IGPS no. 36437 (Existing). Type locality: Kaminoura-jima, [Sakito-mura, Nishisonogigun], Province of Hizen [currently Kakinourago, Sakitochō, Saikai City, Nagasaki Prefecture]. Stratigraphic unit: Itanoura Beds [Itanoura Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Pecten (Vola) byoritsuensis* Nomura, 1933**

Plate 21, Figure 5

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 57, pl. 1, figs. 4a–5b. Holotype: IGPS no. 45001 (Existing). Type locality: The upper course of Sairyōkyō, Sanchin-shō, Tainan-shu [currently Yseilliao Bridge, Yseilliao, Ronghe Village, Tsuothen District, Tainan City], Taiwan. Lithostratigraphic unit: Byōritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Pecten (Propeamusium) cowperi var. yubarensis* Yabe and Nagao, 1928**

Plate 21, Figure 6

Sci. Rep. Tōhoku Imp. Univ., vol. 9, no. 3, p. 88, pl. 16, figs. 17–19. Holotype: IGPS no. 22599 (Existing). Type locality: Pankemo-yubari, Oyubari, Yubari-gun [currently Pankemoyuparo River, Kashima-shirogane, Yubari City], Hokkaido. Stratigraphic unit: Middle Yezo Group and Upper Yezo Group in various areas of Hokkaido. Geologic age: Cenomanian–Campanian, Cretaceous.

***Pecten (Aequipecten) gabusogaensis* Nomura and Zinbō, 1936**

Plate 21, Figure 7

Sci. Rep. Tōhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 236, pl. 11, figs. 3a–4b. Holotype: IGPS no. 51321 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun [currently Nago City], Okinawa-jima, Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Pecten (Decadopecten) izuensis* Nomura and Niino, 1932**

Plate 21, Figures 8–12

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 15, no. 3, p. 179, pl. 11, figs. 9–13. Syntypes: IGPS no. 44583 (Existing). Type locality: Nagata, Shirahama-mura, Kamo-gun, Province of Izu [currently Shirahama, Shimoda City, Shizuoka Prefecture]. Stratigraphic unit: Shirahama Shell-Beds of Shirahama Group [Shirahama Formation]. Geologic age: Miocene [Pliocene].

***Pecten (Chlamys) kagamianus miyagiensis* Nakamura, 1940a**

Plate 21, Figure 13

Japan. Jour. Geol. Geogr., vol. 17, nos. 1–2, p. 10, pl. 2, fig. 4. Holotype: IGPS no. 61336 (Existing). Type locality: Ôtutumi [=Otsutsumi], Miyatoko-mura [currently Miyatoko, Taiwa-cho], Kurokawa-gun, Miyagi Prefecture. Stratigraphic unit: Ôtutumi Beds [=Otsutsumi Formation]. Geologic age: Miocene [early Late Miocene]. Remarks: The present subspecies is a junior synonym of *Nanaochlamys notoensis otutumiensis* (Nomura and Hatai, 1937) (e.g. Masuda, 1962a; Sato, 1991).

***Pecten (Pecten) kakisakiensis* Nomura and Niino, 1932**

Plate 21, Figures 14–15

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 15, no. 3, p. 177, pl. 12, figs. 3, 4. Syntypes: IGPS no. 44582 (Existing). Type locality: Kakisaki, Hamasaki-mura [*sic*, Hamazaki-mura], Kamo-gun, Province of Izu [currently Kakisaki, Shimoda City, Shizuoka Prefecture]. Stratigraphic unit: Shirahama Shell-Beds of Shirahama Group [Shirahama Formation]. Geologic age: Miocene [Pliocene]. Remarks: The present species is synonymous with *Mimachlamys satoi* (Yokoyama, 1928) (e.g. Masuda, 1962a).

***Pecten (Aequipecten) kikaiensis* Nomura and Zinbô, 1934**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 153 (45), pl. 5 (1), fig. 9a, b. Holotype: IGPS no. 50357? (Missing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: "Ryûkyû Limestone". Geologic age: Pleistocene.

***Pecten (Patinopecten) kimurai matumoriensis* Nakamura, 1940a**

Plate 22, Figures 1a–b

Japan. Jour. Geol. Geogr., vol. 17, nos. 1–2, p. 13, pl. 1, figs. 1, 2, pl. 2, figs. 1–3. Syntypes: IGPS no. 61335 (Existing). Type locality: Matumori [=Matsumori], Nanakita-mura, Miyagi-gun [currently Matsumori, Izumi-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Nanakita Beds [Nanakita Formation]. Geologic age: Miocene [late Late

Miocene].

***Pecten kyushuensis* Nagao, 1928b**

Plate 22, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 37, pl. 8, figs. 1, 1a. Holotype: IGPS no. 36459 (Existing). IGPS no. 36450 cited by Ogasawara (2001) is incorrect. Type locality: Wakita, Shimagô-mura, Onga-gun [currently Wakamatsu-ku, Kitakyushu City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Wakita Beds [=Waita Formation]. Geologic age: Oligocene.

***Pecten (Swiftopecten) nanakitaensis* Nakamura, 1940b**

Plate 22, Figure 3

Jour. Geol. Soc. Japan, vol. 47, no. 561, p. 264, text-fig. 1. Holotype: IGPS 61334 (Existing). Type locality: Southern slope of Dôniwayama, Nenoshiroi-mura [=Nenoshiroi-shimura], Miyagi-gun [currently Nenoshiroi-shi, Izumi-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Nanakita Beds [=Nanakita Formation]. Geologic age: Miocene [late Late Miocene]. Remarks: This species is a junior synonym of "*Gloripallium*" *crassivenium* (Yokoyama, 1929) (Masuda, 1958a).

***Pecten (Patinopecten) planicostulatus* Nomura and Niino, 1932**

Plate 22, Figure 4

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 15, no. 3, p. 177, pl. 11, figs. 2–5. Syntypes: IGPS no. 44584 (Existing). Type locality: Ichiyama, Yugashima-mura [*sic*, Kamikano-mura], Tagata-gun, Province of Izu [currently Izu City, Shizuoka Prefecture]. Stratigraphic unit: Shirahama Shell-Beds of Shirahama Group [Shirahama Formation]. Geologic age: Miocene [Pliocene].

***Pecten (Chlamys) sakitoensis* Nagao, 1928b**

Plate 22, Figure 5

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 37, pl. 17, figs. 37, 38. Holotype: IGPS no. 36438 (Existing). Ogasawara (2001) erroneously cited IGPS no. 3638 as the holotype. Type locality: Itanoura, Seto-mura, Nishisonogi-gun [currently Itanourago, Seto, Osetomachi, Saikai City], Province of Chikuzen [Nagasaki Prefecture]. Stratigraphic unit: Itanoura Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Pecten (Pecten) shirahamaensis* Nomura and Niino, 1932**

Plate 22, Figures 6a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 15, no. 3, p. 175, pl. 12, figs. 5, 5a. Holotype: IGPS no. 44587

(Existing). Type locality: Nagata, Shirahama-mura, Kamogun, Province of Izu [currently Shirahama, Shimoda City, Shizuoka Prefecture]. Stratigraphic unit: Shirahama Shell-Beds of Shirahama Group [Shirahama Formation]. Geologic age: Miocene [Pliocene].

***Pecten (Pecten) subsquamatus* Nomura, 1933**

Plate 22, Figures 7a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 53, pl. 1, fig. 11a, b. Holotype: IGPS no. 44702 (Existing). Type locality: Station no. 57 (Nomura, 1933), 550 m E of Jô-tsûsho-wan, Tsûshô-shô, Byôritsu-gun, Shinchiku-shû [currently Shangtongsiaowan, Tongwan Village, Tongshao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Pecten (Patinopecten) taiwanus* Nomura, 1933**

Plate 22, Figure 8

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 56, pl. 2, fig. 5a, b. Holotype: IGPS no. 45007 (Existing). Type locality: Station no. 35 (Nomura, 1933), Wangwa, Kôryû-shô, Chikunan-gun, Shinchiku-shû [currently Wanwa, Jhonghe Village, Houlong Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene]. Remarks: The present species is synonymous with *Mizuhopecten tokyoensis* (Tokunaga, 1906) (e.g. Masuda and Huang, 1994).

***Pecten (Decadopecten) tayamai* Nomura and Niino, 1932**

Plate 22, Figures 9–11

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 15, no. 3, p. 178, pl. 11, figs. 6–8. Syntypes: IGPS no. 44581 (Existing). Type locality: Nagata, Shirahama-mura, Kamogun, Province of Izu [currently Shirahama, Shimoda City, Shizuoka Prefecture]. Stratigraphic unit: Shirahama Shell-Beds of Shirahama Group [Shirahama Formation]. Geologic age: Miocene [Pliocene].

***Pecten (?Amussiopecten) yabei* Nomura, 1933**

Plate 23, Figure 1

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 59, pl. 2, figs. 3, 4. Holotype: IGPS no. 25265 (Existing). Type locality: Near Rahau, Banchi, Kagi-gun, Tainan-shû [currently Arishan Township, Chiayi County], Taiwan. Stratigraphic unit: Kaizan Beds. Geologic age: Miocene [Late Oligocene].

***Pectunculus hokkaidoensis* Yabe and Nagao, 1928**

Plate 23, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9,

no. 3, p. 82, pl. 17, fig. 22. Holotype: IGPS no. 22613 (Existing). Type locality: Ponhorokabetsu [Ponporokabetsu River], Yubari-machi, Yubari-gun [currently Yubari City], Hokkaido. Stratigraphic unit: Mikasa Group in Yubari area. Geologic age: Cenomanian–Turonian, Cretaceous.

***Pectunculus sachalinensis* Yabe and Nagao, 1925**

Plate 23, Figures 3a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 112, pl. 29, figs. 7, 8. Syntypes: IGPS no. 8554 (Existing). Type locality: Sea cliff 1 km S of Cape Khoi [near Alexandrovsk, north Saghalin] [currently Alexandrovsk-Sakhalinsky District, Sakhalin Oblast, Russia]. Lithostratigraphic unit: Cape Khoi bed. Geologic age: Cretaceous [Cenomanian–Turonian, Cretaceous].

***Pedalion tomiyasui* Nagao, 1928a**

Plate 23, Figure 4

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 103, pl. 20, figs. 5, 5a. Lectotype: IGPS no. 35686 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Kôyagi-jima, [Kôyagi-mura], Nishisonogi-gun, Province of Hizen [currently Koyagimachi, Nagasaki City], Nagasaki Prefecture. Stratigraphic unit: Lower *Orthaulax japonicus* Zone [=Futagojima Formation]. Geologic age: Lower Eocene [Middle Eocene].

***Periploma fujikuraense* Noda, 1962b**

Plate 23, Figure 5

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 34, no. 3, p. 229, pl. 16, fig. 6. Holotype: IGPS no. 79056 (Existing). Type locality: Loc. no. 1300 (Noda, 1962b), upstream of the Higashi River, about 400 m S of Fujikura, Matsunoyama-machi, Higashikubiki-gun [currently Matsunoyama, Tokamachi City], Niigata Prefecture. Stratigraphic unit: Nitta Formation. Geologic age: Early Pliocene. Remarks: Although the name of species was originally spelled as *fujikuraensis*, it is corrected herein as *fukuraense* because *Peliploma* is a neuter.

***Periploma pulchellum* Hatai and Nisiyama, 1949**

Plate 23, Figures 6a–b

Jour. Paleont., vol. 23, no. 1, p. 90, pl. 23, figs. 17, 18. Holotype: IGPS no. 72508 (Existing). IGPS no. 72507 given by original description as the holotype is incorrect. Type locality: A small cliff in front of the grocery store at the northern entrance to Kokozura, Nakoso-machi, Ishiki-gun [*sic*, Iwaki-gun] [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Kokozura Formation. Geologic age: Miocene [latest Early Miocene].

***Perna sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 23, Figures 7a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 57, pl. 12, figs. 1–4. Lectotype: IGPS no. 22457 (designated by Hayami, 1965a; Existing). Type locality: Hachimanzawa [currently Kagahara, Kanna-machi], Tano-gun, Province of Kôzuke [Gumma Prefecture]. Stratigraphic unit: Shiroy Group [Sebayashi Formation]. Geologic age: Cretaceous [late Early Cretaceous (Aptian–Albian)].

***Peronidia ochii* Kamada, 1962**

Plate 23, Figure 8

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 133, pl. 16, figs. 6–8. Holotype: IGPS no. 79388 (Existing). Type locality: Yumoto colliery, Joban Coal-mine, Yumotomachi, Joban City [currently Joban-Yumotomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Pholadomya brevitestis* Nagao, 1943**

Plate 23, Figures 9a–c

Jour. Geol. Soc. Japan, vol. 50, no. 596, p. 157, pl. 13 (10), fig. 3. Holotype: IGPS no. 72710 (Existing). Type locality: Koikorobe, Tanohata-mura, Shimohei-gun, Province of Rikutyû, [Iwate Prefecture]. Stratigraphic unit: precise horizon uncertain [?Miyako Group in Tanohata area]. Geologic age: Early Cretaceous.

***Pholadomya kazusaensis* Nagao, 1943**

Plate 23, Figures 10a–c

Jour. Geol. Soc. Japan, vol. 50, no. 596, p. 154, pl. 12 (9), figs. 2, 2a, 3, 3a. Holotype: IGPS no. 19534 (Existing). Type locality: A point between Seki and Minato, Province of Kazusa [currently Futtsu City, Chiba Prefecture]. Stratigraphic unit: Nokogiri Bed [=Nokogiriyama Formation]. Geologic age: Miocene [late Late Miocene–earliest Early Pliocene].

***Pholadomya? miyamotoi* Nagao, 1943**

Plate 23, Figure 11

Jour. Geol. Soc. Japan, vol. 50, no. 596, p. 158, pl. 12 (9), figs. 8, 9. Lectotype: IGPS no. 72737 (designated by Hayami, 1966; Existing). Type locality: Haibe, Tanohata-mura, Shimohei-gun, Iwate Prefecture. Stratigraphic unit: Hiraiga Sandstone [=Hiraiga Formation] in Tanohata area. Geologic age: Early Cretaceous (Aptian).

***Pholadomya takasimensis* Nagao, 1943**

Plate 23, Figures 12a–c

Jour. Geol. Soc. Japan, vol. 50, no. 596, p. 156, pl. 13 (10),

fig. 1, 1a, b. Holotype: IGPS no. 72706 (Existing). Type locality: Okinoshima, in the Takashima Coal-field, Province of Hizen [currently Iojimamachi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Bed [=Okinoshima Formation]. Geologic age: Eocene [Middle Eocene].

***Pinna asakuraensis* Nagao, 1928b**

Plate 23, Figures 13a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 31, pl. 8, figs. 20, 20a. Holotype: IGPS no. 36017 or 36018 (Both numbers are written on the same specimen; Existing). Type locality: Doshi, Hôshuyama-mura [currently Tôhō-mura], Asakura-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Kawamagari Beds [Kawamagari Formation]. Geologic age: Eocene.

***Pitar hataii* Natori, 1964**

Plate 23, Figure 14

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 55, p. 250, pl. 36, fig. 3a, b. Holotype: IGPS no. 85728 (Existing). Type locality: Motomiya, Motomiya-cho [sic, Hongu, Hongu-cho], Higashimuro-gun [currently Hongucho, Tanabe City], Wakayama Prefecture. Stratigraphic unit: Ukekawa-Muro Formation. Geologic age: Oligocene or Early Miocene.

***Pitar hokkaidoensis* Nomura, 1935a**

Plate 24, Figures 1a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 1, p. 35, pl. 4, figs. 1, 2. Holotype: IGPS no. 56371 (Existing). Type locality: At the junction of the Ponrurumoppe-gawa and the Rumoi-gawa, Rumoi-gun, Teshio [River cliff about 650 m NW of Owaga Station at the junction of the Ponrurumoppe-gawa and the Rumoi-gawa, Rumoi-machi, Rumoi-gun, Teshio Province] [currently Togeshita, Rumoimura, Rumoi City], Hokkaido. Stratigraphic unit: Takikawa Formation [correctly Togeshita Formation: Hayasaka and Uozumi, 1954]. Geologic age: Pliocene [late Middle or Late Miocene].

***Pitar kotoi* Natori, 1964**

Plate 24, Figure 2

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 55, p. 252, pl. 36, fig. 4a, b. Holotype: IGPS no. 85729 (Existing). Type locality: Motomiya, Motomiya-cho [sic, Hongu, Hongu-cho], Higashimuro-gun [currently Hongucho, Tanabe City], Wakayama Prefecture. Stratigraphic unit: Ukekawa-Muro Formation. Geologic age: Oligocene or Early Miocene.

***Pitar sendaica monstrosa* Nomura, 1938**

Plate 24, Figures 3a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 19, p. 259, pl. 35, figs. 8a–9b. Holotype: IGPS no. 16131A

(Existing). Type locality: Gôroku cliff along the right bank of the Hirosegawa-River, western border of Sendai [Gôroku, Hirose-mura, Miyagi-gun] [currently Gôroku, Aoba-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Tatunokuti Shell Bed [=Tatsunokuchi Formation]. Geologic age: Early Pliocene [latest Late Miocene–earliest Early Pliocene].

"Pitar" shiobarensis Akutsu, 1964

Plate 24, Figure 4

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 284, pl. 59, fig. 13 Holotype: IGPS no. 85505 (Existing). Type locality: Along the Hoki River, opposite the Electric Power Station at Sekiya, Shiobara-machi, Shioyagun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

Pitar sunakozakaensis Ogasawara, 1976

Plate 24, Figure 5

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 46, no. 2, p. 50, pl. 12, figs. 17, 18, 22. Holotype: IGPS no. 95028 (Existing). Type locality: Loc. no. Su-01 (Ogasawara, 1976), river side cliff of Asano-gawa at Higashi-Ichise [*sic*, Higashi-Ichinosemachi], Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Sunakozaka Formation [=Sunagozaka Formation]. Geologic age: Miocene [latest Early Miocene].

Pitaria? altoumbonata Nagao, 1928b

Plate 24, Figure 6

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 75, pl. 11, fig. 15. Holotype: IGPS no. 36445 (Existing). Type locality: Shinyama, Ômachi-mura, Kishima-gun, Province of Hizen [currently Omachi, Omachi-cho, Kishima-gun, Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

Pitaria ashियाensis Nagao, 1928b

Plate 24, Figure 7

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 72, pl. 13, fig. 1a, b. Holotype: IGPS no. 36434 (Existing). Type locality: Iwaya, Shimagô-mura, Onga-gun [currently Wakamatsu-ku, Kitakyushu City], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene. Remarks: Original spelling *ashियाensis* is corrected.

Pitaria kyushuensis Nagao, 1928b

Plate 24, Figures 8a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 70, pl. 12, figs. 1, 1a. Holotype: IGPS no. 36238

(Existing). Type locality: Western coast of Okinoshima, Iôjima-mura, Nishisonogi-gun [currently Iojimamachi, Nagasaki City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Beds [Okinoshima Formation]. Geologic age: Eocene [Middle Eocene].

Pitaria matsumotoi Nagao, 1928b

Plate 25, Figure 1

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 73, pl. 13, figs. 4, 4a. Holotype: IGPS no. 36241 (Existing). Type locality: Sea cliff facing the mouth of Ongagawa, about 400 m NW of Yamaga, Ashiya-machi, Onga-gun, Fukuoka Prefecture. Stratigraphic unit: Yamaga Formation. Geologic age: Oligocene.

Pitaria takashimaensis Nagao, 1928b

Plate 25, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 72, pl. 12, figs. 11, 11a–b. Holotype: IGPS no. 36300 (Existing). Type locality: Abô, Koyagi-jima, Koyagimura, Nishisonogi-gun, Province of Hizen [currently Koyagimachi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Beds [Okinoshima Formation]. Geologic age: Eocene [Middle Eocene].

Pitaria yokoyamai Nagao, 1928b

Plate 25, Figures 3a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 74, pl. 11, figs. 10, 10a. Holotype: IGPS no. 36443 (Existing). Type locality: Sea coast S of Tokuman, Ôshima, Kurose-mura, Nishisonogi-gun [currently Oshimacho, Saikai City], Province of Hizen [Nagasaki Prefecture]. Stratigraphic unit: Kakinoura Beds [Kakinoura Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

Placopecten nomurai Masuda, 1953a

Plate 25, Figure 4

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 12, p. 83, pl. 8, figs. 1a–7. Holotype: IGPS no. 90553 (formerly DGS no. 1041; Existing; broken). Type locality: Stream floor of small tributary of the Natori River at Moniwa, Oide-mura, Natori-gun [currently Moniwa, Taihaku-ku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Moniwa Formation. Geologic age: Early Miocene [early Middle Miocene].

Placopecten wakuyaensis Masuda, 1956

Plate 25, Figures 5a–b

Saito Ho-on Kai Mus. Res. Bull., no. 25, p. 23, pl. 3, figs. 1a–4. Holotype: IGPS no. 90596 (formerly DGS no. 3003; Existing). Type locality: Oido, Wakuya-machi [*sic*, Wakuya-cho], Tôda-gun, Miyagi Prefecture. Stratigraphic unit: Oido Formation. Geologic age: Early Miocene [Middle Miocene].

***Plicatula tuberculosa* Nomura, 1933**

Plate 25, Figures 6a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 62, pl. 1, fig. 2. Holotype: IGPS no. 45030 (Existing). Type locality: Mud-volcanoes at Konsuihei, Kyoshito, Okayama-gun, Takao-shu [currently Kunshuiping Mud Volcano, Yanchao Township, Kaohsiung County], Taiwan. Geologic age: Unknown (ejecta of mud volcano).

***Pododesmus (Monia) noharai* Noda, 1971**

Plate 25, Figure 7

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 81, p. 39, pl. 7, fig. 17. Holotype: IGPS no. 86762 (Existing). Type locality: Loc. no. 109 (Noda, 1971), W of Kogachi, Haneji-son [currently Nago City], Okinawa-jima, Okinawa Prefecture. Stratigraphic unit: Haneji Formation. Geologic age: Pliocene [Early Pleistocene].

***Polynemamussium masagoi* Kotaka and Noda, 1967**

Plate 25, Figures 8a–c

Saito Ho-on Kai Mus. Res. Bull., no. 36, p. 39, pl. 1, figs. 1–6, 8, 11. Holotype: IGPS no. 90755 (Existing). Type locality: Loc. no. 8 (Kotaka and Noda, 1967), upstream of the Moriai-zawa [*sic*, Moriya-zawa], about 800 m from the junction with the Nakano-gawa, Ogawara [*sic*, Okawara], Kuroishi City, Aomori Prefecture. Stratigraphic unit: Ogawara Formation. Geologic age: Middle Natorian [Late Miocene].

***Polynemamussium yasudae* Masuda, 1962a**

Plate 25, Figure 9

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 2, p. 156, pl. 18, figs. 9a–11. Holotype: IGPS no. 90602 (Existing). Type locality: Road-side cutting, about 500 m N of the Kogane shrine, N of Koganebasama, Motowakuya, Wakuya-machi [*sic*, Wakuya, Wakuya-cho], Toda-gun, Miyagi Prefecture. Stratigraphic unit: Oido Formation. Geologic age: Early Miocene [Middle Miocene].

***Portlandia (Portlandella) enaensis* Kamada, 1962**

Plate 25, Figures 10a–b

Palaeont. Soc. Japan, Spec. Pap., no. 8, p. 51, pl. 1, figs. 28a–30. Holotype: IGPS no. 79377 (Existing). Type locality: Hieda, Shimokajiro, Ena-machi [*sic*, Ena], Iwaki City, Fukushima Prefecture. Stratigraphic unit: Honya Formation. Geologic age: Miocene [Early Miocene].

***Protocardia ibukii* Nakazawa and Murata, 1966**

Plate 25, Figure 11

Mem. Coll. Sci. Univ. Kyoto, Ser. B, vol. 32, no. 4, p. 314, pl. 4, fig. 7a, b. Holotype: IGPS no. 85765 (Existing). Type locality: Kanayama-zawa near the Omine mine [currently Kamigocho, Tono City], Iwate Prefecture. Stratigraphic

unit: Kamihei Group in Kamihei area. Geologic age: Neocomian, Cretaceous.

***Psammocola kazusensis atsumiensis* Hayasaka, 1961**

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 33, no. 1, p. 54–55, pl. 7, figs. 1–2. Holotype: IGPS no. 78419 (Missing). Type locality: Loc. no. SC132–SC144 (Hayasaka, 1961), Takamatsu coast, Takamatsu, Akabane-cho, Atsumi-gun [currently Takamatsucho, Tahara City], Aichi Prefecture. Stratigraphic unit: “*Tonna* bed” in Toshima Sand, Middle Pleistocene.

***Psammocola sekiyaensis* Akutsu, 1964**

Plate 25, Figure 12

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 287, pl. 60, fig. 6. Holotype: IGPS no. 85511 (Existing). Type locality: Sekiya along the Hoki River, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Pseudoactinodontophora yabei* Murata, 1971**

Plate 25, Figures 13a–e

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 82, p. 112, pl. 14, figs. 1a, b, 4. Holotype: IGPS no. 86885 (Existing). Type locality: Motoiwazawa, SW of Kawaguchi, Sumita-cho, Kesen-gun, Iwate Prefecture. Stratigraphic unit: Lower part of Motoiwazawa Sandstone Member, Sakamotozawa Formation. Geologic age: Early Permian.

***Pseudogrammatodon pacificus* Nomura and Zinbô, 1934**

Plate 25, Figures 14a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 153 (45), pl. 5 (1), figs. 6a–7b. Holotype: IGPS no. 50341 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryûkyû Limestone”. Geologic age: Pleistocene.

***Pteria sunakozakaensis* Ogasawara, 1976**

Plate 25, Figure 15

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 46, no. 2, p. 40, pl. 11, figs. 15, 16. Holotype: IGPS no. 95008 (Existing). Type locality: Loc. no. Su-01 (Ogasawara, 1976), river side cliff of Asano-gawa at Higashi-Ichise [*sic*, Higashi-Ichinosemachi], Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Sunakozaka Formation. Geologic age: Miocene [latest Early Miocene].

***Rexithaerus shiratoriensis* Matsubara, 1994**

Plate 25, Figure 16

Saito Ho-on Kai Mus. Nat. Hist. Res. Bull., no. 62, p. 24,

pl. 1, figs. 1, 2, 3a–5b, pl. 2, figs. 1a–4. Holotype: IGPS no. 102562 (Existing). Type locality: A small tributary of the Shiratorigawa River, south of Shiratori, Ninohe City, Iwate Prefecture. Stratigraphic unit: Kadonosawa Formation. Geologic age: latest Early Miocene.

***Rochefortia obsoletoradiata* Nomura and Zinbô, 1936**

Plate 26, Figures 1a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 242 (14), pl. 11 (1), fig. 12a, b. Holotype: IGPS no. 51351 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun, Okinawa-jima [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Saccella confusa toyomaensis* Kamada, 1962**

Plate 26, Figure 2

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 50, pl. 2, figs. 1–5. Holotype: IGPS no. 79376 (Existing; broken). Type locality: Numanouchi Harbor, Toyoma-machi, Taira City [currently Numanouchi, Taira, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Numanouchi Formation. Geologic age: Miocene [early Middle Miocene].

***Saccella konnoi* Hatai and Masuda, 1962**

Plate 26, Figure 3

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 46, p. 259, pl. 40, figs. 3–5. Holotype: IGPS no. 90196 (formerly DGS 4235; Existing). Type locality: Loc. no. 4 (Hatai and Masuda, 1962), river cliff, about 600 m W of Gôdo, Higashimatsuyama City, Saitama Prefecture. Stratigraphic unit: Tokigawa Formation. Geologic age: Late Miocene.

***Saccella saikaiensis* Masuda, 1966b**

Plate 26, Figures 4a–c

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 64, p. 322, pl. 35, figs. 1a–3. Holotype: IGPS no. 90088 (formerly DGS no. 4494; Existing). Type locality: Loc. no. 23 (Masuda, 1966a), river cliff, about 1 km SES of Mukaiyama, [Niemachi], Suzu City, Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Miocene [latest Early Miocene].

***Sanguinolites bisectus* Hayasaka, 1925b**

Plate 26, Figures 5a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 13, pl. 8, fig. 10. Holotype: IGPS no. 22414 (Existing). Type locality: Hikoroichi-mura, Kesen-gôri, prov. Rikuzen [currently Hikoroichicho, Ofunato City, Iwate Prefecture]. Stratigraphic unit: Dark grayish sandy shale. Geologic age: Early Carboniferous.

***Schizothaerus nuttalli kissyuensis* Hatai, 1941**

Plate 26, Figure 6

Bull. Biogeogr. Soc. Japan, vol. 11, no. 13, p. 109, pl. 3, fig. 9. Holotype: IGPS no. 64751 (Existing). Type locality: Kinseidô, Eihoku-men, Kissyû-gun, Kankyô-hoku-dô, North Tyôsen [currently Kilju-gun, Hamgyongpuk-to, North Korea]. Stratigraphic unit: Banko Beds [Banko Sandstone]. Geologic age: Miocene [early Middle Miocene].

***Septifer sinelnikovae* Noda, 1992**

Plate 26, Figure 7

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 62, nos. 1–2, p. 62, pl. 2, figs. 4a–6. Holotype: IGPS no. 100734 (Existing). Type locality: Loc. no. CS7 (Noda, 1992), upper stream of the Shosambetsu River, Haboro-machi [*sic*, Haboro-cho] [Goryo, Shosambetsu-mura], Tomamae-gun, Rumoi Province, Hokkaido. Stratigraphic unit: Basal part of Chikubetsu Formation. Geologic age: Miocene [late Early–early Middle Miocene].

***Serripes hataii* Noda, 1962a [“1961”]**

Plate 26, Figure 8

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 5 (Prof. E. Kon’no Memorial Vol.), p. 224, pl. 37, fig. 3. Holotype: IGPS no. 74593 (Existing). Type locality: Iwaigawa [*sic*, Kubo River], Kamikurosawa, Hagihana-mura [*sic*, Haghisho-mura], Nishiiwai-gun, [currently Sakainokami, Hagisho, Ichinoseki City], Iwate Prefecture. Stratigraphic unit: Shimokurosawa Formation. Noda and Tada (1968) incorrectly cited the “Nishikurosawa Formation” as the horizon of the type locality. Geologic age: Middle Miocene.

***Serripes japonica* Noda, 1962a [“1961”]**

Plate 26, Figure 9

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 5 (Prof. E. Kon’no Memorial Vol.), p. 225, pl. 39, fig. 4. Holotype: IGPS no. 78680 (Existing). Type locality: Mukai, Sakekawa [*sic*, Sakegawa-mura], Mogami-gun, Yamagata Prefecture. Stratigraphic unit: Sakekawa Formation. Geologic age: Late Miocene [Pliocene].

***Serripes makiyamai nigamiensis* Noda, 1962a [“1961”]**

Plate 26, Figure 10

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 5 (Prof. E. Kon’no Memorial Vol.), p. 227, pl. 39, fig. 1a–c. Holotype: IGPS no. 78684 (Existing). Type locality: Nigami, Ooshima-mura, Higashikubiki-gun [currently Oshima-ku, Joetsu City], Niigata Prefecture. Stratigraphic unit: Shiya Formation. Geologic age: Late Miocene.

***Serripes muraii* Noda and Tada, 1968**

Plate 26, Figure 11

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 69, p. 202, pl. 22, fig. 22. Holotype: IGPS no. 88058 (Existing). Noda and Tada (1968) erroneously stated IGPS no. 88059 as the holotype in the text. Type locality: Loc. no. 2 (Noda and Tada, 1968), small tributary of the Kakkonda River, about 4 km NNW of the Takinoue Spa, Shizukuishimachi [*sic*, Shizukuishi-cho], Iwate-gun, Iwate Prefecture. Stratigraphic unit: Yamatsuda Formation. Geologic age: Miocene [early Late Miocene].

***Serripes shiobarensis* Noda, 1962a [“1961”]**

Plate 26, Figure 12

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), Spec. Vol., no. 5 (Prof. E. Kon'no Memorial Vol.), p. 228, pl. 39, fig. 5. Holotype: IGPS no. 78687 (Existing). Type locality: Cliff facing the Hokigawa Electric Power Station along the Hoki River, Sekiya, Shiobara-machi, Shiyo-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Middle Miocene [Late Miocene].

***Solemya (Acharax) bosoa* Hatai and Koike, 1957**

Plate 26, Figure 13; Plate 27, Figure 1

Japan. Jour. Geol. Geogr., vol. 28, nos. 1–3, p. 86, pl. 4, fig. 1. Holotype: IGPS no. 94774 (Existing). Type locality: Loc. no. 9 (Hatai and Koike, 1957), Ôkuzure, Katsuyamamachi [currently Kyonan-machi], Awa-gun, Chiba Prefecture. Stratigraphic unit: Ôkuzure Conglomerate [Ôkuzure Formation; contained in a concretion reworked from the underlying Hota Group]. Geologic age: Oligocene [latest Late Oligocene–Early Miocene].

***Solemya (Acharax) muroensis* Natori, 1964**

Plate 27, Figure 2

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 55, p. 249, pl. 36, fig. 1. Holotype: IGPS no. 85727 (Existing). Type locality: Motomiya, Motomiya-cho [*sic*, Hongu, Hongu-cho], Higashimuro-gun [currently Hongucho, Tanabe City], Wakayama Prefecture. Stratigraphic unit: Ukekawa-Muro Formation. Geologic age: Oligocene or Early Miocene.

***Solen connectens* Oyama, 1951a**

Plate 27, Figure 3

Miner. Geol., vol. 4, nos. 1–2, p. 56. [nom. nov. for *Solen intermedius* Nagao, 1928b, non Koch, in Philippi, 1843]. Holotype: IGPS no. 36435 (Existing). Type locality: Yamaga, Ashiya, Ashiya-machi, Onga-gun, Fukuoka Prefecture. Stratigraphic unit: Yamaga Formation. Geologic age: Oligocene [latest Early–earliest Late Oligocene].

***Solen intermedius* Nagao, 1928b**

Plate 27, Figure 3

Sci. Rep. Tôhoku Imp. Univ., 2nd. Ser. (Geol.), vol. 12,

no. 1, p. 83, pl. 4, figs. 5, 6. Holotype: IGPS no. 36435 (Existing). Type locality: Yamaga, Ashiya-machi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene [latest Early–earliest Late Oligocene]. Remarks: Because this species is preoccupied by *Solen intermedius* Koch in Philippi, 1843, a new replacement name ***Solen connectens*** was proposed by Oyama (1951a).

***Solen shitakaraensis* Honda, 1989**

Plate 27, Figure 4

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 84, pl. 8, figs. 7–10. Holotype: IGPS no. 95129-1 (Existing). Type locality: Loc. no. B-08 (Honda, 1989), uppermost stream of Yukirubeshubeno-zawa a tributary of the Tokomuro-gawa, Rushin, Urahoro-machi [*sic*, Urahoro-cho], Tokachi-gun, Hokkaido. Stratigraphic unit: Shitakara Formation. Geologic age: Oligocene [Middle–Late Eocene].

***Solenomorpha elegantissima* Hayasaka, 1925b**

Plate 27, Figures 5–7b; Plate 28, Figure 1

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 8, no. 2, p. 21, pl. 9, figs. 1, 1a, 2, 2a, 3–7. Syntypes: IGPS nos. 8203, 22228, 22229 (Existing). Type locality: Kinshô-zan, Akasaka-machi, prov. Mino [currently Akasakacho, Ogaki City, Gifu Prefecture]. Stratigraphic unit: *Kuro* zone [Akasaka Limestone] Geologic age: Permian [Middle Permian].

***Spisula (Cymbophora) ezoensis* Yabe and Nagao, 1928**

Plate 28, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 91, pl. 16, figs. 5–10. Holotype: IGPS no. 22614 (Existing). Type locality: The upper course of the Ponnebets, Manji [currently Nishimanji, Kurisawacho, Iwamizawa City], Ishikari Province, Hokkaido. Stratigraphic unit: *Trigonia* sandstone [Middle Yezo Group in Manji area]. Geologic age: Cretaceous [Cenomanian–Campanian, Cretaceous].

***Spisula iwatensis* Hatai, 1940**

Plate 28, Figure 3

Bull. Biogeogr. Soc. Japan, vol. 10, no. 9, p. 130, pl. 1, fig. 7. Holotype: IGPS no. 61360 (Existing). Type locality: Siratori [=Shiratori], Nisatai-mura, Ninohe-gun [currently Shiratori, Ninohe City], Iwate Prefecture. Stratigraphic unit: Siratori Beds [=Tate Sandstone Member of Kadonosawa Formation]. Geologic age: Miocene [latest Early Miocene].

***Spisula (Mactromeris) polynyma nagakoensis* Hatai and Nisiyama, 1949**

Plate 28, Figure 4

Jour. Paleont., vol. 23, no. 1, p. 92, pl. 24, fig. 18. Holotype: IGPS no. 72506 (Existing). Type locality: Small

exposure in drainage W of Nagako, Nishiki-mura, Iwaki-gun [currently Nishikimachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Asagai Formation [correctly Iwaki Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Spisula shimotsukensis* Akutsu, 1964**

Plate 28, Figure 5

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 287, pl. 59, fig. 11. Holotype: IGPS no. 85510 (Existing). Type locality: Upstream of the Shimotokurazawa valley, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Strebrochondria miyamoriensis* Murata, 1964**

Plate 28, Figure 6

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 54, p. 229, pl. 35, fig. 14a, b. Holotype: IGPS no. 85733 (Existing). Type locality: Southeastern slope of Hiryu-yama, Miyamori-mura, Kamihei-gun [currently Miyamoricho, Tono City], Iwate Prefecture. Stratigraphic unit: Hiruyuyama Formation. Geologic age: Middle Permian.

***Tapes nagahamaensis* Saito, Bando and Noda, 1970**

Plate 28, Figure 7

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 77, p. 282, pl. 31, figs. 1–4, 22. Holotype: IGPS no. 78707 (Existing). Although Ogasawara (2001) cited IGPS no. 86743 from the Teshima Formation as the holotype, the specimens with this reg. no. are figured specimens by Saito *et al.* (1970). Type locality: Nagahama, Tonoshô-cho, Shodo-gun [*sic*, Shôzu-gun], Kagawa Prefecture. Stratigraphic unit: Shikai Formation. Geologic age: Miocene [Late Eocene].

***Taras millepustulata* Nomura, 1933**

Plate 28, Figure 8

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 75, pl. 3, fig. 16. Holotype: IGPS no. 45096 (Existing). Type locality: Hanpeizan, Okayama-gun, Takao-shû [currently Ban Pin Shan, Kaohsiung City], Taiwan. Lithostratigraphic unit: "Riukiu Limestone" [correlative of the Ryukyu Limestone]. Geologic age: Pleistocene.

***Tellina (Pharaonella) akiana* Nomura, 1937**

Plate 28, Figure 9

Japan. Jour. Geol. Geogr., vol. 14, nos. 3–4, p. 83, pl. 6, fig. 4. Holotype: IGPS no. 54691 (Existing). Type locality: Tônohama, Yasuda-mura [*sic*, Yasuda-cho], Aki-gun, Kôti [=Kochi] Prefecture. Stratigraphic unit: Tosa Pliocene [=Ananai Formation]. Geologic age: Pliocene [latest Late

Pliocene–early Early Pleistocene].

***Tellina equideclivis* Nagao, 1928b**

Plate 28, Figure 10

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 79, pl. 4, fig. 29. Holotype: IGPS no. 36457 (Existing). Type locality: Abô, Kôyagi-jima, Kôyagi-mura, Nishisonogigun, Province of Hizen [currently Koyagimachi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Beds [Okinoshima Formation]. Geologic age: Eocene [Middle Eocene].

***Tellina hamadai* Masuda, 1955**

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 20, p. 122, pl. 19, figs. 10, 11. Holotype: IGPS no. 90415 (formerly DGS no. 1657; Missing). Type locality: Tokunari, Machinomachi, Fugeshi-gun [currently Wajima City], Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Early Miocene [latest Early Miocene].

***Tellina kikaizimana* Nomura and Zinbô, 1934**

Plate 28, Figures 11a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 157 (49), pl. 5 (1), fig. 19a, b. Holotype: IGPS no. 50398 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: "Ryûkyû Limestone". Geologic age: Pleistocene.

***Tellina kuntsuipinensis* Nomura, 1933**

Plate 28, Figures 12a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 99, pl. 4, fig. 10a, b. Holotype: IGPS no. 48595 (Existing). Type Locality: Ejecta of mud-volcanoes at Konsuihei [currently Kunshuiping Mud Volcano, Yanchao Township, Kaohsiung City], Taiwan. Geologic age: Unknown (ejecta of mud volcano)

***Tellina maxima* Nagao, 1928b**

Plate 28, Figure 13

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 80, pl. 4, figs. 8–11. Holotype: IGPS no. 36412 (Existing; broken). Type locality: Shinyama, Ômachimura [currently Omachi-cho], Kishima-gun, Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene]. Remarks: See also *Angulus maximus submaximus* Mizuno, 1964.

***Tellina notoensis* Masuda, 1955**

Plate 28, Figure 14

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 20, p. 122,

pl. 19, fig. 12. Holotype: IGPS no. 90451 (formerly DGS no. 2502; Existing). Type locality: Tokunari, Machinomachi, Fugeshi-gun [currently Wajima City], Ishikawa Prefecture. Stratigraphic unit: Higashi-innai Formation. Geologic age: Early Miocene [latest Early Miocene].

***Tellina prototenuilirata* Nomura, 1933**

Plate 28, Figure 15

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 100, pl. 4, figs. 7a–9b. Holotype: IGPS no. 48192 (Existing; broken). Type locality: Futoko (?), Bôshiho, Shiko-shô, Byôritsu-gun, Shinchiku-shû [currently Maozihbu, Wuhwu Village, Shihwu Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Tellina scabricostulata* Nomura and Zinbô, 1936**

Plate 28, Figures 16a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 246, pl. 11, figs. 16a–17b. Holotype: IGPS no. 51333 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Tellina tricarinata* Nagao, 1928b**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 78, pl. 3, fig. 17. Holotype: IGPS no. unknown (Missing). Type locality: Chôgiri, Kiuragi-mura, Higashimatsura-gun [currently Ouchicho, Karatsu City], Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kiuragi Beds [Kiuragi Formation]. Geologic age: Eocene [Late Eocene].

***Tellina umedairensis* Shikama, 1951**

Plate 28, Figures 17a–b

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 1, p. 15, text-figs. 1, 2. Holotype: IGPS no. 90404 (Existing). Type locality: Umedaira, Yaegôchi-mura [*sic*, Yaekawachimura], Shimoina-gun [currently Yaegochi, Minamishinano, Iida City], Nagano Prefecture. Stratigraphic unit: Wada Formation. Geologic age: Oligocene [Early Miocene].

***Tellina venulosa zyonoensis* Hatai and Nisiyama, 1939 [“1938”]**

Plate 28, Figure 18

Japan. Jour. Geol. Geogr. vol. 16, nos. 1–2, p. 150, pl. 9, fig. 3. Holotype: IGPS no. 62424 (Existing) Type locality: A cliff of the Zintu-gawa [=Jintu-gawa] at Zyônô [=Jônô], Sugihara-mura, Nehi-gun [*sic*, Nei-gun], Ettyû [=Etchû] Province [currently Jônô, Yatsuomachi, Toyama City, Toyama Prefecture]. Stratigraphic unit: Zyônô Beds [=Otogawa Formation]. Geologic age: Pliocene [Late Miocene].

***Teredo matsushimaensis* Hatai, 1951**

Plate 28, Figure 19

Short Pap. Inst. Geol. Paleont., Tôhoku Univ., no. 3, p. 30, pl. 5, figs. 1–5. Lectotype: IGPS no. 73697 (designated by Hayami, 1966; Existing). Type locality: IGPS loc. no. It-4 (Hatai, 1951), Matsushima, Taro-mura [*sic*, Taro-cho], Shimohei-gun [currently Taro, Miyako City], Iwate Prefecture. Stratigraphic unit: Hiraiga Sandstone Formation [Hiraiga Formation]. Geologic age: Early Cretaceous [Aptian].

***Thetironia affinis* var. *japonica* Yabe and Nagao, 1928**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 89, pl. 17, figs. 14, 15. Holotype: IGPS no. 22605 (Missing). Type locality: Ponbets [*sic*, Pombetsu River], a tributary of the Ikushumbets [*sic*, Ikushumbetsu River], [currently Mikasa City, Hokkaido]. Stratigraphic unit: Mikasa Formation. Geologic age: Cenomanian–Turonian, Cretaceous.

***Thracia hataii* Kamada, 1955**

Plate 28, Figures 20a–b

Sci. Rep., Fac. Arts and Liter., Nagasaki Univ., no. 4, p. 10, pl. 1, figs. 5, 6. Holotype: IGPS no. 72960 (Existing). Type locality: IGPS loc. no. Fs-37 (Kamada, 1955), about 600 m N of Ena-machi water-reservoir, Igamesaku, Nagasaki, Ena-machi [currently Ena, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Nakayama Formation. Geologic age: Miocene [latest Early Miocene].

***Thracia kamayasikiensis* Hatai, 1940**

Plate 28, Figures 21a–b

Bull. Biogeogr. Soc. Japan, vol. 10, no. 9, p. 123, pl. 1, fig. 2. Holotype: IGPS no. 61349 (Existing). Type locality: Kamayasiki [=Kamayashiki], Tomai-mura, Ninohe-gun [currently Shimotomai, Ninohe City], Iwate Prefecture. Stratigraphic unit: Suenomatuyama Beds [=Tomesaki Formation]. Geologic age: Pliocene [Middle Miocene].

***Thracia kidoensis* Kamada, 1955**

Plate 28, Figures 22a–b

Sci. Rep., Fac. Arts and Liter., Nagasaki Univ., no. 4, p. 11, pl. 1, figs. 1–2b. Holotype: IGPS no. 72958 (Existing). Type locality: IGPS loc. no. Fs-38, in the tunnel, W of the Iriumi mineral spring, Kobansaku, Kido-mura [currently Naraha-machi], Futaba-gun, Fukushima Prefecture. Stratigraphic unit: Asagai Formation. Geologic age: Oligocene [Early Oligocene].

***Thracia kurosawaensis* Hayasaka, 1957**

Plate 28, Figures 23a–b

Saito Ho-on Kai Mus. Res. Bull., no. 26, p. 28, text-fig. 1a–c. Holotype: IGPS no. 77497 (Existing). Type locality:

Loc. no. 6 (Hayasaka, 1957), river side cliff at the western entrance of the railway tunnel between the Iwateyuda and Kawajiri Stations, Yuda-mura [currently Nishiwaga-machi], Waga-gun, Iwate Prefecture. Stratigraphic unit: Kurosawa Formation. Geologic age: Miocene [Middle–Late Miocene].

***Thracia (Thracia) shitakaraensis* Honda, 1989**

Plate 28, Figure 24; Plate 29, Figure 1

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 60, no. 1, p. 89, pl. 6, figs. 2, 5, pl. 7, figs. 1–3, 5–7. Holotype: IGPS no. 95428-4 (Existing). Type locality: Loc. no. B-03 (Honda, 1989), tributary of Rushin River, Rushin, Urahoro-machi [*sic*, Urahoro-cho], Tokachi-gun, Hokkaido. Stratigraphic unit: Shitakara Formation. Geologic age: Oligocene [Middle–Late Eocene].

***Thracidora nishizawaensis* Akutsu, 1964**

Plate 29, Figure 2

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 283, pl. 59, fig. 4. Holotype: IGPS no. 85502 (Existing). Ogasawara (2001) erroneously cited IGPS no. 85504 as the holotype. Type locality: Nishizawa, Uzuno [*sic*, Utsuno], Shiobara-machi, Shiota-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Thyasira bisecta* var. *nipponica* Yabe and Nomura, 1925**

Plate 29, Figures 3a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 84, pl. 23, figs. 3a–b, pl. 24, figs. 2a–4b. Lectotype: IGPS no. 7485 (designated by Hatai and Nisiyama, 1952; Existing). Type locality: Mōrai, Atsuta-mura, Atsuta-gun [currently Atsuta-ku, Ishikari City], Ishikari Province, Hokkaido. Stratigraphic unit: Kawabata Series [=Morai Formation]. Geologic age: Tertiary [Late Miocene].

***Thyasira inflata* Yabe and Nomura, 1925**

Plate 29, Figure 4

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 93, pl. 23, fig. 5a–b. Holotype: IGPS no. 17251 (Existing). Type locality: Sea cliff S of Tsurushizaki, Hitachi-mura, Taga-gōri, province of Hitachi [currently Higashicho, Hitachi City, Ibaraki Prefecture]. Stratigraphic unit: not cited [Hitachi Formation]. Geologic age: Tertiary [Early Pliocene].

***Thyasira quadrata* Yabe and Nomura, 1925**

Plate 29, Figures 5a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 92, pl. 23, figs. 1a–b. Holotype: IGPS no. 8188 (Existing). Type locality: “Japan” (exact locality unknown). Stratigraphic unit: unknown. Geologic age: Tertiary [precise age unknown].

***Thyasira subexcavata* Yabe and Endô, in Yabe and Nomura, 1925**

Plate 29, Figure 6

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 7, no. 4, p. 93, pl. 24, figs. 1a–b. Holotype: IGPS no. 6973 (Existing). Type locality: Near Takai, Sekimoto-mura, Taga-gōri [currently Sekimotomachi, Kitaibaraki City], Ibaraki Prefecture. Stratigraphic unit: not cited [Kokozura Formation or Taga Group]. Geologic age: Tertiary [Miocene].

***Thyasira tokunagai* Kuroda and Habe, 1951**

Plate 29, Figures 7a–b

Illust. Cat. Jpn. Shells, no. 13, p. 86 [“nom. nov.” for *Thyasira gouldii* (Philippi) *sensu* Yabe and Nomura, 1925, p. 94, pl. 23, figs. 6a–b (not of Philippi, 1845)]. Lectotype: IGPS no. 13786 (designated herein) (Existing). Type locality: Shinagawa, near Tôkyô [=Shinagawa-machi, Ebara-gun, Tokyo Prefecture] [currently Shinagawa-ku, Tokyo; precise locality unknown]. Stratigraphic unit: Tôkyô Beds [Tokyo Formation]. Geologic age: Pliocene [Late Pleistocene].

***Trapezium (Neotrapezium) ichinohense* Matsubara, 1995**

Plate 29, Figures 8a–b

Trans. Proc. Palaeont. Soc. Japan, N. S., no. 180, p. 328, figs. 4-1, 4-7a, b, 4-8a–c. Holotype: IGPS no. 102605 (Existing). Type locality: Loc. no. 18 (Matsubara, 1995), upper reaches of the Nesori River about 3 km E of Nosokei [*sic*, Nosoke], Ichinohe-machi, Ninohe-gun, Iwate Prefecture. Stratigraphic unit: Yotsuyaku Formation. Geologic age: late Early Miocene.

***Trapezium (Neotrapezium) isohareense* Kamada, 1962**

Plate 29, Figure 9

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 91, pl. 8, figs. 4–6. Holotype: IGPS no. 79382 (Existing). Type locality: 100 m upstream from the Futatsujima mineral-spring, Isoharamachi, Kitaibaraki City, Ibaraki Prefecture. Stratigraphic unit: Kunugidaira Formation. Geologic age: Miocene [Early Miocene].

***Trapezium isomatsuense* Kotaka, 1955**

Plate 29, Figure 10

Saito Ho-on Kai Mus. Res. Bull., no. 24, p. 28, pl. 2, fig. 1. Holotype: IGPS no. 74006 (Existing). Type locality: IGPS loc. no. Ao-15 (Kotaka, 1955), upper course of the Isomatsu-gawa, Wakimoto-mura, Kitatsugaru-gun [currently Wakimoto, Goshogawara City], Aomori Prefecture. Stratigraphic unit: Isomatsu Formation. Geologic age: Oligocene [Early Miocene].

***Trapezium jobanicum* Hatai and Nisiyama, 1949**

Plate 29, Figure 11

Jour. Paleont., vol. 23, no. 1, p. 90, pl. 24, figs. 8, 9. Holotype: IGPS no. 72505 (Existing). IGPS no. 72506 given by original description is incorrect. Reg. no. of the holotype by Ogasawara (2001) is identical that in the original description. Type locality: A small cliff in front of the dormitory of Nippon Coal Mining Company, Nakosomachi, Ishiki-gun [*sic*, Iwaki-gun] [currently Nakosomachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

***Trifarcardium nomurai* Kuroda and Habe, 1951**

Plate 29, Figures 12a–b

Illust. Cat. Jpn. Shells, no. 13, p. 86. [nom. nov. for *Cardium* (*Acanthocardia*) *cancellatum* Nomura, 1933 non Gmelin, 1791] Holotype: IGPS no. 46500 (Existing). Type locality: Station no. 14 (Nomura, 1933), exposure, 550 m SE of Jô-tsûsho-wan, Tsûshô-shô, Byôritsu-gun, Shinchiku-shû [currently Shangtongsiawan, Tongwan Village, Tongshao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene]. Remarks: This species is a type species of *Trifarcardium* Kuroda and Habe, 1951 (by monotypy). See *Cardium* (*Acanthocardia*) *cancellatum* Nomura, 1933 [non Gmelin, 1791] also.

***Trigonarca? obsoleta* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926**

Plate 29, Figure 13

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 2, p. 43, pl. 12, fig. 24. Holotype: IGPS no. 22538 (Existing). Type locality: Ishidô, near Ôhinata[-mura] [currently Ishidô, Ôhinata, Sakuho-machi], Minamisaku-gun, Province of Shinano [Nagano Prefecture]. Stratigraphic unit: Ishidô Group [Ishidô Formation]. Geologic age: Cretaceous [late Early–early Late Cretaceous (late Neocomian or Aptian)].

***Trigonia ainuana* Yabe and Nagao, 1928**

Plate 30, Figure 1

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 9, no. 3, p. 84, pl. 16, fig. 20. Holotype: IGPS no. 22591 (Existing). Type locality: Ponbets [=Pombetsu River] (near the Ikushumbets [=Ikushumbetsu] coal-mines), Sorachi-gun [currently Mikasa City], Hokkaido. Stratigraphic unit: *Trigonia* sandstone [Mikasa Formation]. Geologic age: Cretaceous [early Late Cretaceous (Cenomanian–Turonian)].

***Trigonia brevicula* Yehara, 1915**

Plate 30, Figure 2

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 2, no.

2, p. 42, pl. 2, figs. 18, 19. Lectotype: IGPS no. 4329 (designated by Nakano and Numano, 1961; Existing). Type locality: Ikushumbets [=Ikushumbetsu], some 3 km above the Ikushumbets [=Ikushumbetsu] coal mines [currently Mikasa City], Hokkaido. Stratigraphic unit: *Thetis* aff. *affinis* zone [Middle Yezo Group (Mikasa sandstone)]. Geologic age: Cretaceous [early Late Cretaceous (Cenomanian–Turonian)].

***Trigonia datemasamunei* Yehara, 1915**

Plate 30, Figures 3–4

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 2, no. 2, p. 38, pl. 2, figs. 13, 14. Syntypes: IGPS no. 4331 (Existing). Type locality: Raga II, Miyako District [Southern coast of Hiraname, northeast of Raga, Tanohata-mura, Shimohei-gun, Iwate Prefecture]. Stratigraphic unit: *Orbitolina* sandstone [=Miyako Group]. Geologic age: Cretaceous [late Early Cretaceous (Aptian–Lower Albian)].

***Trigonia hokkaidoana* Yehara, 1915**

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 2, no. 2, p. 39, pl. 1, figs. 1–8. Lectotype: IGPS no. 4224 (designated by Kobayashi and Nakano, 1957; Missing). Type locality: Tokuzo, southern coast of Hiraiga inlet, Tanohata-mura, Shimohei-gun, Iwate Prefecture. Stratigraphic unit: Miyako Group (Hiraiga Formation). Geologic age: late Early Cretaceous (Aptian–Lower Albian).

***Trigonia pustulosa* Nagao, 1930**

Plate 30, Figures 5a–8

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 1, no. 1, p. 17, pl. 3, figs. 9–12. Syntypes: IGPS nos. 35603, 35608, 35609, 35610, 35612, 35613 (Existing). Type locality: Goshonoura-jima [*sic*, Goshoura-jima], Amakusa-gun, Province of Higo [At the seashore of Enokuchi, Goshonoura [currently Goshoura, Goshouramachi], Amakusa City, Kumamoto Prefecture]; Shishi-jima, Nagashima-mura, Province of Satsuma [currently Nagashima-cho, Izumi-gun, Kagoshima Prefecture]. Stratigraphic unit: Goshonoura Group. Geologic age: Cretaceous [Albian(?)–Cenomanian, Cretaceous].

***Trigonia yokoyamai* Yehara, 1915**

Plate 30, Figures 9–10

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 2, no. 2, p. 41, pl. 2, figs. 15–17. Syntypes: IGPS nos. 4366, 4367 (Existing). Type locality: Tokuzo, southern coast of Hiraiga inlet, Tanohata-mura, Shimohei-gun, Iwate Prefecture. Stratigraphic unit: Miyako Group (Hiraiga Formation). Geologic age: Upper Neocomian(?)–Aptian, Cretaceous.

***Vasticardium arenicoloides* Akutsu, 1964**

Plate 30, Figure 11

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 284, pl. 59, figs. 6, 7. Syntypes: IGPS no. 85504 (Existing). Type locality: Upstream of the Shimotokurazawa valley, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene].

***Vasticardium shimotokuraense* Akutsu, 1964**

Plate 30, Figure 12

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 35, no. 3, p. 283, pl. 59, figs. 9, 10. Syntype: IGPS no. 85503 (Existing). Type locality: Shimotokurazawa, Sekiya, Shiobara-machi, Shioya-gun [currently Nasushiobara City], Tochigi Prefecture. Stratigraphic unit: Kanomatazawa Formation. Geologic age: Miocene [Late Miocene]. Remarks: Although the name of species was originally spelled as *shimotokuraensis*, it is corrected as *shimotokuraense* because *Vasticardium* is a neuter.

***Vasticardium teshimaense* Saito, Bando and Noda, 1970**

Plate 30, Figure 13

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 77, p. 283, pl. 31, figs. 5–7. Holotype: IGPS no. 86745 (Existing). Type locality: Loc. no. 1 (Saito *et al.*, 1970), (about 500 m SW of Abuzaki), Teshima Island, Tonosho-cho, Shôdo-gun [*sic*, Shôzu-gun], Kagawa Prefecture. Stratigraphic unit: Teshima Formation. Geologic age: Miocene [Late Eocene].

***Venericardia crenulicostata* Nomura, 1933**

Plate 30, Figures 14a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 69, pl. 2, figs. 12a–16b. Holotype: IGPS no. 46221 (Existing). Type locality: Station no. 18 (Nomura, 1933), 650 m SE of Jô-tsûshô-wan, Tsûshô-shô, Byôritsu-gun, Shinchiku-shu [currently Shangtongsiaowan, Tongwan Village, Tongsiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Venericardia (Cyclocardia) enaensis* Kamada, 1962**

Plate 30, Figure 15

Palaeont. Soc. Japan Spec. Pap., no. 8, p. 87, pl. 7, figs. 7, 8. Holotype: IGPS no. 79381 (Existing). Type locality: Igamesaku, Nagasaki, Ena-machi [currently Ena, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Honya Formation. Geologic age: Miocene [late Early Miocene].

***Venericardia (Cyclocardia) ferruginea complexa* Ogasawara, 1977**

Plate 30, Figures 16a–b

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 47, no. 2, p. 107, pl. 11, fig. 3a, b, pl. 12, fig. 4. Holotype: IGPS no. 95127 (Existing). Type locality: Loc. no. KO-22 (Ogasawara, 1977), cliff, distant from the road, 300 m W of Kaminakamachi, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Omma Formation. Geologic age: Pliocene [Early Pleistocene].

***Venericardia granulicostata* Nomura, 1933**

Plate 30, Figures 17a–e

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 70, pl. 2, fig. 7a–d. Holotype: IGPS no. 46136 (Existing). Type locality: 1,450 W of Hokkô, Ôbokô, Station 14, Shiko-shô, Byôritsu-gun, Shinchiku-shû [currently Yamukeng, Jinshih Village, Hsihu Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Venericardia millegrana* Nomura and Zinbô, 1934**

Plate 30, Figures 18a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 154 (46), pl. 5 (1), figs. 13a–14b. Holotype: IGPS no. 50375 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryûkyû Limestone”. Geologic age: Pleistocene.

***Venericardia nagaoi* Mizuno, 1964**

Plate 30, Figure 19

Rep., Geol. Surv. Japan, no. 204, p. 57. Holotype: IGPS no. 36314 (Existing). [= *Venericardia nipponica* Yokoyama, *sensu* Nagao 1928b, pl. 13, fig. 11]. Type locality: Nakayama Pass, Hôshuyama-mura, Asakura-gun, Fukuoka Prefecture [currently Tôhō-mura, Asakura-gun, Fukuoka Prefecture]. Stratigraphic unit: Kawamagari Formation. Geologic age: Eocene.

***Venericardia okinoshimaensis* Mizuno, 1964**

Plate 30, Figure 20

Rep., Geol. Surv. Japan, no. 204, p. 57. Holotype: IGPS no. 36371 (Existing) [= *Venericardia nipponica* Yokoyama, *sensu* Nagao, 1928b, pl. 13, figs. 15, 15a]. Type locality: Abo, Kôyagi-jima, Kôyagi-mura, Nishi-Sonogi-gun, Nagasaki Prefecture [currently Abo, Kôyagi-machi, Nagasaki City, Nagasaki Prefecture]. Stratigraphic unit: Okinoshima Formation. Geologic age: Eocene [Middle Eocene].

***Venericardia (Megacardita) ommaensis* Ogasawara, 1977**

Sci. Rep. Tohoku Univ., 2nd Ser. (Geol.), vol. 47, no. 2, p. 106, pl. 10, figs. 2, 5, pl. 13, fig. 3. Holotype: IGPS 95122 (Missing). Type locality: Loc. no. KO-15 (Ogasawara, 1977), river-side cliff of Asano-gawa, 400

m W of Tagamihonmachi, Kanazawa City, Ishikawa Prefecture. Stratigraphic unit: Omma Formation. Geologic age: Pliocene [Early Pleistocene]. Remarks: *Trominina japonica* (Takeda) from the Oligocene Charo Formation is registered in the same number as the holotype.

***Venericardia onukii* Masuda and Takegawa, 1965**

Plate 31, Figures 1a–b

Saito Ho-on Kai Mus. Res. Bull., no. 34, p. 12, pl. 1, figs. 15–22. Holotype: IGPS no. 90828 (formerly DGS no. 4683; Existing). Type locality: Loc. no. 13 (Masuda and Takegawa, 1965), river cliff about 200 m downstream of Dam, Taniyama, NW of Ashitate, Murata-machi, Shibata-gun, Miyagi Prefecture. Stratigraphic unit: Fukuda Member of Kanagase Formation. Geologic age: Middle Miocene [late Late Miocene].

***Venericardia quadriangulata* Nomura and Zinbô, 1934**

Plate 31, Figures 2a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 155 (47), pl. 5 (1), figs. 15a–16b. Holotype: IGPS no. 50385 (Existing). Type locality: Plateaux area near Kamikatetu, Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryûkyû Limestone”. Geologic age: Pleistocene.

***Venericardia ryukyuensis* Nomura and Zinbô, 1936**

Plate 31, Figures 3a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 18, no. 3, p. 240 (12), pl. 11 (1), figs. 7a–8b. Holotype: IGPS no. 51344 (Existing). Type locality: Gabusoga, Haneji-mura, Kunigami-gun [currently Nago City], Okinawa Prefecture. Stratigraphic unit: Simaziri Beds [=Haneji Formation]. Geologic age: Early Pliocene [Early Pleistocene].

***Venericardia subnipponica* Nagao, 1928b**

Plate 31, Figures 4a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 55, pl. 14, fig. 19, 19a. Holotype: IGPS no. 36405 (Existing). Type locality: Taya, Ashiya-machi, [Onga-gun], Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

***Venericardia yoshidai* Nagao, 1928b**

Plate 31, Figure 5

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 57, pl. 12, fig. 14. Holotype: IGPS no. 36327 (Existing). Type locality: Ôbô, near Arita-machi [currently Arita-cho], Nishimatsuura-gun, Province of Hizen [Saga Prefecture]. Stratigraphic unit: Kishima Beds [Kishima Formation]. Geologic age: Oligocene [latest Late Eocene–

earliest Early Oligocene].

***Veniella? japonica* Nagao, 1930**

Plate 31, Figures 6–7

Jour. Fac. Sci. Hokkaido Imp. Univ., Ser. 4, vol. 1, no. 1, p. 21, pl. 2, figs. 1, 3a–c. Syntypes: IGPS nos. 35578, 44306, 44307 (Existing). Type locality: Goshonoura-jima [*sic*, Goshoura-jima], Province of Higo [currently Goshoura, Goshouramachi, Amakusa City, Kumamoto Prefecture]. Stratigraphic unit: Goshonoura Group in Goshonoura area. Geologic age: Cretaceous [Albian(?)-Cenomanian, Cretaceous].

***Venus (Chione) byoritsuensis* Nomura, 1933**

Plate 31, Figure 8

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 84, pl. 3, fig. 7a, b. Holotype: IGPS no. 48061 (Existing). Type locality: Station no. 48 (Nomura, 1933), Chû-tsushô-wan, Tsûshô-shô, Byôritsu-gun, Shinchiku-shû [currently Shangtongsiaowan, Tongwan Village, Tongsiao Township, Miaoli County], Taiwan. Lithostratigraphic unit: Byôritsu Beds [Miaoli Formation]. Geologic age: Pliocene [Pleistocene].

***Venus (Chione) taiwanensis* Nomura, 1933**

Plate 31, Figure 9

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 1, p. 86, pl. 1, figs. 12a–13b. Holotype: IGPS no. 47771 (Existing). Type locality: Hanpeizan, Okayama-gun, Takao-shû [currently Ban Pin Shan, Kaohsiung City], Taiwan. Lithostratigraphic unit: “Riuki Limestone” [correlative of the Ryukyu Limestone]. Geologic age: Pleistocene.

***Venus (Chione) yabei* Nomura and Zinbô, 1934**

Plate 31, Figures 10a–b

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 16, no. 2, p. 156 (48), pl. 5 (1), fig. 18a, b. Holotype: IGPS no. 50651 (Existing). Type locality: Plateaux area near Kamikatetu [=Kamikatetsu], Kikai-zima, [Kikai-cho, Oshima-gun], Kagoshima Prefecture. Lithostratigraphic unit: “Ryûkyû Limestone”. Geologic age: Pleistocene.

***VolSELLA yokoyamai* Hatai and Nisiyama, 1949**

Plate 31, Figures 11a–b

Jour. Paleont., vol. 23, no. 1, p. 90, pl. 23, figs. 13, 14. Holotype: IGPS no. 72504 (Existing). Type locality: Near the Mimatsu Colliery, Ogawa, Kawabe-mura, Ishiki-gun [*sic*, Iwaki-gun] [currently Kawabemachi, Iwaki City], Fukushima Prefecture. Stratigraphic unit: Iwaki Formation. Geologic age: Oligocene [latest Late Eocene–earliest Early Oligocene].

Waagenoperna elongata Nakazawa and Murata, 1966

Plate 31, Figure 12

Mem. Coll. Sci. Univ. Kyoto, Ser. B, vol. 32, no. 4, p. 312, pl. 4, fig. 1a, b. Holotype: IGPS no. 85764 (Existing). Type locality: Kanayama-zawa, near the Omine mine, Tono City, Iwate Prefecture. Stratigraphic unit: Kamihei Group in Kamihei area. Geologic age: Neocomian, Cretaceous.

Yabepecten ogasawarai Matsubara, 2003

Plate 31, Figures 13a–b

Paleontol. Res., vol. 7, no. 2, p. 169, Figs. 2, 3, 4.2, 4.4, 4.6a, b. Holotype: IGPS no. 98911 (Existing). Type locality: Bed of the Sagae River, about 250 m downstream of "Uwano-o-hashii" (Uwano big bridge) over the Sagae River and about 500 m S-SE of the hamlet of Uwano, [Shiraiwa], Sagae City, Yamagata Prefecture. Stratigraphic unit: Oya Tuffaceous Sandstone Member of the Hongô Formation. Geologic age: Late Miocene.

Yoldia iwatensis Hatai, 1940

Plate 31, Figures 14a–b

Bull. Biogeogr. Soc. Japan, vol. 10, no. 9, p. 121, pl. 1, figs. 5, 6. Holotype: IGPS no. 61348 (Existing). Type locality: Kadonosawa, Nisatai-mura, Ninohe-gun [currently Fukuoka, Ninohe City], Iwate Prefecture. Stratigraphic unit: Kadonosawa Beds [=Kadonosawa Formation]. Geologic age: Miocene [latest Early–earliest Middle Miocene].

Yoldia scaphoides Nagao, 1928b

Plate 31, Figures 15a–c

Sci. Rep. Tôhoku Imp. Univ., 2nd Ser. (Geol.), vol. 12, no. 1, p. 23, pl. 2, figs. 29, 29a. Holotype: IGPS no. 35987 (Existing). Type locality: Taya, Ashiya-machi, Onga-gun, Province of Chikuzen [Fukuoka Prefecture]. Stratigraphic unit: Yamaga Beds [Yamaga Formation]. Geologic age: Oligocene.

Zirfaea hataii Masuda and Noda, 1969

Plate 31, Figure 16

Trans. Proc. Palaeont. Soc. Japan, N.S., no. 75, p. 133, pl. 14, figs. 3, 4. Holotype: IGPS no. 86742 (Existing). Type locality: Gôroku cliff along the right bank of the Hirosegawa, near the waterway tunnel of the Sankyozawa Electric Plant, in the western border of Sendai City [sic, Gôroku, Miyagi-machi, Miyagi-gun][currently Aobaku, Sendai City], Miyagi Prefecture. Stratigraphic unit: Tatsunokuchi Formation. Geologic age: Early Pliocene [latest Late Miocene–earliest Early Pliocene].

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Note: Bibliography with asterisk (*) behind the date of publication includes the original description(s) of listed taxa.

Explanation of Plates

All figures in natural size, unless otherwise stated

Plate 1

1. *Acanthopecten onukii* Murata, 1964. IGPS no. 85745 (Holotype). 2. *Acanthopecten spinosus* Hayasaka, 1925b. IGPS no. 22388 (Lectotype). 3. *Acila divaricata chitosensis* Noda, 1962b. IGPS no. 79060 (Holotype). 4a–b. *Acila (Acila) kiiensis* Masuda and Katto, in Katto and Masuda, 1978. IGPS no. 96071 (Holotype). 5. *Aequipecten matsunagiensis* Masuda, 1966b. IGPS no. 90089 (Holotype). 6. *Amussiopecten akiyamae* Masuda, 1962a. IGPS no. 90658 (Holotype). 7a–d. *Anadara (Scapharca) akitaensis* Noda, 1966a. IGPS no. 16330 (Holotype). 8a–b. *Anadara (Anadara) amicula elongata* Noda, 1966a. IGPS no. 85907 (Holotype). 9a–b. *Anadara (Anadara) arasawaensis* Noda, 1966a. IGPS no. 90046 (Holotype). 10. *Anadara (Anadara) gentaroensis* Noda, 1966a. IGPS no. 86411 (Holotype). 11a–c. *Anadara (Anadara) hataii* Noda, 1966a. IGPS no. 73210 (Holotype).

Plate 2

1a–b. *Anadara (Anadara) hataii* Noda, 1966a. IGPS no. 73210 (Holotype). 2a–c. *Anadara (Anadara) hokkaidoensis* Noda, 1966a. IGPS no. 86408 (Holotype). 3. *Anadara (Scapharca?) iwashibaraensis* Noda, 1965. IGPS no. 29050 (Holotype). 4a–b. *Anadara (Anadara) iwatensis* Noda, 1966a. IGPS no. 90048 (Holotype). 5a–b. *Anadara (Anadara) iwatonoensis* Noda, 1966a. IGPS no. 63342 (Holotype). 6a–d. *Anadara (Anadara) kakehataensis* Hatai and Nisiyama, 1949. IGPS no. 72510 (Holotype). 7a–c. *Anadara (Hataiarca) kogachiensis* Noda, 1971. IGPS no. 86757 (Holotype).

Plate 3

1a–b. *Anadara (Hataiarca) kogachiensis* Noda, 1971. IGPS no. 86757 (Holotype). 2a–b. *Anadara (Anadara) kurosedaniensis* Hatai and Nisiyama, 1949. IGPS no. 72511 (Holotype). 3a–b. *Anadara (Scapharca) masudai* Noda, 1966a. IGPS no. 51550 (Holotype). 4. *Anadara (Anadara) naganoensis* Noda, 1966a. IGPS no. 86410 (Holotype). 5a–b. *Anadara (Tegillarca) obessa* Kotaka, 1953. IGPS no. 66536 (Holotype). 6a–b. *Anadara (Scapharca) omaruensis* Sasaki, 1991. IGPS no. 101325 (Holotype). 7a–b. *Anadara (Hataiarca) pseudosubcrenata* Ogasawara, 1977. IGPS no. 95070 (Holotype). 8a–b. *Anadara (Scapharca?) shizuokaensis* Noda, 1965. IGPS no. 78919 (Holotype). 9. *Anadara (Scapharca) taiwanica* Noda, 1966a. IGPS no. 42357 (Holotype).

Plate 4

1a–c. *Anadara (Scapharca) taiwanica* Noda, 1966a.

IGPS no. 42357 (Holotype). 2a–b. *Anadara (Scapharca) takanabensis* Sasaki, 1991. IGPS no. 101327 (Holotype). 3a–b. *Anadara (Hataiarca) takayamai* Noda, 1966a. IGPS no. 86403 (Holotype). 4a–b. *Anadara (Anadara) tanakuraensis* Noda, 1966a. IGPS no. 28404 (Holotype). 5. *Anadara (Tosarca) tosaensis* Noda, 1965. IGPS no. 54609 (Holotype). 6a–c. *Anadara (Anadara) tsudai* Noda, 1966a. IGPS no. 86396 (Holotype). 7a–c. *Anadara (Hataiarca) yatsuoensis* Noda, 1966a. IGPS no. 86402 (Holotype).

Plate 5

1a–b. *Angulus maximus submaximus* Mizuno, 1964. IGPS no. 36452 (Syntype). 2a–c. *Anisocorbula ohiroi* Masuda, 1966b. IGPS no. 90734 (Holotype). 3. *Annuliconcha kitakamiensis* Murata, 1964. IGPS no. 22389 (Holotype). 4–5. *Anomia pseudotruncata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22522 (Syntypes). 6a–b. *Arca (Arca) kikaizimana* Nomura and Zinbô, 1934. IGPS no. 50198 (Holotype). 7a–b. *Arca (Arca) miurensis* Noda, 1966a. IGPS no. 23846 (Holotype). 8. *Arca sakamizuensis* Hatai and Nisiyama, 1952. IGPS no. 35996 (Holotype). 9–11. *Arca shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22521 (Syntypes). 12. *Arca (Arca) sokeishiensis* Nomura, 1933. IGPS no. 47770 (Holotype external mold). 13. *Arca (Arca) takaoensis* Nomura, 1933. IGPS no. 37444 (Holotype). 14a–e. *Arca (Barbatia) yokoyamai* Nomura, 1933. IGPS no. 42588 (Holotype). 15. *Astarte shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22544 (Lectotype). 16. *Astarte submalioides* Nagao, 1934. IGPS no. 66446 (Lectotype). 17. *Astarte subsenecta* var. *costata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22483 (Holotype). 18a–b. *Aviculopecten hataii* Murata, 1964. IGPS no. 85732 (Holotype; b. external mold). 19. *Aviculopecten minoensis* Hayasaka, 1925b. IGPS no. 22412 (Lectotype). 20a–b. *Aviculopecten? onukii* Murata, 1969. IGPS no. 91380 (Holotype). 21. *Aviculopecten reticularis* Hayasaka, 1925b. IGPS no. 22227 (Holotype). 22a–b. *Aviculopecten sasakii* Murata, 1964. IGPS no. 85730 (Holotype; b. external mold). 23. *Azorius philippianus* Kotaka and Noda, 1977. IGPS no. 95087 (Holotype). 24a–b. *Barbatia (Acar) hayasakai* Noda, 1966a. IGPS no. 76249 (Holotype). 25. *Barbatia kanezawaensis* Akutsu, 1964. IGPS no. 85501 (Holotype). 26a–b. *Barbatia (Acar) numaensis* Noda, 1966a. IGPS no. 86137 (Holotype). 27. *Barbatia (Pugillarca) tsurushizakiensis* Noda, 1966a. IGPS no. 17271 (Holotype). 28. *Barbatia (Barbatia) uetsukiensis* Hatai and Nisiyama, 1949. IGPS no. 72522 (Holotype). 29a–b. *Cyrena (Batissa) ponderosa* Nagao, 1928a. IGPS no. 35777 (Syntype) [non Prime, 1860; =*Batissa nagoai* Suzuki, 1941. IGPS no. 35777 (Holotype)].

Plate 6

1. *Cyrena (Batissa) ponderosa* Nagao, 1928a. IGPS no. 35777 (Syntype). [non Prime, 1860; =*Batissa nagaoui* Suzuki, 1941. IGPS no. 35777 (Holotype)]. **2a–b.** *Batissa taiwanensis* Nomura, 1933. IGPS no. 45087 (Holotype). **3.** *Brachidontes takiensis* Kamada, 1962. IGPS no. 79380 (Holotype). **4.** *Callista chinensis takagii* Masuda, 1955. IGPS no. 90885 (Holotype). **5.** *Callista pseudoplana* Yabe and Nagao, 1925. IGPS no. 8553 (Lectotype). **6.** *Callista sekuyaensis* Akutsu, 1964. IGPS no. 85506 (Syntype). **7.** *Cardiomya (Cardiomya) kotakai* Honda, 1989. IGPS no. 99278 (Holotype). **8a–b.** *Cardita katsumatai* Nagao, 1928b. IGPS no. 36331 (Holotype). **9.** *Cardita kondoi* Nagao, 1928b. IGPS no. 36407 (Holotype). **10.** *Cardium (Trachycardium) hanpeizanense* Nomura, 1933. IGPS no. 37455 (Holotype). **11a–b.** *Cardium (Cerastoderma) hanzawai* Nomura, 1933. IGPS no. 46803 (Holotype). **12.** *Cardium (Cerastoderma) hizenense* Nagao, 1928b. IGPS no. 36369 (Holotype). **13a–b.** *Cardium (Trachycardium) infantile* Nomura and Zinbô, 1934. IGPS no. 50386 (Holotype). **14.** *Cardium ishidoense* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22553 (Lectotype). **15a–b.** *Cardium (Cerastoderma?) kishimaense* Nagao, 1928b. IGPS no. 36367 (Holotype). **16.** *Cardium miikense* Nagao, 1928a. IGPS no. 35733 (Lectotype). **17a–b.** *Cardium (Nemocardium) torii* Nomura, 1933. IGPS no. 49000 (Holotype). **18.** *Caryocorbula saikawai* Kotaka, 1955. IGPS no. 74010 (Holotype).

Plate 7

1. *Chlamys (Chlamys) akutsui* Masuda, 1962a. IGPS no. 28293 (Holotype). **2.** *Chlamys chinkopensis* Masuda and Sawada, 1961. IGPS no. 90595 (Holotype). **3.** *Chlamys cosibensis hanzawae* Masuda, 1959. IGPS no. 90648 (Holotype). **4.** *Chlamys daishakaensis* Masuda and Sawada, 1961. IGPS no. 90708 (Holotype). **5.** *Chlamys (Chlamys) hanaishiensis* Masuda, 1962a. IGPS no. 90565 (Holotype). **6.** *Chlamys (Chlamys) hasimotoi* Masuda, 1962a. IGPS no. 90527 (Holotype). **7.** *Chlamys hataii* Masuda and Akutsu, 1956. IGPS no. 90726 (Holotype). **8.** *Chlamys (Chlamys) hatakeyamae* Masuda, 1962a. IGPS no. 27563 (Holotype). **9a–b.** *Chlamys imanishii* Masuda and Sawada, 1961. IGPS no. 72555 (Holotype). **10.** *Chlamys (Chlamys) ishidae* Masuda, 1962a. IGPS no. 90676 (Holotype). **11.** *Chlamys (Chlamys) itoigawae* Masuda, 1962a. IGPS no. 90538 (Holotype). **12.** *Chlamys kitamurai* Kotaka, 1955. IGPS no. 74009 (Plastotype).

Plate 8

1. *Chlamys (Chlamys) kotakae* Masuda, 1962a. IGPS no. 90646 (Holotype). **2.** *Chlamys kumanodoensis* Masuda, 1953a. IGPS no. 90522 (Holotype). **3.** *Chlamys (Chlamys)*

matsunoii Masuda, 1962a. IGPS no. 90627 (Holotype). **4.** *Chlamys (Chlamys) nagaoui* Masuda, 1962a. IGPS no. 36440 (Holotype). **5.** *Chlamys (Chlamys) niikappuensis* Masuda, 1962a. IGPS no. 90536 (Holotype). **6a–b.** *Chlamys oidensis* Hatai, Masuda and Noda, 1974. IGPS no. 64419 (Holotype). **7a–b.** *Chlamys otukae* Masuda and Sawada, 1961. IGPS no. 90607 (Holotype). **8a–b.** *Chlamys (Chlamys) setsukoeae* Masuda, 1962b. IGPS no. 90477 (Holotype). **9a–c.** *Chlamys shitakaraensis* Honda, 1980. IGPS no. 95439 (Holotype; **a–b.** external molds of both valves, **c.** cast from the holotype). **10.** *Chlamys tamurae* Masuda and Sawada, 1961. IGPS no. 90550 (Holotype). **11.** *Circe (Circe) triangulus* Kotaka and Noda, 1977. IGPS no. 95085 (Holotype). **12.** *Clementia japonica* Masuda, 1955. IGPS no. 90405 (Holotype). **13a–b.** *Clementia (Clementia) nakosoensis* Kamada, 1962. IGPS no. 79385 (Holotype).

Plate 9

1a–b. *Clinocardium asagaiense arakawae* Kamada, 1962. IGPS no. 79383 (Holotype). **2a–b.** *Clinocardium asagaiense makiyamae* Kamada, 1962. IGPS no. 15800 (Holotype). **3a–b.** *Clinocardium chikagawaense* Kotaka, 1950. IGPS no. 72999 (Holotype). **4.** *Clinocardium hataii* Hayasaka, 1956. IGPS no. 77375 (Holotype). **5.** "*Clinocardium*" *nomurai* Hayasaka, 1956. IGPS no. 77376 (Holotype). **6a–c.** *Clinocardium omagariense* Honda, 1981b. IGPS no. 95740-1 (Holotype). **7.** *Codakia kitamurai* Hatai and Nisiyama, 1949. IGPS no. 72526 (Holotype). **8a–b.** *Codakia (Jagonia) okinawazimana* Nomura and Zinbô, 1936. IGPS no. 51319 (Holotype). **9a–b.** *Codakia semipolita* Nomura, 1933. IGPS no. 45086 (Holotype). **10a–c.** *Conularia rectangularis* Hayasaka, 1920. IGPS no. 7320 (Lectotype). **11a–b.** *Corbicula (Corbicula) kotakai* Honda, 1981a. IGPS no. 96758 (Holotype). **12–14.** *Corbicula (Veloritina?) sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22467 (Syntypes). **15.** *Corbicula (Veloritina?) sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22449 (Syntype). **16a–b.** *Corbicula (Corbicula) sachalinensis* Suzuki, 1943. IGPS no. 8353c (Holotype). **17a–b.** *Corbicula (Corbicula) shimizui* Suzuki, 1943. IGPS no. 8353a (Holotype). **18.** *Corbicula takasago* Nomura, 1933. IGPS no. 45079 (Holotype). **19.** *Corbula (Cunaecorbula) kyushuensis* Nagao, 1928a. IGPS no. 35834 (Lectotype). **20.** *Corbula (Corbula) subtumida* Nagao, 1928a. IGPS no. 35828 (Lectotype). **21a–b.** *Corbula (Corbula) taiwanensis* Nomura, 1933. IGPS no. 48966 (Holotype). **22.** *Crassatellites asakuraensis* Nagao, 1928b. IGPS no. 36258 (Holotype). **23.** *Crassatellites formosanus* Nomura, 1933. IGPS no. 37441 (Holotype). **22a–b.** *Crassatellites inconspicuus* Nagao, 1928b. IGPS no. 36308 (Holotype). **23a–c.** *Crassatellites matsuraensis* Nagao, 1928b. IGPS no. 36310 (Holotype). **24a–b.** *Crassatellites*

tosanus Nomura, 1937. IGPS no. 54638 (Lectotype).

Plate 10

1a–b. *Crassostrea gravitesta eoilensis* Kim, Noda and Yoon, 1974. IGPS no. 92938 (Holotype). **2a–b.** *Crassostrea sunakozakaensis* Ogasawara, 1976. IGPS no. 95018 (Holotype). **3.** *Crenella (Megacrenella) nuibetsuensis* Honda, 1989. IGPS no. 97096 (Holotype). **4.** *Crenella (Megacrenella) shitakaraensis* Honda, 1989. IGPS no. 97111 (Holotype). **5.** *Crenella striatocostata* Nagao, 1928b. IGPS no. 36291 (Holotype). **6a–c.** *Crenella subformicata* Nagao, 1928b. IGPS no. 36288 (Holotype). **7.** *Crenella tomiyaensis* Hatai and Nakamura, 1940. IGPS no. 61354 (Holotype). **8.** *Crenipecten kesenensis* Hayasaka, 1925b. IGPS no. 22383 (Holotype). **9a–b.** *Ctena hataii* Masuda, 1966b. IGPS no. 90729 (Holotype). **10a–b.** *Ctenodonta manchuriensis* Endo, 1935. IGPS no. 55582 (Holotype). **11.** *Cucullaea delicatostriata* Yabe and Nagao, 1925. IGPS no. 8555 (Lectotype). **12.** *Cucullaea ezoensis* Yabe and Nagao, 1928. IGPS no. 22611 (Syntype). **13.** *Cucullaea nipponica* Nagao, 1928b. IGPS no. 35999 (Holotype).

Plate 11

1a–b. *Cucullaea nipponica* Nagao, 1928b. IGPS no. 35999 (Holotype). **2.** *Cultellus? brevis* Nagao, 1928a. IGPS no. 35788 (Holotype). **3.** *Cultellus? leguminoides* Nagao, 1928b. IGPS no. 36447 (Holotype). **4a–b.** *Cyclina (Cyclina) asagaiensis* Kamada, 1952. IGPS no. 72955 (Holotype). **5.** *Cyclina compressa* Nagao, 1928b. IGPS no. 36415 (Holotype). **6a–b.** *Cyclina (Cyclina) japonica* Kamada, 1952. IGPS no. 72952 (Holotype). **7a–b.** *Cyclina? nodai* Nagao, 1928b. IGPS no. 36442 (Holotype). **8.** *Cyclina (Cyclina) umbonata* Kotaka and Noda, 1977. IGPS no. 95090 (Holotype). **9.** *Cyclocardia fujinaensis* Ogasawara and Nomura, 1980. IGPS no. 96024 (Holotype). **10–13.** *Cyrena otsukai* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22476 (Syntypes; external and internal molds). **14–16.** *Cyrena shiroiensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22451 (Syntypes). **17–19.** *Cyrena shiroiensis* var. *alata* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22443 (Syntypes). **20.** *Daonella densisulcata* Yabe and Shimizu, 1927. IGPS no. 7571 (Holotype). **21.** *Daonella densisulcata* var. *subquadrata* Yabe and Shimizu, 1927. IGPS no. 7890 (Holotype). **22.** *Daonella kotoi* var. *alta* Yabe and Shimizu, 1927. IGPS no. 5298 (Holotype). **23.** *Daonella kotoi* var. *multistriata* Yabe and Shimizu, 1927. IGPS no. 35278 (Syntype). **24.** *Daonella kotoi* var. *multistriata* Yabe and Shimizu, 1927. IGPS no. 22998 (Syntype). **25.** *Diplodonta confusa* Nagao, 1928b. IGPS no. 36351 (Holotype). **26.** *Diplodonta? problematica* Nagao, 1928a. IGPS no. 35827 (Lectotype). **27.** *Dosinia chikuzenensis* Nagao, 1928b.

IGPS no. 36277 (Holotype). **28.** *Dosinia ettyuensis* Hatai and Nisiyama, 1939 ["1938"]. IGPS no. 62429 (Holotype).

Plate 12

1a–c. *Dosinia (Phacosoma) hataii* Masuda, 1963. IGPS no. 72476 (Holotype). **2.** *Dosinia (Kaneharaia) kaneharai fujinaensis* Masuda, 1967. IGPS no. 90888 (Holotype). **3a–b.** *Dosinia (Kaneharaia) kannoi* Masuda, 1963. IGPS no. 64682 (Holotype). **4a–b.** *Dosinia tatunokutiensis* Nomura, 1938. IGPS no. 15944 (Holotype). **5a–c.** *Ennucula praenipponica* Kamada, 1962. IGPS no. 79375 (Holotype). **6a–b.** *Ezocallista kurodae* Kamada, 1962. IGPS no. 79384 (Holotype).

Plate 13

1. *Fortipecten kuroishiensis* Kotaka and Noda, 1967. IGPS no. 90767 (Holotype). **2a–b.** *Gafrarium (Circe) hanzawai* Nomura and Zinbō, 1936. IGPS no. 51348 (Holotype). **3.** *Gari (Gari) pitogoensis* Kotaka and Noda, 1977. IGPS no. 95086 (Holotype). **4.** *Gervillia shinanoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22507 (Syntype). **5a–b.** *Glans naomiae* Masuda, 1966b. IGPS no. 90181 (Holotype). **6.** *Gloripallium izurense* Masuda, 1958a. IGPS no. 90541 (Holotype). **7.** *Glycimeris altoumbonata* Nagao, 1928b. IGPS no. 36013 (Holotype). **8–10.** *Glycimeris amakusensis* Nagao, 1930. IGPS no. 42727 (Syntypes). **11a–b.** *Glycimeris cisshuensis* var. *compressa* Nagao, 1928b. IGPS no. 36001 (Holotype). **12a–b.** *Glycimeris hanzawai* Nomura and Zinbō, 1934. IGPS no. 50196 (Holotype). **13a–b.** *Glycimeris nakosoensis* Hatai and Nisiyama, 1949. IGPS no. 72502 (Holotype). **14.** *Glycimeris nozokiensis* Hatai and Nisiyama, 1951. IGPS no. 72883 (Holotype). **15.** *Glycimeris ogawaraensis* Kotaka and Noda, 1967. IGPS no. 90739 (Holotype). **16.** *Glycimeris oshimaensis* Noda, 1962b. IGPS no. 79057 (Holotype). **17.** *Glycimeris rhyconelloides* Nomura and Hatai, 1939 ["1938"]. IGPS no. 60022 (Holotype). **18a–b.** *Glycimeris subpectiniformis* Nomura and Zinbō, 1934. IGPS no. 50200 (Holotype). **19a–b.** *Glycimeris yamaguchii* Hayasaka, 1956. IGPS no. 77373 (Holotype). **20.** *Grammatodon yokoyamai* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22555 (Lectotype). **21a–b.** *Halicardia akitaensis* Ogasawara and Takayasu, 1982. IGPS no. 96013 (Holotype; **b.** cast from the holotype). **22a–b.** *Halicardia miyagiensis* Fujiwara, 1992. IGPS no. 101555 (Holotype).

Plate 14

1–3. *Homomya? dubia* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22505 (Syntypes). **4.** *Inoceramus balticus* var. *toyajoanus* Nagao and Matumoto, 1940. IGPS no. 4540 (Lectotype). **5.** *Inoceramus pedalionoides* Nagao and Matumoto, 1939 ex Inai (MS). IGPS no. 22720

(Syntype). **6.** *Isognomon (Isognomon) hataii* Noda and Furuichi, 1972. IGPS no. 91766 (Holotype). **7.** *Katylisia (Nipponomarcia) endoi* Hatai and Kotaka, 1952. IGPS no. 74341 (Holotype). **8.** *Leptochondria? hataii* Murata, 1973. IGPS no. 92661 (Holotype). **9.** *Leukomoides nipponicus* Ogasawara, 1976. IGPS no. 95190 (Holotype). **10a–b.** *Lima amaxensis* var. *kumasoana* Nagao, 1928a. IGPS no. 35808 (Lectotype). **11.** *Lima eocenica* Nagao, 1928a. IGPS no. 35817 (Lectotype). **12.** *Lima (Limatula) ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22539 (Lectotype). **13a–b.** *Lima (Limea) limopsis* Nomura and Zinbō, 1934. IGPS no. 50368 (Holotype). **14.** *Limatula sakoi* Masuda and Katto, in Katto and Masuda, 1978. IGPS no. 96073 (Holotype). **15a–b.** *Limipecten bandoi* Murata, 1969. IGPS no. 91384 (Holotype; **a.** external mold, **b.** cast from the holotype).

Plate 15

1a–b. *Lioconcha tosana* Nomura, 1937. IGPS no. 54674 (Holotype). **2a–b.** *Loripes tonohamanus* Nomura, 1937. IGPS no. 54645 (Holotype). **3a–b.** *Lucina kunigamiensis* Nomura and Zinbō, 1936. IGPS no. 51350 (Holotype). **4a–b.** *Lucinoma otukai* Hatai and Nisiyama, 1949. IGPS no. 72501 (Holotype; external molds of both valves). **5a–b.** *Lucinopsis? boshihoensis* Nomura, 1933. IGPS no. 48007 (Holotype). **6.** *Lucinopsis kosuiensis* Nomura, 1933. IGPS no. 48001 (Holotype; broken). **7a–b.** *Macoma (Macoma) atsunaiensis* Honda, 1988. IGPS no. 97106-2 (Holotype). **8a–b.** *Macoma hakushatonensis* Nomura, 1933. IGPS no. 48589 (Holotype; broken). **9.** *Macoma hokiensis* Akutsu, 1964. IGPS no. 85512 (Holotype). **10.** *Macrocallista ariakensis* Nagao, 1928a. IGPS no. 35758 (Lectotype). **11.** *Macrocallista hanzawai* Nagao, 1928b. IGPS no. 36236 (Holotype). **12a–b.** *Macrocallista kahoensis* Nagao, 1928b. IGPS no. 36389 (Holotype). **13a–c.** *Macrocallista matsuraensis* Nagao, 1928b. IGPS no. 36209 (Holotype). **14a–b.** *Mactra (Spisula) asperaeformis* Nomura and Zinbō, 1934. IGPS no. 50396 (Holotype). **15a–b.** *Mactra nakayamaensis* Kamada, 1962. IGPS no. 79386 (Holotype). **16.** *Mactra sulcataroides* Akutsu, 1964. IGPS no. 85509 (Holotype). **17a–b.** *Margaritifera owadaensis* Noda, 1970. IGPS no. 86893 (Holotype). **18a–b.** *Meretrix deguchii* Hayasaka and Hayasaka, 1960. IGPS no. 77512 (Holotype). **19a–b.** *Meretrix meretrix ninohensis* Hatai, 1940. IGPS no. 61351 (Holotype). **20.** *Meretrix pseudomeretrix* Nagao, 1928b. IGPS no. 36361 (Holotype). **21a–b.** *Meretrix tochiensis* Akutsu, 1964. IGPS no. 85507 (Holotype).

Plate 16

1a–b. *Miyagipecten matsumoriensis* Masuda, 1952. IGPS no. 90690 (Lectotype). **2.** *Mizuhopecten kimurai kagaensis* Ogasawara, 1976. IGPS no. 95012 (Holotype).

3a–b. *Mizuhopecten paraplebejus murataensis* Masuda and Takegawa, 1965. IGPS no. 90826 (Holotype). **4.** *Modiola? ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 8570 (Holotype). **5a–b.** *Modiolus ezoensis* Yabe and Nagao, 1928. IGPS no. 22627 (Holotype). **6a–b.** *Modiolus wanizakiensis* Masuda, 1966b. IGPS no. 90180 (Holotype). **7a–b.** *Modiolus (Modiolatus) yasuihiro* Kamada, 1962. IGPS no. 79379 (Holotype). **8a–d.** *Monia denselineata* Hatai, Masuda and Suzuki, 1961. IGPS no. 90505 (Holotype). **9.** *Mya arenaria kitahukuokaensis* Hatai, 1940. IGPS no. 61363 (Holotype). **10.** *Mya convexa* Noda, 1992. IGPS no. 100877 (Holotype). **11a–b.** *Myadora okadae* Hatai and Masuda, 1960. IGPS no. 90184 (Holotype).

Plate 17

1. *Myadora suzuensis* Masuda, 1966b. IGPS no. 90776 (Holotype). **2.** *Myoconcha hamadaensis* Yabe and Shimizu, 1927. IGPS no. 35286 (Holotype). **3.** *Myophoria japonica* Hayasaka, 1925b. IGPS no. 22422 (Lectotype). **4.** *Myophoria subelegans* var. *tobai* Hayasaka, 1924. IGPS no. 8405 (Syntype). **5.** *Myophoria subelegans* var. *tobai* Hayasaka, 1924. IGPS no. 8404 (Syntype). **6.** *Myophoria subelegans* var. *tobai* Hayasaka, 1924. IGPS no. 8406 (Syntype; external mold). **7.** *Myophoria subelegans* var. *tobai* Hayasaka, 1924. IGPS no. 8407 (Syntype; external mold). **8.** *Mytilus haboroensis* Noda, 1992. IGPS no. 100727 (Holotype). **9.** *Mytilus ogawaensis* Hatai and Nisiyama, 1949. IGPS no. 72503 (Holotype). **10.** *Nemocardium (Keenaea) yoshidai* Masuda and Miyasaka, 1994. IGPS no. 102544 (Holotype). **11.** *Neoburmesia iwakiensis* Yabe and Sato, 1942. IGPS no. 65274 (Holotype). **12a–b.** *Astarte minor* Nagao, 1934. IGPS no. 66425 (Lectotype) [= *Nicaniella (Trautscholdia) nagaoi* Matsubara, 2016. IGPS no. 66425 (Holotype)]. **13.** *Arca (Noetia) pondaungensis* var. *transversa* Nagao, 1928b [= *Noetia nagaoi* MacNeil, 1938]. IGPS no. 36012 (Holotype). **14.** *Nucula fukasawaensis* Akutsu, 1964. IGPS no. 85500 (Holotype). **15a–b.** *Nucula ishidoensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 7125 (Syntype). **16.** *Nucula karatsuensis* Nagao, 1928b. IGPS no. 35988 (Holotype). **17a–b.** *Nucula kokozuraensis* Hatai and Nisiyama, 1949. IGPS no. 72507 (Holotype). **18a–c.** *Nucula (Acila) mirabilis* var. *ashiyaensis* Nagao, 1928b. IGPS no. 35981 (Holotype). **19.** *Nucula (Ennucula) omagariensis* Honda, 1989. IGPS no. 95576-1 (Holotype). **20a–c.** *Nuculana (Nuculana) karihaensis* Hatai and Nisiyama, 1949. IGPS no. 72633 (Holotype). **21.** *Nuculana (Nuculana) matsukuchiensis* Noda, 1962b. IGPS no. 79059 (Holotype). **22–24.** *Nuculana sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 7115 (Syntypes). **25a–c.** *Nuculites kimurai* Hayasaka, 1925a. IGPS no. 22418 (Holotype). **26a–b.** *Nuttallia uchigoensis* Kamada, 1962. IGPS no. 79387 (Holotype).

Plate 18

1. *Ostrea cassis* Nagao, 1928b. IGPS no. 36031 (Holotype). 2. *Ostrea lunaiformis* Nagao, 1928b. IGPS no. 36039 (Holotype). 3a–b. *Ostrea sakitoensis* Nagao, 1928b. IGPS no. 36053 (Holotype). 4. *Ostrea (Ostrea) yokoyamai* Kamada, 1962. IGPS no. 79378 (Holotype). 5a–b. *Panomya izumo* Nomura and Hatai, 1939 [“1938”]. IGPS no. 51884 (Holotype). 6. *Panope kanomatazawaensis* Akutsu, 1964. IGPS no. 85513 (Holotype). 7. *Panope kanomatazawaensis fudozawaensis* Akutsu, 1964. IGPS no. 85514 (Holotype). 8. *Panopea nomurae* Kamada, 1962. IGPS no. 79395 (Holotype). 9. *Paphia (Paphia) euglypta ohiroi* Masuda, 1966b. IGPS no. 90735 (Holotype). 10. *Paphia shimotsukensis* Akutsu, 1964. IGPS no. 85508 (Holotype). 11. *Paphia (Paphia) suzuensis* Masuda, 1966b. IGPS no. 90086 (Holotype). 12a–b. *Parallelodon obsoletiformis* Hayasaka, 1925b. IGPS no. 22392 (Lectotype).

Plate 19

1. *Patinopecten ibaragiensis* Masuda, 1953b. IGPS no. 90698 (Holotype). 2. *Patinopecten kagamianus moniwaensis* Masuda, 1958b. IGPS no. 90700 (Holotype). 3. *Patinopecten kimurai nakosoensis* Masuda, 1960. IGPS no. 90581 (Holotype). 4. *Patinopecten kimurai yudaensis* Masuda, 1960. IGPS no. 90661 (Holotype). 5a–b. *Patinopecten kobiyamai* Kamada, 1954. IGPS no. 72963 (Holotype). 6. *Patinopecten (Kotorapekten) naganensis* Masuda, 1962a. IGPS no. 90547 (Holotype).

Plate 20

1. *Patinopecten (Kotorapekten) naganensis* Masuda, 1962a. IGPS no. 90547 (Holotype). 2a–b. *Patinopecten nakajimai* Masuda, 1954b. IGPS no. 90580 (Holotype). 3a–b. *Patinopecten poculum tsudae* Noda, 1962b. IGPS no. 79062 (Holotype). 4. *Patinopecten (Patinopecten) tokyoensis hokurikuensis* Masuda, 1962a. IGPS no. 13430 (Holotype). 5. *Patinopecten yamasakii kintaichiensis* Masuda, 1958c. IGPS no. 90715 (Holotype). 6. *Patinopecten yamasakii ninohensis* Masuda, 1954a. IGPS no. 90684 (Holotype). 7. *Patinopecten (Patinopecten) yessoensis nakatonbetsuensis* Masuda, 1962a. IGPS no. 90662 (Holotype).

Plate 21

1. *Patinopecten (Patinopecten) yessoensis yokoyamae* Masuda, 1962a. IGPS no. 90543 (Holotype). 2a–b. *Pecten (Pseudamusium) akihoensis* Saga, in Matsumoto, 1930. IGPS no. 90586 (Neotype). 3. *Pecten (Chlamys) ashियाensis* Nagao, 1928b. IGPS no. 36448 (Holotype). 4. *Pecten (Chlamys) ashियाensis* var. *denselineatus* Nagao, 1928b. IGPS no. 36437 (Holotype). 5. *Pecten (Vola) byoritsuensis* Nomura, 1933. IGPS no. 45001 (Holotype).

6. *Pecten (Propeamusium) cowperi* var. *yubarensis* Yabe and Nagao, 1928. IGPS no. 22599 (Holotype). 7. *Pecten (Aequipekten) gabusogaensis* Nomura and Zinbō, 1936. IGPS no. 51321 (Holotype). 8–12. *Pecten (Decadopecten) izuensis* Nomura and Niino, 1932. IGPS no. 44583 (Syntypes). 13. *Pecten (Chlamys) kagamianus miyagiensis* Nakamura, 1940a. IGPS no. 61336 (Holotype). 14–15. *Pecten (Pecten) kakisakiensis* Nomura and Niino, 1932. IGPS no. 44582 (Syntypes).

Plate 22

1a–b. *Pecten (Patinopecten) kimurai matumoriensis* Nakamura, 1940a. IGPS no. 61335 (Syntype). 2. *Pecten kyushuensis* Nagao, 1928b. IGPS no. 36459 (Holotype). 3. *Pecten (Swiftopekten) nanakitaensis* Nakamura, 1940b. IGPS 61334 (Holotype; external mold). 4. *Pecten (Patinopecten) planicostulatus* Nomura and Niino, 1932. IGPS no. 44584 (Syntype). 5. *Pecten (Chlamys) sakitoensis* Nagao, 1928b. IGPS no. 36438 (Holotype). 6a–b. *Pecten (Pecten) shirahamaensis* Nomura and Niino, 1932. IGPS no. 44587 (Holotype). 7a–b. *Pecten (Pecten) subsquamatus* Nomura, 1933. IGPS no. 44702 (Holotype). 8. *Pecten (Patinopecten) taiwanus* Nomura, 1933. IGPS no. 45007 (Holotype). 9–11. *Pecten (Decadopecten) tayamai* Nomura and Niino, 1932. IGPS no. 44581 (Syntypes).

Plate 23

1. *Pecten (?Amussiopecten) yabei* Nomura, 1933. IGPS no. 25265 (Holotype). 2. *Pectunculus hokkaidoensis* Yabe and Nagao, 1928. IGPS no. 22613 (Holotype). 3a–b. *Pectunculus sachalinensis* Yabe and Nagao, 1925. IGPS no. 8554 (Syntype). 4. *Pedalion tomiyasui* Nagao, 1928a. IGPS no. 35686 (Lectotype). 5. *Periploma fujikuraense* Noda, 1962b. IGPS no. 79056 (Holotype). 6a–b. *Periploma pulchellum* Hatai and Nisiyama, 1949. IGPS no. 72508 (Holotype). 7a–b. *Perna sanchuensis* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22457 (Lectotype). 8. *Peronidia ochii* Kamada, 1962. IGPS no. 79388 (Holotype). 9a–c. *Pholadomya brevitesta* Nagao, 1943. IGPS no. 72710 (Holotype). 10a–c. *Pholadomya kazusaensis* Nagao, 1943. IGPS no. 19534 (Holotype). 11. *Pholadomya? miyamotoi* Nagao, 1943. IGPS no. 72737 (Lectotype). 12a–c. *Pholadomya takasimensis* Nagao, 1943. IGPS no. 72706 (Holotype). 13a–b. *Pinna asakuraensis* Nagao, 1928b. IGPS no. 36017 or 36018 (Holotype). 14. *Pitar hataii* Natori, 1964. IGPS no. 85728 (Holotype).

Plate 24

1a–b. *Pitar hokkaidoensis* Nomura, 1935a. IGPS no. 56371 (Holotype). 2. *Pitar kotoi* Natori, 1964. IGPS no. 85729 (Holotype). 3a–b. *Pitar sendaica monstrosa* Nomura, 1938.

IGPS no. 16131A (Holotype). **4.** *"Pitar" shiobarensis* Akutsu, 1964. IGPS no. 85505 (Holotype). **5.** *Pitar sunakozakaensis* Ogasawara, 1976. IGPS no. 95028 (Holotype). **6.** *Pitaria? altoumbonata* Nagao, 1928b. IGPS no. 36445 (Holotype). **7.** *Pitaria ashiyaensis* Nagao, 1928b. IGPS no. 36434 (Holotype). **8a–b.** *Pitaria kyushuensis* Nagao, 1928b. IGPS no. 36238 (Holotype).

Plate 25

1. *Pitaria matsumotoi* Nagao, 1928b. IGPS no. 36241 (Holotype). **2.** *Pitaria takashimaensis* Nagao, 1928b. IGPS no. 36300 (Holotype). **3a–b.** *Pitaria yokoyamai* Nagao, 1928b. IGPS no. 36443 (Holotype). **4.** *Placopecten nomurai* Masuda, 1953a. IGPS no. 90553 (Holotype; broken). **5a–b.** *Placopecten wakuyaensis* Masuda, 1956. IGPS no. 90596 (Holotype). **6a–b.** *Plicatula tuberculosa* Nomura, 1933. IGPS no. 45030 (Holotype). **7.** *Pododesmus (Monia) noharai* Noda, 1971. IGPS no. 86762 (Holotype). **8a–c.** *Polynemamussium masagoi* Kotaka and Noda, 1967. IGPS no. 90755 (Holotype). **9.** *Polynemamussium yasudae* Masuda, 1962a. IGPS no. 90602 (Holotype). **10a–b.** *Portlandia (Portlandella) enaensis* Kamada, 1962. IGPS no. 79377 (Holotype). **11.** *Protocardia ibukii* Nakazawa and Murata, 1966. IGPS no. 85765 (Holotype; external mold). **12.** *Psammocola sekiyaensis* Akutsu, 1964. IGPS no. 85511 (Holotype). **13a–e.** *Pseudoactinodontophora yabei* Murata, 1971. IGPS no. 86885 (Holotype; **a.** internal mold, **b.** external mold, **c–e.** casts from the holotype). **14a–b.** *Pseudogrammatodon pacificus* Nomura and Zinbô, 1934. IGPS no. 50341 (Holotype). **15.** *Pteria sunakozakaensis* Ogasawara, 1976. IGPS no. 95008 (Holotype). **16.** *Rexithaerus shiratoriensis* Matsubara, 1994. IGPS no. 102562 (Holotype).

Plate 26

1a–b. *Rochefortia obsoletoradiata* Nomura and Zinbô, 1936. IGPS no. 51351 (Holotype). **2.** *Saccella confusa toyomaensis* Kamada, 1962. IGPS no. 79376 (Holotype; broken). **3.** *Saccella konnoi* Hatai and Masuda, 1962. IGPS no. 90196 (Holotype). **4a–c.** *Saccella saikaiensis* Masuda, 1966b. IGPS no. 90088 (Holotype). **5a–c.** *Sanguinolites bisectus* Hayasaka, 1925b. IGPS no. 22414 (Holotype). **6.** *Schizothaerus nuttalli kissyuensis* Hatai, 1941. IGPS no. 64751 (Holotype). **7.** *Septifer sinelnikovae* Noda, 1992. IGPS no. 100734 (Holotype). **8.** *Serripes hataii* Noda, 1962a ["1961"]. IGPS no. 74593 (Holotype). **9.** *Serripes japonica* Noda, 1962a ["1961"]. IGPS no. 78680 (Holotype). **10.** *Serripes makiyamai nigamiensis* Noda, 1962a ["1961"]. IGPS no. 78684 (Holotype). **11.** *Serripes muraii* Noda and Tada, 1968. IGPS no. 88058 (Holotype). **12.** *Serripes shiobarensis* Noda, 1962a ["1961"]. IGPS no. 78687 (Holotype). **13.** *Solemya (Acharax) bosoana* Hatai and

Koike, 1957. IGPS no. 94774 (Holotype).

Plate 27

1. *Solemya (Acharax) bosoana* Hatai and Koike, 1957. IGPS no. 94774 (Holotype). **2.** *Solemya (Acharax) muroensis* Natori, 1964. IGPS no. 85727 (Holotype). **3.** *Solen intermedius* Nagao, 1928b [= *Solen connectens* Oyama, 1951a]. IGPS no. 36435 (Holotype). **4.** *Solen shitakaraensis* Honda, 1989. IGPS no. 95129-1 (Holotype). **5.** *Solenomorpha elegantissima* Hayasaka, 1925b. IGPS no. 8203 (Syntype). **6a–c.** *Solenomorpha elegantissima* Hayasaka, 1925b. IGPS no. 22228 (Syntype). **7a–b.** *Solenomorpha elegantissima* Hayasaka, 1925b. IGPS no. 22229 (Syntype).

Plate 28

1. *Solenomorpha elegantissima* Hayasaka, 1925b. IGPS no. 22229 (Syntype). **2.** *Spisula (Cymbophora) ezoensis* Yabe and Nagao, 1928. IGPS no. 22614 (Holotype). **3.** *Spisula iwatensis* Hatai, 1940. IGPS no. 61360 (Holotype). **4.** *Spisula (Mactromeris) polynyma nagakoensis* Hatai and Nisiyama, 1949. IGPS no. 72506 (Holotype). **5.** *Spisula shimotsukensis* Akutsu, 1964. IGPS no. 85510 (Holotype). **6.** *Strebromchondria miyamoriensis* Murata, 1964. IGPS no. 85733 (Holotype). **7.** *Tapes nagahamaensis* Saito, Bando and Noda, 1970. IGPS no. 78707 (Holotype). **8.** *Taras millepustulata* Nomura, 1933. IGPS no. 45096 (Holotype). **9.** *Tellina (Pharaonella) akiana* Nomura, 1937. IGPS no. 54691 (Holotype). **10.** *Tellina equideclivis* Nagao, 1928b. IGPS no. 36457 (Holotype). **11a–b.** *Tellina kikaizimana* Nomura and Zinbô, 1934. IGPS no. 50398 (Holotype). **12a–b.** *Tellina kuntsuipinensis* Nomura, 1933. IGPS no. 48595 (Holotype). **13.** *Tellina maxima* Nagao, 1928b. IGPS no. 36412 (Holotype; broken). **14.** *Tellina notoensis* Masuda, 1955. IGPS no. 90451 (Holotype). **15.** *Tellina prototenuilirata* Nomura, 1933. IGPS no. 48192 (Holotype; broken). **16a–b.** *Tellina scabricostulata* Nomura and Zinbô, 1936. IGPS no. 51333 (Holotype). **17a–b.** *Tellina umedairensis* Shikama, 1951. IGPS no. 90404 (Holotype). **18.** *Tellina venulosa zyonoensis* Hatai and Nisiyama, 1939 ["1938"]. IGPS no. 62424 (Holotype). **19.** *Teredo matsushimaensis* Hatai, 1951. IGPS no. 73697 (Lectotype). **20a–b.** *Thracia hataii* Kamada, 1955. IGPS no. 72960 (Holotype). **21a–b.** *Thracia kamayasikiensis* Hatai, 1940. IGPS no. 61349 (Holotype). **22a–b.** *Thracia kidoensis* Kamada, 1955. IGPS no. 72958 (Holotype). **23a–b.** *Thracia kurosawaensis* Hayasaka, 1957. IGPS no. 77497 (Holotype). **24.** *Thracia (Thracia) shitakaraensis* Honda, 1989. IGPS no. 95428-4 (Holotype).

Plate 29

1. *Thracia (Thracia) shitakaraensis* Honda, 1989. IGPS no. 95428-4 (Holotype). **2.** *Thracidora nishizawaensis* Akutsu,

1964. IGPS no. 85502 (Holotype). **3a–c.** *Thyasira bisecta* var. *nipponica* Yabe and Nomura, 1925. IGPS no. 7485 (Lectotype). **4.** *Thyasira inflata* Yabe and Nomura, 1925. IGPS no. 17251 (Holotype). **5a–c.** *Thyasira quadrata* Yabe and Nomura, 1925. IGPS no. 8188 (Holotype). **6.** *Thyasira subexcavata* Yabe and Endō, in Yabe and Nomura, 1925. IGPS no. 6973 (Holotype). **7a–b.** *Thyasira tokunagai* Kuroda and Habe, 1951. IGPS no. 13786 (Lectotype, designated herein). **8a–b.** *Trapezium (Neotrapezium) ichinohense* Matsubara, 1995. IGPS no. 102605 (Holotype). **9.** *Trapezium (Neotrapezium) isoharensis* Kamada, 1962. IGPS no. 79382 (Holotype). **10.** *Trapezium isomatsuense* Kotaka, 1955. IGPS no. 74006 (Holotype). **11.** *Trapezium jobanicum* Hatai and Nisiyama, 1949. IGPS no. 72505 (Holotype). **12a–b.** *Cardium (Acanthocardia) cancellatum* Nomura, 1933 [= *Trifaricardium nomurai* Kuroda and Habe, 1951]. IGPS no. 46500 (Holotype). **13.** *Trigonarca? obsoleta* Yabe and Nagao, in Yabe, Nagao and Shimizu, 1926. IGPS no. 22538 (Holotype).

Plate 30

1. *Trigonia ainuana* Yabe and Nagao, 1928. IGPS no. 22591 (Holotype). **2.** *Trigonia brevicula* Yehara, 1915. IGPS no. 4329 (Lectotype). **3–4.** *Trigonia datemasamunei* Yehara, 1915. IGPS no. 4331 (Syntypes). **5a–b.** *Trigonia pustulosa* Nagao, 1930. IGPS no. 35612 (Syntype; **a.** external mold, **b.** cast from the syntype). **6a–b.** *Trigonia pustulosa* Nagao, 1930. IGPS no. 35613 (Syntype; **a.** external mold, **b.** cast from the syntype). **7–8.** *Trigonia pustulosa* Nagao, 1930. IGPS no. 35613 (Syntypes; **7a.** external mold, **7b–8.** casts from syntypes). **9.** *Trigonia yokoyamai* Yehara, 1915. IGPS no. 4367 (Syntype). **10.** *Trigonia yokoyamai* Yehara, 1915. IGPS nos. 4366 (Syntype). **11.** *Vasticardium arenicoloides* Akutsu, 1964. IGPS no. 85504 (Syntype). **12.** *Vasticardium shimotokuraense* Akutsu, 1964. IGPS no. 85503 (Syntype). **13.** *Vasticardium teshimaense* Saito,

Bando and Noda, 1970. IGPS no. 86745 (Holotype). **14a–b.** *Venericardia crenulicostata* Nomura, 1933. IGPS no. 46221 (Holotype). **15.** *Venericardia (Cyclocardia) enaensis* Kamada, 1962. IGPS no. 79381 (Holotype). **16a–b.** *Venericardia (Cyclocardia) ferruginea complexa* Ogasawara, 1977. IGPS no. 95127 (Holotype). **17a–e.** *Venericardia granulicostata* Nomura, 1933. IGPS no. 46136 (Holotype). **18a–b.** *Venericardia millegrana* Nomura and Zinbō, 1934. IGPS no. 50375 (Holotype). **19.** *Venericardia nagaoi* Mizuno, 1964. IGPS no. 36314 (Holotype). **20.** *Venericardia okinoshimaensis* Mizuno, 1964. IGPS no. 36371 (Holotype).

Plate 31

1a–b. *Venericardia onukii* Masuda and Takegawa, 1965. IGPS no. 90828 (Holotype). **2a–b.** *Venericardia quadriangulata* Nomura and Zinbō, 1934. IGPS no. 50385 (Holotype). **3a–b.** *Venericardia ryukyuensis* Nomura and Zinbō, 1936. IGPS no. 51344 (Holotype). **4a–c.** *Venericardia subnipponica* Nagao, 1928b. IGPS no. 36405 (Holotype). **5.** *Venericardia yoshidai* Nagao, 1928b. IGPS no. 36327 (Holotype). **6a–b.** *Veniella? japonica* Nagao, 1930. IGPS no. 44307 (Syntype). **7.** *Veniella? japonica* Nagao, 1930. IGPS no. 44306 (Syntype). **8.** *Venus (Chione) byoritsuensis* Nomura, 1933. IGPS no. 48061 (Holotype). **9.** *Venus (Chione) taiwanensis* Nomura, 1933. IGPS no. 47771 (Holotype). **10a–b.** *Venus (Chione) yabei* Nomura and Zinbō, 1934. IGPS no. 50651 (Holotype). **11a–b.** *VolSELLA yokoyamai* Hatai and Nisiyama, 1949. IGPS no. 72504 (Holotype). **12.** *Waagenoperna elongata* Nakazawa and Murata, 1966. IGPS no. 85764 (Holotype). **13a–b.** *Yabepecten ogasawarai* Matsubara, 2003. IGPS no. 98911 (Holotype). **14a–b.** *Yoldia iwatensis* Hatai, 1940. IGPS no. 61348 (Holotype; **b.** external mold). **15a–c.** *Yoldia scaphoides* Nagao, 1928b. IGPS no. 35987 (Holotype). **16.** *Zirfaea hataii* Masuda and Noda, 1969. IGPS no. 86742 (Holotype).

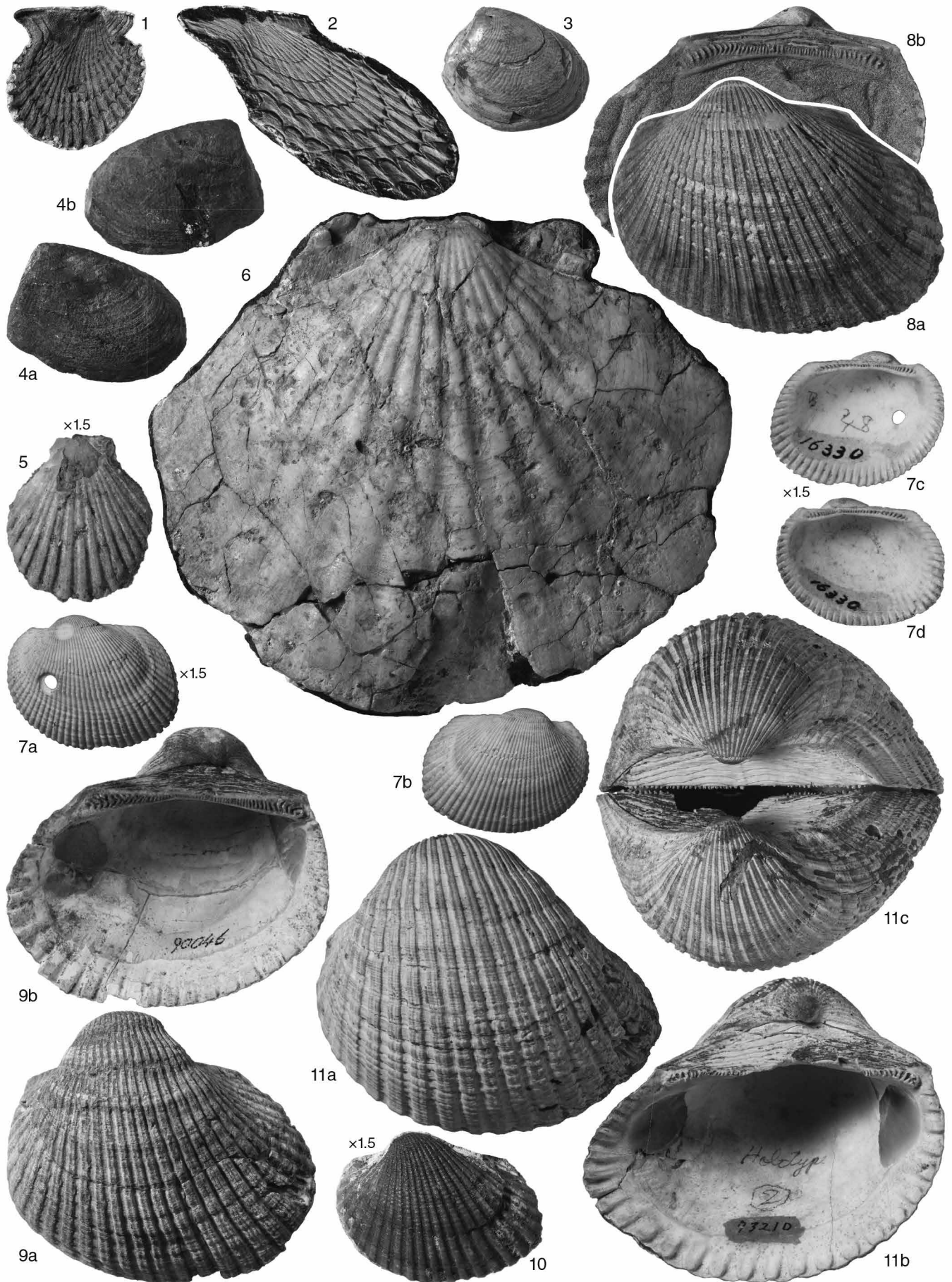


PLATE 1

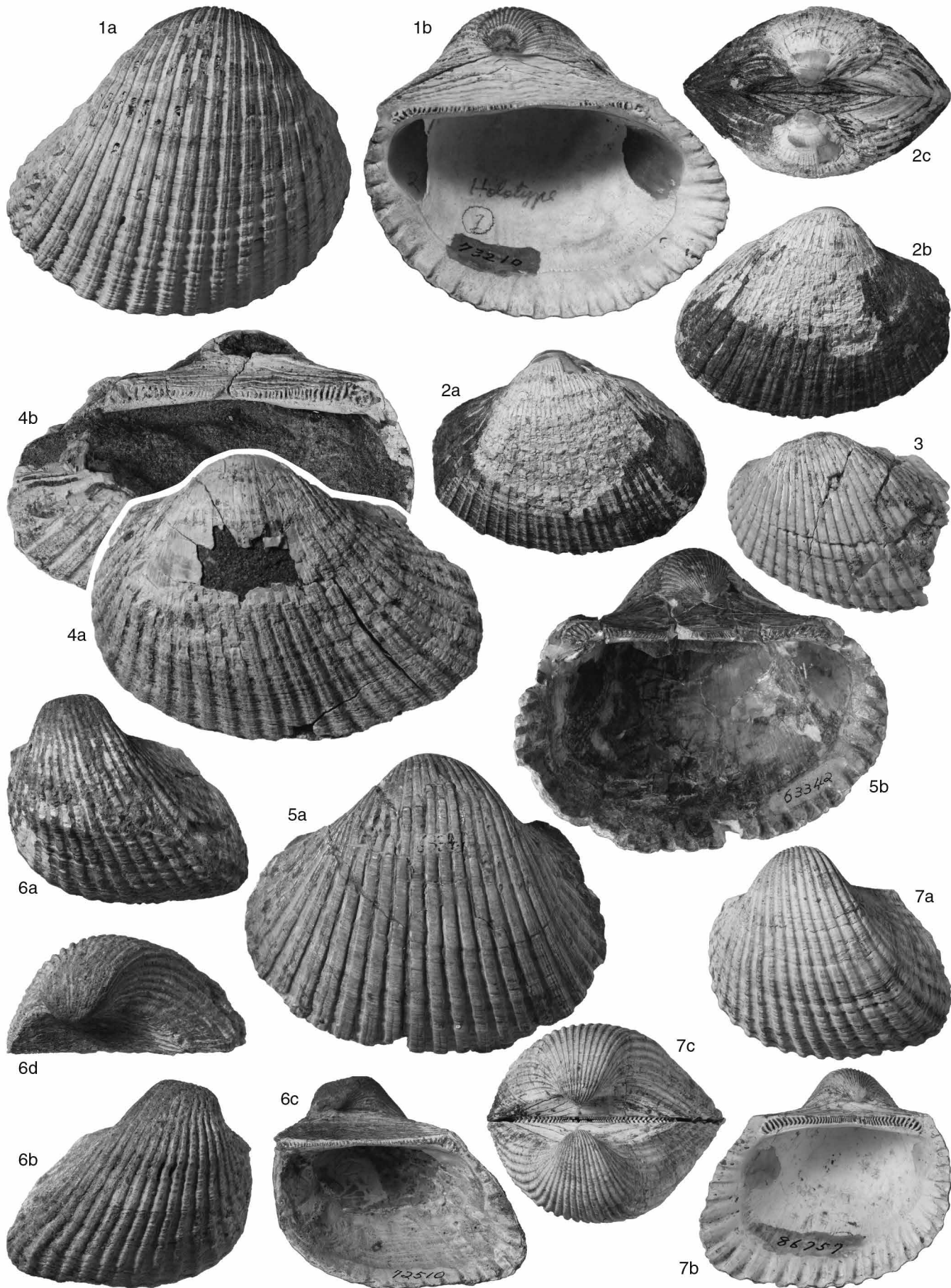
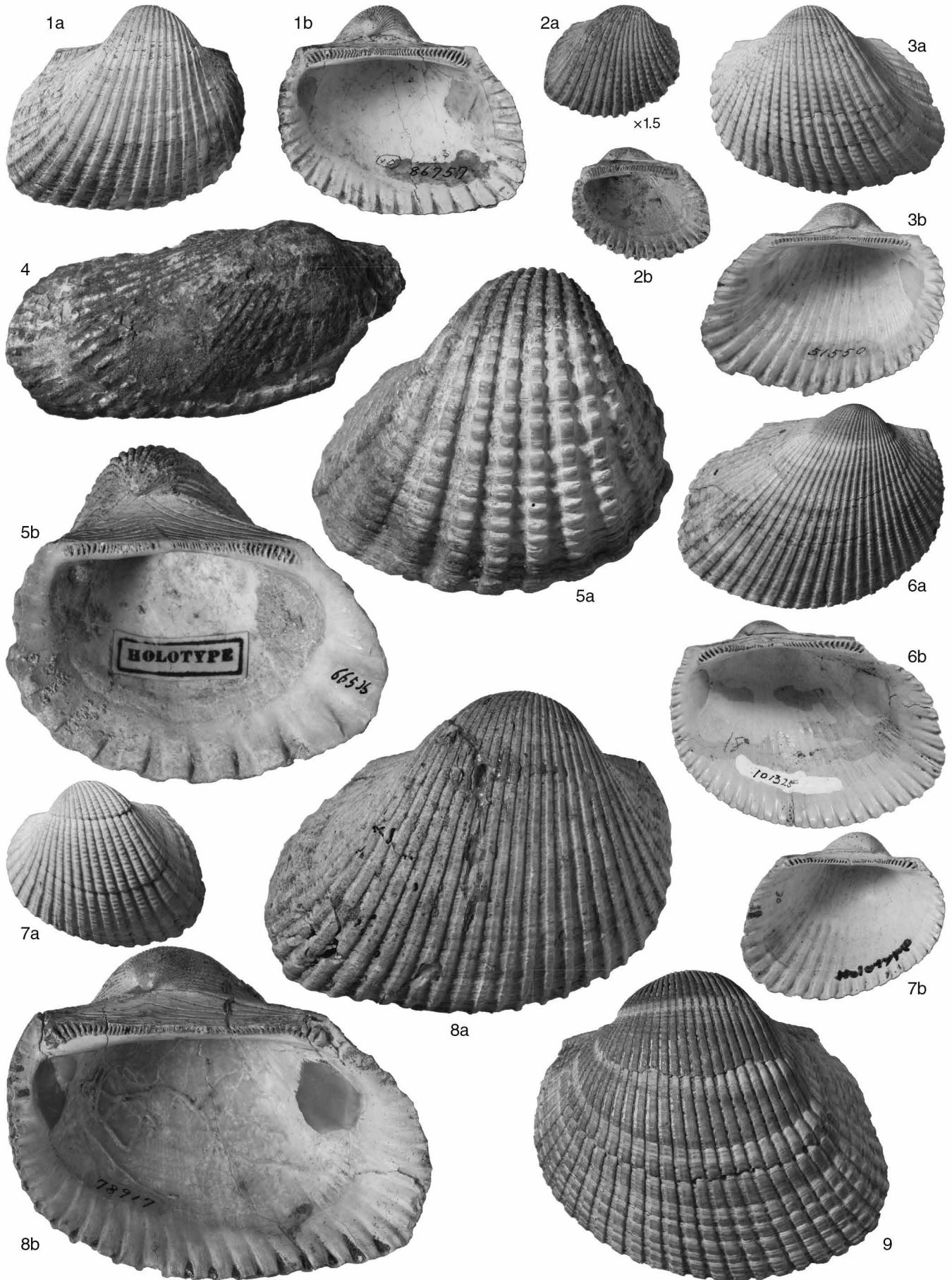


PLATE 2



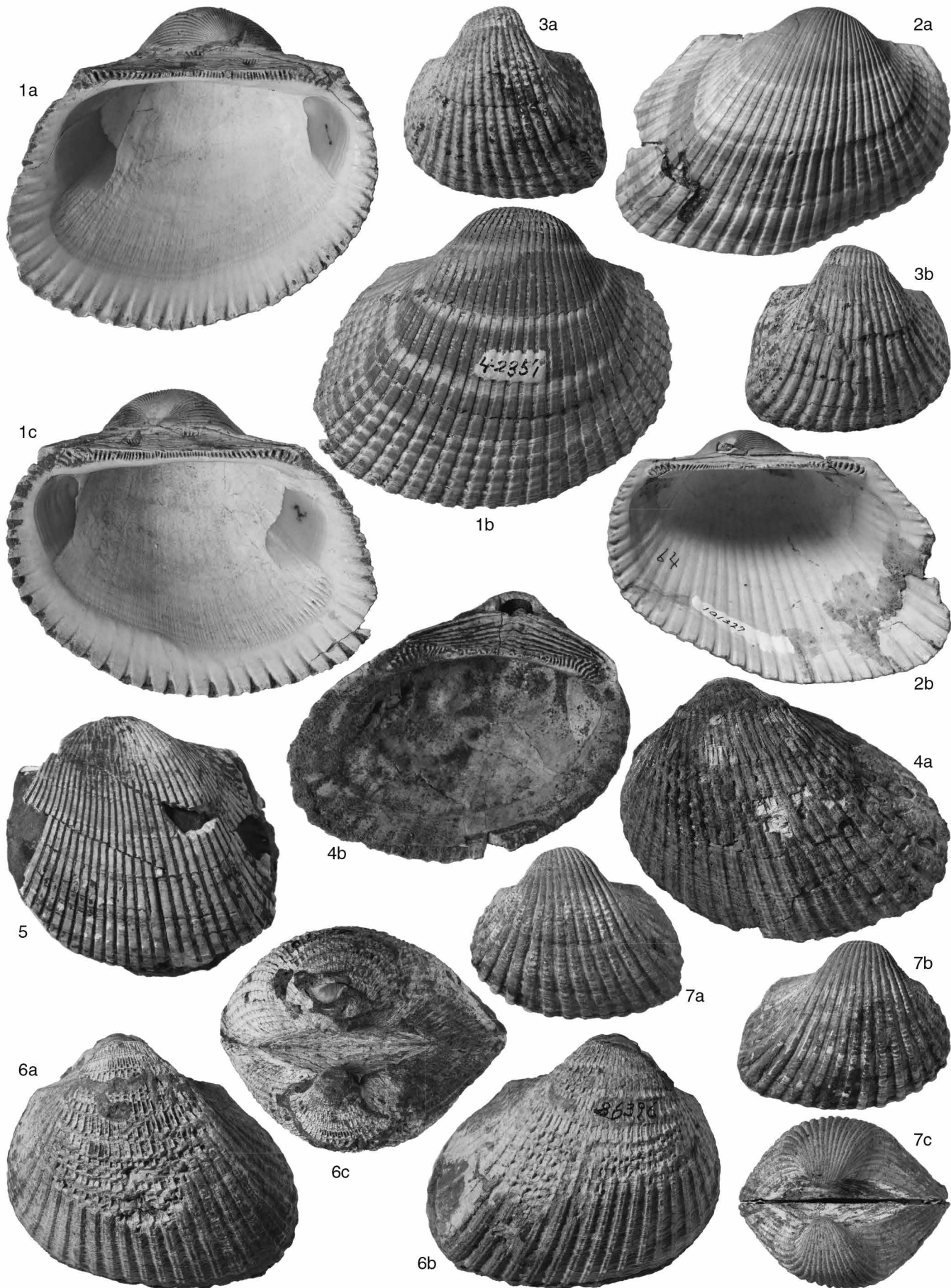
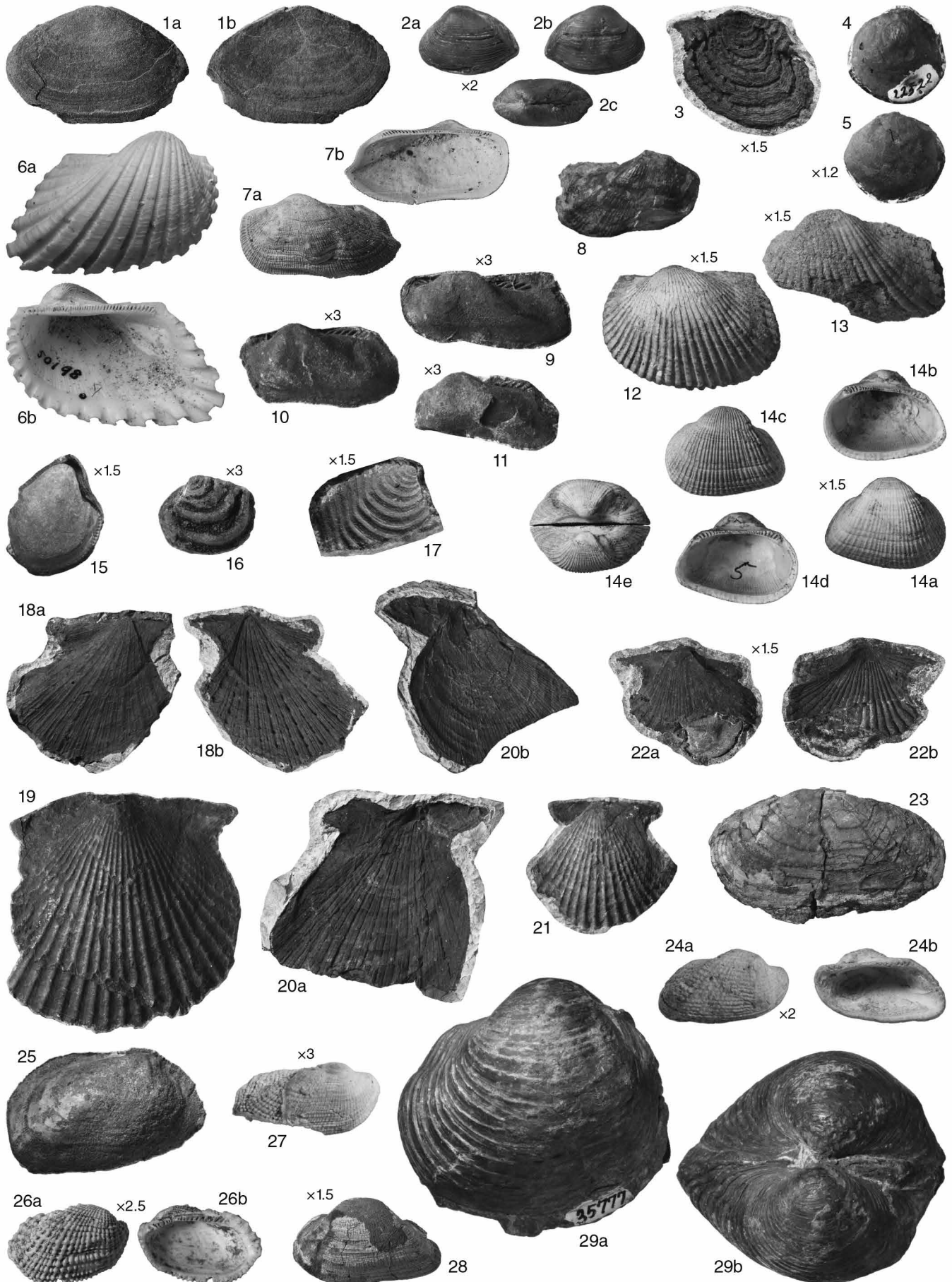


PLATE 4



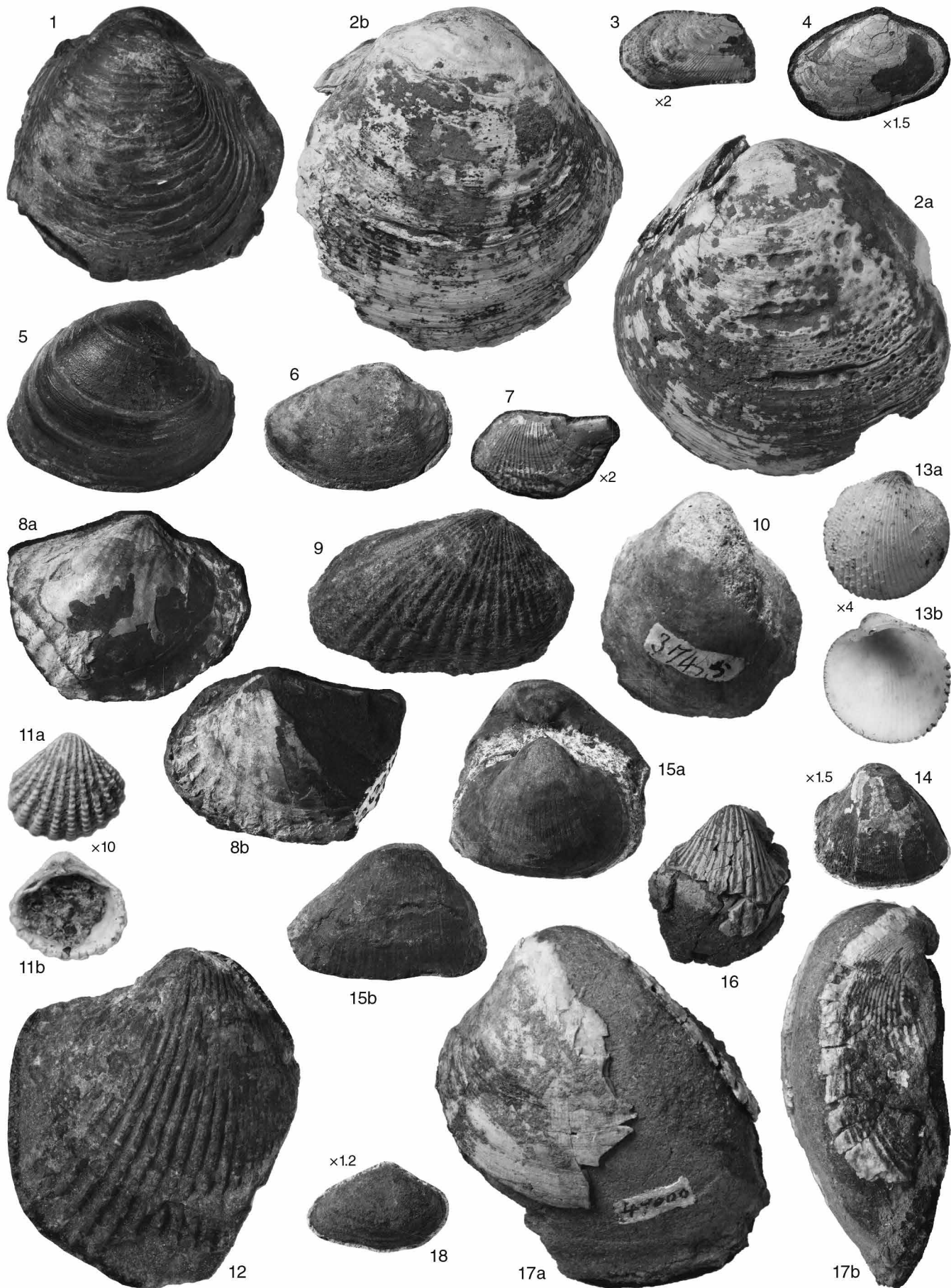
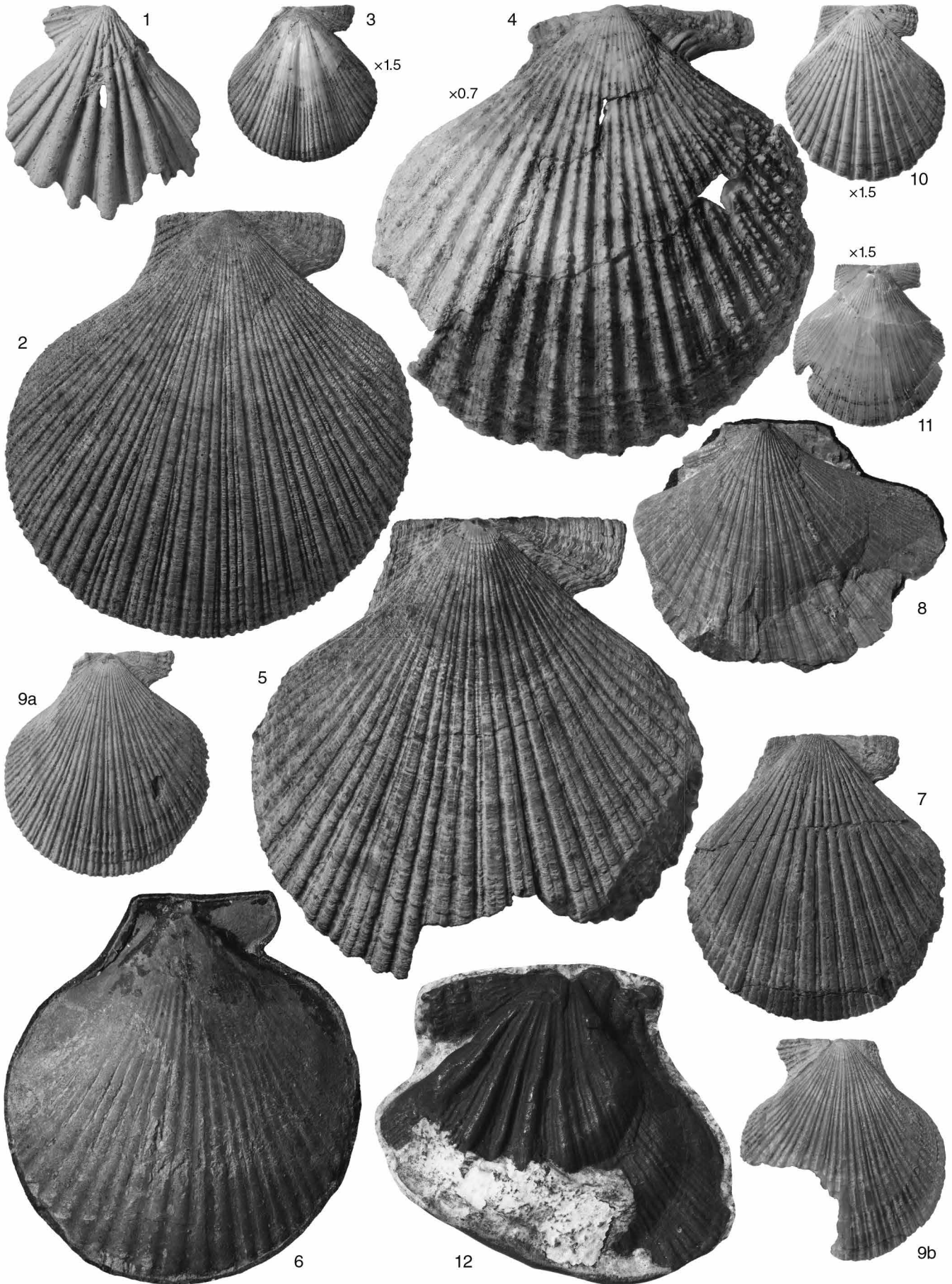


PLATE 6



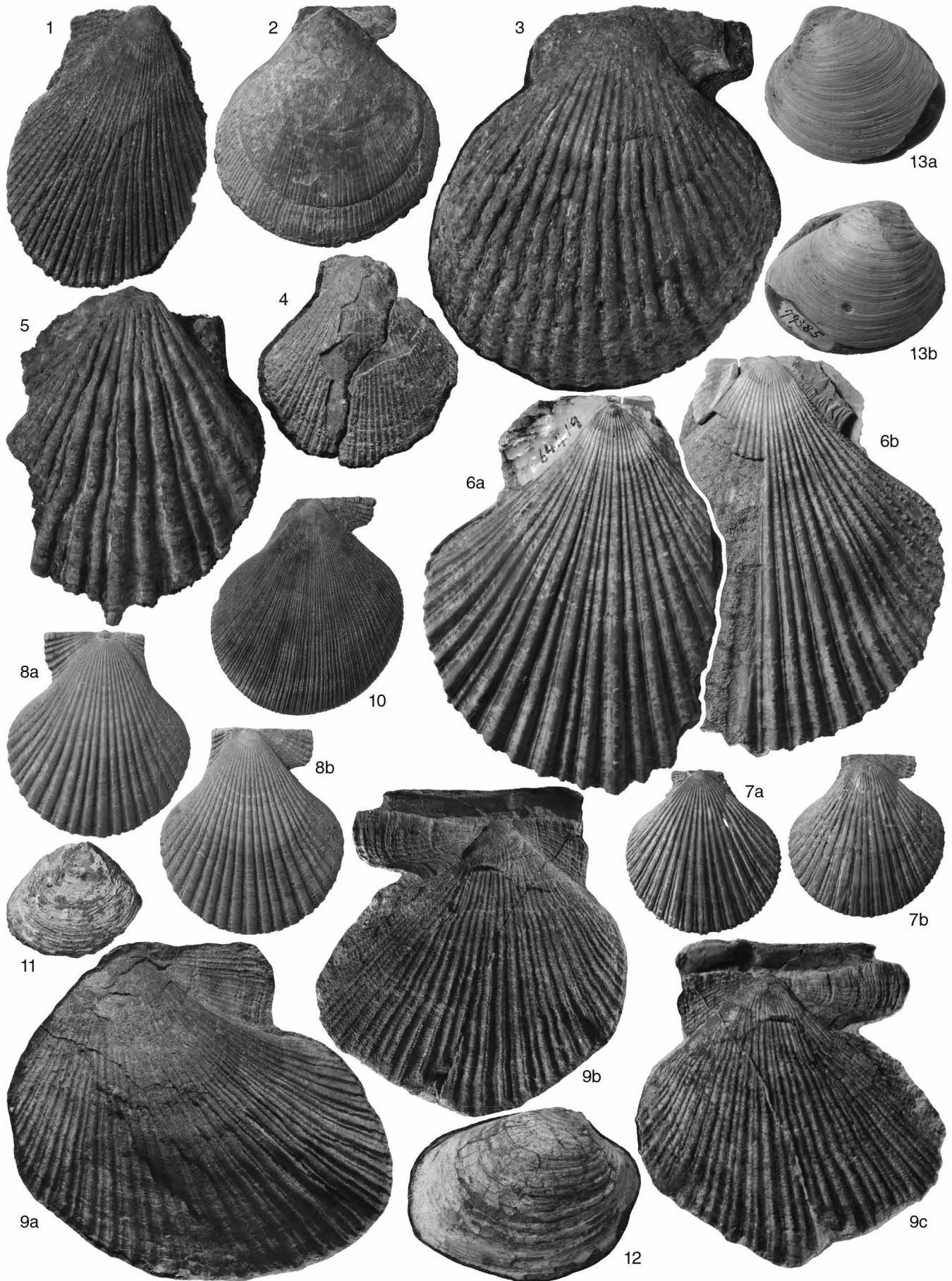


PLATE 8

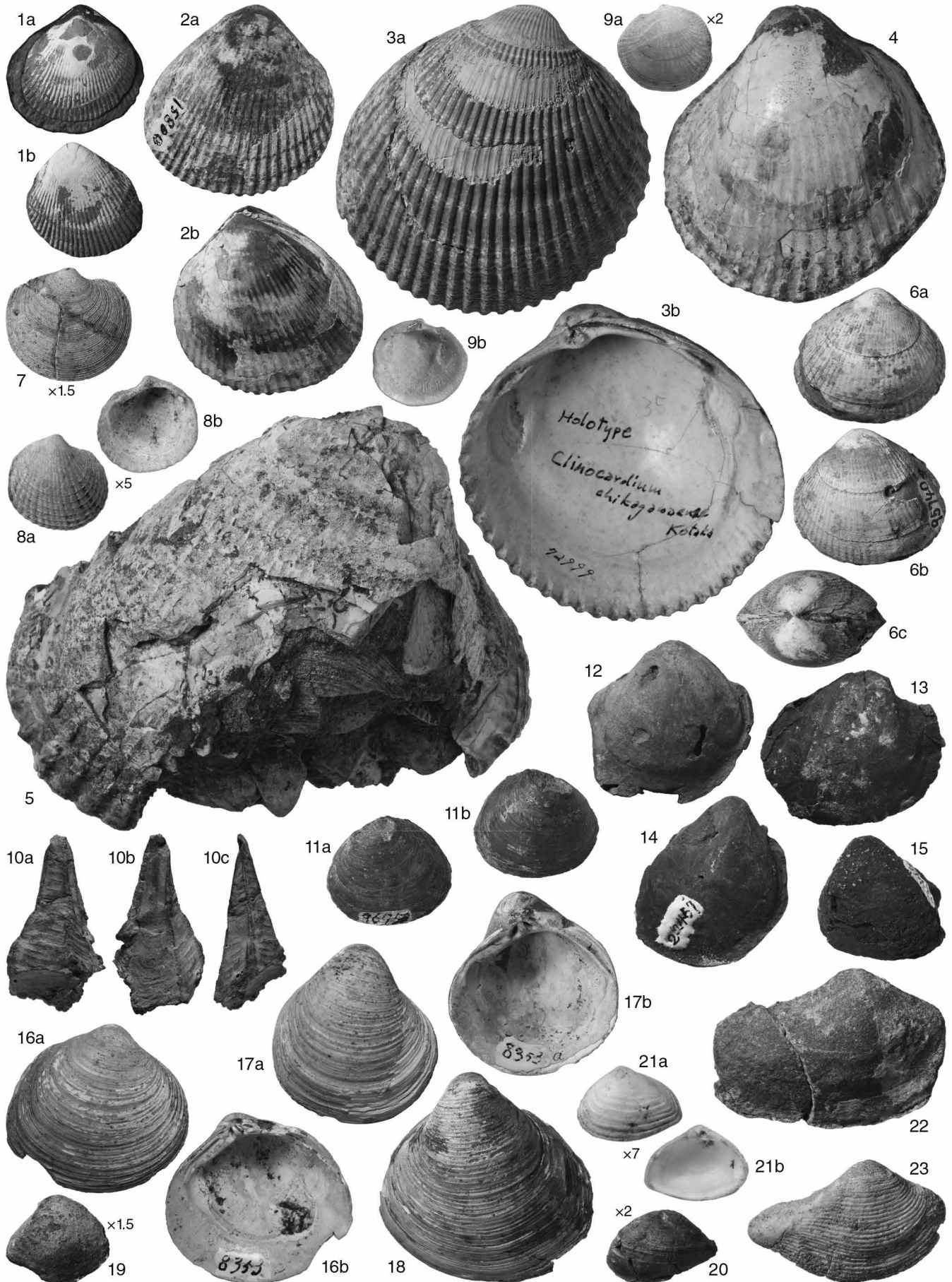


PLATE 9

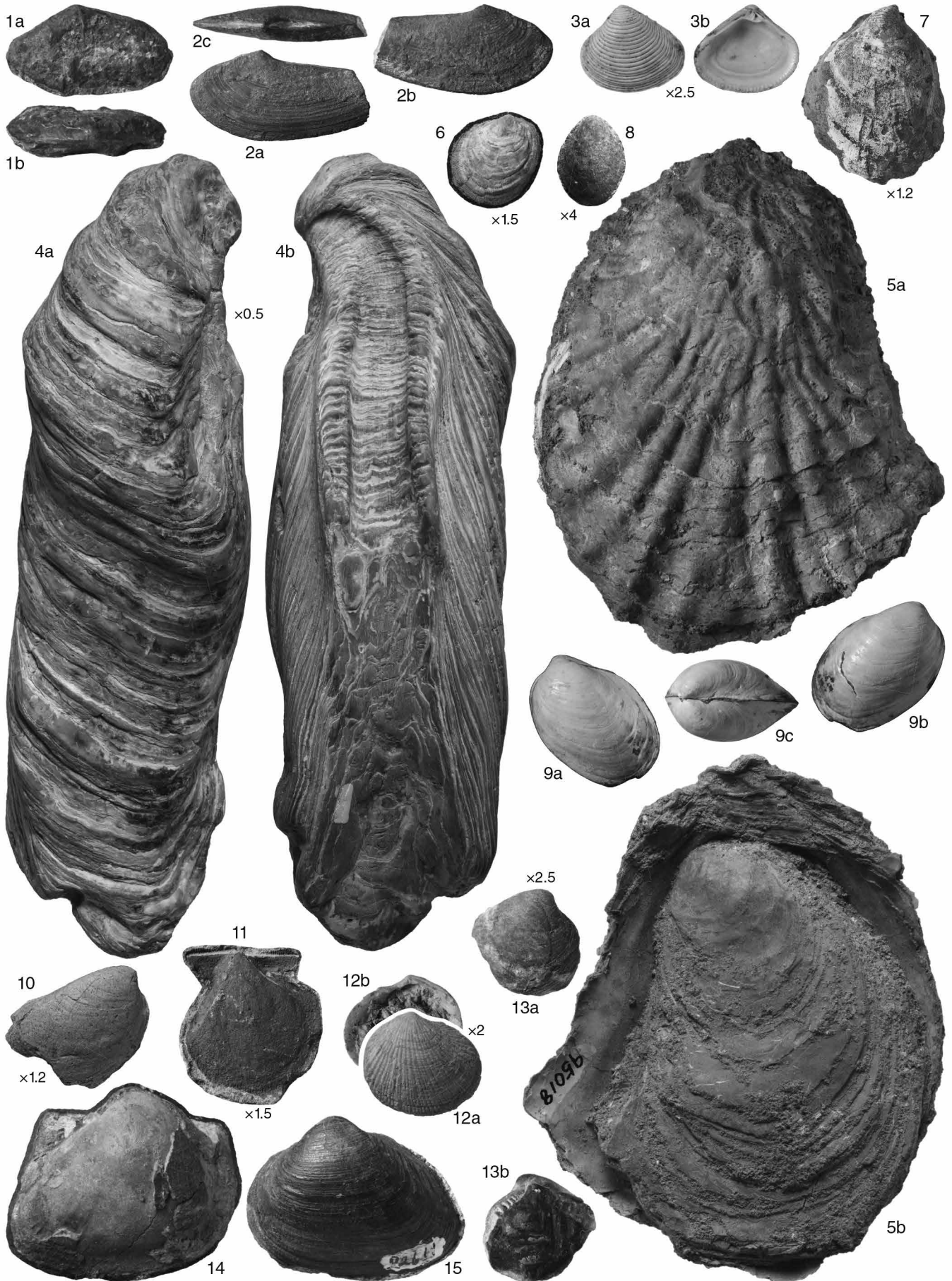
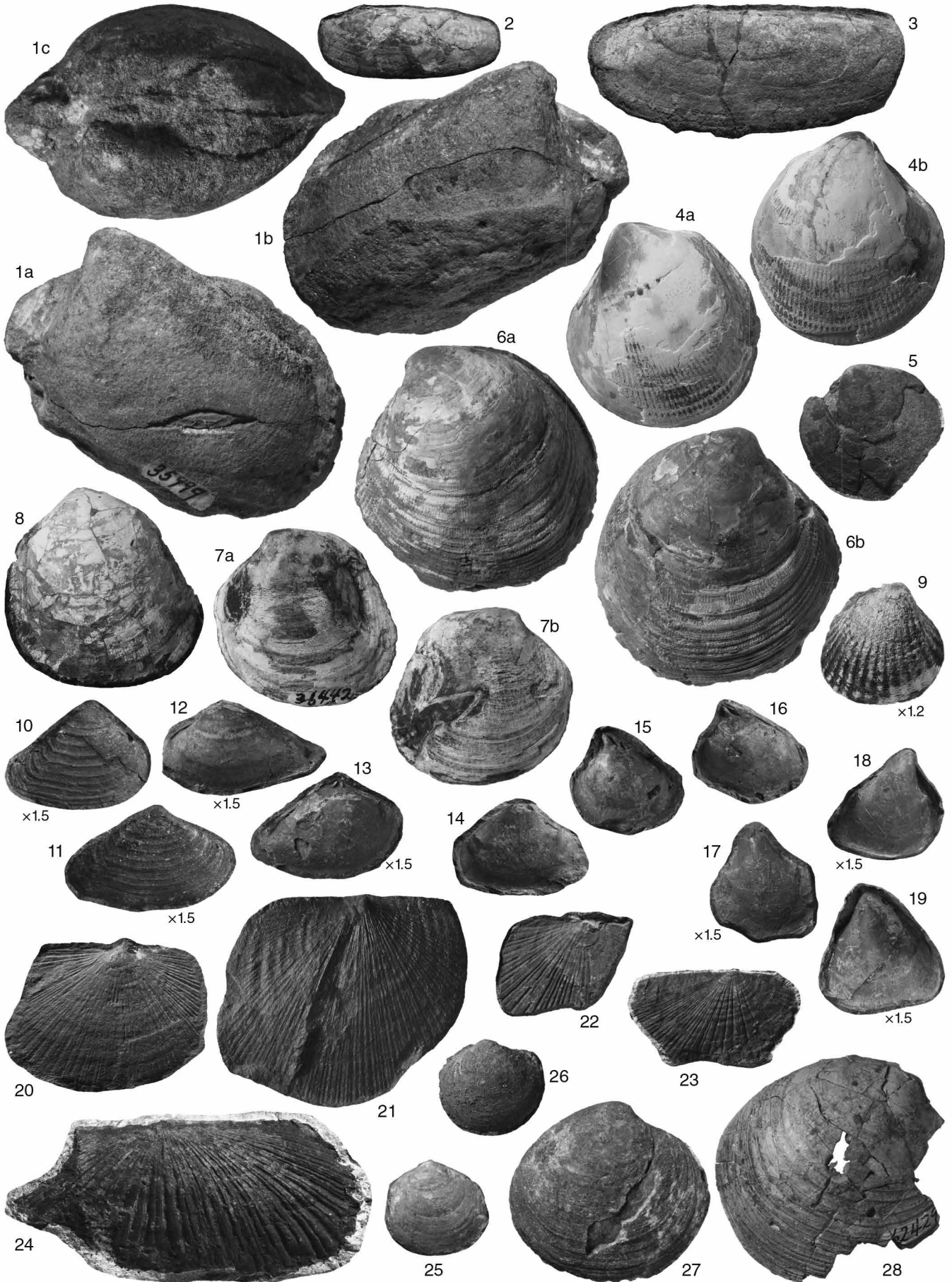


PLATE 10



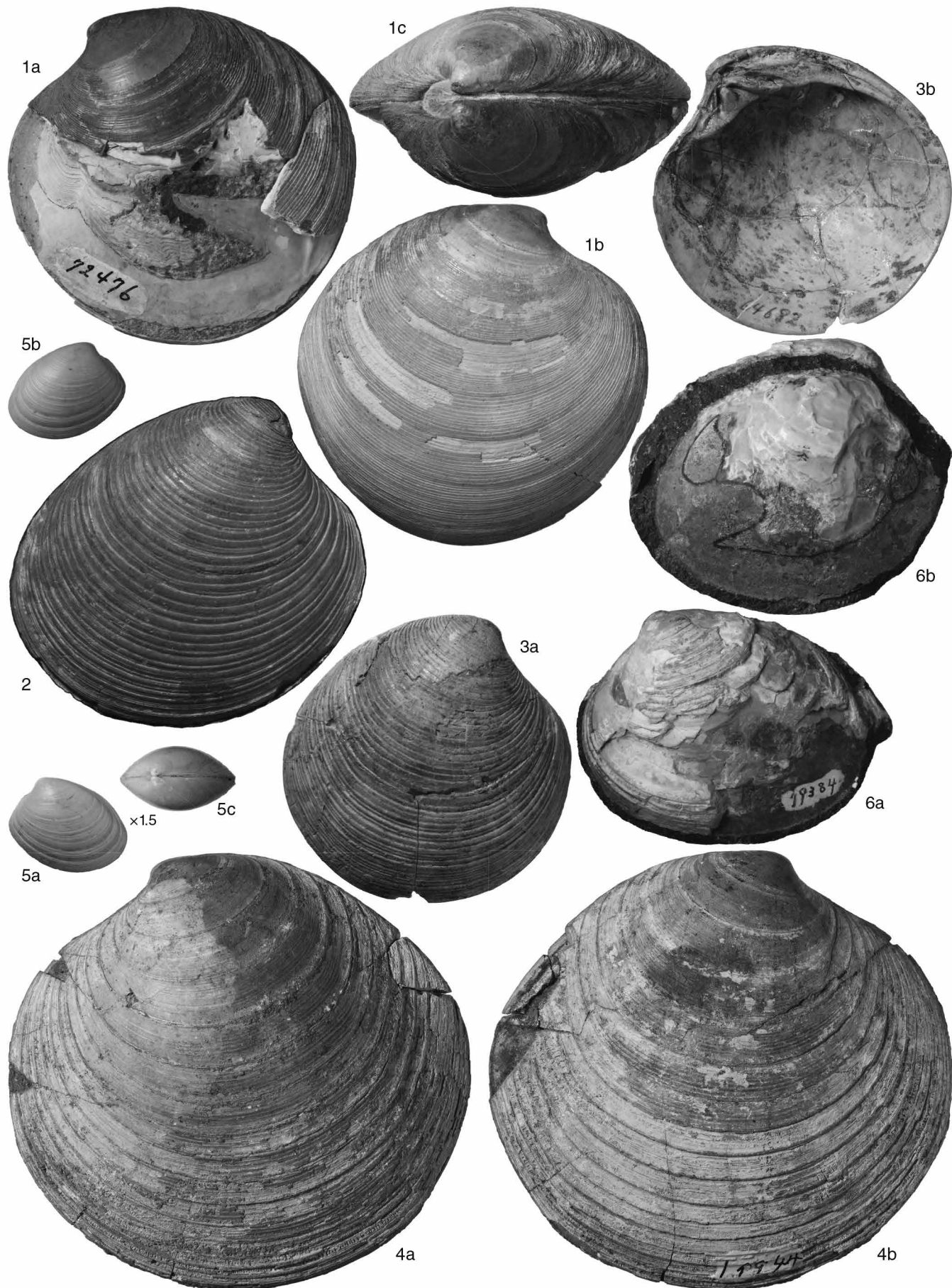


PLATE 12

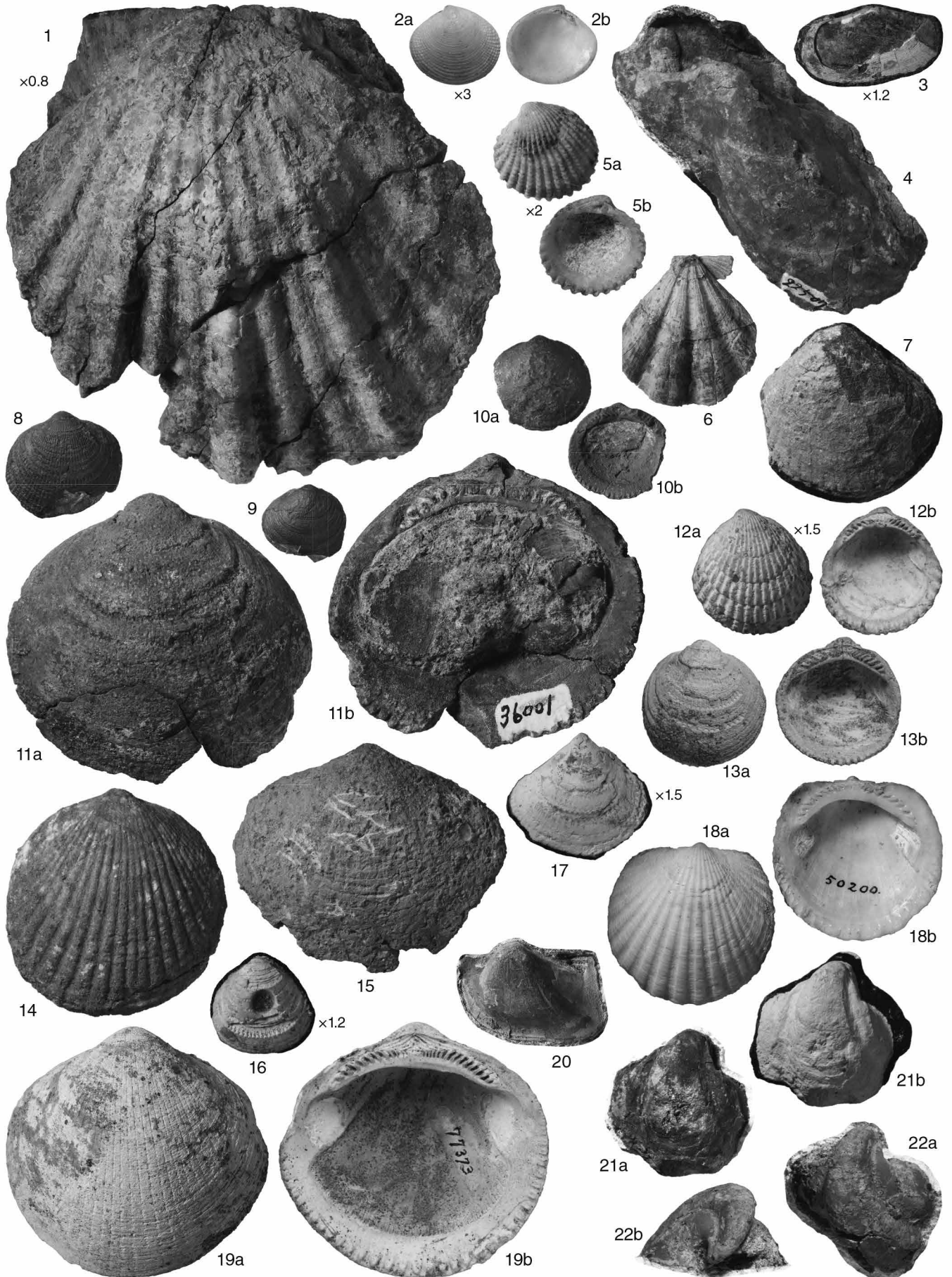


PLATE 13

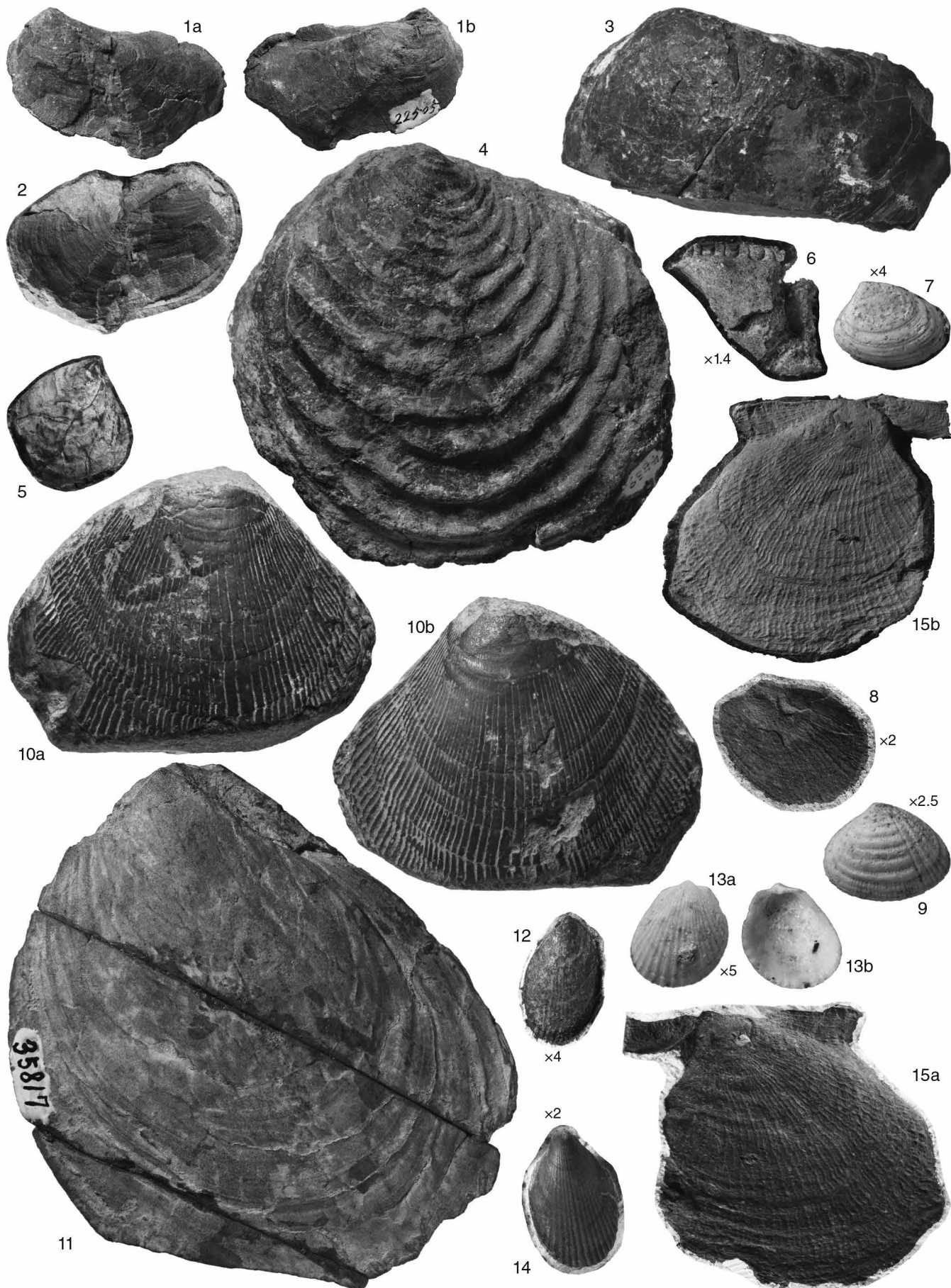


PLATE 14

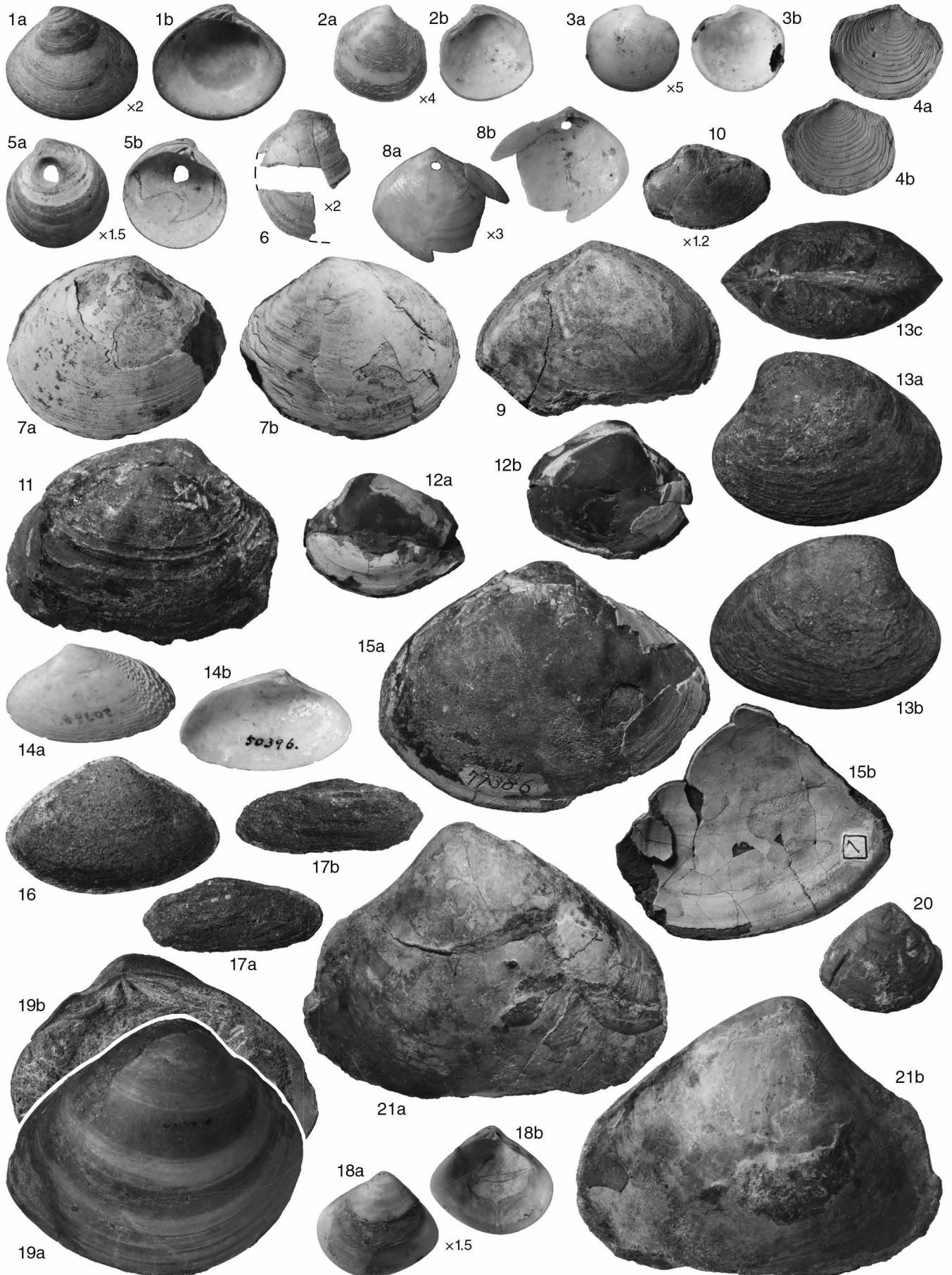


PLATE 15

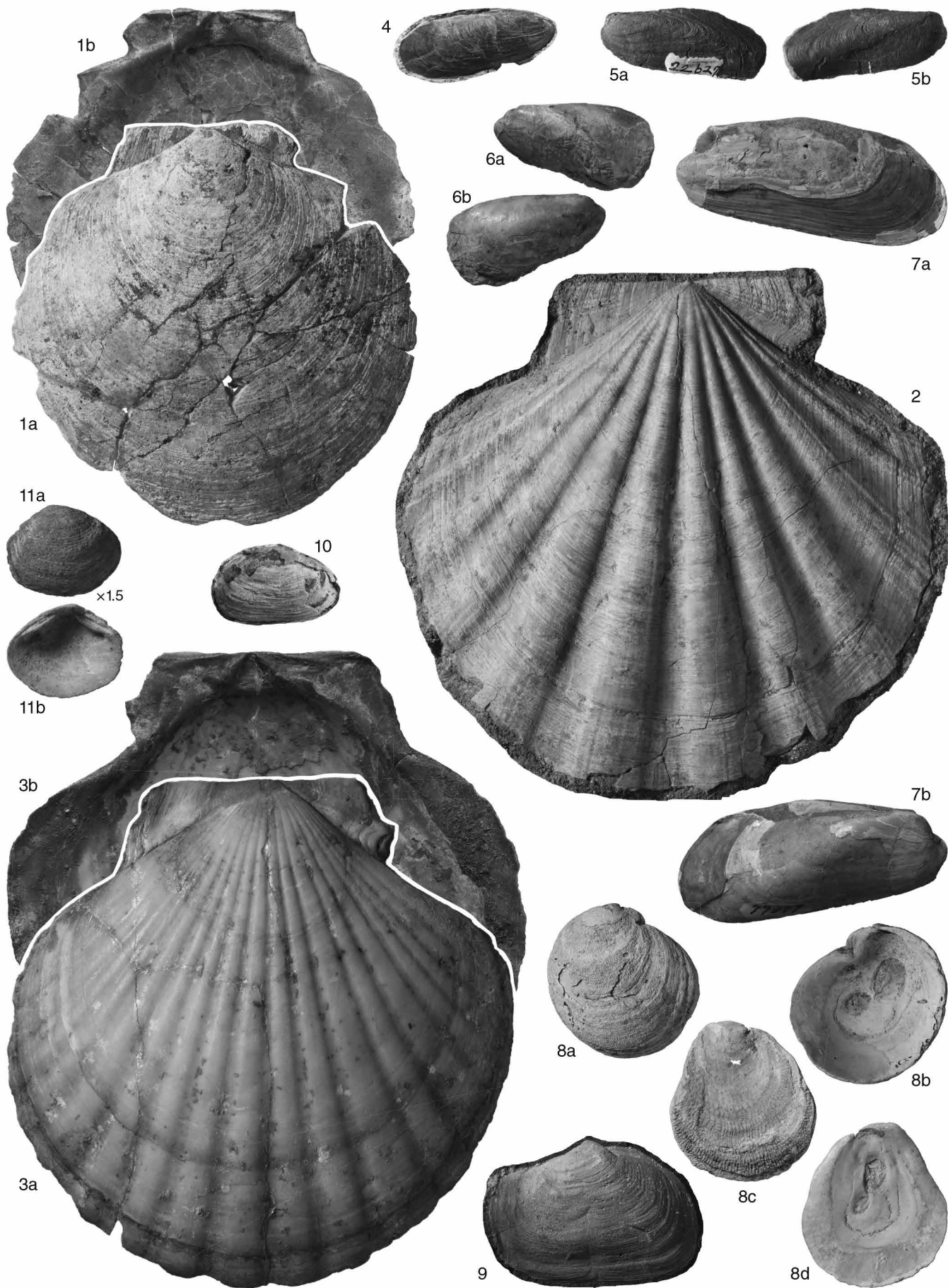


PLATE 16

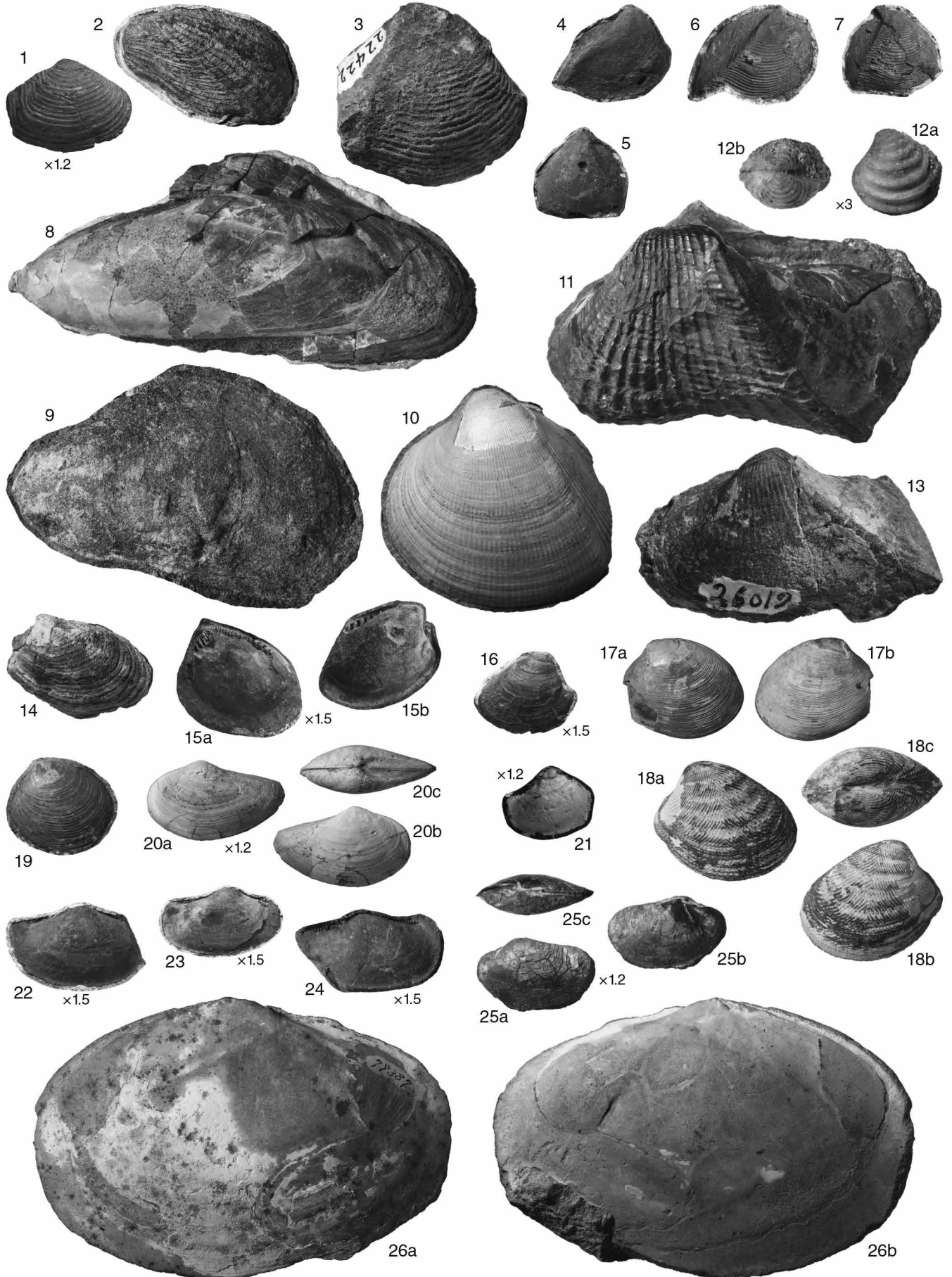


PLATE 17

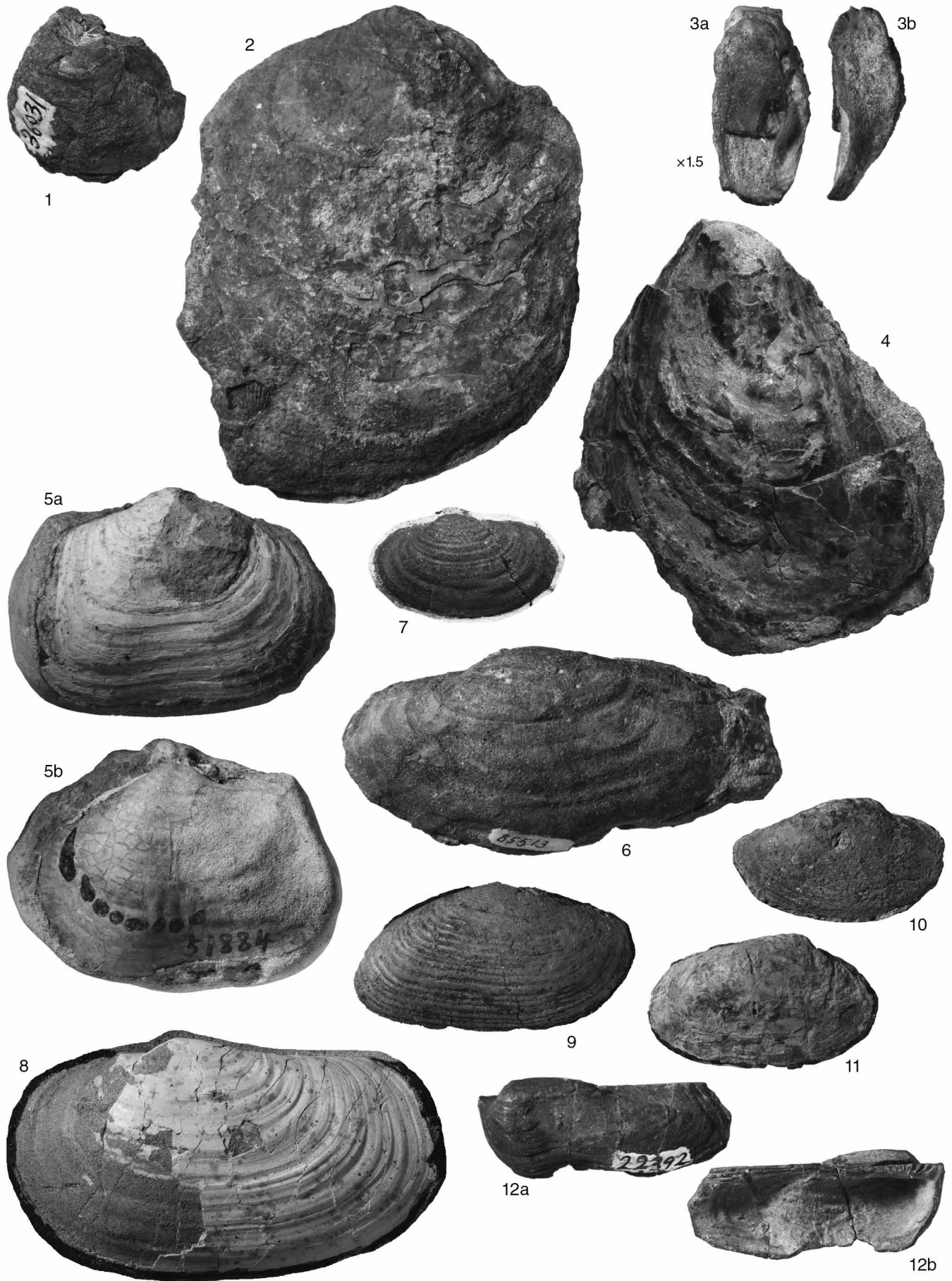


PLATE 18

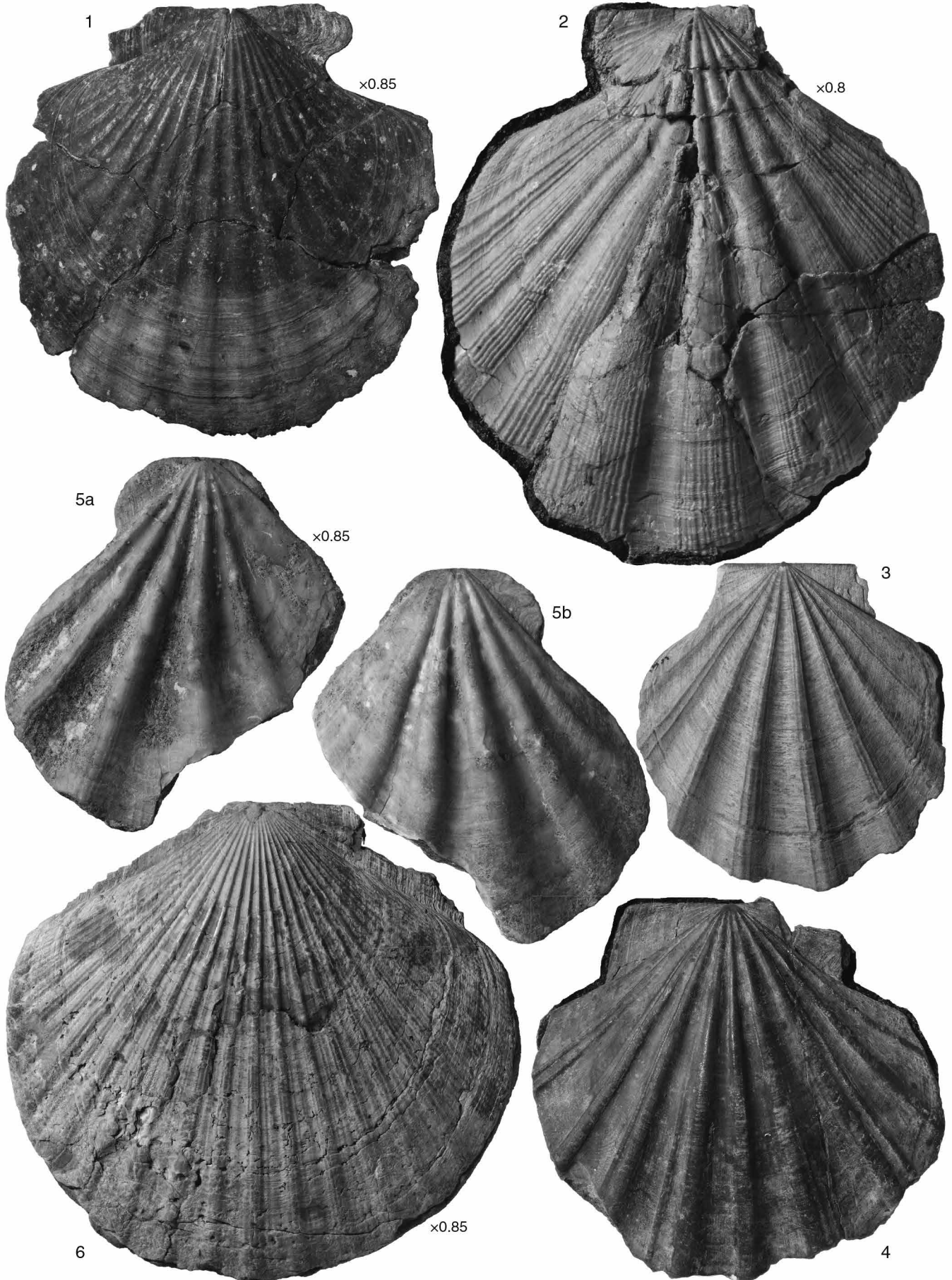


PLATE 19

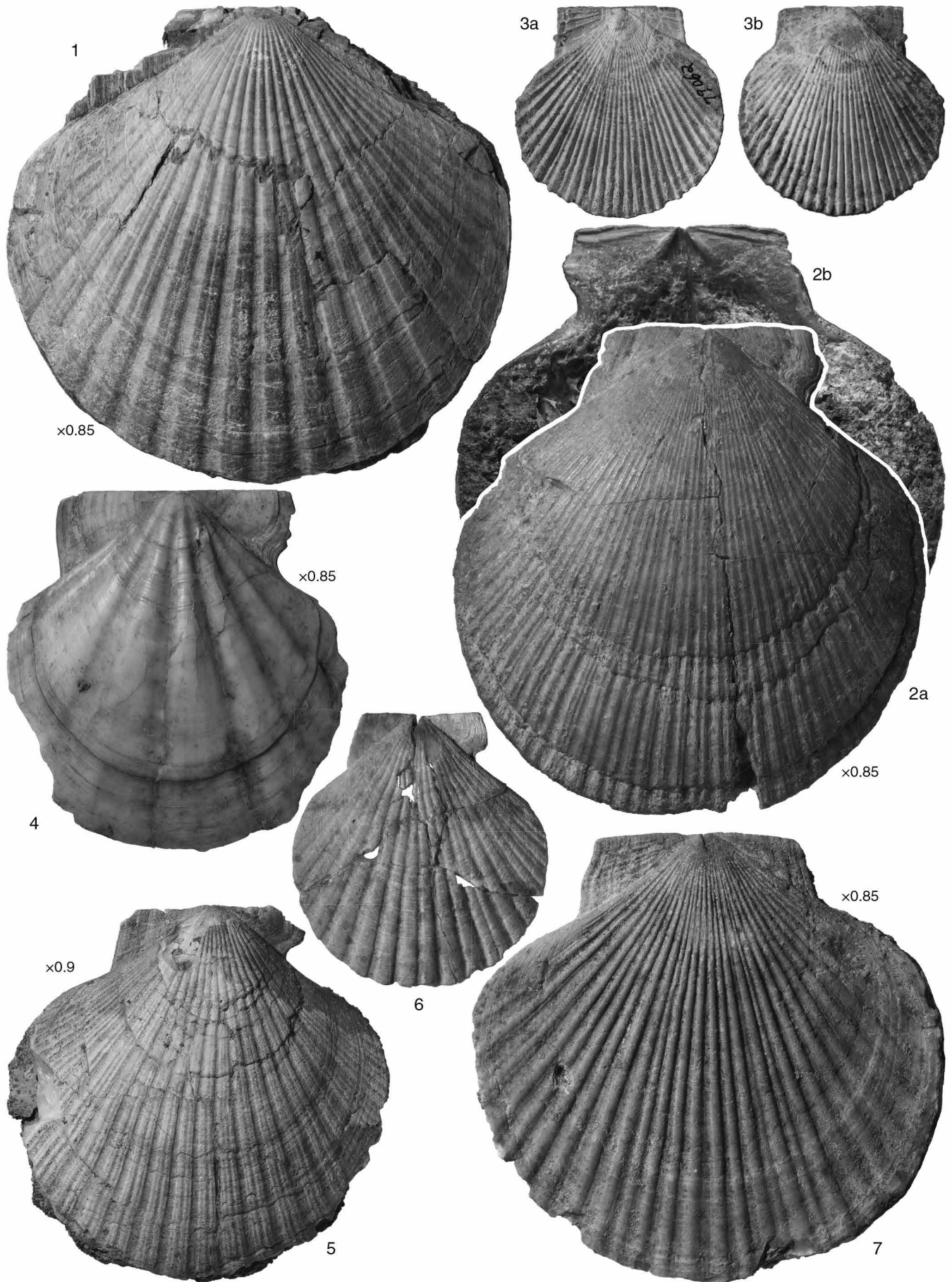


PLATE 20

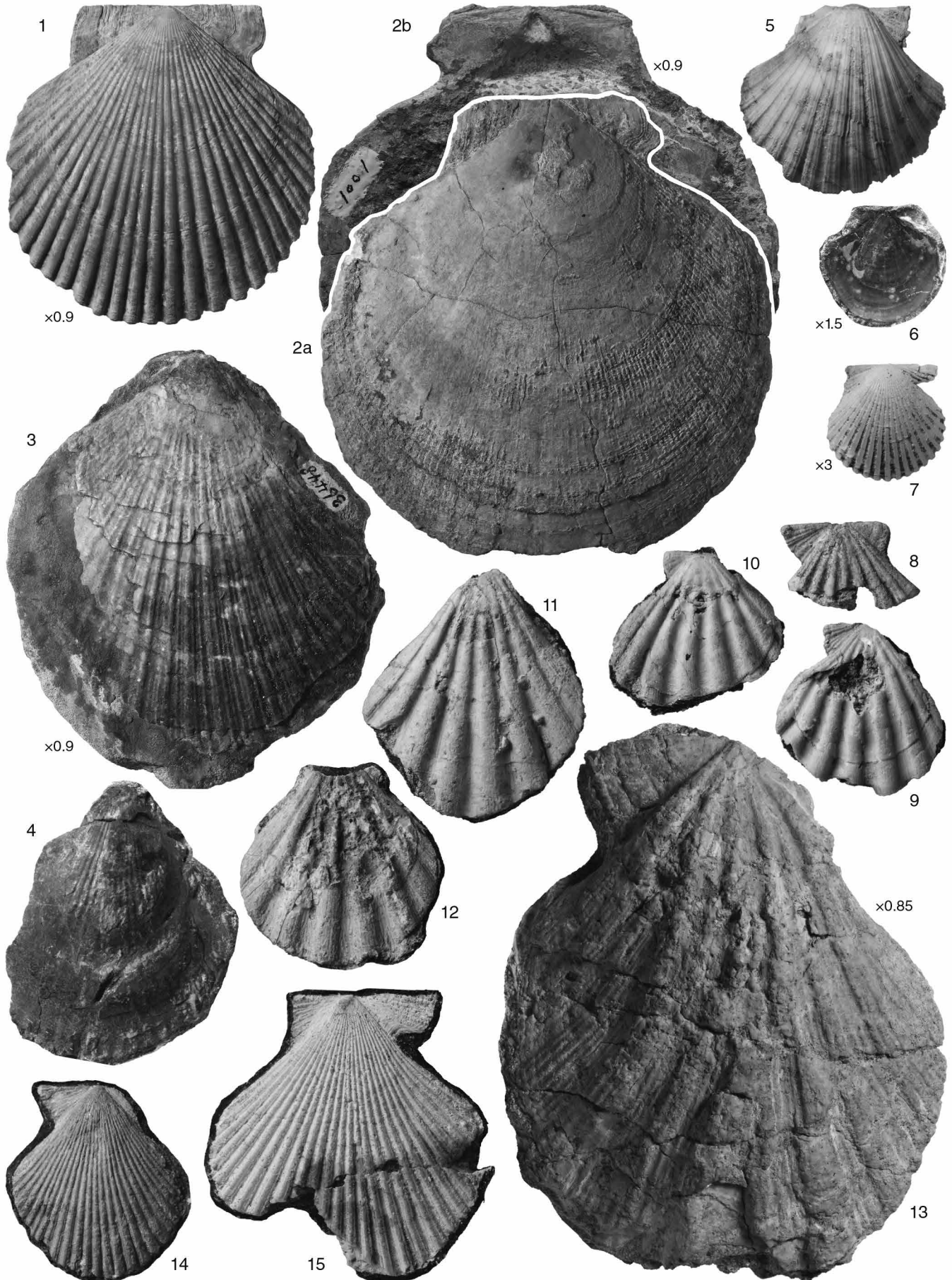


PLATE 21

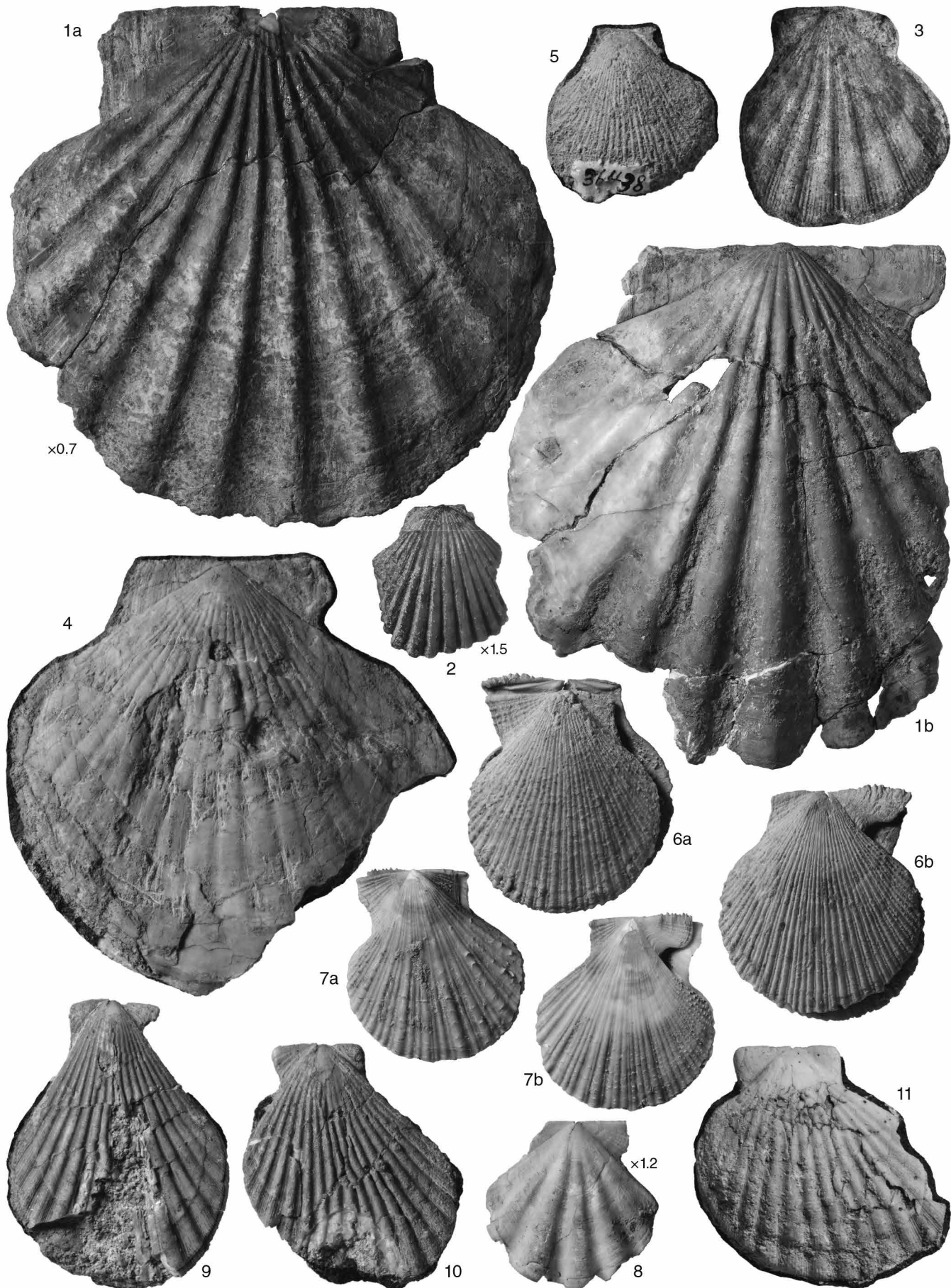


PLATE 22

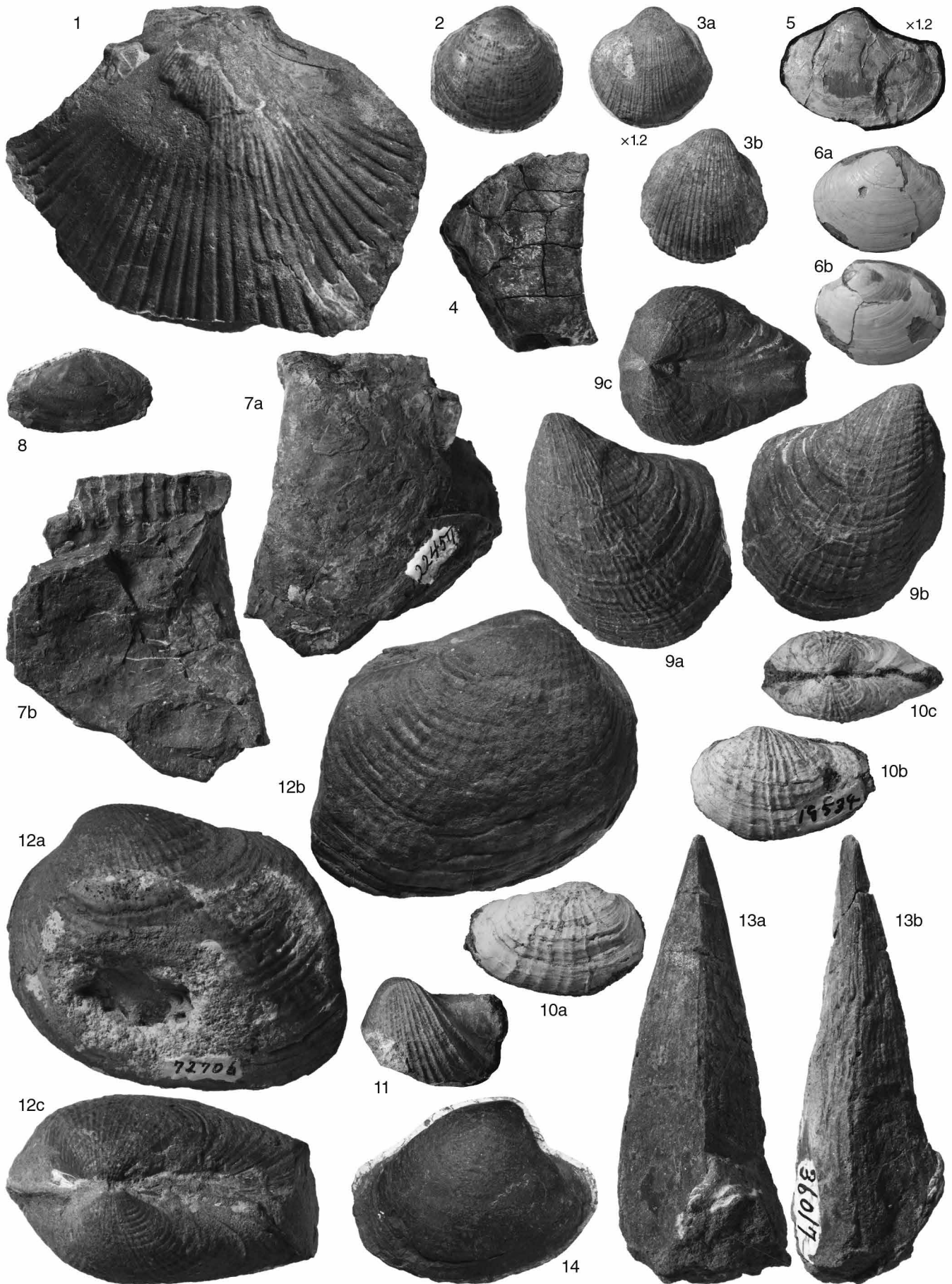


PLATE 23

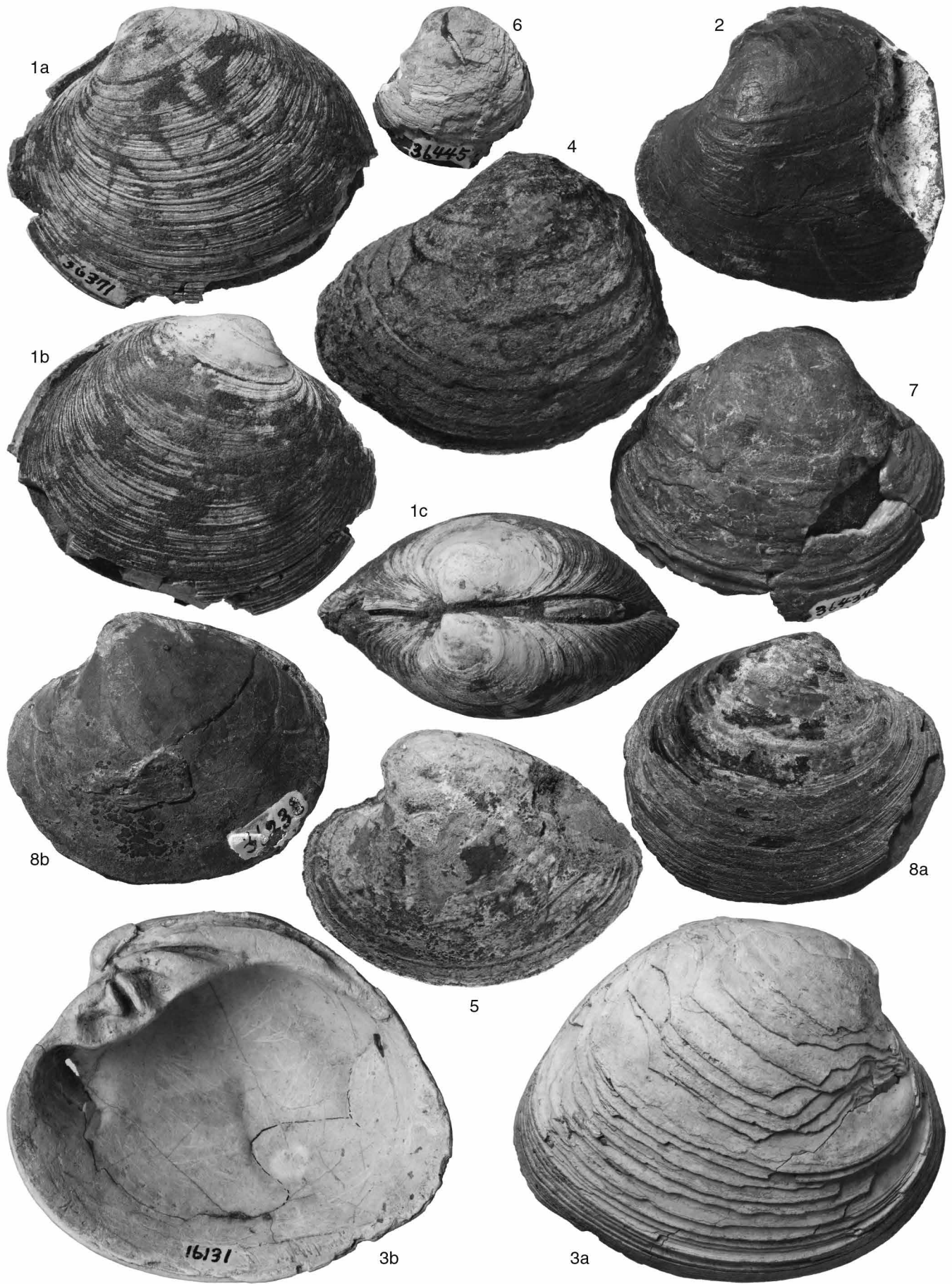


PLATE 24

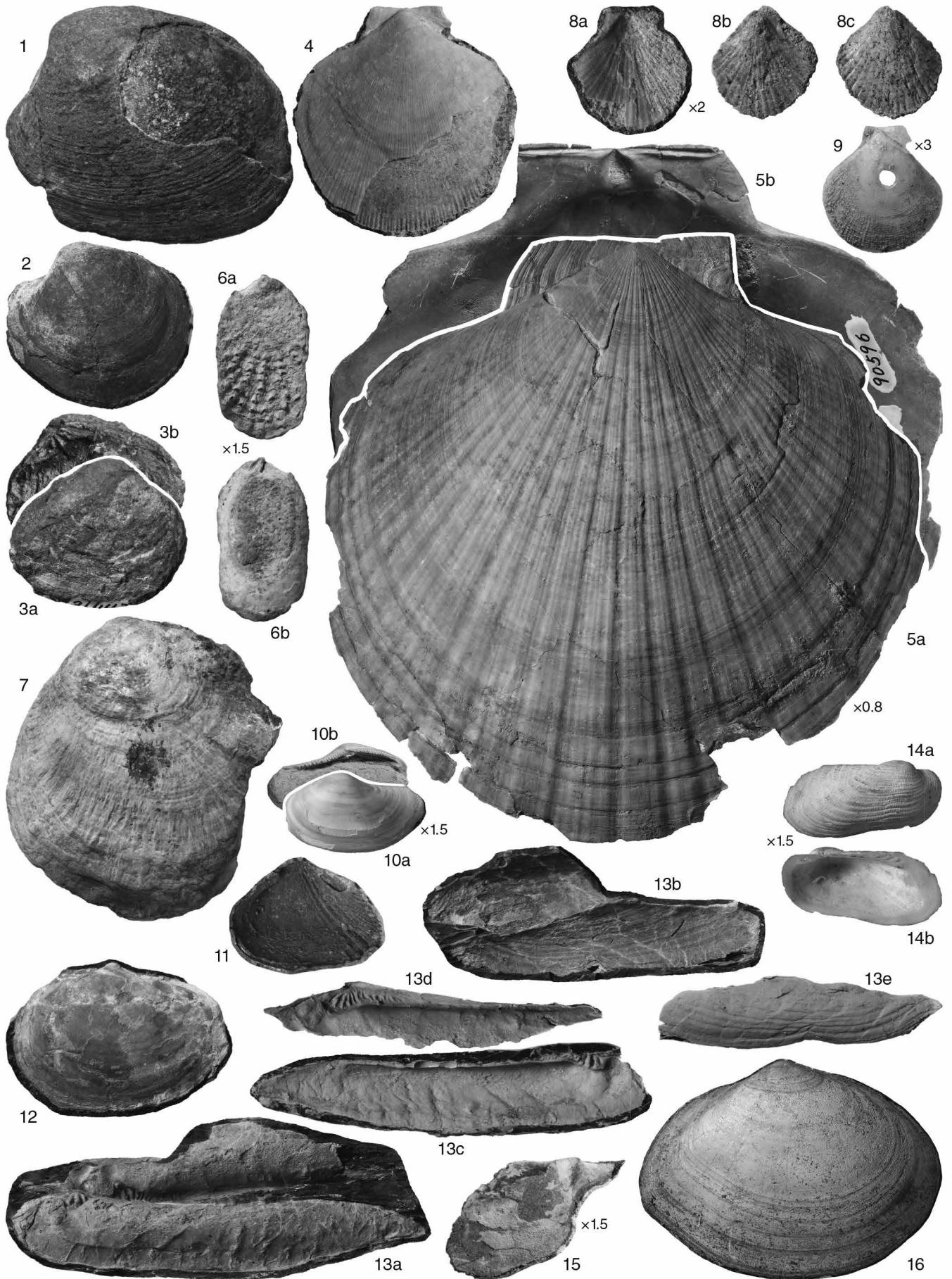


PLATE 25

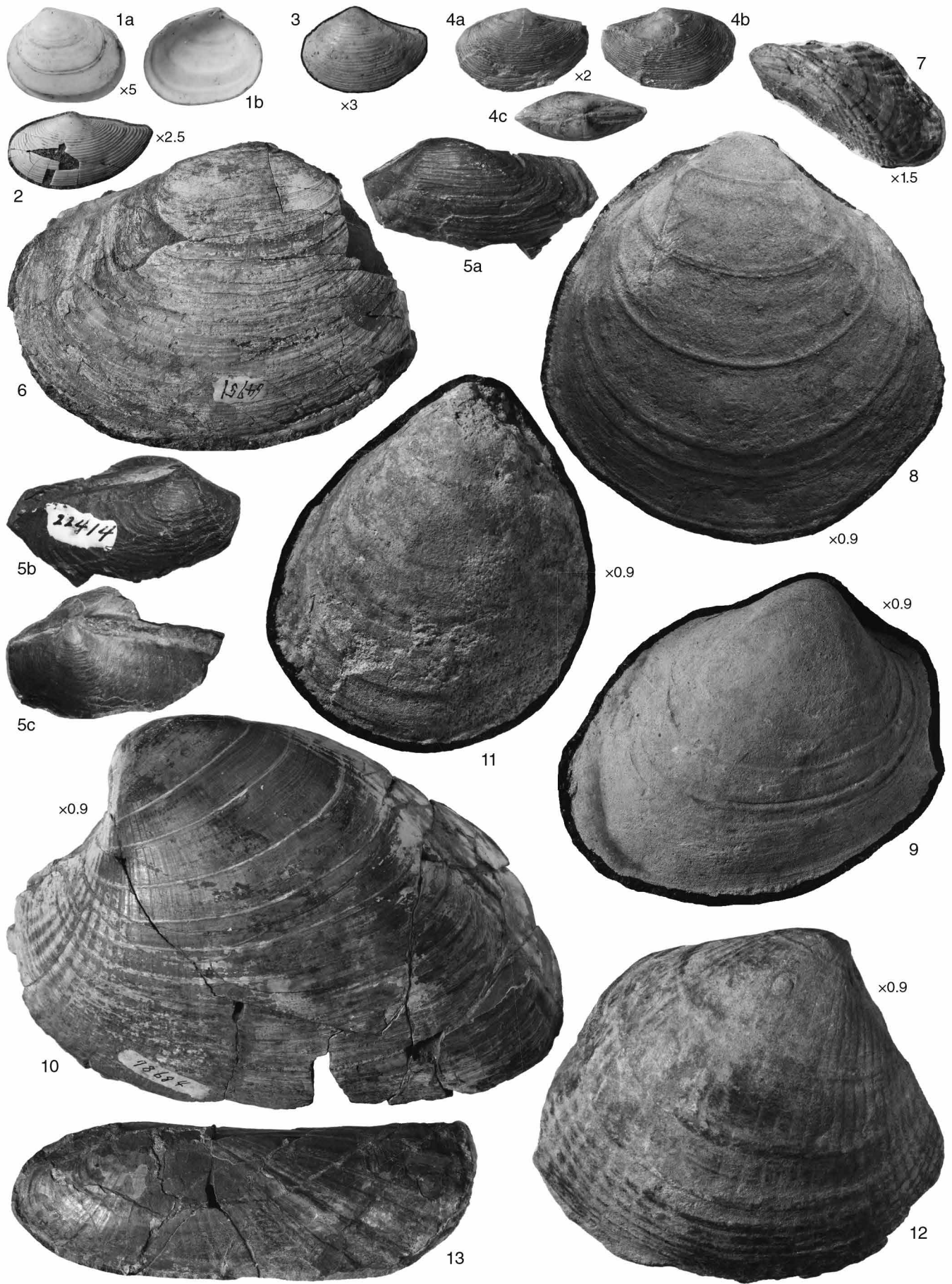


PLATE 26

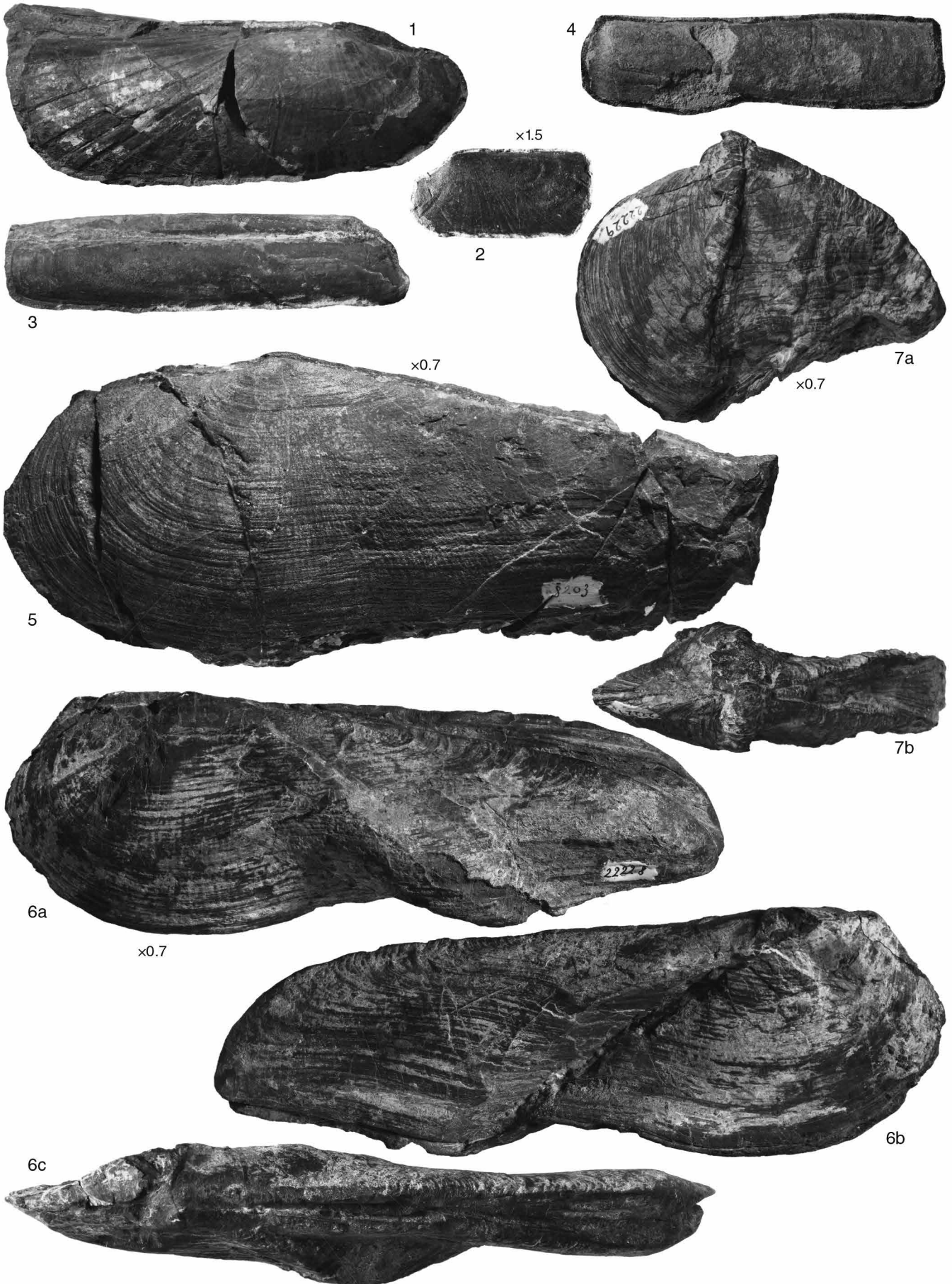


PLATE 27

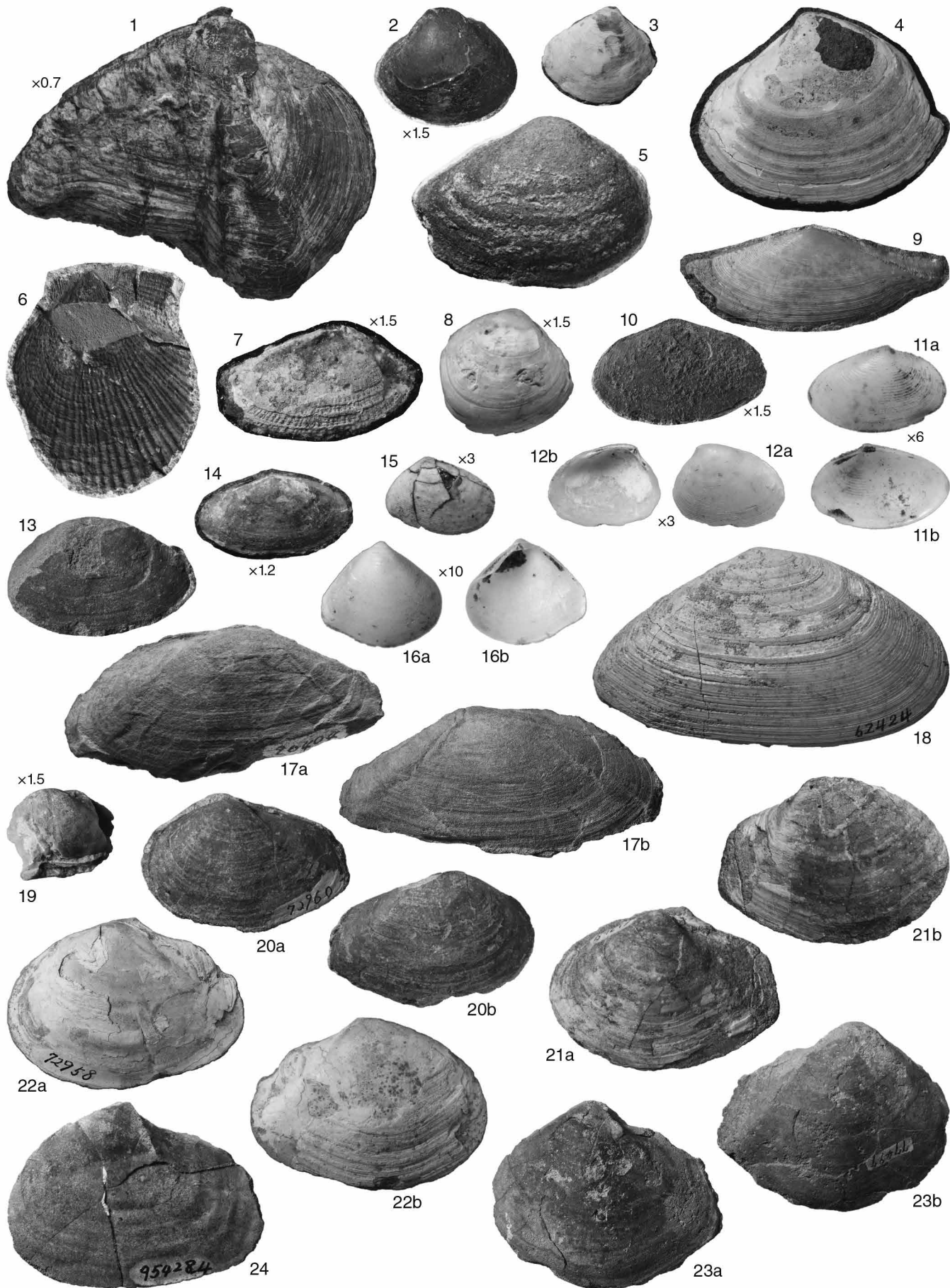


PLATE 28

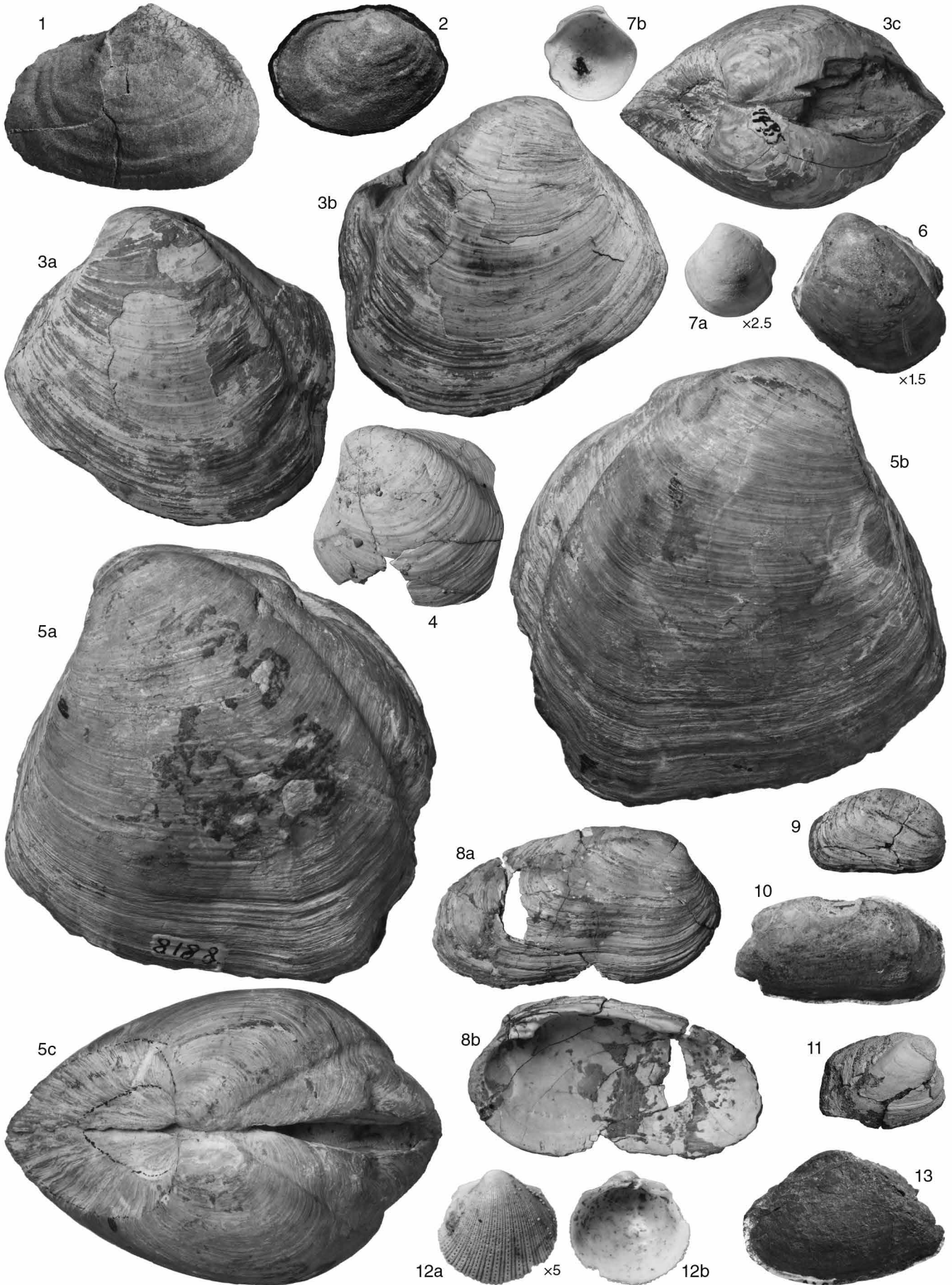


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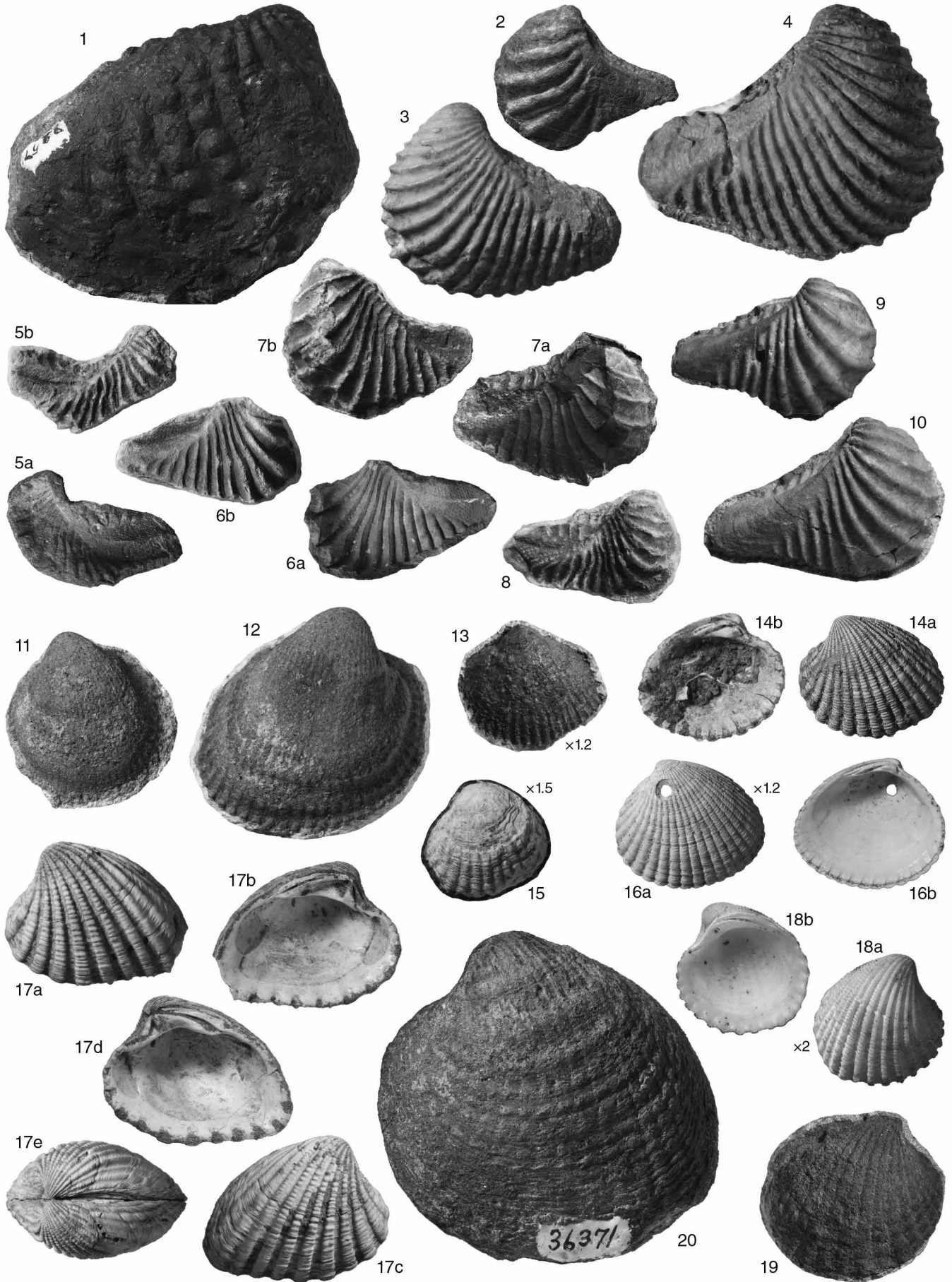


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