Twelve new Gastropods from the Miocene Mizunami group, Gifu Prefecture, Japan

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瑞浪層群産腹足類12新種

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(要　　約)

瑞浪市化石博物館収蔵の瑞浪層群産腹足類新種12種を記載した．前報の二枚貝類につづくものである．新種は次のとおりである．

Cellana depressa new species
Puncturella minoensis new species
Tristichotrochus takeharai new species
Cantharidus mizunamiensis new species
Uzumakiella habei new species
Homalopoma solidus new species
Sigaretornus kujiriensis new species
Tachyrhynchus yamaokaensis new species
Scaliola hiyoshiensis new species
Sigatica kurodai new species
Cymatiella variegata new species
Nucella tokishiensis new species

Introduction and acknowledgements

Twelve new species of Gastropoda found in the collection of the Mizunami Fossil Museum are described in this paper. The collection mainly was brought from the geological and paleontological study of the Miocene Mizunami group from 1973 to 1975. Details on the stratigraphy and molluscan assemblages of the group have been published in the writers' previous work.

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and Mr. Yoshitsugu OKUMURA of the Museum for their assistance in preparation of specimens and for many discussions.

Description of new species

Cellana depressa ITOIGAWA and SHIBATA, new species
(Pl. 2, Figs. 10, 11a, b)

1974 *Cellana* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 115, Pl. 36, Figs. 17, 18a, b.

Shell of medium size for species of the genus, solid, depressed conical. Apex low, directed forward, situated about one-third the length of shell from the anterior margin. The profile of the posterior slope gently arched, the anterior side nearly straight. Base flat and elliptical. The external surface sculptured with numerous, obscure, radial riblets. The inner surface nacreous, with a horse-shoe-shaped muscular scar at the center.

Dimensions (in mm):

	Greater basal diameter	Lesser basal diameter	Height
Holotype	48.3	40.1	9.8
Paratype	ca. 37	29.6	6.0

Holotype: MFM10052 (Oginoshima)

Paratype: MFM10053 (Oginoshima)

Remarks: This species is allied to *Patella toreuma* REEVE 1855 and *Patella nigrolineata* REEVE 1854, Recent species from the Western Pacific, but is lower.

Type locality: Oginoshima, Toki-cho, Mizunami city, Gifu Prefecture (loc. no. 138 of ITOIGAWA, SHIBATA and NISHIMOTO 1974, and so forth)

Occurrence: Type locality, Akatsuki-bora (loc. no. 45), Shukubora (loc. no. 18), Suganuma (loc. no. 22).....Shukunohora facies, Akeyo formation

Associated forms: *Glycymeris-Chlamys* A. (Type locality), *Bellucina-Polinices* A. (Akatsuki-bora), *Cavilucina-Glycymeris* A. (Shukubora), *Dendostrea-Chlamys* A. (Suganuma)

Puncturella minoensis ITOIGAWA and SHIBATA, new species
(Pl. 2, Figs. 1a, b, 2a, b, 3a, b, c)

1974 *Puncturella* sp. 2, ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 113, Pl. 36, Figs. 5–11.

Shell small in size, conical, laterally compressed, with an elliptical base. Apex small, turned backward and downward, situated a little behind the center of the shell. Anterior slope convex and posterior one straight. Foramen is arrow-shaped, placed little anterior to the apex. The sculpture consists of about 18 primary, radial ribs starting from the end of apical whorls, widely spaced, their intervals bearing one, finer, secondary ribs which begin at the edge of the anal slit. The

radials crossed by numerous, concentric ribs, interspaces between the radials and the concentrics form rectangular pits. Margin finely crenulated. Internal septum funnel-shaped.

Dimensions (in mm):

	Greater basal diameter	Lesser basal diameter	Height
Holotype	4.5	3.3	3.0
Paratype	5.5	4.1	3.7
Paratype	4.9	3.6	3.0

Holotype: MFM10054 (Dan)

Paratype: MFM10055, MFM10056 (Dan)

Remarks: This species is close to *Cemoria nobilis* A. ADAMS 1860, a living species from Japan, but can be distinguished therefrom by its coarser concentric ribs. *Puncturella mitsuganoensis* SHIBATA 1970 from the Miocene Ichishi group in Mié Prefecture is larger and lower than this species.

Type locality: Dan, Toki-cho, Mizunami City, Gifu Prefecture (loc. no. 26)

Occurrence: Type locality, Nakahida (loc. no. 111), Hiyoshi Hongo (loc. no. 11), Nataki (loc. no. 25), West of Sakurado (loc. no. 35).....Nataki conglomerate, Oidawara formation

Associated forms: *Chlamys-Homalopoma* A. (Type locality), *Turbo-"Ostrea"* A. (Hiyoshi-Hongo), *Chlamys-Homalopoma* A. (Nataki), *Chlamys-Anisocorbula* A. (West of Sakurado)

Tristichotrochus takeharai ITOIGAWA and SHIBATA, new species

(Pl. 2, Figs. 4a, b, c, 5a, b, 6)

1974 *Tristichotrochus* sp. 2, ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 116, Pl. 37, Figs. 1, 2.

Shell of small size, conical, with a high, pointed spire. Whorls about three and one-half turns, set between apressed sutures, so fine as to be hardly discernible. The side profile of the whorl nearly straight. The periphery of the final whorl angulated. The surface is ornamented with fine, beaded, spiral cords set between smooth interspaces of equal width. On the penultimate whorl there are six primary spiral cords and two or more secondary ones. The base is little convex, imperforate, sculptured with about 16 beaded spiral cords. The aperture subquadrate, oblique forward, pearly within, outer margin thin. Columella thickened and oblique. Apical angle about 60 degrees.

Dimensions (in mm):

	Length	Diameter
Holotype	12.5	13.5
Paratype	17.0	14.3

Holotype: MFM10057 (West of Sakurado)

Paratype: MFM10058 (West of Sakurado)

Remarks: This species resembles *Calliostoma* (*Calotropis*) *hataii* KANNO 1958 from the Miocene Chichibu group in Saitama Prefecture, but differs from it in having granulated spiral cords. This is also similar to *Tristichotrochus tosaensis* KURODA and HABE 1961, a living species from the Pacific coast of Japan, but has less convex whorls with low spiral cords.

This species is named in honor of Professor Emeritus Hei-ichi TAKEHARA of Nagoya University commemorating his seventieth birthday.

Type locality: West of Sakurado, Toki-cho, Mizunami City, Gifu Prefecture (loc. no. 35)

Occurrence: Type locality, Nakahida (loc. no. 111), Dan (loc. no. 26), Nataki (loc. no. 25), Sakurado-Yakushi (loc. no. 24).....Nataki conglomerate

Associated forms: *Chlamys-Anisocorbula* A. (Type locality), *Pitar-Chama* A. (Nakahida), *Chlamys-Homalopoma* A. (Dan and Nataki), *Chlamys-Turbo* A. (Sakurado-Yakushi), *Dentalium-Glycymeris* A. (Okuna)

Cantharidus mizunamiensis ITOIGAWA and SHIBATA, new species
(Pl. 2, Figs. 7a, b, 8a, b, 9a, b)

1974 *Cantharidus* sp. 1, ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 121, Pl. 38, Figs. 1, 2.

Shell, small, moderate in thickness; spire high conical consisting of five whorls; apical angle about 40°; nuclear whorls one and half, smooth; remaining whorls three, regularly increasing, more or less convex; suture well-marked, slightly canaliculate; sculpture consisting of eight spiral striae, with wider flat-topped interspaces; base slightly convex, with 14-15, fine, spiral striae, aperture ovate, narrowed and angulated posteriorly; outer lip more or less thick, inner lip smooth, bounded from the base with a furrow; umbilicus narrow, slit-like.

Dimensions (in mm):

	Length	Diameter
Holotype	4.5	2.8
Paratype	4.5	2.8

Holotype: MFM10059 (Dan)

Paratype: MFM10060 (Dan)

Remarks: This species closely resembles *Cantharidus hirasei* PILSBRY 1901, a living species of Japan, but has a smaller, lower and thinner shell with a narrower umbilicus.

Type locality: Dan (loc. no. 26), Toki-cho, Mizunami City, Gifu Prefecture

Occurrence: Type locality, Nataki (loc. no. 25).....Nataki conglomerate

Associated forms: *Chlamys-Homalopoma* A. (Type locality and Nataki)

Uzumakiella habei ITOIGAWA and SHIBATA, new species
(Pl. 3, Figs. 1a, b, c, 2a, b, c)

1974 "*Uzumakiella*" sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 124, Pl. 38, Figs. 16a, b.

Shell small, rather thick, depressed turbinate; nuclear whorls one and half, smooth; post-nuclear whorls two, sculptured with 12-14 spiral cords, of which a subsutural one more or less stronger than the others; interspaces narrower than the cords in the upper part of the spire and wider in the lower part with fine interstitial threads; the spirals crossing with fine growth lines, rope-like or granulated; body whorl rapidly increasing in its diameter towards the aperture; periphery acutely angled and connected with base; sculpture of the base consisting of fine spiral threads and growth lines, decussate except smooth callus which occupies larger area in the central part of the base; umbilicus narrowly opened; aperture big, oblique, reversely ovate, slightly thickened at outer margin; posterior corner of the aperture with a distinct canal; inner margin of the aperture smooth.

Dimensions (in mm):

	Length	Diameter
Holotype	1.45	4.0
Paratype	1.4	3.7

Holotype: MFM10061 (Dan)

Paratype: MFM10062 (Dan)

Remarks: The present new species is closely allied to *Uzumakiella japonica* HABE 1958, a living species in Seto-nai-kai (Inland sea of Japan), which is the genotype of *Uzumakiella*. But the former has a finely sculptured base with a callus pad. This species might belong to a new subgenus of *Uzumakiella*. Examination on the generic position of this species is needed in future. This species is named in honor of Dr. Tadashige HABE of the National Science Museum, who made the first study on *Uzumakiella* commemorating his sixtieth birthday.

Type locality: Dan (loc. no. 26)

Occurrence: Type locality.....Nataki conglomerate, Akatsuki-bora (loc. no. 45) .....Shukunohora facies

Associated forms: *Chlamys-Homalopoma* A. (Type locality), *Mitrella-Bellucina* A., *Miogypsina japonica* UJIIÉ (Akatsuki-bora)

Homalopoma solidus ITOIGAWA and SHIBATA, new species
(Pl. 2, Figs. 12a, b, 13a, b, c. 14a, b)

1974 *Homalopoma* sp. 1, ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 127, Pl. 39, Figs. 11-14.

Shell medium in size, solid, conical and more or less shouldered; apical part not known in detail; whorls six; sculpture of early two whorls consisting of six to six and half spiral ribs with interspaces narrower than the ribs, intercalating riblets from the third whorl; on the penultimate whorl, 19 spirals visible and the primary six ribs stronger and larger than the others, the upper three weaker than the lower and the fourth making the shoulder; the radials crossing distinct

growth lines, granulate on the body whorl; base slightly convex, sculptured with about 30, fine, spiral riblets; aperture subround, thick, complete; umbilicus closed.

Dimensions (in mm):

	Length	Diameter
Holotype	17.0	15.3
Paratype	15.2	14.2
Paratype	—	15.2

Holotype: MFM10063 (Yamanouchi)

Paratype: MFM10064, MFM10065 (Togari)

Remarks: This new species is different from *Leptothyra ena* ITOIGAWA 1955 and *Homalopoma hidensis* ITOIGAWA 1960, both from the Mizunami group by its larger and more solid shell with shouldered spire and stronger spiral ribs. *Homalopoma tsukiyoshiensis* OYAMA and SAKA 1944 from the Tsukiyoshi member of the group looks like specimens in immature stage of this new species, but the latter is distinguishable from the former by having a larger number of ribs and a close umbilicus. *Turbo amussitatus* GOULD 1861 is another allied species, but the present species has more conical shell having fewer spiral ribs.

Occurrence: Type locality (loc. no. 87), Togari (loc. no. 78), Asano (loc. no. 113)..... Yamanouchi member, Akeyo formation

Type locality: Yamanouchi-St. 281, Akeyo-cho, Mizunami City

Associated forms: *Macoma-Lucinoma* A. (Type locality and Togari), *Macoma-Cultellus* A. (Asano)

Sigaretornus kujiriensis ITOIGAWA and SHIBATA, new species

(Pl. 3, Figs. 3a, b, c, d, 4a, b, c, 5)

1960 *Tornus* sp., ITOIGAWA, Jour. Earth Sci. Nagoya Univ., vol. 8, no. 2, p. 279, Pl. 4, Figs. 5a, b.

1974 *Sigaretornus* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 130, Pl. 39, Figs. 19a, b.

Shell minute, thin, nearly flat with more or less elevated spire; nuclear whorls two, small and smooth; post-nuclear whorls three, slightly convex, spirally sculptured having growth lines; spiral striae seven to eight, shallow, nearly equal to interspaces; suture deeply impressed; periphery subround; base convex with fine and numerous spiral striae and growth lines; aperture large, subround, slightly obilique; lip thin; umbilicus broadly and deeply opened, nearly reaching to the protoconch, spirally coiled.

Dimensions (in mm):

	Length	Diameter
Holotype	1.5	3.7
Paratype	1.3	3.6
Paratype	1.5	3.7

Holotype: MFM10066 (Kujiri)

Paratype: MFM10067, MFM10068 (Kujiri)

Remarks: *Tornus planus* A. ADAMS 1850, a living species of Japan, is similar to the present new species, but the latter has rougher sculpture and a small aperture.

Type locality: Kujiri, Izumi-cho, Toki City, Gifu Prefecture (loc. no. 119)

Occurrence: Type locality.....Kujiri facies, Akeyo formation, Akatsuki-bora (loc. no. 45).....Shukunohora facies

Associated forms: *Glycymeris-Turritella* A. (Type locality), *Mitrella-Bellucina* A. (Akatsuki-bora)

Tachyrhynchus yamaokaensis ITOIGAWA and SHIBATA, new species
(Pl. 2, Figs. 15a, b, 16a, b, 17a, b, 18)

1974 *Tachyrhynchus* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 132, Pl. 40, Figs. 13-17.

shell of large size for the genus, turriculate. Whorls number about 13 (the protoconch missing), convex, principally sculptured with two, strong, flat-topped, keel-like spiral cords, with a concave area of equal width, in the middle zone of each whorl. In addition, space between the upper suture and the upper spiral cord carries two, fine, spiral threads. The spiral cords crossed by numerous axial riblets on earlier whorls, their points of intersection noded. The axials obsolete on adult whorls. The last whorl has a strong peripheral keel. The base flat, smooth. Aperture subquadrate, slightly produced in front into a rudimentary channel. Outer lip and its growth line trace show a shallow wide sinus. The apical angle about 21 degrees.

Dimensions (in mm):

	Length	Diameter
Holotype	30.3	7.8
Paratype	25+	7.0
Paratype	19.7	5.3

Holotype: MFM10069 (Higashi-hora)

Paratype: MFM10070, (Togari), MFM10071 (Yamanouchi)

Remarks: This species will be easily recognized by its large size and unusual sculpture.

Type locality: Higashi-hora, Yamaoka-cho, Ena-gun, Gifu Prefecture

Occurrence: Type locality.....Kubohara member, Tôyama formation, Mizunami group (Iwamura basin), Asano (loc. no. 113).....Asano facies, Akeyo formation, Anabora (loc. no. 91).....Kujiri facies, Asano (loc. no. 113), Yamanouchi-St. 282 (loc. no. 87), Togari-St. KA-1 (loc. no. 78), Matsugase (loc. no. 136).....Yamanouchi member

Associated forms: *Saccella-Arca* A. (Type locality), *Arca-Saccella* A. (Asano), *Felaniella-"Nassarius"* A., (Anabora), *Macoma-Cultellus* A. (Asano), *Saccella-Venericardia* A. (Yamanouchi and Togari), *Patinopecten-Macoma* A. (Matsugase)

Scaliola hiyoshiensis ITOIGAWA and SHIBATA, new species
(Pl. 3, Figs. 10a, b)

1974 *Scaliola* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 137, 138, Pl. 43, Fig. 43.

Shell minute in size, slender; spire shortly turreted, consisting of about seven whorls; apical angle about 30°; whorls slightly convex with well-marked suture; surface with many, fine sand-grains or sculptured with traces of sand-grains; last whorl unisolated; aperture partly broken but round abutting on penultimate whorl; umbilicus closed. Length 2.0 mm, diameter 1.2 mm.

Holotype: MFM10072 (Shukubora)

Remarks: A single well-preserved specimen is under examination. This new species closely resembles living species in the temperate waters of Japan, *Scaliola gracilis* A. ADAMS 1862 and *S. glareosa* A. ADAMS 1862. But it is distinguished from the two latter by its shorter and thicker shell with fewer whorls.

The occurrence of this new species may be the first record of the genus *Scaliola* from the Miocene series in Japan.

Type locality: Shukubora, Hiyoshi-cho, Mizunami City (loc. no. 18)

Occurrence: Type locality.....Shukunohora facies

Associated forms: *Cavilucina-Glycymeris* A.

Sigatica kurodai ITOIGAWA and SHIBATA, new species
(Pl. 3, Figs. 9a, b)

1960 *Sigatica* sp., ITOIGAWA, Jour. Earth Sci., Nagoya Univ., vol. 8, No. 2, p. 284.

1974 *Sigatica* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 149, Pl. 45, Fig. 12.

Shell small, globose, slender; spire somewhat elevated, less than half of the height of the aperture; surface sculptured by numerous, fine spiral striae and fine, irregular, oblique incremental lines; suture deeply impressed, slightly channeled; aperture large, semicircular; umbilicus broadly and deeply opened. 6.0 mm height, 5.2 mm diameter.

Holotype: MFM10073 (Shukubora)

Remarks: A single well-preserved specimen was obtained. This shell resembles *Sigatica bathyraphe* (PILSBRY 1911). But the former has the shell with stronger sculpture and a more round body whorl. *Gennaeosinum yokoyamai* KURODA and HABE 1952, a Pleistocene and Recent species of Japan, is another allied species but the present new species differs in its thinner and smaller shell with finer sculpture.

This species is named in honor of Dr. Tokubei KURODA who gave many suggestions on taxonomy of this specimen to the writers commemorating his ninetieth birthday.

Type locality: Shukubora (loc. no. 18)

Occurrence: Type locality.....Shukunohora facies

Associated forms: *Cavilucina-Glycymeris*. A.

Cymatiella variegata ITOIGAWA and SHIBATA, new species

(Pl. 3, Figs. 11a, b, 12a, b, 13, 14)

1974 *Cymatiella* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 149, Pl. 46, Figs. 1a, b, 6a, b.

Shell of medium size, fusiformly oblong, spire approximately half of the length of shell. Whorls more than five in number (the nuclear ones missing on available specimens), rounded bearing five to eleven, irregularly spaced, rib like varices. Suture distinct. The surface between the varices sculptured with numerous, fold like axial ribs, separated by wider interspaces, fully developed between sutures of the spire whorls, but on the body whorl they fade out on the base; these axials number about 19 on the penultimate whorl. The ribs are crossed by spiral threads of primary, secondary and tertiary strength. On the penultimate whorl, there are four or five primary threads. On some specimens, the axial sculpture is much fine and weak. Aperture ovate, outer lip strong, strengthened with a stout varix, dentated within. Inner lip covered with thin callus and denticulate. Columella curved. Anterior canal short, open, recurved.

Dimensions (in mm):

	Length	Diameter
Holotype	43+	23.9
Paratype	46.5	29.1

Holotype: MFM10074 (Yamanouchi-St. 282)

Paratype: MFM10075 (Matsugase)

Remarks: This species resembles *Cymatiella lesueuri* IREDALE 1929 living in Australian waters, but has a larger shell with more convex whorls. This differs from *Bursa shimsorutonensis* HATAI and KOTAKA 1952 from the Miocene of Korea in having irregularly spaced varices.

Type locality: Yamanouchi-St. 282, Akeyo-cho, Mizunami City (loc. no. 87)

Occurrence: Type locality, Asano (loc. no. 113), Togari-St. KA-1 (loc. no. 78), Matsugase (loc. no. 136).....Yamanouchi member, Asano (loc. no. 113), Masumi (loc. no. 135).....Hazama member, Akeyo formation

Associated forms: *Macoma-Lucinoma* A. (Type locality and Togari), *Macoma-Cultellus* A. (Asano), *Patinopecten-Macoma* A. (Matsugase), *Macoma-Ennucula* A. (Asano and Masumi)

Nucella tokishiensis ITOIGAWA and SHIBATA, new species

(Pl. 3, Figs. 6a, b, 7a, b, 8a, b)

1960 "*Polytropa*" sp., ITOIGAWA, Jour. Earth Sci., Nagoya Univ., vol. 8, no. 2 p. 258, Pl. 5, Fig. 8.

1974 *Nucella* sp., ITOIGAWA, SHIBATA and NISHIMOTO, Bull. Mizunami Fossil Mus., No. 1, p. 152, Pl. 46, Figs. 9-11.

Shell small, solid, fusiform, with a large convex body whorl and a small, elevated spire of more than two whorls (the apical ones missing on specimens), separated by distinct sutures. The spire whorls are sculptured with low, axial ribs, about 13 on the penultimate whorl, crossed by more prominent spiral cords. There are four spiral cords on the penultimate whorl and are about 17 on the last whorl. The axials become obsolete on the last whorl and fade out on the base. Aperture rather small, oblong oval in shape, outer lip sharp, dentated with nine or more denticles within. Anterior canal short, open, slightly recurved, fasciolarid.

Dimensions (in mm):

	Length	Diameter
Holotype	24+	14.7
Paratype	16+	10.2
Paratype	16+	10.1

Holotype: MFM10076 (Nakahida)

Paratype: MFM10077, MFM10078 (Nakahida)

Remarks: This species resembles *"Polytropa" yatsuoensis* TSUDA 1959 described from the Miocene Kurosedani formation in Toyama Prefecture, but is distinguished therefrom by the absence of a spine on the outer lip and a suture like line on the base. This is also close to *Nucella lapillus* LINNÉ 1758 figured in WENZ (1941), but is smaller in size and has a lower spire.

Type locality: Nakahida, Hida-cho, Toki City, Gifu Prefecture (loc. no. 111)

Occurrence: Type locality, Shizugahora (loc. no. 52), Hiyoshi-Hongo (loc. no. 11), Dan (loc. no. 26), Nataki (loc. no. 25), Sakurado-Yakushi (loc. no. 34), West of Sakurado (loc. no. 35), Okuna (loc. no. 24).....Nataki conglomerate, Tsukiyoshi-Mizonokuchi (loc. no. 47), Akatsuki-bora (loc. no. 45), Hayakawa coal mine (loc. no. 16).....Shukunohora facies

Associated forms: *Pitar-Chama* A. (Type locality), *Turbo-"Ostrea"* A. (Shizugahora and Hiyoshi-Hongo), *Chlamys-Homalopoma* A. (Dan and Nataki), *Chlamys-Turbo* A. (Sakurado-Yakushi), *Chlamys-Anisocorbula* A. (West of Sakurado), *Dentalium-Glycymeris* A. (Okuna), *Bellucina-Polinices* A. (Tsukiyoshi-Mizonokuchi), *Turbo-Glycymeris* A. (Akatsuki-bora), *Glycymeris-Turbo* A. (Hayakawa coal mine)

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Plate 2

Figs. 1a, b, 2a, b, 3a, b, c. *Puncturella minoensis* ITOIGAWA and SHIBATA ×2
1. Holotype 2, 3. Paratype

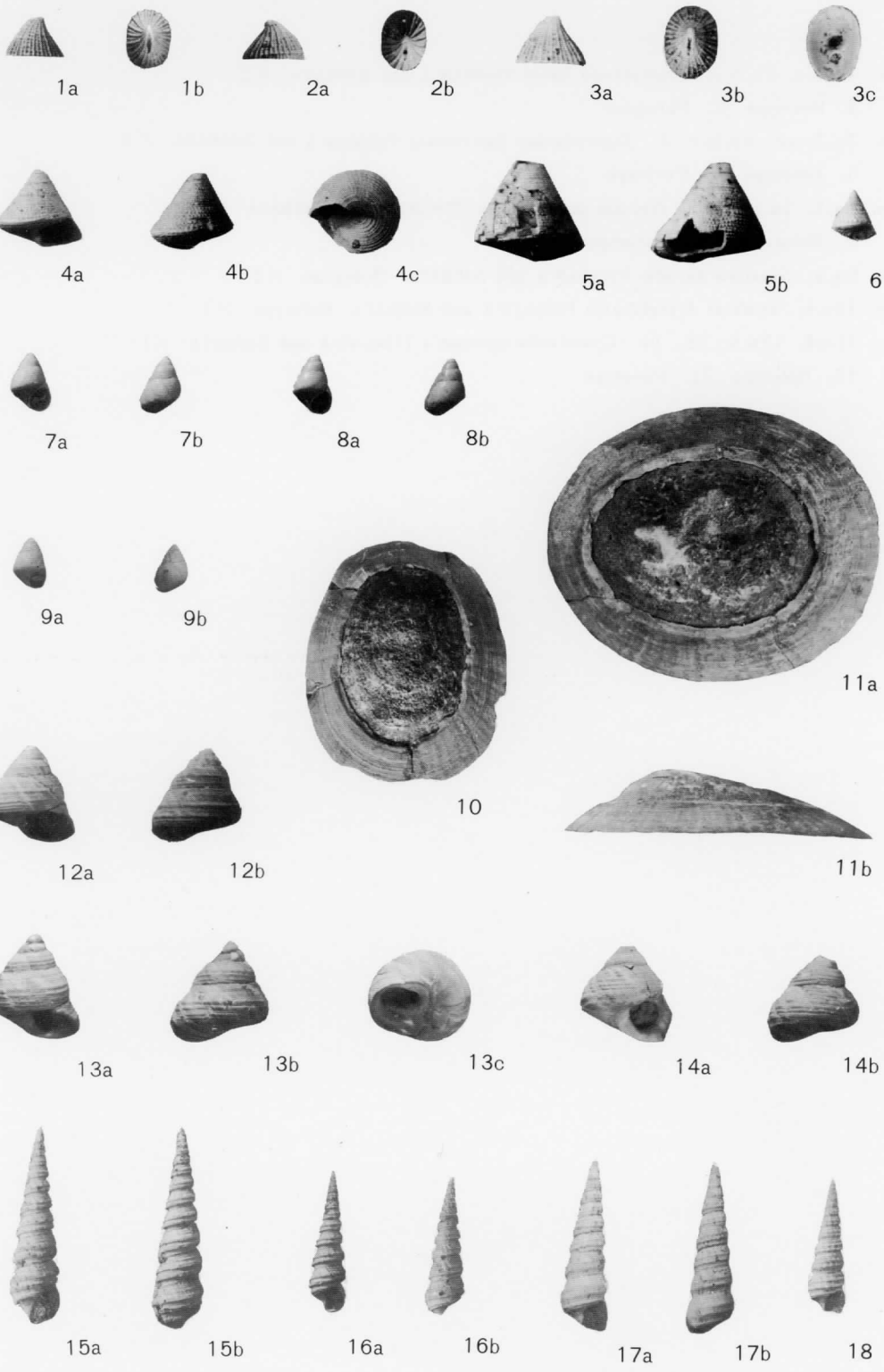
Figs. 4a, b, c, 5a, b, 6. *Tristichotrochus takeharai* ITOIGAWA and SHIBATA
4. Holotype ×1 5. Paratype ×1 6. ×2

Figs. 7a, b, 8a, b, 9a, b. *Cantharidus mizunamiensis* ITOIGAWA and SHIBATA ×2
7. Holotype 8. Paratype

Figs. 10, 11a, b. *Cellana depressa* ITOIGAWA and SHIBATA ×1
11. Holotype 10. Paratype

Figs. 12a, b, 13a, b, c, 14a, b. *Homalopoma solidus* ITOIGAWA and SHIBATA ×1
13. Holotype 12. Paratype

Figs. 15a, b, 16a, b, 17a, b, 18. *Tachyrhynchus yamaokaensis* ITOIGAWA and SHIBATA ×1 15. Holotype 17, 18. Paratype


1a
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13c
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15a
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16a
16b
17a
17b
18

Plate 3

Figs. 1a, b, c, 2a, b, c. *Uzumakiella habei* ITOIGAWA and SHIBATA ×2
1. Holotype 2. Paratype

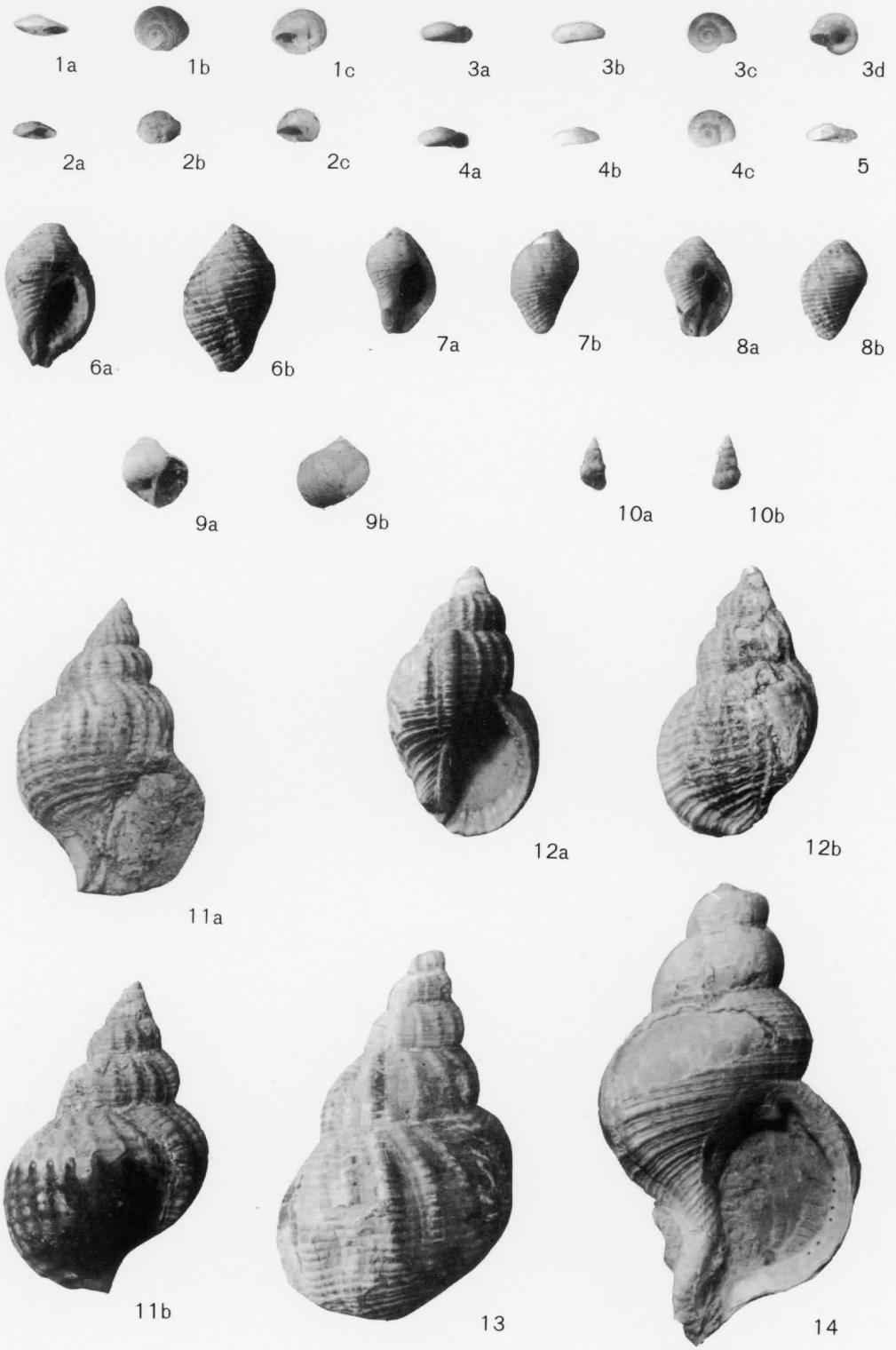
Figs. 3a, b, c, d, 4a, b, c, 5. *Sigaretornus kujiriensis* ITOIGAWA and SHIBATA ×2
3. Holotype 4. Paratype

Figs. 6a, b, 7a, b, 8a, b. *Nucella tokishiensis* ITOIGAWA and SHIBATA ×1
6. Holotype 7, 8. Paratype

Figs. 9a, b. *Sigatica kurodai* ITOIGAWA and SHIBATA Holotype ×2

Figs. 10a, b. *Scaliola hiyoshiensis* ITOIGAWA and SHIBATA Holotype ×4

Figs. 11a, b, 12a, b, 13, 14. *Cymatiella variegata* ITOIGAWA and SHIBATA ×1
12. Holotype 11. Paratype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7b
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9a
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10a
10b
11a
12a
12b
11b
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14