

Revision of the genus *Retimohnia* McLean, 1995 (Gastropoda: Buccinidae)

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ABSTRACT. The genus *Retimohnia* McLean, 1995 is revised based on shell and radular morphology, foregut and stomach anatomy. Ten previously described species are recognized as valid: *R. frielei* (Dall, 1891), *R. bella* (Ozaki, 1958), *R. vernalis* (Dall, 1913), *R. clarki* (Dall, 1907), *R. hondoensis* (Dall, 1913), *R. micra* (Dall, 1907), *R. sordida* (Dall, 1907) comb. nov., *R. robusta* (Dall, 1913), *R. caelata* (Verrill et Smith, 1880), *R. acadiana* García, 2008. Two species are described as new: *R. lussae* sp. nov. and *R. mcleani* sp. nov. *R. japonica* (Dall, 1913) is reduced to a junior synonym of *R. micra*, *R. clementina* (Dall, 1919) considered as a junior synonym of *R. clarki*. Five species are excluded from the genus. Lectotypes designated for *Mohnia frielei*, *Mohnia vernalis*, *Mohnia sordida*, *Mohnia clarki*.

Introduction

In 1995, McLean established new genus *Retimohnia* with the type species *Mohnia frielei* Dall, 1891 for several species previously included in *Mohnia* Friele in Kobelt, 1878 by Dall [1913], Radwin [1972] and Tiba and Kosuge [1992]. Bouchet and Warén [1985] tentatively included in *Mohnia* three northeastern Atlantic species, for which they could not find a better genus. These species were also included in *Retimohnia* by McLean [1995]. McLean mentioned, that the type species of *Mohnia*, *Fusus mohnii* Friele, 1877, differs from *Retimohnia* allocated species in sculpture and radulae structure. Kosyan [2007] and later Kosyan and Kantor [2009] synonymised genera *Retimohnia* and *Retifusus* Dall, 1916 on the basis of the similarity of the radula of *Retifusus jessoensis* and the specimen erroneously identified as *Retimohnia frielei*. Later [Kantor, 2009] re-established the genus *Retimohnia*.

In the present paper we revise the genus, which in our opinion includes ten known valid species and two new ones found presumably at depths more than 1000 m and comment on species excluded from *Retimohnia*.

Material and methods

The material was obtained from the collections of Russian Institutions – the P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences (RAS), Zoological Institute of RAS, and the Museum of the A.V. Zhirmunsky Institute of Marine Biology, Far Eastern Branch, RAS; type material of several species from the Natural History Museum, Smithsonian Institution were provided by the curators Drs E. Strong and M.G. Harasewych.

The radulae were extracted by gross dissection, cleaned using diluted bleach (NaOCl), air-dried, coated with gold and examined with a Tescan Scanning Electron Microscope (IPEE RAS).

Teeth formula indicates number of cusps on left lateral: rachidian: right lateral teeth of radula; for example: 3:3:3 indicates the presence of three cusps on the left and right lateral teeth and three on the rachidian. The radula width was measured as a distance between outer corners of the lateral teeth bases. The height of the basal part of the lateral tooth was measured as a distance from the tooth base and the base of the cusps (see Fig. 2D, a).

Abbreviations of the depositories and conventions:

AL, aperture length; **ANSP**, the Academy of Natural Sciences of Philadelphia, Pennsylvania, USA; **H**, shell length; **h**, last whorl length; **ICZN**, International Code of Zoological Nomenclature; **IO**, the P.P. Shirshov Institute of Oceanology of RAS, Moscow, Russia; **RAS**, the Russian Academy of Sciences; **MIMB**, the Museum of the A.V. Zhirmunsky Institute of Marine Biology of the Far Eastern Branch of RAS, Vladivostok, Russia; **NSM-Mo** recent molluscan collection of the Department of Zoology, National Museum of Nature and Science, Tokyo; **NSM PM**, paleontological molluscan collection of the Department of Geology and Paleontology, National Museum of Nature and Science, Tokyo; **UKM**, Rikuzentakata City Museum, Rikuzentakata, Iwate, Japan; **UMUT**, the University Museum, the University of Tokyo, Japan; **USFC**, the United States Fish Commission; **USNM**, the Natural History Museum, Smithsonian Institution, Washington DC, USA; **ZIN**, the Zoological Institute of RAS, Saint-Petersburg, Russia

Abbreviations on the figures: **adg**, opening of anterior duct of digestive gland; **alg**, ampule of gland of Leiblein; **ao**, anterior aorta; **aoe**, anterior oesophagus; **bm**, buccal mass; **cep.t**, cephalic tentacles; **cg**, capsule gland; **cm**, columellar muscle; **ct**, ctenidium; **dg**, digestive gland; **dgl**, duct of gland of Leiblein; **fo**, female orifice; **ft**, foot; **gl**, gland of Leiblein; **gon**, gonad; **hd**, head; **hg**, hypobranchial gland; **int**, intestine; **kd**, kidney; **lfl**, longitudinal fold on inner stomach wall; **mo**, mouth opening; **mrrr**, medial retractor of radula; **n**, nerves; **nr**, nerve ring; **odn**, odontophore nerves; **odr**, odontophore retractors; **oeo**, oesophageal opening; **op**, operculum; **os**, osphradium; **p**, penis; **pdg**, opening of posterior duct of digestive gland; **pma**, posterior mixing area; **poe**, posterior oesophagus; **pr**, proboscis; **prp**, propodium; **prpg**, propodial groove; **prrr**, proboscis retractors; **pw**, proboscis wall; **r**, radula; **rd**, rhynchodaeum; **re**, rectum; **s**, siphon; **sd**, salivary duct; **sed**, seminal duct; **sg**, salivary gland; **so**, seminal opening; **sp**, seminal papilla; **st**, stomach; **va**, vagina; **vd**, vas deferens; **vl**, valve of Leiblein.

Systematics

Order Neogastropoda

Family Buccinidae Rafinesque, 1815

Subfamily Colinae Gray, 1857

Genus *Retimohnia* McLean 1995

McLean, 1995: 40.

Type species: *Mohnia frielei* Dall, 1891, by original designation.

Diagnosis. Shell length small comparing to other genera of Colinae, from 12 (*R. hondoensis*) to 37 mm (*R. robusta*), oval to narrow-fusiform, with moderately or quickly increasing whorls diameter; last whorl comprises about 0.75 of shell height, with long or moderate, straight or slightly left-curved siphonal canal. Aperture moderately high, about 0.5 shell height; outer lip evenly arcuate. Operculum oval with subspiral nucleus, which in adult specimens sometimes transforms into terminal one but strongly dislodged leftward. Axial sculpture, when present, consists of prominent axial ribs, up to 18 on last whorl; axial ribs sometimes disappearing in adults. Spiral sculpture always present, of multiple, more or less prominent cords (up to 30 on penultimate whorl in *R. sordida*).

Radula with weakly overlapping teeth rows. Rachidian teeth with 3-6 sharp cusps situated on deeply anteriorly notched basal plate; length of cusps diminishing from center outwards. Lateral teeth normally with three cusps, median cusp thinnest and shortest. Salivary glands moderate or large-sized, sometimes fused under nerve ring, with thick salivary ducts. Stomach comparing to proboscis large with small or moderate in size posterior mixing area. Penis with medium-large seminal papilla, situated in deepening on top of penis.

The genus *Retimohnia* represents rather heterogeneous group of Colinae, comprising species with

or without axial sculpture, different types of radula, inhabiting wide range of depths, but predominantly deeper than 1000 m. The intraspecific variability is also very high. From *Neptunea* Röding, 1798, *Colus* Röding, 1798, *Plicifusus* Dall 1902, *Aulacofusus* Dall, 1918, *Latisipho* Dall, 1916 it differs in smaller sizes and operculum with subspiral nucleus; from *Pararetifusus* Kosuge, 1967 and *Fusipagoda* Habe et Ito, 1965 in lack of spiral cords; from *Mohnia* – in radula (type species, *Mohnia mohni*, has unicuspid rachidian and bicuspid lateral teeth, in other *Mohnia* species there is a distinct tendency to reduction of teeth cusps; at the same time, cusps number in *Retimohnia* is always not less than three on all teeth); from the most similar genus *Retifusus* – by radular structure (lateral teeth in *Retifusus* normally have three nearly equal in length cusps, whereas in *Retimohnia*, median cusp is the thinnest and smallest), operculum (with terminal nucleus in *Retifusus*) and penis with small seminal papilla.

Retimohnia frielei (Dall, 1891)

(Figs 1 A-B; 2A; 3)

Mohnia frielei Dall, 1891: 186; Dall, 1921: 91; Oldroyd, 1927: 200, pl. 25, fig. 8 (non pl. 15, fig. 5 – although erroneously referred to as *M. frielei*, the figure is of *Beringius frielei*); Kosuge, 1972: pl. 13, fig. 3.

Retimohnia frielei. – McLean, 1995: 40; Higo et al., 1999: 228; Higo et al., 2001: 73, fig. G2564 (“holotype”); Kantor, Sysoev, 2006: pl. 102 I; Kantor, 2009: 70, fig. 3 D-E.

Lectotype: USNM 122656, here designated; paralectotypes (80 spms): USNM 122653.

Type locality: off Queen Charlotte Isls., British Columbia, 51°23'N 130°34'W, 1602 m.

Material examined. Paralectotype (dissected): off Queen Charlotte Isls., British Columbia, 51°23'N, 130°34'W, 1602 m, USFC “*Albatross*” sta. 2860.

Description. Shell small, broad fusiform, relatively thin-walled, solid, not-translucent; whorls rounded but not inflated, with slowly increasing diameter. Siphonal canal rather short, wide open, twisted to left (Fig. 1 A-B). Protoconch and upper whorls eroded, the rest of shell consists of approximately 4 whorls (lectotype). Periostracum light-olive, thick, adherent; shell under periostracum white. Dominant sculpture of strong axial ribs, suture to suture on spire whorls and becoming obsolete on shell base; spiral sculpture of fine to moderate spiral grooves. Operculum subspiral, nucleus away from anterior edge. Measurements: lectotype – H 16.0 mm; studied paralectotype – H 14.8 mm, h 10.6 mm, AL 7.5 mm.

Radula of paralectotype is 200 µm wide (2.5% of AL), rachidian with three cusps, of which intermediate is the longest, and small denticles abutting the lateral cusps. Lateral teeth tricuspid, with thinner, but almost equal in length to other cusps, intermediate cusp (Fig. 2A).



FIG. 1. Shells of *Retimohnia*: **A**. Lectotype of *Mohnia frielei* USNM 122656, off Queen Charlotte Ids., British Columbia, 51°23'N 130°34'W, 1602 m, H 16 mm. **B**. Paralectotype of *R. frielei* (radula on Fig. 2A), the same locality as lectotype, H 14.8 mm. **C**. Lectotype of *Mohnia hondoensis*, USNM 205253, off Hondo, Japan, 139 m, H 12 mm. **D-F**. *R. hondoensis* from the Sea of Japan, 37°12'N, 132°53'E, 320 m. **D**. No. 1, H 16.2 mm. **E**. No. 2, H 15.5 mm. **F**. no. 3, H 15.3 mm (radulae on Fig. 2 B-D. Anatomy of no. 1 on Fig. 5). Scale bar = 10 mm.

РИС. 1. Раковины *Retimohnia*: **A**. Лектотип *Mohnia frielei* USNM 122656, Острова королевы Шарлотты, Британская Колумбия, 51°23'N 130°34'W, 1602 м, Н 16,0 мм. **B**. Паралектотип *R. frielei* (радула на Рис. 2А), то же место сбора, что у лектотипа, Н 14,8 мм. **C**. Лектотип *Mohnia hondoensis*, USNM 205253, о. Хондо, Япония, 139 м, Н 12,0 мм. **D-F**. *R. hondoensis* из Японского моря, 37°12'N, 132°53'E, 320 м. **D**. № 1, Н 16,2 мм. **E**. № 2, Н 15,5 мм. **F**. № 3, Н 15,3 мм (радулы на Рис. 2 B-D. Анатомия № 1 на Рис. 5). Длина масштабного отрезка 10 мм.

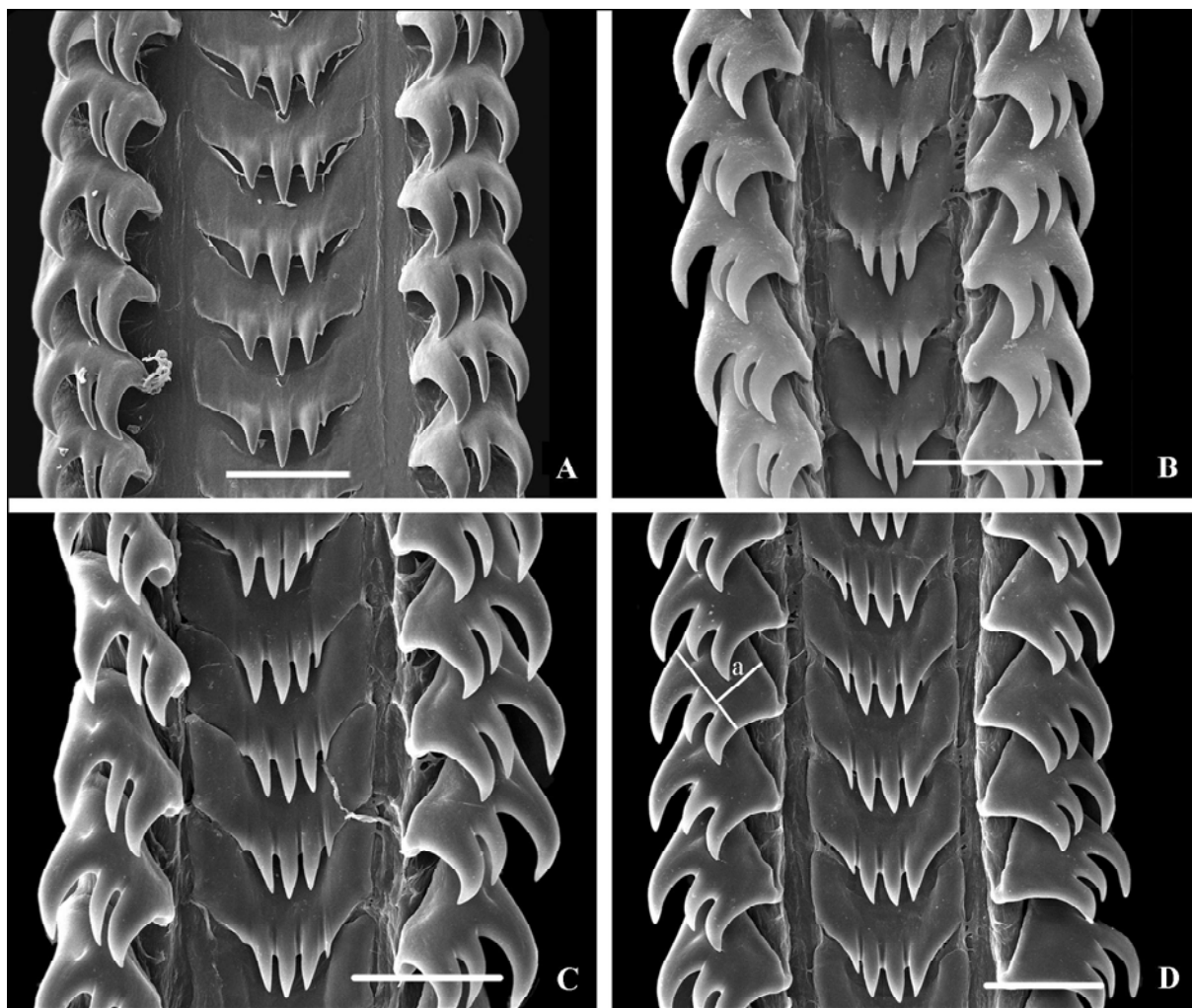


FIG. 2. Radulae of *Retimohnia*. A. Paralecotype of *Mohnia frielei* (shell on Fig. 1B). B-D. *R. hondoensis*. B, no. 1. C, no. 2. D, no. 3 (shells on Fig. 1D-F, anatomy of no. 1 on Fig. 5); a height of basal part of lateral tooth. Scale bar = 50 μ m.

РИС. 2. Радуды *Retimohnia*. А. Паралектотип *Mohnia frielei* (раковина на Рис. 1B). B-D. *R. hondoensis*. B, № 1. C, № 2. D, № 3 (раковины на Рис. 1D-F, анатомия № 1 на Рис. 5). Масштабный отрезок = 50 мкм.

Distribution: presently known from type locality only (Fig. 3).

Remarks. In the original description, Dall [1891] did not select holotype among several specimens collected from the type locality, and thus all of them must be considered syntypes. Kosuge [1972] published the photo of the specimen, which was subsequently illustrated again by Higo *et al* [2001] erroneously labeled as “holotype”. According to Art. 74. 7 of ICZN this can not be considered a valid lectotype designation after 1999. In the internet database of USNM the specimen USNM 122656 is also obviously erroneously referred to as holotype. To avoid further misconception, we designate this specimen, USNM 122656 (Fig. 1A) with shell length 16 mm, as lectotype.

Kosyan [2007] and Kosyan and Kantor [2009]

erroneously identified the specimen of *R. bella* as *frielei* and, based on radula similarity with *Retifusus jessoensis*, synonymized genus *Retimohnia* with *Retifusus*. After radula examination of syntype of *Mohnia frielei*, Kantor [2009] resurrected *Retimohnia* as a valid genus. *R. frielei* is most similar to *R. hondoensis*, both in shell and radula structure.

Golikov and Sirenko [1998], as well as Gulbin and Chaban [2007] recorded *R. frielei* from the Kurile Islands and the Sea of Japan. The radulae were not studied for mentioned specimens and Gulbin and Chaban [2007] did not provide the photo of the shells. The photo of the specimen illustrated by Golikov and Sirenko [1998: fig. 7D] does not allow unambiguous identification and the specimens were collected at shallower depth (280-890 m). Therefore the presence of the species in the Sea of Japan and the Kuriles needs confirmation.

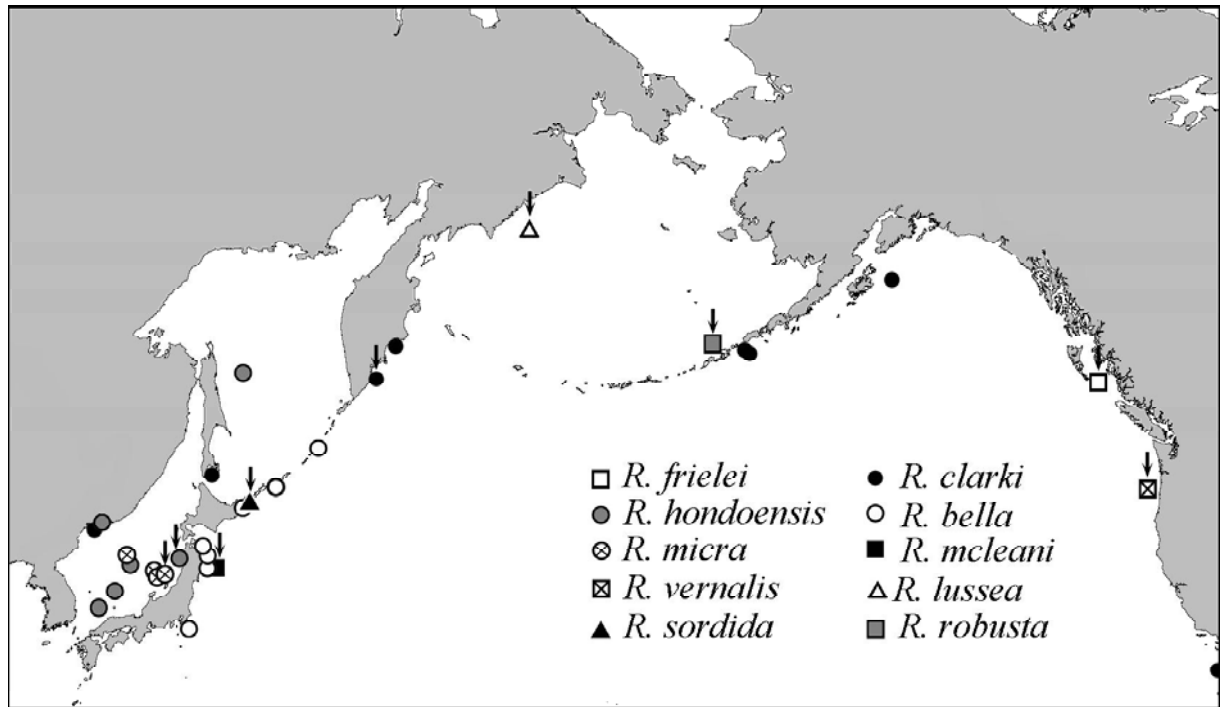


FIG. 3. Distribution of *Retimohnia*. Arrows indicate the type localities.

РИС. 3. Распространение *Retimohnia*. Стрелки отмечают типовые местонахождения.

Retimohnia hondoensis (Dall, 1913)
(Figs 1 C-F; 2 B-D; 3-6)

Mohnia hondoensis Dall, 1913: 504; Dall, 1925: 21, pl. 32 fig. 4; Kosuge, 1972: pl. 27, fig. 5; Tiba, Kosuge, 1992: 18(7-8), text-fig. 1; Kantor, Sysoev, 2006: 201, pl. 102 G; Hasegawa, 2009: 304.

Retimohnia hondoensis. – McLean, 1995: 40; Higo *et al.*, 1999: 228; Higo *et al.*, 2001: 73, fig. G 2568.

Holotype (by monotypy): USNM 205253.

Type locality: “off Hondo, Japan” (in original description), Honshu Island, Anto Saki, 36°14'30"N, 135°56'30"E, 139-144 m, R/V “*Albatross*”, stn. 4832.

Material examined. 4 lots, more than 100 spms. Sea of Japan, 37°12'N, 132°53'E, 320 m, R/V “*Vityaz*” sta. 7487, 10.06.1976, IO uncataloged (8 spms., nos. 1-3 dissected). Sea of Japan, 38°41'N, 133°45'E, 1550 m, R/V “*Vityaz*” sta. 7488, 11.06.1976, IO uncataloged (75 spms, nos. 4-6 dissected). Sea of Japan, 36°10'N, 131°25'E, 1760 m, R/V “*Vityaz*” sta. 7483, 09.06.1976, IO uncataloged (20 spms, nos. 7-9 dissected). Kurile Islands, Pacific coast of Simushir Island, 1320 m, R/V “*Odissey*”, cruise 34, sta.1, 10.12.1984, ZIN uncataloged (4 spms).

Description. Shell small, broad-fusiform, relatively thin walled, solid, not-translucent, with medium long, well defined, slightly left-curved siphonal canal (Fig. 1 C-F, 4). Protoconch and upper whorls eroded, the rest of shell consists of approximately 4 whorls (lectotype). Periostracum thin, pale beige;

shell under periostracum white or creamy-white. Teleoconch whorls convex, shoulder slightly angulated in most specimens, periphery evenly rounded. Aperture high, oval, tapering posteriorly beneath impressed suture; outer lip evenly rounded, slightly concave at transition to siphonal canal. Inner lip concave, smooth, covered with thin callus extending on parietal part of whorl. Dominant sculpture of strong to faint axial ribs, somewhat angulated at shoulder, about 13 on last whorl; spiral sculpture represented by weak unevenly wide spiral cords (15-20 on penultimate whorl). Operculum oval with subspiral nucleus shifted leftward (Fig. 5A). Shell measurements in Table 1.

Soft body: One whorl extracted (Fig. 5A). Head with rather long thick tentacles, eyes absent (Fig. 5B). Foot contracted; propodium wide, separated by deep propodial groove (Fig. 5B, prp). Mantle width equals to length (Fig. 5C). Ctenidium occupies 0.8 of mantle length and 0.25 of its width. Osphradium slightly wider than ctenidium and occupies half of its length. Rectum comprises half of mantle length.

Reproductive system. Penis with elongated medium wide, cone-shaped seminal papilla (Fig. 5B, p). Seminal duct in its distal part (before entering penis) very wide, inflated, with diameter comparable to that of penis (Fig. 5B, sed).



FIG. 4. Shells of *Retimohnia hondoensis*: A-C. Nos. 4-6 respectively, 38°41'N, 133°45'E, 1550 m, H 12.0, 12.6, 16.8 mm respectively (radulae on Fig. 6 A-C). D-F. Nos. 7-9 respectively, 36°10'N, 131°25' E, 1760 m, H 12.1, 12.6, 13.6 mm respectively. Scale bar = 10 mm.

РИС. 4. Раковины *Retimohnia hondoensis*: A-C. №№ 4-6, 38°41'N, 133°45'E, 1550 м, H 12,0, 12,6, 16,8 мм соответственно (радулы на Рис. 6 A-C). D-F. №№ 7-9 соответственно, 36°10'N, 131°25' E, 1760 м, H 12,1, 12,6, 13,6 мм соответственно. Масштабный отрезок = 10 мм.

Digestive system. Proboscis short, retracted into rhynchodaeum (Fig. 5E, pr). Proboscis retractors detach ventrally from middle of rhynchodaeum as several muscle bands and attach to bottom of body haemocoel (Fig. 5D, prr). Buccal mass occupies entire length of proboscis. Rachidian teeth of radula bear 3-6 small sharp cusps, diminishing from center

outwards. Lateral teeth normally tricuspid, with high basal parts and short cusps, inner and central of nearly equal length (Fig. 2 B-D, 6). Teeth formula and radula measurements of examined specimens represented in Table 1. Anterior oesophagus thick and straight, valve of Leiblein of medium size, rounded (Fig. 5 D-E). Nerve ring large, situated

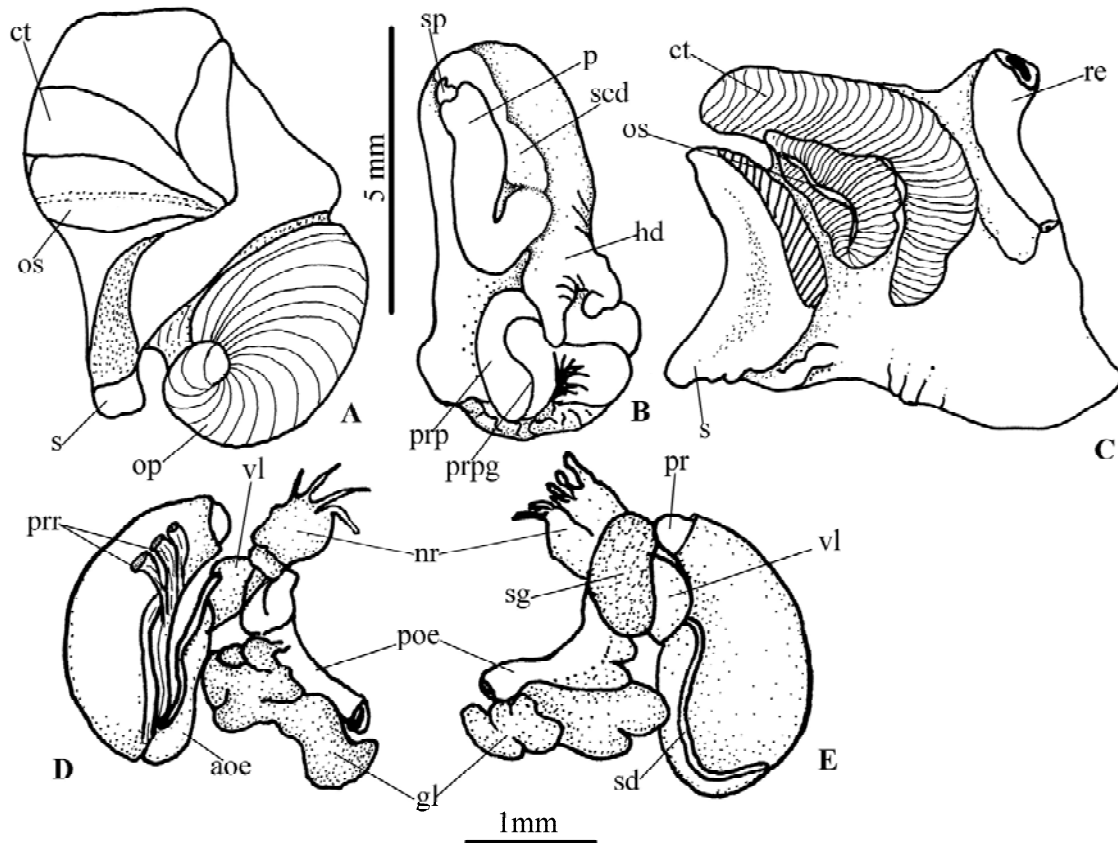


FIG. 5. Anatomy of *Retimohnia hondoensis* no. 1 (shell on Fig. 1D, radula on Fig. 2B). A. Soft body, ventral view. B. Cephalopodium, dorsal view. C. Mantle. D. Foregut, right lateral view, right salivary gland removed. E. Foregut, left lateral view.

РИС. 5. Анатомия *Retimohnia hondoensis* № 1 (раковина на Рис. 1D, радула на Рис. 2B). А. Мягкое тело, вид с вентральной стороны. В. Цефалоподиум, вид с дорсальной стороны. С. Мантия. D. Передний отдел пищеварительной системы, вид справа, правая слюнная железа удалена. Е. Передний отдел пищеварительной системы, вид слева.

immediately after valve of Leiblein. Salivary glands bean-shaped, small, about 0.3 of proboscis length, situated on both sides of nerve ring (Fig. 5E, sg). Salivary ducts thick and straight, running parallel to anterior oesophagus (Fig. 5E, sd). Posterior oesophagus abruptly widened in its median part (Fig. 5 D-E, poe), gland of Leiblein large (gl), opening by

a small duct (dgl) shortly posterior to nerve ring. Stomach not available for study.

Distribution. The Sea of Japan, western part of the Sea of Okhotsk, 139-1760 m (Fig. 3).

Remarks. Unlike most of examined specimens obtained from more than 1000 m depth, holotype was found at 139 m. The specimen no. 1 is con-

Table 1. Shell and radulae measurements of *Retimohnia hondoensis*.

Табл. 1. Измерения раковин и радул *Retimohnia hondoensis*.

No. of specimen	H, mm	h mm	AL, mm	Width of radula, μ m	Radula width (% of AL)	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
1	16.2	11.7	8.8	120	1.36	3:4:3	2B
2	15.5	12	8	160	2.00	3:5:3	2C
3	15.3	10.8	7.3	180	2.47	3:4:3	2D
4	12.0	8.6	6.1	100	1.64	3:5:3	6A
5	12.6	9.0	6.8	140	2.06	3:4:3	6B
6	16.8	12	8.3	160	1.93	3:6:3	6C
7	12.1	8.7	7.1	160	2.25	3:6:3	6D
8	12.6	9.6	7.3	140	1.92	3:3:3	6E
9	13.6	10.7	8.1	125	1.54	3:5:2	6F

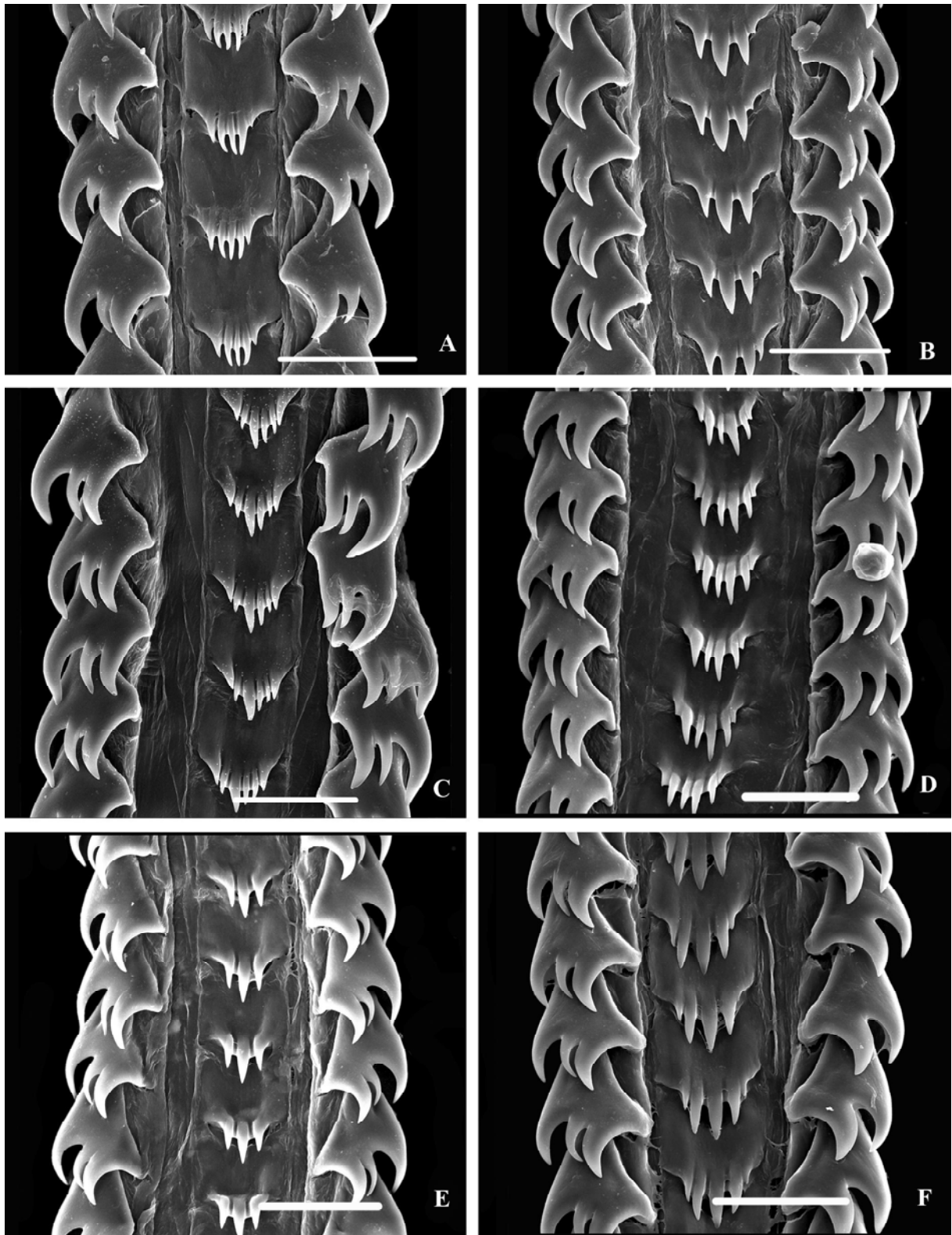


FIG. 6. Radulae of *Retimohnia hondoensis*. **A.** Specimen no. 4 (shell on Fig. 4A). **B.** Specimen no. 5 (shell on Fig. 4B). **C.** Specimen no. 6 (shell on Fig. 4C). **D.** Specimen no. 7 (shell on Fig. 4D). **E.** Specimen no. 8 (shell on Fig. 4E). **F.** Specimen no. 9 (shell on Fig. 4F). Scale bars = 50 μm.

РИС. 6. Радуды *Retimohnia hondoensis*. **A.** Экземпляр № 4 (раковина на Рис. 4А). **B.** Экземпляр № 5 (раковина на Рис. 4В). **C.** Экземпляр № 6 (раковина на Рис. 4С). **D.** Экземпляр № 7 (раковина на Рис. 4Д). **E.** Экземпляр № 8 (раковина на Рис. 4Е). **F.** Экземпляр № 9 (раковина на Рис. 4Ф). Масштабный отрезок = 50 мкм.

chology very similar to holotype and was found at intermediate 320 m depth, its radula is very similar to the radulae of deep-water specimens. Thus, until more data are available, we consider all examined specimens as *R. hondoensis*, which probably inhabit very wide range of depths. We examined more than 100 specimens and found that the axial sculpture is very variable, from specimens, strongly resembling *R. frielei* with well-expressed axial ribs (lectotype) to specimens resembling *R. clarki*, with weak or obsolete axial ribs (no. 2 (Fig. 1E), no. 5 (Fig. 4B)). *R. hondoensis* differs from *R. frielei* in radula morphology with rachidian and lateral teeth possessing high bases and relatively short cusps on them; from *R. clarki* it differs in shell shape with more convex and more rapidly increasing diameter of teleoconch whorls and, normally, presence of axial ribs on the last whorl.

In the original description Dall [1913] did not mention the number of specimens and only single one is present in the collections of USNM according to the database. Thus this specimen should be considered as holotype by monotypy according to art. 73.1.2 and 72.4.1.1 of ICZN. The specimen was referred to as holotype by Tiba and Kosuge [1992].

The finding of *R. hondoensis* in the Bering Sea [Kantor, Sysoev, 2006] needs confirmation.

Retimohnia micra (Dall, 1907)
(Figs 3; 7; 8; 9 A-E)

Mohnia micra Dall, 1907: 162; Dall, 1925: 21, pl. 30 fig. 9; Kosuge, 1972: pl. 13, fig. 1.

Mohnia japonica Dall, 1913: 503; Dall, 1925: 21, pl. 32 fig. 6; Kosuge, 1972: pl. 13, fig. 8; Tiba, Kosuge, 1992: 18 (11-12), text-figs 1-5.

Retimohnia micra. – Higo *et al.*, 1999: 228; Higo *et al.*, 2001: 73, fig. G2567.

Retimohnia japonica. – McLean, 1995: 40; Higo *et al.*, 1999: 228; Higo *et al.*, 2001: 73, fig. G2570.

Types. Two syntypes of *M. micra*: USNM 110499; holotype (by monotypy) of *M. japonica*: USNM 205244.

Type localities: of *M. micra* – off Sado Island,

Sea of Japan, 38°35'N, 138°41'E, 366 m, R/V “*Albatross*”, stn. 4813; of *M. japonica* – off Sado Island, Sea of Japan, 38°08'55"N, 138°31'30"E, 411-448 m, R/V “*Albatross*”, st. 4818.

Material examined: 3 lots, 23 specimens. 38°32'N, 138°43'E, 785 m, R/V, “*Albatross*” sta. 4814, USNM 205063 (no. 1, radula prepared). Sea of Japan, 39°51'N, 133°47'E, 560 m, R/V “*Vityaz*” sta. 7490, 12.06.1976, IO uncataloged (15 spms., nos. 2-3 dissected). Sea of Japan, 41°20.0'N, 142°12.1'E, 1260 m, R/V “*Vityaz*” sta. 7516, 30.06.1976, IO uncataloged (6 spms., nos. 4-5 dissected).

Description. Shell 12-24 mm in height, elongate fusiform, rather thin walled, solid, white under light-beige or light-olive glossy periostracum (Fig. 7). Protoconch and upper whorls slightly eroded, siphonal canal well-defined, medium long, straight. Spiral sculpture consists of thin spiral cords, separated by narrow shallow grooves, about 35 on penultimate whorl. Axial sculpture represented only by incremental lines. Operculum oval, with subspiral nucleus (Fig. 7C, 8A). Shell measurements in Table 2.

Soft body completely extracted from shell and comprises three whorls: mantle – one whorl, kidney – 0.3 whorl, rest of visceral mass occupied by digestive gland and gonad (Fig. 8 A-B). Mantle square in shape, ctenidium of same width and twice as long as osphradium (Fig. 8C), crescent-curved, occupying 0.25 mantle width. Rectum opens at mid-length of mantle, siphon short and wide. Head small, with short thick tentacles lacking eyes. Foot contracted with medium-wide propodium separated by deep propodial groove (Fig. 8E). Penis with elongated medium wide cone-shaped seminal papilla (Fig. 8D, p).

Digestive system. Proboscis retracted into rhynchodaeum (Fig. 8 F-G, pr). Buccal mass slightly protruded from distal end of proboscis, its length equals that of proboscis (Fig. 8G, bm). Proboscis retractors attach to lateral walls of body haemocoel (Fig. 8G, prr). Radula details in Table 2. Central tooth of radula with 4-7 small unequal in size cusps, diminishing from center outwards (Fig. 9 A-E). Lateral teeth tricuspid, with very high basal part, marginal cusps large, while intermediate ones much thinner and slightly shorter.

Table 2. Shell and radulae measurements of *Retimohnia micra*.

Табл. 2. Измерения раковин и радул *Retimohnia micra*.

No. of specimen	H, mm	h, mm	AL, mm	Width of radula, μ m	Radula width % of AL	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
1	16.3	11.7	8.3	220	2.65	3:5:3	9A
2	23.4	15.4	11.4	180	1.58	3:7:3	9B
3	21.6	14.3	10.1	200	1.98	3:5:3	9C
4	15.1	11.0	7.8	200	2.56	3:4:3	9D
5	14.6	10.7	8.1	180	2.22	3:5:3	9E



FIG. 7. Shells of *Retimohnia micra*. **A.** Syntype of *Mohnia micra* USNM 110499 off Sado Island, Japan Sea, 38°35'N, 138°41'E, 366 m, H 15 mm. **B.** Lectotype of *Mohnia japonica* USNM 205244, off Sado Island, Japan Sea, 411 m, H 19.5 mm. **C.** *R. micra* no. 1, USNM 205063, Sea of Japan, Sado Island, 38°32'N 138°43' E, 785 m, H 16.3 mm. **D-G.** *R. micra*, Sea of Japan, 39°51'N, 133°47'E, 560 m (**D-E**, nos. 2 (H 23.4 mm) and 3 (H 21.6 mm) respectively, radulae on Fig. 9 **B-C**). **H-I.** *R. micra*, Sea of Japan, "Vityaz" sta. 7516, 1260 m, nos. 4 (H 15.1 mm) and 5 (H 14.6 mm) respectively (radulae on Fig. 9 **D-E**).

РИС. 7. Раковины *Retimohnia micra*. **A.** Синтип *Mohnia micra* USNM 110499 о. Садо, Япония, 38°35'N, 138°41'E, 366 м, Н 15 мм. **B.** Лектотип *Mohnia japonica* USNM 205244, о. Садо, Японское море, 411 м, Н 19,5 мм. **C.** *R. micra* № 1, USNM 205063, Японское море, о. Садо, 38°32'N, 138°43'E, 785 м, Н 16,3 мм. **D-G.** *R. micra*, Японское море, 39°51'N, 133°47'E, 560 м (**D-E**, №№ 2 (Н 23,4 мм) и 3 (Н 21,6 мм) соответственно, радулы на Рис. 9 **B-C**). **H-I.** *R. micra*, "Витязь" ст. 7516, 1260 м, №№ 4 (Н 15,1 мм) и 5 (Н 14,6 мм) соответственно (радулы на Рис. 9 **D-E**).

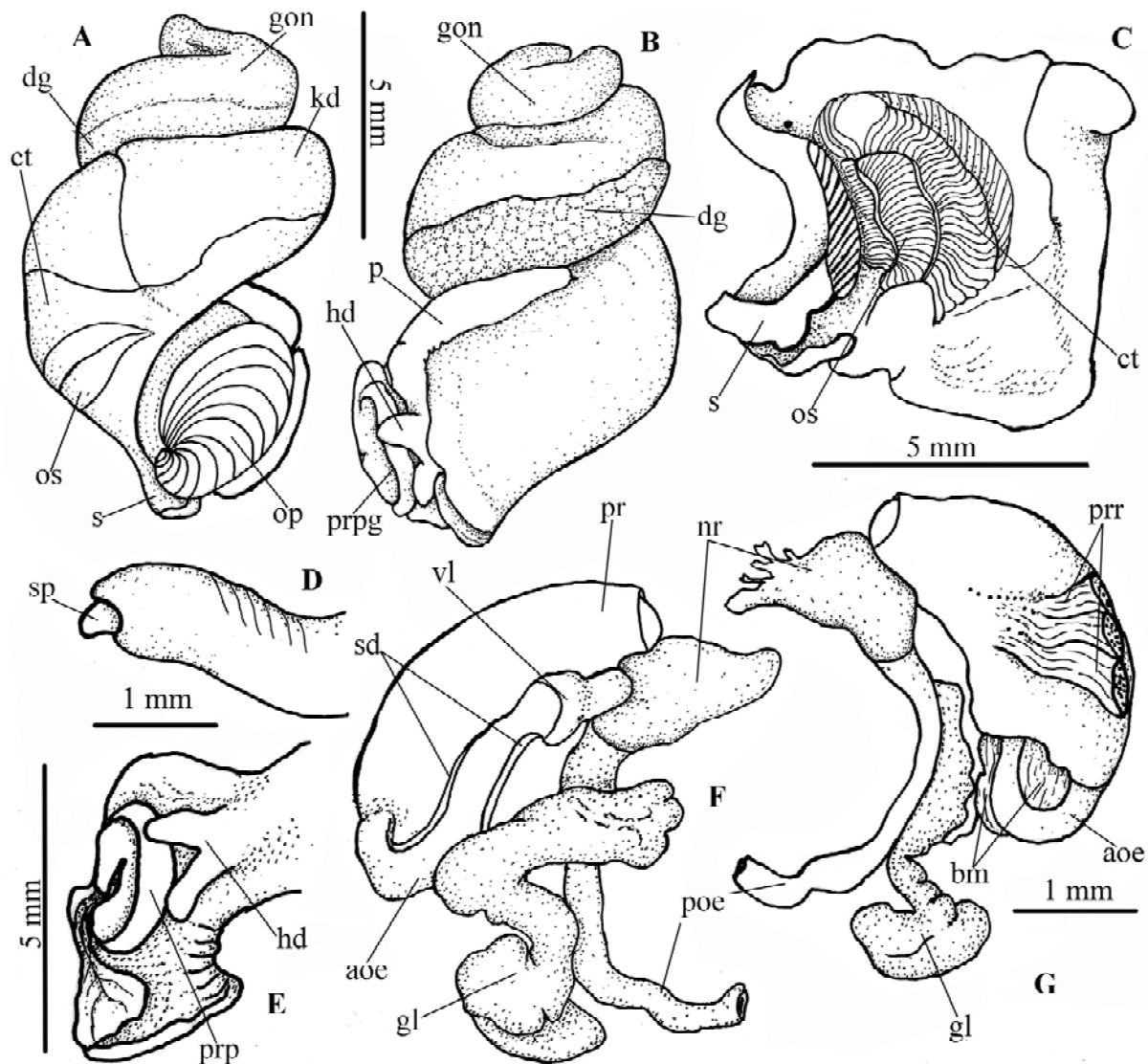


FIG. 8. Anatomy of *Retimohnia micra* no. 2 (shell on Fig. 7D, radula on Fig. 9B). A-B. Soft body. C. Mantle. D. Penis. E. Head-foot. F. Foregut right lateral view (salivary glands removed). G. Foregut left lateral view (salivary glands removed).

РИС. 8. Анатомия *Retimohnia micra* № 2 (раковина на Рис. 7D, радула на Рис. 9B). A-B. Мягкое тело. C. Мантия. D. Пенис. E. Цефалоподиум. F. Передний отдел пищеварительной системы, вид справа (слюнные железы удалены). G. Передний отдел пищеварительной системы, вид слева (слюнные железы удалены).

Valve of Leiblein (Fig. 8F, vl) large, pear-shaped; nerve ring situated immediately behind the valve. Salivary glands not large, rounded, situated on both sides of nerve ring (not shown on the figure). Anterior oesophagus wide and flattened after leaving proboscis, narrowing after passing through nerve ring. Salivary ducts thin, not convoluted, running along anterior oesophagus separately from its wall (Fig. 8F, sd). Gland of Leiblein (8F, gl) large, three times folded around posterior oesophagus, opening to oesophagus behind nerve ring. Stomach not studied.

Distribution. The Sea of Japan, 366-1260 m (Fig. 3).

Remarks. The name *Mohnia micra* was rarely used in literature, while the name *Mohnia japonica*

was in prevailing usage. The types of both species were collected nearly in the same locality at the same depth – off Sado Island, in 366-448 m. Conchologically they are very similar, including size of types (H = 15 mm in *R. micra* and 19 mm in *R. japonica*), shell shape and sculpture. The radula of a specimen, identified by Dall as *Mohnia micra* from the station, close to the type locality (*Albatross* sta. 4814) (Fig. 7C) falls within the variability range of the examined specimens, that are conchologically close to *R. japonica*. Therefore we do not see the reasons to consider these species as separate and synonymize the junior name *Mohnia japonica* with *Mohnia micra*. Although Dall did not designate the holotype of *M. japonica* and did not mention how many specimens were available to him

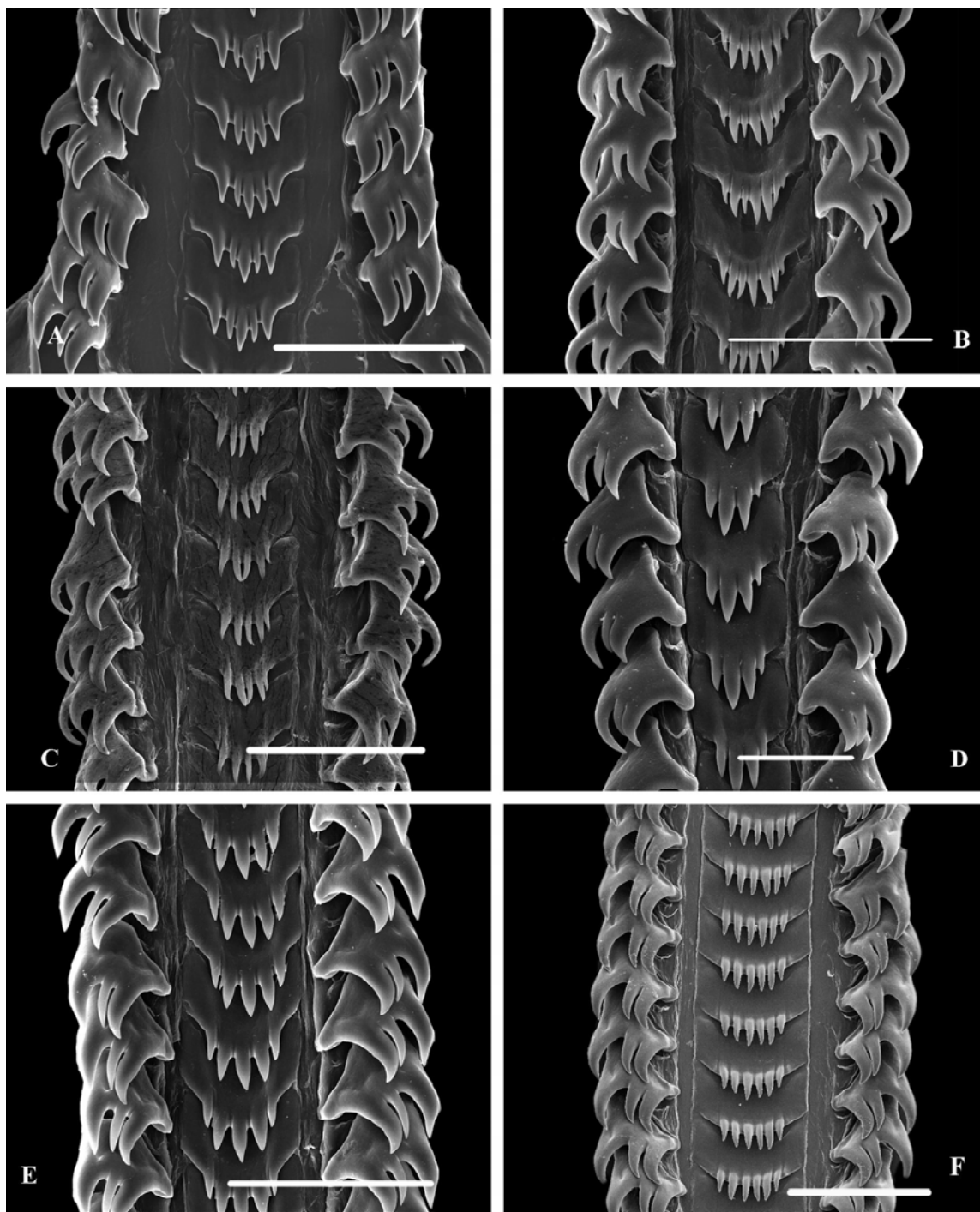


FIG. 9. Radulae of *Retimohnia*. **A.** *R. micra* no. 1 (shell on Fig. 7C). **B.** *R. micra* no. 2 (shell on Fig. 7D). **C.** *R. micra* no. 3 (shell on Fig. 7E). **D.** *R. micra* no. 4 (shell on Fig. 7H). **E.** *R. micra* no. 5 (shell on Fig. 7I). **F.** Paralectotype of *R. vernalis* (shell on Fig. 10B). Scale bar 100 μ m.

РИС. 9. Радуды *Retimohnia*. **A.** *R. micra* № 1 (раковина на Рис. 7C). **B.** *R. micra* № 2 (раковина на Рис. 7D). **C.** *R. micra* № 3 (раковина на Рис. 7E). **D.** *R. micra* № 4 (раковина на Рис. 7H). **E.** *R. micra* № 5 (раковина на Рис. 7I). **F.** паралектотип *R. vernalis* (раковина на Рис. 10B). Масштабный отрезок 100 мкм.

[Dall, 1913], there is only one specimen in the USNM collections and we can consider it holotype by monotypy (according to Art. 73.1.2 of ICZN). Specimens no. 4-5 (Fig. 7 H-I) are from deeper habitat (1260 m) and somewhat different from other specimens in shell shape and radulae mor-

phology having thicker cusps on central teeth. Therefore we attribute them to *R. micra* conditionally pending additional material that can clarify the situation.

The finding of *R. japonica* in the Bering Sea [Sirenko *et al.*, 2013] was based on the wrong

identification of poorly preserved specimens, that constitute probably still unnamed species. They were not suitable for establishing new species herein.

Retimohnia vernalis (Dall, 1913)
(Figs 9F; 10 A-B)

Mohnia vernalis Dall, 1913: 502; Dall, 1921: 92; Dall, 1925: 21, pl. 2, fig. 2; pl. 30 fig. 4; Oldroyd, 1927: 201, pl. 8, fig. 2; Abbott, 1974: 212.

Retimohnia vernalis. – McLean, 1995: 40; Higo *et al.*, 1999: 228.

Lectotype: USNM 213334, here designated.

Type locality: Pacific coast of North America, off Tillamook Bay, Oregon, 1437 m.

Type material: lectotype USNM 213334 (here designated) and 23 paralectotypes USNM 635694 (1 dissected),

Type locality: Pacific coast of North America, off Tillamook Bay, Oregon, 45°30'N 124°52'W, 1437 m, R/V “*Albatross*” sta. 3346.

Original description. “Shell small, thin, white under a light green periostracum, of about seven whorls; the apex apparently blunt, but always more or less eroded; the nepionic whorls with a few spiral grooves, the following whorl or two with about 16 rather prominent short ribs, most prominent at the periphery, with narrower interspaces crossed by fine spiral striae with wider interspaces; the ribs rapidly become obsolete and on the last three whorls are absent, the surface being then only marked by very arcuate incremental lines, the striae becoming obsolete, except on the base near the canal where there are a few coarse spirals; aperture short-ovate, the outer lip thin, sharp, the body erased, the canal short, wide, slightly recurved, the pillar gyrate, minutely pervious; the operculum with a subspiral nucleus” (Dall, 1913: 502).

Measurements: lectotype – H 19.0 mm, h 13.9 mm, AL 9.7 mm; paralectotype – H 16.1 mm, h 12.1 mm, AL 8.2 mm.

Radula of paralectotype is about 200 µm wide (2.44% of AL). Rachidian teeth with six small sharp cusps slightly increasing its height from both margins of tooth plate towards its median part; basal plate of rachidian with rounded posterior edge. Anterior and lateral edges indistinct. Lateral teeth tricuspid, outer cusp slightly longer than inner cusps (Fig. 9F).

Distribution. Type locality (Fig. 3).

Remarks. In shell and radula morphology, *R. vernalis* is most similar to *R. micra*. Both species lack axial ribs and possess multiple cusps on rachidian, but *R. micra* has more elongated spire and narrower and longer basal plate of rachidian tooth, as well as higher basal plate of lateral teeth.

The material, examined by Dall, consists of two lots, both originating from *Albatross* stn. 3346 –

USNM 213334 (two specimens) bearing the original label marked as “Types” and USNM 635694 ex 213334 (23 specimens). In our opinion the original label (in plural) suggests that the holotype was not isolated and therefore all specimens should be considered syntypes (including those from 635694). Moreover, the newly printed label for 213334 reads “Holotype”, which is obviously wrong. To avoid further confusion we designate one specimen from the lot USNM 213334 as the lectotype (Fig. 10A), shell length 19.0 mm.

Higo *et al.* [1999] recorded the species for Hokkaido (off cape Esan) and northwards, Japan Sea (northern Noto peninsula; off Sado island; off Niigata prefecture). Nevertheless the basis for this records is not clear and we consider the presence of *R. vernalis* off the Asian coast unconfirmed.

Retimohnia sordida (Dall, 1907) comb. nov.
(Figs 3; 10 C-F)

Mohnia sordida Dall, 1907: 162; Dall, 1925: 21, pl. 30 fig. 3; Kosuge, 1972: pl. 13, fig. 5; Higo *et al.*, 1999: 228; Higo *et al.*, 2001: 73, fig. G2559.

Lectotype (here designated) and 5 paralectotypes: USNM 110496.

Type locality: Tsugaru Strait, coast of Yesso, Japan, 549 m.

Type material: lectotype and 5 paralectotypes (1 dissected). Tsugaru Strait, coast of Yesso (Hokkaido Island, Nemuro strait), Japan, 44°05'N 145°30'E, 549 m, R/V “*Albatross*” sta. 5032, 30.09.1906, USNM 110496.

Original description. “Shell rather large for genus, thin-walled, white under thick light-brown periostracum. Teleoconch of about six whorls; protoconch eroded. Siphonal canal well-defined, long, straight. Each whorl with one spiral cord, separating upper third of whorl as sloping shoulder, suture deeply adpressed. Principal spiral sculpture consists of tiny spiral cords, separated by narrow shallow sinuous grooves, about 35 on penultimate whorl. Axial sculpture represented only by incremental lines. Operculum oval, with subspiral nucleus.” [Dall, 1907: 162].

Measurements: lectotype – H 26.0 mm, h 17.9 mm, AL 12.6 mm; paralectotype – H 27.3 mm, h 18.1 mm, AL 12.6 mm.

Radula of one paralectotype was examined (Fig. 10 E-F). It is about 250 µm wide (1.98% of AL). Rachidian teeth with 3 closely spaced sharp cusps with median cusp slightly wider and longer than other cusps; the rachidian tooth width exceeds three times the area occupied by bases of cusps. Lateral teeth tricuspid, median cusp much thinner and shorter than other cusps; outer cusp twice wider than inner cusp.

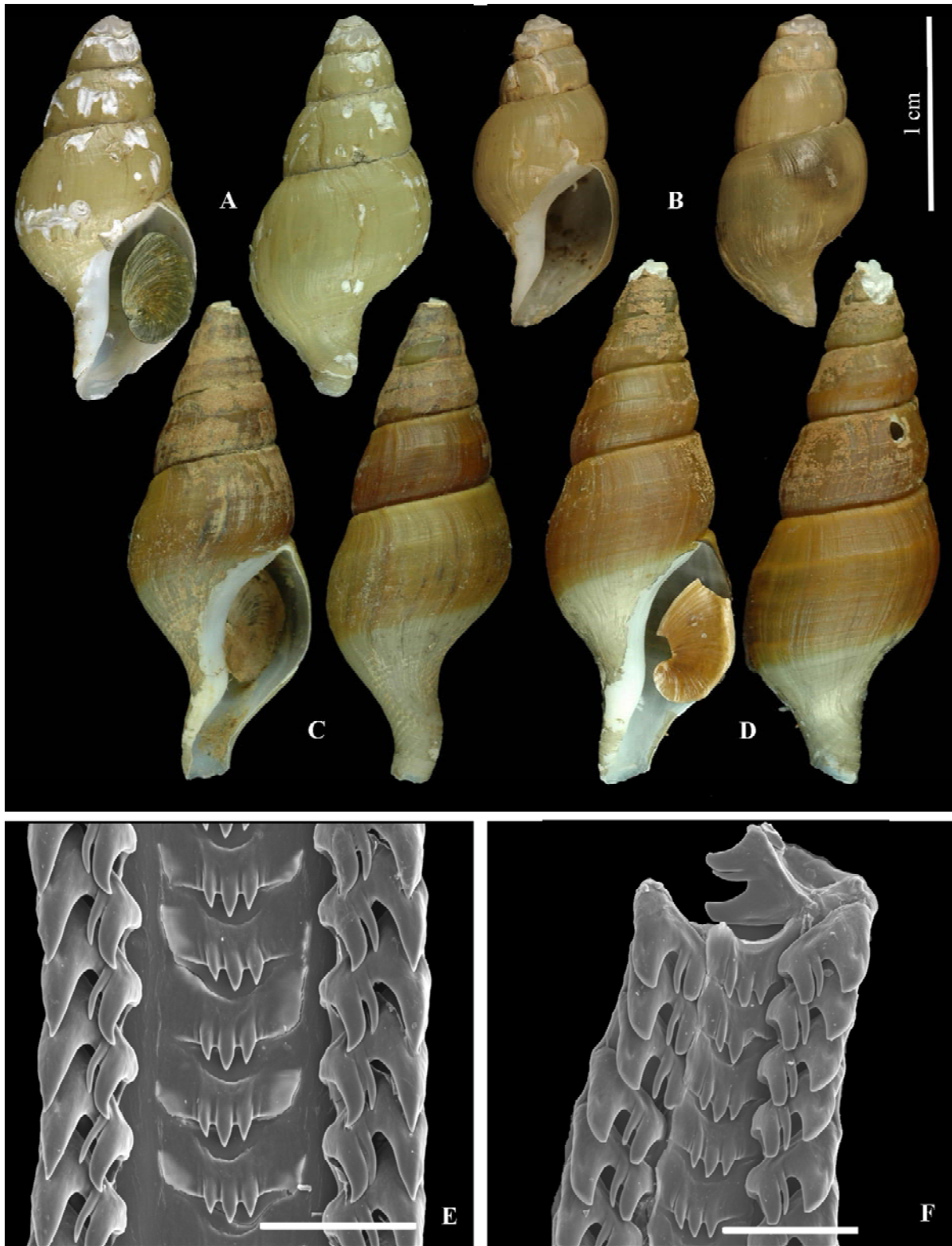


FIG. 10. Shells of *Retimohnia*. **A.** Lectotype of *Mohnia vernalis*, USNM 213334, Pacific coast of North America, off Tillamook Bay, Oregon, 1437 m, H 19.0 mm. **B.** Dissected paralectotype of *R. vernalis* USNM 635694, the same locality as lectotype, H 16.1 mm (radula on Fig. 9F). **C.** Lectotype of *Mohnia sordida*, USNM 110496, Tsugaru Strait, coast of Yesso, Japan, 549 m, H 26.0 mm. **D.** Paralectotype of *R. sordida*, same locality as lectotype, H 27.3 mm. **E-F.** Radula of paralectotype of *R. sordida* (shell on Fig. 10D), scale bar 100 µm.

РИС. 10. Раковины *Retimohnia*. **A.** Лектотип *Mohnia vernalis*, USNM 213334, тихоокеанское побережье Северной Америки, бухта Тилламук, Орегон, 1437 м, Н 19,0 мм. **B.** Вскрытый паралектотип *R. vernalis* USNM 635694, место сбора то же, что и у лектотипа, Н 16,1 мм (радула на Рис. 9F). **C.** Лектотип *Mohnia sordida*, USNM 110496, пролив Цугару, побережье Йессо, Япония, 549 м, Н 26,0 мм. **D.** Паралектотип *R. sordida*, место сбора то же, что и лектотипа, Н 27,3 мм. **E-F.** Радула паралектотипа *R. sordida* (раковина на Рис. 10D), масштаб 100 мкм.

Distribution. Type locality (Fig. 3).

Remarks. Although the original label clearly stated that the specimens are syntypes, Higo *et al.* [2001] illustrated one specimen as holotype. To avoid future confusion we designate here the same specimen (SL 26.0 mm) as lectotype (Fig. 10C).

The species has elongate fusiform shell with very long siphonal canal, rather atypical for *Retimohnia*. Similar shape but with less attenuated canal may be found in *R. bella*. Radula of *R. sordida* is similar to some other species of the genus, type species *R. frielei* among them. Thus, despite conchological distinctiveness of the species, we attribute it to *Retimohnia* as the most suitable at the moment genus.

Retimohnia clarki (Dall, 1907)
(Figs 3; 11-14)

Mohnia clarki Dall, 1907: 163; Dall, 1925: 21, pl. 30 fig. 2; Kosuge, 1972: pl. 13, fig. 7.

Latisipho clementinus Dall, 1919: 321; Dall, 1921: 96; Dall, 1925: 12, pl. 2, fig. 9; Oldroyd, 1927: 226.

Retimohnia clarki. – McLean, 1995: 40; Higo *et al.*, 1999: 228; Higo *et al.*, 2001: 73, fig. G2566; Golikov, Sirenko, 1998: 109; Kantor, Sysoev, 2006: 200, pl. 102 H.

Mohnia vernalis. – Radwin, 1972: 340, fig. 1 f-g (not of Dall, 1913).

Types: lectotype of *Mohnia clarki*: USNM 110497, here designated; holotype of *Colus (Latisipho) clementinus*: USNM 208912 (female).

Type localities: *Mohnia clarki* – Eastern Kamchatka, 52°37'30"N, 158°50'E, 549-1247 m, R/V "Albatross", sta. 4797; *Colus (Latisipho) clementinus* – between Santa Catalina and San Clemente Islands, California, 32°54'N, 118°30'W, 1196-1287 m, R/V "Albatross" sta. 4405.

Material examined: 7 lots (114 specimens). Type material: holotype of *L. clementinus* (dissected).

Other material. Alaska Bay, near Kodiak Island, 57°51'N, 148°57'W, 1350-1340 m, R/V "Vityaz", sta. 6093, 07.05.1969, IO uncataloged (14 spms., no. 1 dissected). South-

ern coast of Sakhalin, 1450-1530 m, Kurile-Sakhalin Expedition, R/V "Toporok", sta. 17(20), 28.08.1948, ZIN uncataloged (3 spms., no. 2 dissected). Pacific coast of Kamchatka, Kronotsky Bay, 940-1015 m, R/V "Vityaz", sta. 3304 (no data), 24.05.55, IO uncataloged (16 spms. nos. 3-4 dissected). Aleutian trench, 53°46'N 163°41'W, 830-1100 m, R/V "Vityaz" sta. 6132, 06.06.1969, IO uncataloged (80 spms., nos. 5-6 dissected). Aleutian trench, 53°43'N, 163°35.7'W, 1740-1690 m, R/V "Vityaz" sta. 6134, 6-7.06.1969, IO uncataloged (6 spms., no. 7 dissected). Sea of Japan, 42°13'N, 131°4'E, 1170 m, R/V "Vityaz", sta. 7459, 27.05.1976, IO uncataloged (8 spms.).

Description. Shell small, broad fusiform, thin-walled and rather fragile, with rather short, broad, slightly left-curved siphonal canal (Fig. 11). Upper whorls eroded, the rest of teleoconch comprises 3-3.5 whorls. Spiral sculpture weak, of tiny spiral cords, separated by narrow inconspicuous grooves, about 30 on penultimate whorls. Axial sculpture of wide, low axial ribs on upper whorls, last whorl always smooth. Some specimens lack axial ribs. Periostracum from light beige and yellowish to light-brown and olive; shell under periostracum white. Operculum (Fig. 12A) oval with subspiral nucleus shifted leftward. Shell measurements showed in Table 3.

Soft body: three whorls extracted, mantle spans about $\frac{3}{4}$ whorl, kidney $\frac{1}{3}$ whorl, rest occupied by digestive gland and gonad (Fig. 12 A-B). Mantle width equal to length (Fig. 12C). Ctenidium occupies $\frac{6}{7}$ of mantle length and $\frac{1}{4}$ of its width. Osphradium as wide as ctenidium and occupies $\frac{3}{4}$ of mantle length. Rectum opens at half of mantle length. Head with medium long thick tentacles, eyes absent (Fig. 12B, **hd**). Foot contracted; propodium medium wide, separated by deep propodial groove (Fig. 12B, **prp**). Penis like in *R. hondoensis*, with elongated medium wide cone-shaped seminal papilla. Seminal duct in its distal part (before entering penis) very wide and inflated, similar to *R. hondoensis*.

Digestive system. Proboscis short, retracted into

Table 3. Shell and radulae measurements of *Retimohnia clarki*.

Табл. 3 Измерения раковин и радул *Retimohnia clarki*.

No. of specimen	H, mm	H, mm	AL, mm	Width of radula, μ m	Radula width % of AL	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
Holotype of <i>L. clementinus</i>	20.5	14.3	9.5	230	2.42	3:6:3	13A
1	16.7	13.0	10.0	200	2.00	3:4:3	13B
2	17.1	13.4	9.9	220	2.22	3:6:3	13C
3	17.6	12.1	8.8	200	2.27	3:4:3	14 A
4	17.3	13.6	10.6	200	1.89	3:4:3	14B
5	15.6	11.9	8.5	200	2.35	3:4:3	14C
6	18.1	14.0	10.5	200	2.00	3:3:3	14D
7	17.0	13.4	10.0	150	1.50	3:3-5:3	14E-F



FIG. 11. Shells of *Retimohnia clarki*. **A**. Lectotype, USNM 110497, eastern Kamchatka, 52°37'30"N 158°50'E, 1247 m, H 21 mm. **B**. Holotype of *L. clementinus* Dall, 1919, USNM 209110, North of California, between Santa Catalina and San Clemente Islands, 1196-1287 m, H 20.5 mm (radula on Fig. 13A). **C**. No. 1, 57°51'N, 148°57'W, Alaska Bay, near Kadiak Lake, 1350-1340 m, H 16.7 mm (radula on Fig. 13B). **D**. No. 2, southern coast of Sakhalin, 1450-1530 m, H 17.1 mm (radula on Fig. 13C). **E-F**. Nos. 3-4, Pacific coast of Kamchatka, Kronotsky Bay, 940-1015 m, H 17.6 mm and 17.3 mm respectively (anatomy of no. 3 on Fig. 12, radula on Fig. 14A, radula of no. 4 on Fig. 14B). **G-H**. Nos. 5-6, 53°46'N, 163°41'W, Aleutian trench, 1100-830 m, H 15.6 mm and 18.1 mm respectively (radulae on Fig. 14 C-D). **I**. No. 7, Aleutian trench, 53°43'N, 163°35.7'W, 1690-1740 m, H 17.0 mm (radula on Fig. 14 E-F). Scale bar 10 mm.

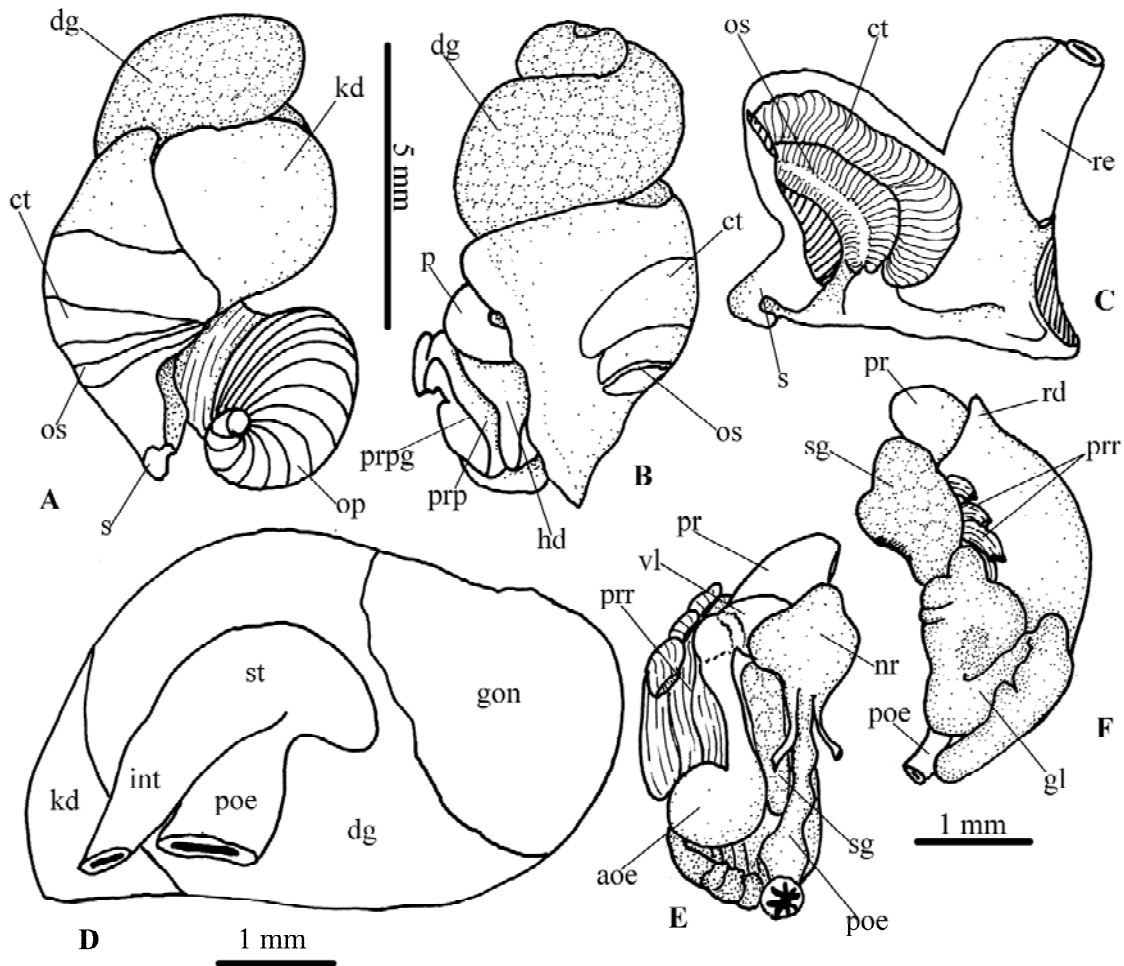


FIG. 12. Anatomy of *R. clarki* no. 3 (shell on Fig. 11E, radula on Fig. 14A). A-B. Soft body. C. Mantle. D. Stomach, general view. E. Foregut, right lateral-ventral view. F. Foregut, left lateral view.

РИС. 12. Анатомия *R. clarki* № 3 (раковина на Рис. 11E, радула на Рис. 14A). A-B. Мягкое тело. C. Мантия. D. Общий вид желудка. E. Передний отдел пищеварительной системы, вид справа снизу. F. Передний отдел пищеварительной системы, вид слева.

rhynchodaeum (Fig. 12F, **pr**). Proboscis retractors detach ventrally in the middle of rhynchodaeum as several muscle bands and attach to bottom of body haemocoel (Fig. 12 E-F, **prr**). Buccal mass occupies entire length of proboscis. Rachidian teeth of radula with 3-6 small sharp cusps, diminishing from slightly longer and usually thicker median cusp outwards; even in a single specimen the number of cusps may vary along radula ribbon (3 in younger part, 5 – in older one, Fig. 14 E-F). Lateral teeth

tricuspid, with high basal parts and short cusps, central thinnest and shortest (Figs 13, 14). Teeth formula and radula measurements of studied specimens presented in Table 3. Anterior oesophagus inflated after leaving proboscis and narrowing towards medium sized valve of Leiblein (Fig. 12E, **vl**). Nerve ring large, situated immediately after valve of Leiblein. Salivary glands bean-shaped, small, about 0.3 of proboscis length, situated on both sides of nerve ring (Fig. 12F, **sg**). Salivary ducts

РИС. 11. Раковины *Retimohnia clarki*. A. Лектотип, USNM 110497, восточная Камчатка, 52°37'30"N, 158°50'E, 1247 м, Н 21 мм. B. Голотип *L. clementinus* Dall, 1919, USNM 209110, север Калифорнии, между о-вами Санта-Каталина и Сан-Клементе, 1196-1287 м, Н 20,5 мм (радула на Рис. 13A). C. №1, 57°51'N, 148°57'W, зал. Аляска, около оз. Кадык, 1350-1340 м, Н 16,7 мм (радула на Рис. 13B). D. № 2, южное побережье Сахалина, 1450-1530 м, Н 17,1 мм (радула на Рис. 13C). E-F. №№ 3-4, Тихоокеанское побережье Камчатки, Кроноцкий залив, 940-1015 м, Н 17,6 мм and 17,3 мм соответственно (анатомия № 3 на Рис. 12, радула на Рис. 14A, радула № 4 на Рис. 14B). G-H. №№ 5-6, 53°46'N, 163°41'W, Алеутский желоб, 1100-830 м, Н 15,6 мм и 18,1 мм соответственно (радулы на Рис. 14 C-D). I. № 7, Алеутский желоб, 53°43'N, 163°35.7'W, 1690-1740 м, Н 17,0 мм (радула на Рис. 14 E-F). Масштабный отрезок 10 мм.

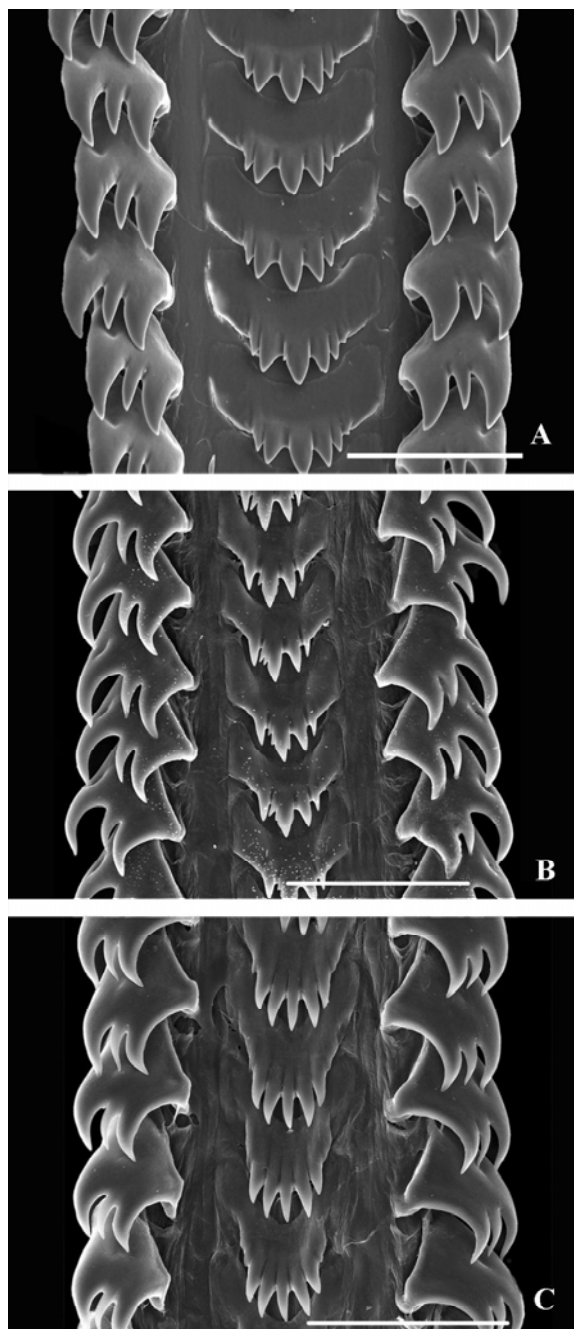


FIG. 13. Radulae of *R. clarki*. A. Holotype of *L. clementinus* (shell on Fig. 11B). B. No. 1 (shell on Fig. 11C). C. No. 2 (shell on Fig. 11D). Scale bar 100 μ m.

РИС. 13. Радулы *R. clarki*. А. Голотип *L. clementinus* (раковина на Рис. 11В). В. № 1 (раковина на Рис. 11С). С. № 2 (раковина на Рис. 11Д). Масштаб 100 мкм.

thick and straight, running parallel to anterior oesophagus. Posterior oesophagus comparatively narrow (Fig. 12 E-F, **poe**), gland of Leiblein large (Fig. 12F, **gl**), folded, opening by a small duct shortly after nerve ring. Stomach small, occupying $\frac{1}{4}$ of visceral whorl, with small posterior mixing area (Fig. 12D).

Distribution. California, Alaska and Aleutian Is-

lands, Pacific coast of Kamchatka, southern part of Sakhalin, northern part of the Sea of Japan, 830-1740 m (Fig. 3). The presence of the species at shallow waters off Hakodate needs confirmation (see remarks below).

Remarks. Dall [1907] in the original description of *Mohnia clarki* mentioned two lots - one from Eastern Kamchatka (*Albatross* st. 4797, USNM 110497, containing 5 specimens) and off Hakodate, Japan, very shallow at 128 m (*Albatross* st. 4815, USNM 110498, containing 2 specimens, not seen). All the specimens should be considered syntypes, with very broad type locality. In literature, only the specimen from Kamchatka was illustrated. To reduce ambiguity, we designate the illustrated herein specimen (Fig. 11A) as lectotype, thus restricting the type locality to Eastern Kamchatka. The same specimen was illustrated by Kosuge [1972] and Higo *et al.*, [2001, as syntype].

The original label of *Colus (Latisipho) clementinus* is marked as **Type**, therefore the status of the specimen must be considered as holotype by original designation (Art. 73.1.1 of ICZN). Paratype was collected at sta. 4354 (32°42'N, 117°14'W) at 1181-1188 m (USNM 209110). The holotype lacks eyes.

Holotype of *C. (L.) clementinus* is very similar to lectotype of *M. clarki*, differing in very weak axial ribs on upper teleoconch whorls (seen on the dorsal side of the shell on Fig. 11B). Radula morphology of holotype of *L. clementinus* falls within the variability range of other examined specimens. There are several specimens from different distant samples with intermediate development of axial ribs (i.e. nos. 1-3), and at the same time, there are samples containing transitions from specimens, similar to typical "*clarki*" to those, typical "*clementinus*" in development of axial ribs (Fig. 11 G-H, nos. 5-6, 53°46'N, 163°41'W, Aleutian trench, 1100-830 m). Therefore we consider *Mohnia clarki* and *Latisipho clementinus* conspecific.

Radwin [1972] discussed and illustrated the shell and radula of *Mohnia vernalis*. His drawings of shell and radula are very similar to holotype of *Latisipho clementinus*, while the radula is quite different from *Mohnia vernalis*. Therefore we consider his specimens as being conspecific with *R. clarki*.

R. clarki is rather similar to *R. hondoensis* in morphology of lateral radular teeth, penis and digestive system. *R. clarki* differs from *R. hondoensis* in shell shape and lack of axial ribs on the last whorl. In majority of studied specimens of *R. hondoensis*, length of rachidian is equal or exceeds its width, whereas in *R. clarki* width of rachidian slightly exceeds its length. *R. clarki* has broader distribution than *R. hondoensis* - from the Sea of Japan, along Kamchatka to Alaska and eastern part of the North Pacific.

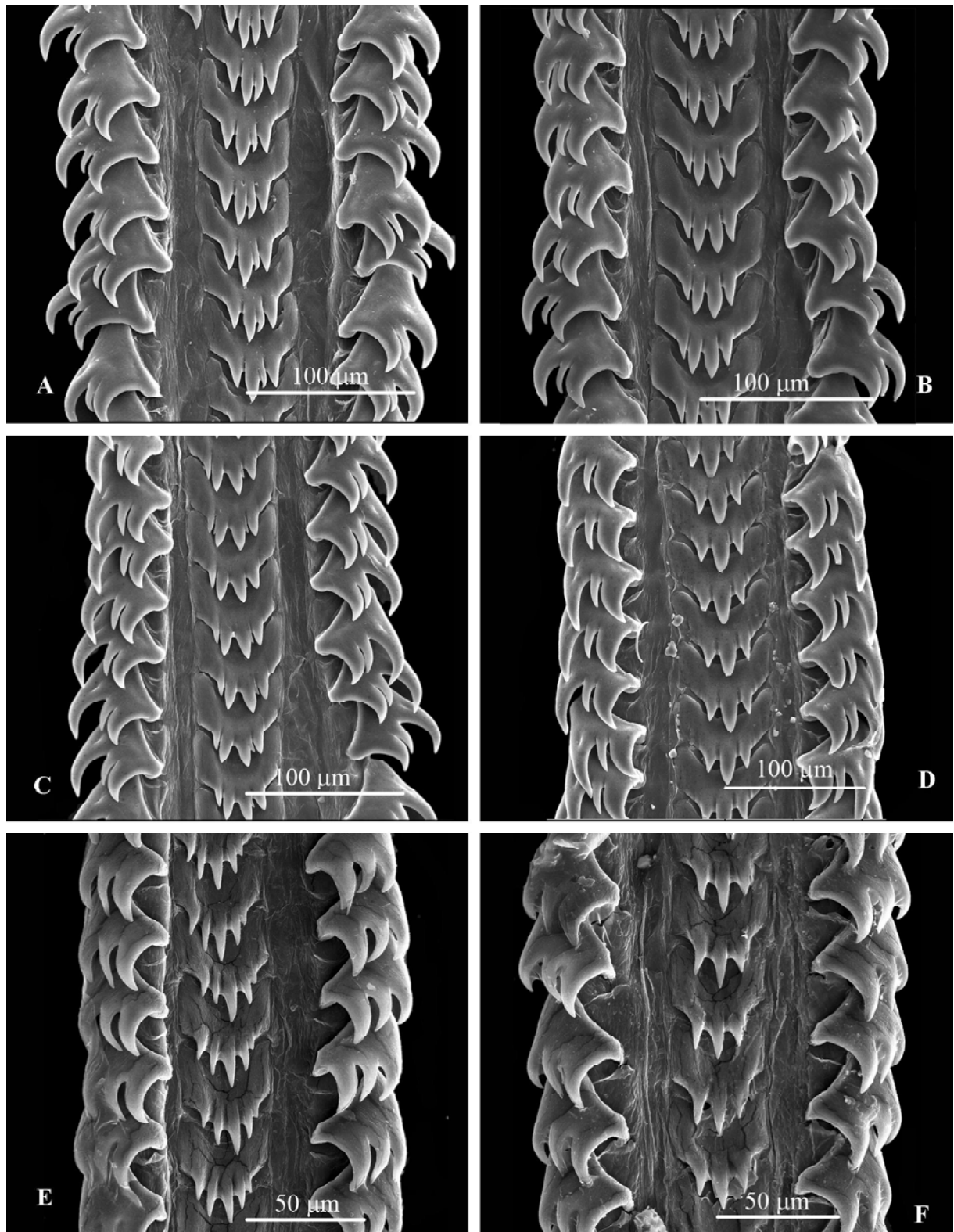


FIG. 14. Radulae of *R. clarki*. **A.** No. 3 (shell on Fig. 11E, anatomy on Fig. 12). **B.** No. 4 (shell on Fig. 11F). **C.** No. 5 (shell on Fig. 11G). **D.** No. 6 (shell on Fig. 11H). **E-F.** No. 7 (shell on Fig. 11I).

РИС. 14. Радулы *R. clarki*. **A.** № 3 (раковина на Рис. 11Е, анатомия на Рис. 12). **B.** № 4 (раковина на Рис. 11F). **C.** № 5 (раковина на Рис. 11G). **D.** № 6 (раковина на Рис. 11H). **E-F.** № 7 (раковина на Рис. 11I).



FIG. 15. Shells of *Retimohnia bella*. **A.** Holotype of *Ophiidermella bella*, road-side cutting 500 m southwest of Tokoyoda-machi, Choshi City, Iioka Formation [Pliocene], 34 mm. **B.** Holotype of *Mohnia multicostata* NSM-Mo 53551, off Choshi, Chiba Prefecture, 200 m, H 24.5 mm. **C.** holotype of *Mohnia iwateana* UKM 29313 (R09325), off Kuji in Iwate Prefecture, Pacific coast of Northern Honshu, Japan, 299-250 m, 23 mm. **D.** No. 1, South Kurile Islands, Shikotan Island, 285-287 m (anatomy on Fig. 16 **A-G, I**, radula on Fig. 17**A**). **E.** No. 2, Kurile Islands, Pacific coast of Urup Island, Lidin's cape, 45°49.5'N, 150°09.95'E, 210 m (radula on Fig. 17**B**). **F.** No. 3, Iturup Island, 44°52'N 149°27.7'E, 910-920 m (anatomy on Fig. 16**H**). **G-H.** Nos. 4-5, Pacific coast of Japan, 39°58.8'N, 142°19.7'E, 425 m. **G.** No. 4 (radula on Fig. 17**D**). **H.** No. 5 (radula on Fig. 17**C**).

РИС. 15. Раковины *Retimohnia bella*. **A.** Голотип *Ophiidermella bella*, road-side cutting 500 м southwest of Tokoyoda-machi, Choshi City, формация Июка [плиоцен], 34 мм. **B.** Голотип *Mohnia multicostata* NSM-Mo 53551, Коши, префектура Тиба, 200 м, Н 24,5 мм. **C.** Голотип *Mohnia iwateana* UKM 29313 (R09325), Куji в префектуре Ивате, тихоокеанское побережье северного Хонсю, Япония, 299-250 м, 23 мм. **D.** № 1, Южные Курильские острова, о. Шикотан, 285-287 м (анатомия на Рис. 16 **A-G, I**, радула на Рис. 17**A**). **E.** № 2, Курильские острова, тихоокеанское побережье о-ва Уруп, мыс Лидина, 45°49.5'N, 150°09.95'E, 210 м (радула на Рис. 17**B**). **F.** № 3, Курильские острова, о. Итуруп, 44°52'N 149°27.7'E, 910-920 м (анатомия на Рис. 16**H**). **G-H.** №№ 4-5, тихоокеанское побережье Японии, 39°58.8'N, 142°19.7'E, 425 м. **G.** № 4 (радула на Рис. 17**D**). **H.** № 5 (радула на Рис. 17**C**).

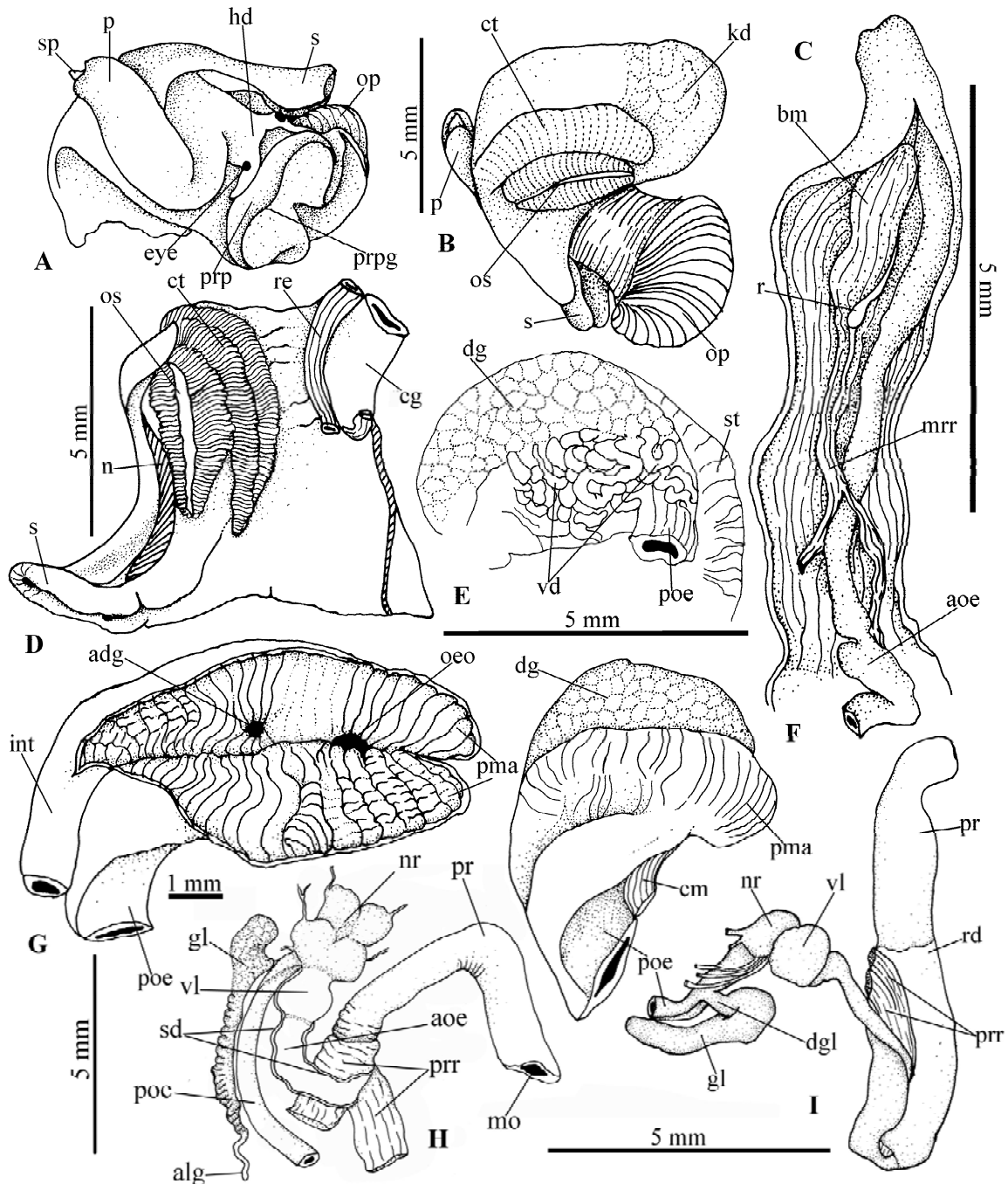


FIG. 16. Anatomy of *R. bella* no. 1 (A-G, I) (shell on Fig. 15D, radula on Fig. 17A) and no. 2 (H) (shell on Fig. 15E). A. Soft body dorsal view. B. Soft body ventral view. C. Proboscis opened ventrally. D. Mantle. E. Visceral mass, ventral view. F. Stomach general view. G. Opened stomach. H. Foregut of no. 3. I. Foregut of no. 1.

РИС. 16. Анатомия *R. bella* № 1 (A-G, I) (раковина на Рис. 15D, радула на Рис. 17A) и № 2 (H) (раковина на Рис. 15E). A. Дорсальный вид мягкого тела. B. Вентральный вид мягкого тела. C. Хобот, вскрытый вентрально. D. Мантия. E. Висцеральная масса с вентральной стороны. F. Общий вид желудка. G. Вскрытый желудок. H. Передний отдел пищеварительной системы № 2. I. Передний отдел пищеварительной системы экземпляра № 1.

Retimohnia bella (Ozaki, 1958)

(Figs 3; 15-17)

Ophiodermella bella Ozaki, 1958: 162, pl. 16, fig. 4.

Mohnia frielei Okutani, 1964. – 407, pl. 3, fig. 3 (not of Dall, 1891).

Mohnia multicostata Habe, Ito, 1965a: 45, pl. 13, fig. 12; Habe, Ito, 1965b: 23, pl. 2, fig. 2; Watanabe, Naruke,

1988: 48, pl. 6, fig. 7; Tiba, Kosuge, 1992: 18 (1-14), text-figs. 1-3 on page 18 (13); Higo *et al.*, 1999: 227; Higo *et al.*, 2001: 72, fig. G2556 (figured syntype); Kantor, Sysoev, 2006: 187, pl. 93, fig. E.

Mohnia iwateana Tiba, 1981: 85, pl. 30, figs. 1-3; Tiba, Kosuge, 1992 in 1979-1992: 18 (9-10), text-figs. 1-7; Higo *et al.*, 1999: 227; Higo *et al.*, 2001: 72, fig. G2557.

Plicifusus bella. – Baba, 1990: 161-162, pl. 10, fig. 12.

Table 4. Shell and radulae measurements of *Retimohnia bella*.Табл. 4. Измерения раковин и радул *Retimohnia bella*.

No. of specimen	H, mm	H, mm	AL, mm	Width of radula, μ m	% of AL	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
1	21.0	13.7	9.3	230	2.47	3:6:3	17A
2	20.5	13.7	9.0	180	2.00	3:5:3	17B
3	16.7	12.0	8.7	-	-	-	-
4	24.6	18.1	12.7	250	1.77	4:5:3	17D
5	29.1	20.6	15.2	250	1.64	3:5:3	17C

Mohnia hondoensis. – Tiba, Kosuge, 1992: 18 (7-8), text-fig. 2 (non fig. 1); Okutani, 2000: 463, pl. 230, fig. Buccinidae-47 (not of Dall, 1913).

Mohnia robusta. – Tiba, Kosuge, 1992: 18 (17-18), text-fig. 2-7 (not of Dall, 1913).

Plicifusus rhyssoides. – Okutani, 2000: 467, pl. 232, fig. Buccinidae-66 (non *Plicifusus* (*Aulacofusus*) *rhyssoides* Dall, 1919).

Mohnia bella. – Hasegawa, 2009: 301, figs. 214-225.

Opisthoderma (sic!) *bella* (in synonymy of *M. bella*). – Hasegawa, 2009: 301 (misspelling of *Ophiodermella bella*).

Not *Mohnia multicostata* – Ito, 1985: pl. 5, fig. 3; Ito *et al.*, 1986: pl. 12, fig. 5; Ito, 1989: pl. 7, fig. 4 [is *Plicifusus* sp. cf. *parvus* Tiba, 1980].

Types: holotype of *Ophiodermella bella* – NSM PM 4473 (Fig. 15 A); holotype of *Mohnia multicostata* NSM-Mo 53551 (Fig. 15 B); holotype of *Mohnia iwateana* – UKM 29313 (R09325) (Fig. 15 C).

Type localities: *Ophiodermella bella*, road-side cutting 500 m southwest of Tokoyoda-machi, Choshi City, Iioka Formation [Pliocene]; *Mohnia iwateana* – off Kuji in Iwate Prefecture Pacific coast of Northern Honshu, Japan, 299-250 m; of *Mohnia multicostata* – off Choshi, Chiba Prefecture, at a depth of ca. 200 m.

Material examined: 4 lots, 15 specimens. Kurile Islands, Shikotan Island, 285-287 m, R/V “*Toporok*”, sta. 93, 13.09.1949, coll. Kobayakova, ZIN 28234 (no. 1 dissected)., Kurile Islands, Pacific coast of Urup Island, Lidin’s cape, 45°49’5 N, 150°09.95’E, 210 m, shelly sand, sta. 23, MIMB, coll. Gulbin (no. 2 dissected). Iturup Island, 44°52’N 149°27.7’E, 910-920 m, muddy sand with pebble, R/V “*Odissey*”, sample 1, 25.07.1984, coll. Sirenko, ZIN 57495 (2 spms., no. 3 dissected). Pacific coast of Japan, 39°58.8’N 142°19.7’E, 425 m, R/V “*Vityaz*” sta. 6669, IO uncataloged (5 specimens, nos. 4-5 dissected).

Description. Shell large for genus, elongate fusiform, rather thin-walled, solid but tending to become fragile at larger depths, white under yellowish-brown or light-olive periostracum (Fig. 15). Spiral sculpture of well or poorly expressed spiral cords, up to 15 on penultimate whorl. Holotype with more pronounced spiral cord, marking whorl shoulder. This cord present in some specimens, can be nearly completely obsolete. Axial sculpture of

frequent curved subsuturally axial folds, from 13 to 18 on last whorl. Operculum oval, with spiral nucleus in young specimen and subspiral or terminal nuclei in adult specimens.

Soft body: 1.5 whorls extracted (Fig. 16 A-B). Mantle occupies one whorl, kidney – $\frac{1}{6}$, the remaining part of visceral mass occupied by digestive gland and gonad. Head small, with long thin tentacles bearing large black eyes at base. Foot twice folded, narrow propodium separated by deep propodial groove.

Mantle length equals width (Fig. 16 D). Siphon long, asymmetric osphradium very large: its width almost one third of mantle width. Ctenidium of high triangular lamellae, its length comprises $\frac{3}{4}$ of mantle length. Narrow rectum comprises less than half of mantle length. Hypobranchial gland consists of irregular folds.

Reproductive system. Very large thick-walled capsule gland situated on the right side of rectum (Fig. 16 D, cg). Penis (Fig. 16 A, p) long, dorso-ventrally flattened. Small conical seminal papilla (sp) situated on top of penis.

Digestive system. Proboscis partly protracted (Fig. 16 H-I, pr). Buccal mass occupies slightly less than half of its length (Fig. 16 C, bm). Proboscis retractor muscles attached to median parts of rhynchodaeum (Fig. 16 H-I, prr). Radula measurements in Table 4. Rachidian teeth with 4-6 small cusps, outer ones shorter and narrower, than central ones, of which median cusp slightly longer and usually thicker than the others (Fig. 17F). Lateral teeth tricuspid, except for no. 5, bearing four cusps in left longitudinal row. Intermediate cusp(s) much thinner and slightly shorter than outer- and innermost. Very thin medial retractor muscle of radula (Fig. 16 C, mrr) bifurcate proximally and is attached to base of proboscis wall. Valve of Leiblein (Fig. 16 H-I, vl) very large, swollen; nerve ring situated immediately behind the valve. Not large rounded salivary glands (not shown on the figure) are situated on both sides of nerve ring. Salivary ducts large, thick, not convoluted. Gland of Leiblein

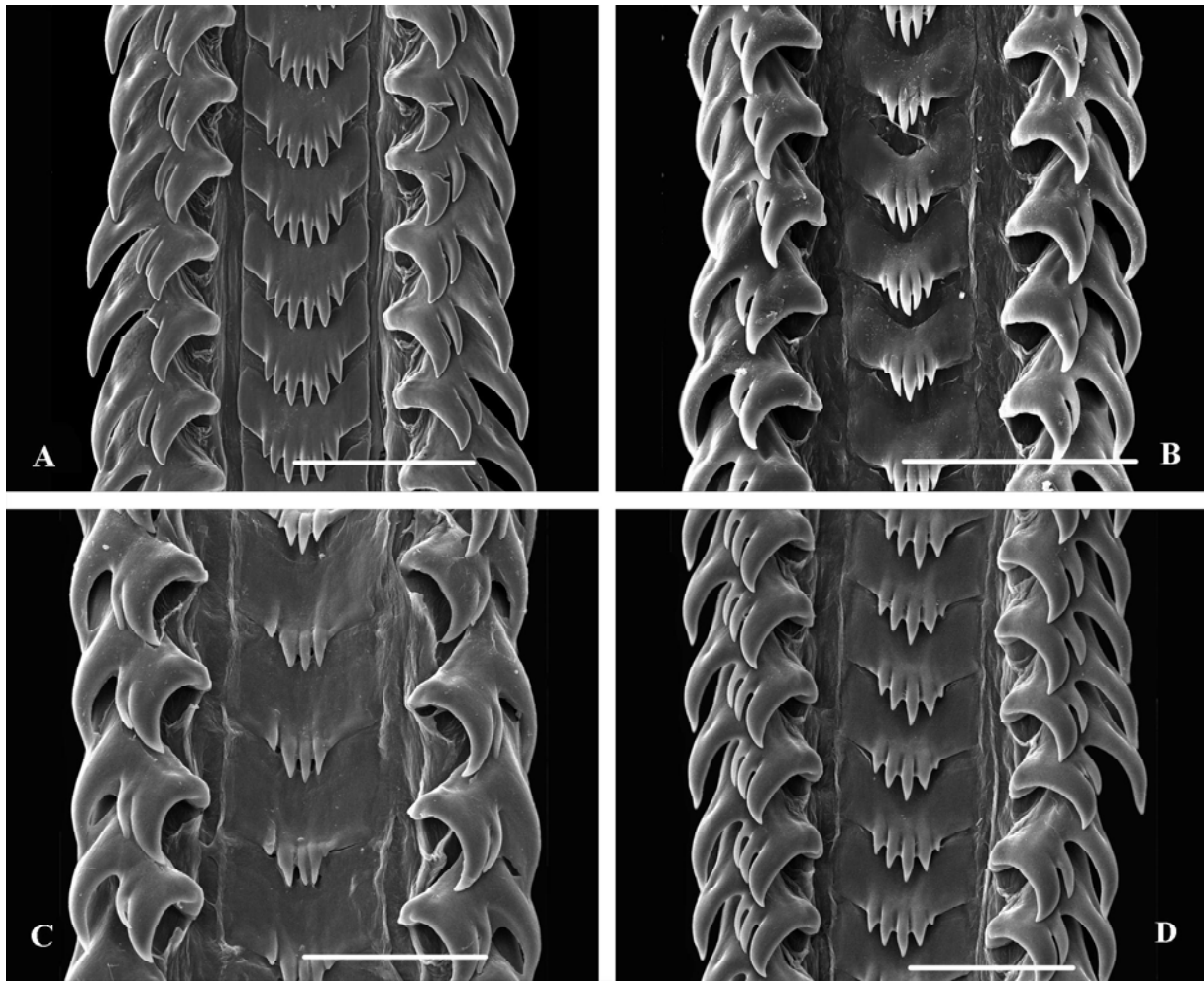


FIG. 17. Radulae of *Retimohnia bella*. A. No. 1 (shell on Fig. 15D, anatomy on Fig. 16 A-G, I). B. No. 2 (shell on Fig. 15E, anatomy on Fig. 16H). C. No. 5 (shell on Fig. 15H). D. No. 4 (shell on Fig. 15G). Scale bar 100 μ m.

РИС. 17. Радуды *Retimohnia bella*. А. № 1 (раковина на Рис. 15D, анатомия на Рис. 16 А-G, I). В. № 2 (раковина на Рис. 15E, анатомия на Рис. 16H). С. № 5 (раковина на Рис. 15H). D. № 4 (раковина на Рис. 15G). Масштабный отрезок 100 мкм.

(gl) medium sized, short, with large wide duct (dgl), opening to oesophagus at a rather large distance posterior to nerve ring.

Stomach large for the genus, occupies half of whorl and lies parallel to its longitudinal axis (Fig. 16 F). Posterior mixing area rather large, elongated (Fig. 16G, pma). Outer and inner stomach walls lined with uniform transverse folds, lowering in the middle section. Oesophageal opening (oeo) is ventrally deepened, not large opening of anterior duct of digestive gland (adg) is in the middle of the stomach.

Distribution. Off Choshi, in sea area Kashimanada, and northwards to off southern Hokkaido [Ito, 1967; Tiba, Kosuge, 1992; Hasegawa, 2009], Sea of Japan, Kurile Islands, 200-1398 m (Fig. 3).

Remarks. Rather variable species: most variable are number and shape of axial folds and to less extent shape of whorls and slenderness of shell.

O. bella, *M. iwateana* and *M. multicostata* were

synonymized by Hasegawa [2009]. Species is easily distinguishable from other species of *Retimohnia* by elongated shell with high spire and often present shoulder spiral cord and closely spaced axial ribs. It is rather similar to *R. mcleani* sp. nov. in sculpture, but differs in less convex whorls; from rather similar *Retifusus similis* (Golikov et Gulbin, 1977) differs in operculum with subspiral nucleus and morphology of radular teeth (Fig. 17).

Retimohnia mcleani sp. nov.
(Figs 3, 18-20)

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Mohnia similis. – Hasegawa, 2009: 305, figs. 226-229 (not of Golikov et Gulbin, 1977).

Type material: holotype ZMMU Lc-40356, 4 paratypes ZMMU Lc-40357 (type locality) (paratypes 2-3 dissected).



FIG. 18. Shells of type specimens of *Retimohnia mcleani* sp. nov., Pacific coast of Japan, 40°12' N, 143°35' E, 2500 m. **A.** Holotype, H 22.5 mm (radula on Fig. 20A, anatomy on Fig. 19). **B.** Paratype 1, H 15.5 mm. **C.** Paratype 2, H 19.1 mm (radula on Fig. 20B). **D.** Paratype 3, H 20.2 mm (radula on Fig. 20C). **E.** Paratype 4, H 12.4 mm. Scale bar 10 mm.

РИС. 18. Раковины типовых экземпляров *Retimohnia mcleani* sp. nov., тихоокеанский берег Японии, 40°12' N, 143°35' E, 2500 м. **A.** Голотип, H 22,5 мм (радула на Рис. 20А, анатомия на Рис. 19). **B.** Паратип 1, H 15,5 мм. **C.** Паратип 2, H 19,1 мм (радула на Рис. 20В). **D.** Паратип 3, H 20,2 мм (радула на Рис. 20С). **E.** Паратип 4, H 12,4 мм. Масштабный отрезок 10 мм.

Type locality: off Pacific coast of Honshu, 40°12'N, 143°35'E, 2500 m, R/V "Vityaz" sta. 6671, 23.06.1972.

Description (holotype). Shell of medium size for genus (22.5 mm high), elongate-fusiform, relatively thin-walled and fragile, not-translucent, with medium-long, well defined, slightly left-curved si-

phonal canal (Fig. 18A). Protoconch eroded, the rest of shell consists of approximately 3 whorls. Periostracum thin, light-brown; shell under periostracum white or creamy-white. Teleoconch whorls very convex with rapidly increasing diameter. Aperture about half shell length, ovate, tapering adapically; outer lip evenly rounded, concave at transition to

Table 5. Shell and radulae measurements of *Retimohnia mcleani*.Табл. 5 Измерения раковин и радул *Retimohnia mcleani*.

Specimen	H, mm	h, mm	AL, mm	Width of radula, μm	Radula width % of AL	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
Holotype	22.5	16.1	11.3	230	2.47	3:6:3	20A
Paratype 1	15.5	11.7	8.6	-	-	-	-
Paratype 2	19.1	14.8	10.7	220	2.1	3:4:3	20B
Paratype 3	20.2	15.4	11.2	200	1.79	3:3:3	20C
Paratype 4	12.4	9.3	7.1	-	-	-	-

siphonal canal. Inner lip concave, smooth, covered with thin callus, slightly extending on parietal part of whorl. Dominant sculpture of medium high, well-defined axial ribs, 17 on last whorl, with interspaces 1-1.5 ribs width, somewhat angled on upper half of whorl; some ribs on penultimate whorl eroded. Spiral sculpture represented by well-pronounced unevenly wide spiral cords (about 18 on penultimate whorl). Operculum oval with subspiral nucleus.

Shell measurements of holotype and other examined specimens in Table 5.

[**Диагноз (голотип):** раковина средних размеров для рода (22,5 мм в высоту), удлинённо-веретеновидная, сравнительно тонкостенная и хрупкая, непрозрачная, с умеренно-длинным, хорошо обособленным, слегка изогнутым влево сифональным каналом (Рис. 18А). Протококх эродирован, остальная часть раковины представлена 3 оборотами. Периостракум тонкий, светло-коричневый, раковина под периостракумом белая или кремово-белая. Обороты телеококха очень выпуклые, диаметр оборотов быстро нарастает. Устье составляет около половины высоты раковины, овальное, сужающееся к шву оборота, наружная губа равномерно округлая, вогнута в месте перехода в сифональный вырост. Внутренняя губа вогнутая, гладкая, покрыта тонким каллусом, переходящим на париетальную часть оборота. Преобладающая скульптура состоит из умеренно высоких, хорошо выраженных осевых ребер, слегка угловатых в верхней части оборота; на последнем обороте около 17 ребер, некоторые ребра на предпоследнем обороте потеряны. Спиральная скульптура представлена хорошо выраженными неравномерно широкими спиральными ребрами (18 на предпоследнем обороте). Крышечка овальная с субспиральным ядром. Измерения голотипа и других исследованных экземпляров в таблице 5.]

Soft body of 3 whorls, mantle spans one whorl, kidney – 0.3, rest of visceral mass occupied by digestive gland and gonad. Mantle width equals length (Fig. 19C). Ctenidium occupies 0.8 of mantle length and 0.2 of its width. Osphradium strongly asymmetrical, with much narrower left side, slightly wider than ctenidium and occupies 0.6 of its length. Rectum comprises half of mantle length. Head with rather long thick tentacles, with small

eyes on lobes at base of tentacles (Fig. 19B, hd). Foot contracted; propodium wide, separated by deep propodial groove (Fig. 19B, prp). Penis with elongated medium wide conical seminal papilla (Fig. 19B, p), sitting in a deepening on top of penis.

Digestive system. Proboscis short, retracted into rhynchodaeum (Fig. 19E, pr). Proboscis retractors detach laterally in basal part of rhynchodaeum as multiple muscle bands and attach to bottom and lateral walls of body haemocoel (Fig. 19D, prr). Buccal mass occupies entire length of proboscis. Radula of holotype with small tricuspid rachidian and large lateral teeth with large marginal cusps and small and thin intermediate cusp, total number of cusps is three in left longitudinal row and four – in right (Fig. 20A). Radulae of paratypes 2 and 3 have tricuspid lateral teeth; rachidian of paratype 2 with four cusps, of paratype 3 with three cusps. Teeth formula and radula measurements of type specimens are represented in Table 5. Anterior oesophagus thick and straight, valve of Leiblein rather small, elongated (Fig. 19E, vl). Nerve ring large, situated immediately after valve of Leiblein. Salivary glands bean-shaped, small, about 0.25 of proboscis length, situated on both sides of nerve ring and fused ventrally (Fig. 19F, sg). Salivary ducts thick and weakly coiled, running parallel to anterior oesophagus (Fig. 19E, sd). Gland of Leiblein large (gl), opening by small duct (dgl) at a distance from nerve ring. Stomach spans about 0.25 of whorl, situated at 30° to its longitudinal axis (Fig. 19H, st). Posterior mixing area rather large, lined with transverse folds of epithelium. Posterior oesophagus not very wide, small opening of posterior duct of digestive gland situated close to oesophageal opening. Opening of anterior duct of digestive gland is rather large, situated at beginning of intestine. Area between two openings lined with broad longitudinal folds, outer stomach wall lined with high transverse folds.

Distribution. Off Pacific coast of Northern Honshu, 749-2500 m (Fig. 3).

Remarks. The new species strongly reminds

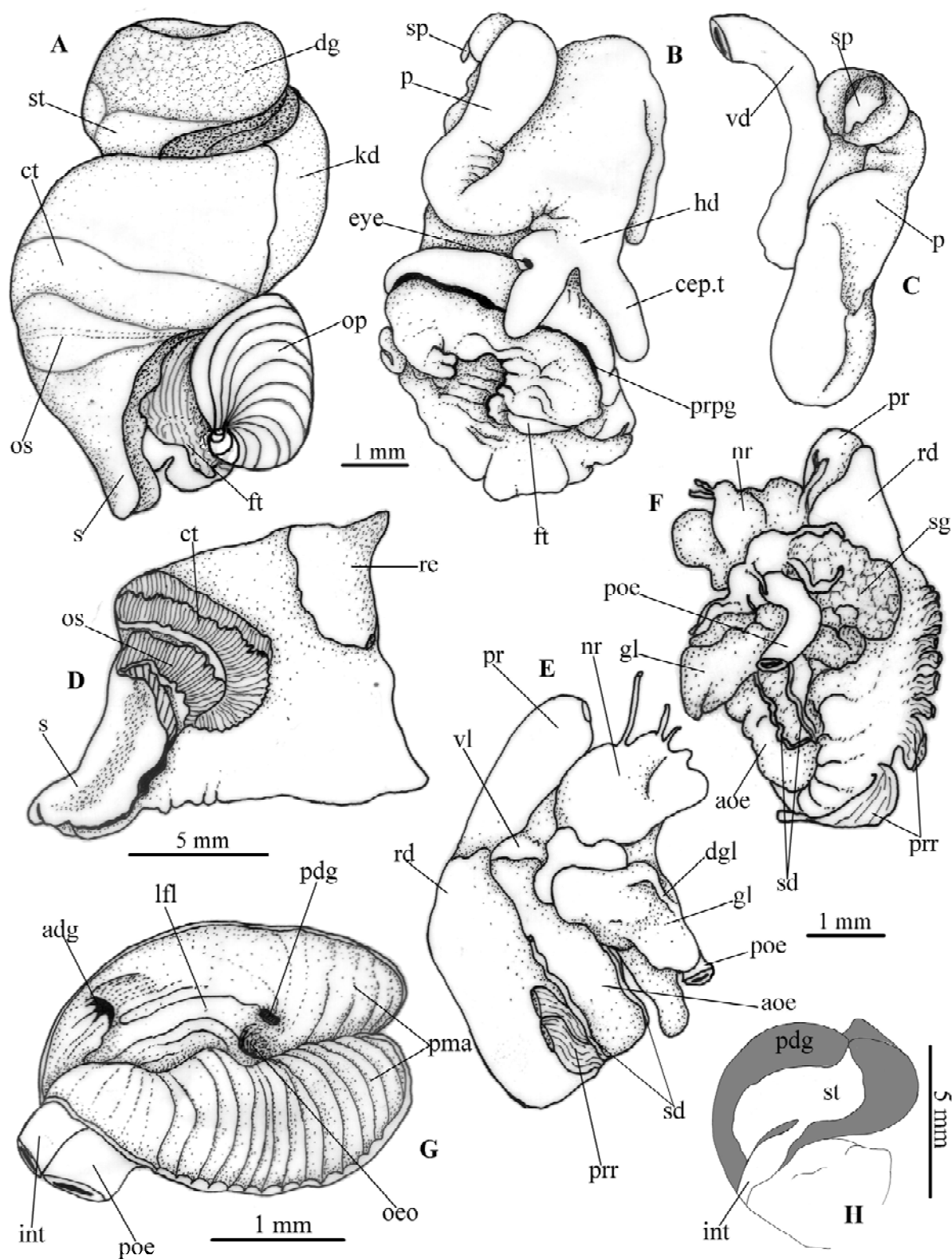


FIG. 19. Anatomy of holotype of *Retimohnia mcleani* sp. nov. (shell on Fig. 18A, radula on Fig. 20A). A. Soft body front view. B. Cephalopodium, dorsal view. C. Distal parts of male reproductive system. D. Mantle. E. Foregut, right lateral view (salivary glands removed). F. Foregut, left ventral lateral view. G. Stomach, opened dorsally. H. Stomach general view.

РИС. 19. Анатомия голо типа *Retimohnia mcleani* sp. nov. (раковина на Рис. 18А, радула на Рис. 20А). А. Мягкое тело, вид спереди. В. Цефалоподий, вид с дорсальной стороны. С. Дистальные части мужской репродуктивной системы. D. Мантия. Е. Передний отдел пищеварительной системы, вид справа (слюнные железы удалены). F. Передний отдел пищеварительной системы, вид слева. G. Желудок, вскрытый с дорсальной стороны. H. Общий вид желудка.

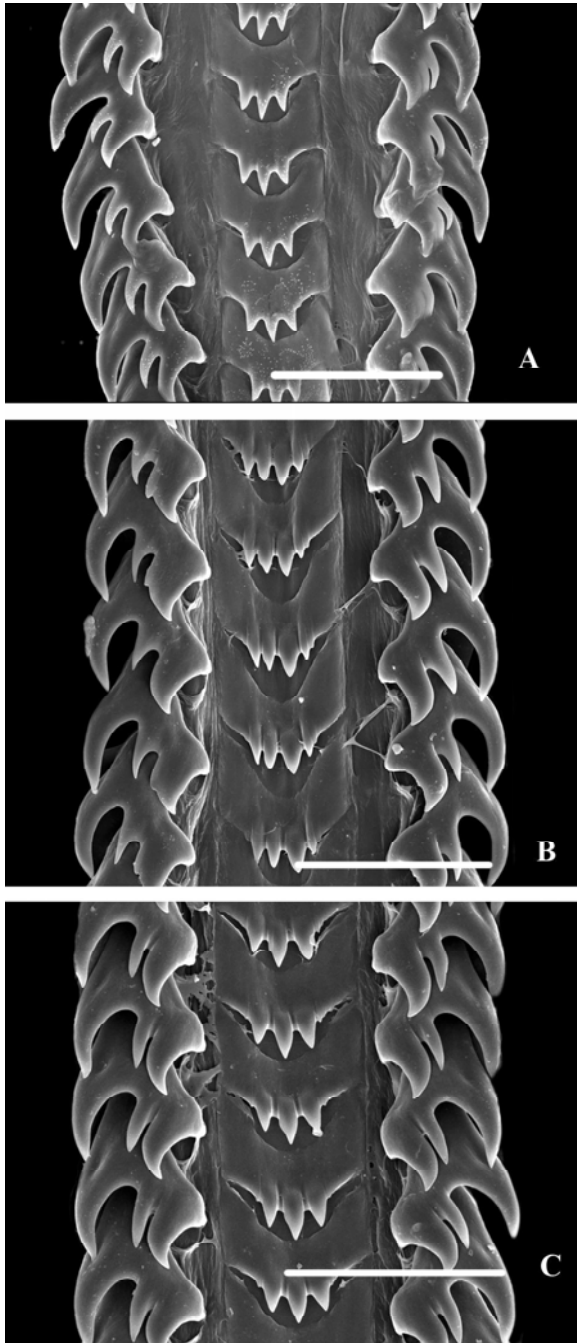


FIG. 20. Radulae of *Retimohnia mcleani* sp. nov. A. Holotype (shell on Fig. 18A), B. Paratype 2 (shell on Fig. 18B), C. Paratype 3 (shell on Fig. 18D). Scale bar 100 μ m.

РИС. 20. Радулы *Retimohnia mcleani* sp. nov. А. Голотип (раковина на Рис. 18А), В. Паратип 2 (раковина на Рис. 18В), С. Паратип 3 (раковина на Рис. 18Д). Масштабный отрезок 100 мкм.

R. bella, especially in axial sculpture, but differs in shell shape with more convex whorls and more defined, longer siphonal canal, as well as by radula with tricuspid rachidian. The species is also very similar to *Retifusus similis* (Golikov et Gulbin, 1977) in shell shape and sculpture, differing in operculum with subspiral nucleus, and radula morphology as

well as shallow-water distribution (50–300 m in *R. similis*) [Kosyan, Kantor, 2014]. The new species was most probably figured by K. Hasegawa [2009, p. 305, figs. 226–229] as *Mohnia similis* (from the same locality – off the Pacific coast of the Northern Honshu). He recorded it from several stations in the depth range 404–904 m. The illustrated specimen from 404–407 m [fig. 230] is strongly covered by hydroids, and its identification requires confirmation, remaining specimens were collected from 744–904 m.

Etymology. The species is named after outstanding malacologist James McLean, the author of the genus *Retimohnia*.

Retimohnia lussae sp. nov.
(Figs 3; 21–23)

urn:lsid:zoobank.org:act:A50C2DAD-335E-49BC-9B69-5F7F61DEA43A

Type material: Holotype ZMMU Lc-40358, 4 paratypes ZMMU Lc-40359 (all dissected),

Type locality: Bering Sea, 60°24.7'N 173°46.9'E, 1960 m, R/V “*Vityaz*”, sta. 1030, 16.10.51.

Description (holotype). Shell 20.2 mm high, broad-fusiform, relatively thin-walled, not translucent, with medium-long, well-defined siphonal canal (Fig. 21A). Protoconch and upper whorls eroded, the rest of shell consists of approximately 3 whorls. Periostracum thin, yellowish-olive to brown; shell under periostracum white or creamy-white. Teleoconch whorls convex, with somewhat angulated shoulder. Body whorl sharply constricts towards shell base. Aperture comprises half of shell length, wide-oval, tapering adapically; outer lip rounded, slightly concave in the transition to siphonal canal. Inner lip concave, smooth, covered with thin callus, extending on parietal part of whorl. Dominant sculpture of broad distinct not high axial ribs, somewhat angled on shoulder, 11 on last whorl; spiral sculpture of weak spiral cords (about 25 on penultimate whorl), crossing distinct incremental lines of the same width in interspaces between axial ribs, producing reticulated pattern. Operculum oval with subspiral nucleus shifted leftward. Shell measurements of holotype and other examined specimens are in Table 6.

[**Диагноз (голотип):** раковина высотой 20,2 мм, широко-веретеновидная, сравнительно тонкостенная, непрозрачная, с умеренно-длинным, хорошо выраженным сифональным каналом (Рис. 21А). Протоконх и верхние обороты раковины эродированы, остальная часть раковины представлена 3 оборотами. Периостракум тонкий, от желтовато-оливкового до коричневого цвета, раковина под периостракумом белая или кремово-белая. Обороты телеоконха выпуклые, с угловатым плечом. Последний оборот резко сужается к основанию. Устье составляет около половины высоты раковины, широко-овальное, сужаю-

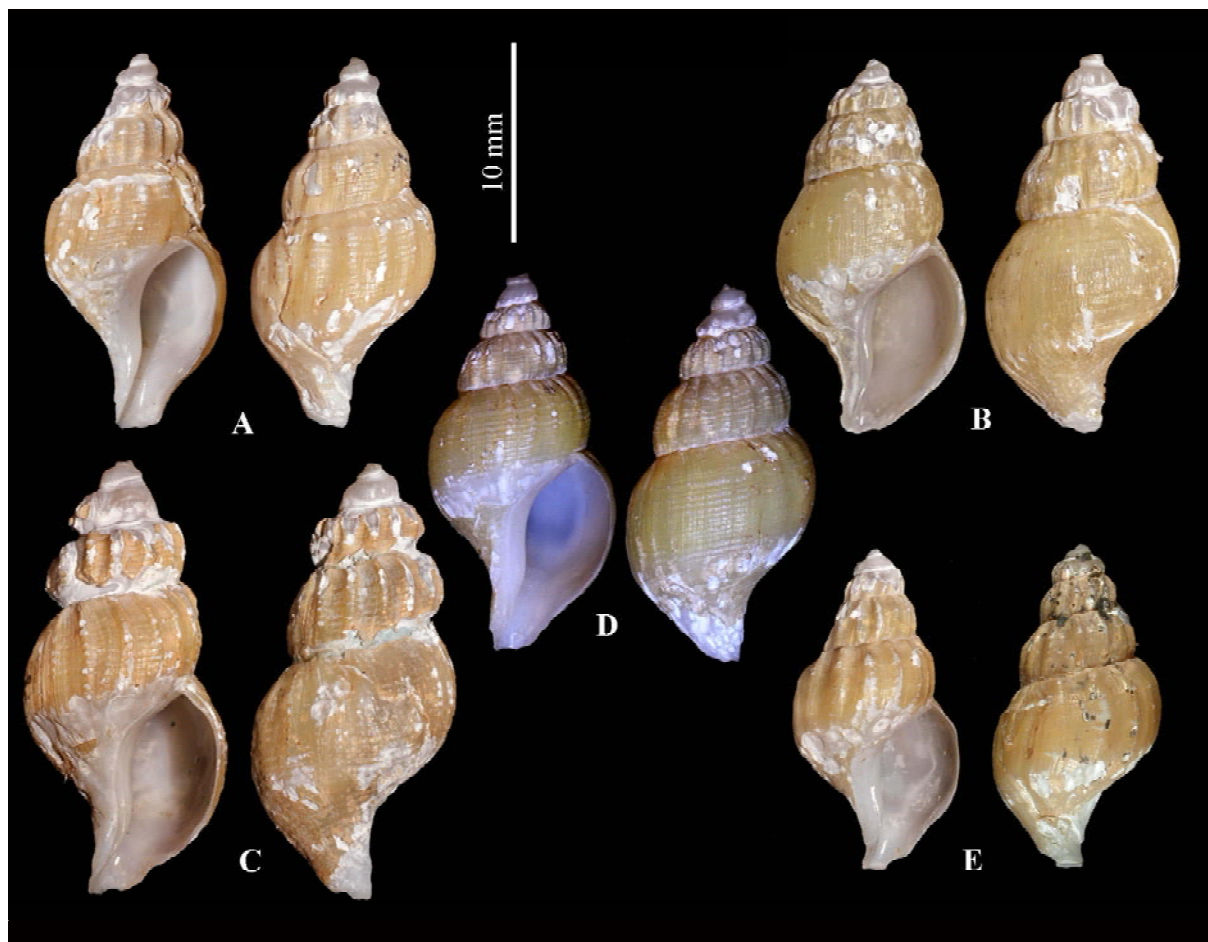


FIG. 21. Shells of *Retimohnia lussae* sp. nov., Bering Sea, 60°24.7'N 173°46.9'E, 1960 m. **A.** Holotype, H 20.2 mm (anatomy on Fig. 22, radula on Fig. 23A). **B.** Paratype 1, H 20.8 mm (radula on Fig. 23B). **C.** Paratype 2, H 22.6 mm (radula on Fig. 23C). **D.** Paratype 3, H 18.8 mm (radula on Fig. 23D). **E.** Paratype 4, H 16.6 mm (radula on Fig. 23E).

РИС. 21. Раковины *Retimohnia lussae* sp. nov., Берингово море, 60°24.7'N 173°46.9'E, 1960 м. **A.** Голотип, Н 20,2 мм (анатомия на Рис. 22, радула на Рис. 23А). **B.** Паратип 1, Н 20,8 мм (радула на Рис. 23В). **C.** Паратип 2, Н 22,6 мм (радула на Рис. 23С). **D.** Паратип 3, Н 18,8 мм (радула на Рис. 23D). **E.** Паратип 4, Н 16,6 мм (радула на Рис. 23Е).

Table 6. Shell and radulae measurements of *Retimohnia lussae*.

Табл. 6 Измерения раковин и радул *Retimohnia lussae*.

Specimen	H, mm	H, mm	AL, mm	Width of radula, μ m	Radula width % of AL	Teeth formula (number of cusps on left lateral: rachidian: right lateral)	Figure of radula
Holotype	20.2	14.3	10.2	250	2.45	3:3:2	23A
Paratype 1	20.8	14.5	10.5	230	2.19	3:3:3	23B
Paratype 2	22.6	16.5	11.4	200	1.71	3:4:3	23C
Paratype 3	18.8	14.0	10.8	250	2.31	3:3:3	23D
Paratype 4	16.6	11.8	8.7	200	2.23	3:5:3	24A

щеесяверху, наружная губа равномерно округлая, слабо вогнутая в месте перехода в сифональный вырост. Внутренняя губа слабо вогнутая, гладкая, покрыта тонким каллусом, переходящим на парietальную часть оборота. Преобладающая скульптура состоит из широких умеренно высоких хорошо выраженных осевых ребер, слегка угловатых на плече; на последнем обороте около 11 ребер. Спиральная скульптура представлена слабо-выра-

женными спиральными ребрами (около 25 на предпоследнем обороте), пересекающимися с линиями нарастания сходной ширины, в результате чего образуется сетчатый рисунок. Крышечка овальная с субспиральным ядром. Измерения голотипа и других исследованных экземпляров в таблице 6.]

Soft body: One whorl extracted. Head with

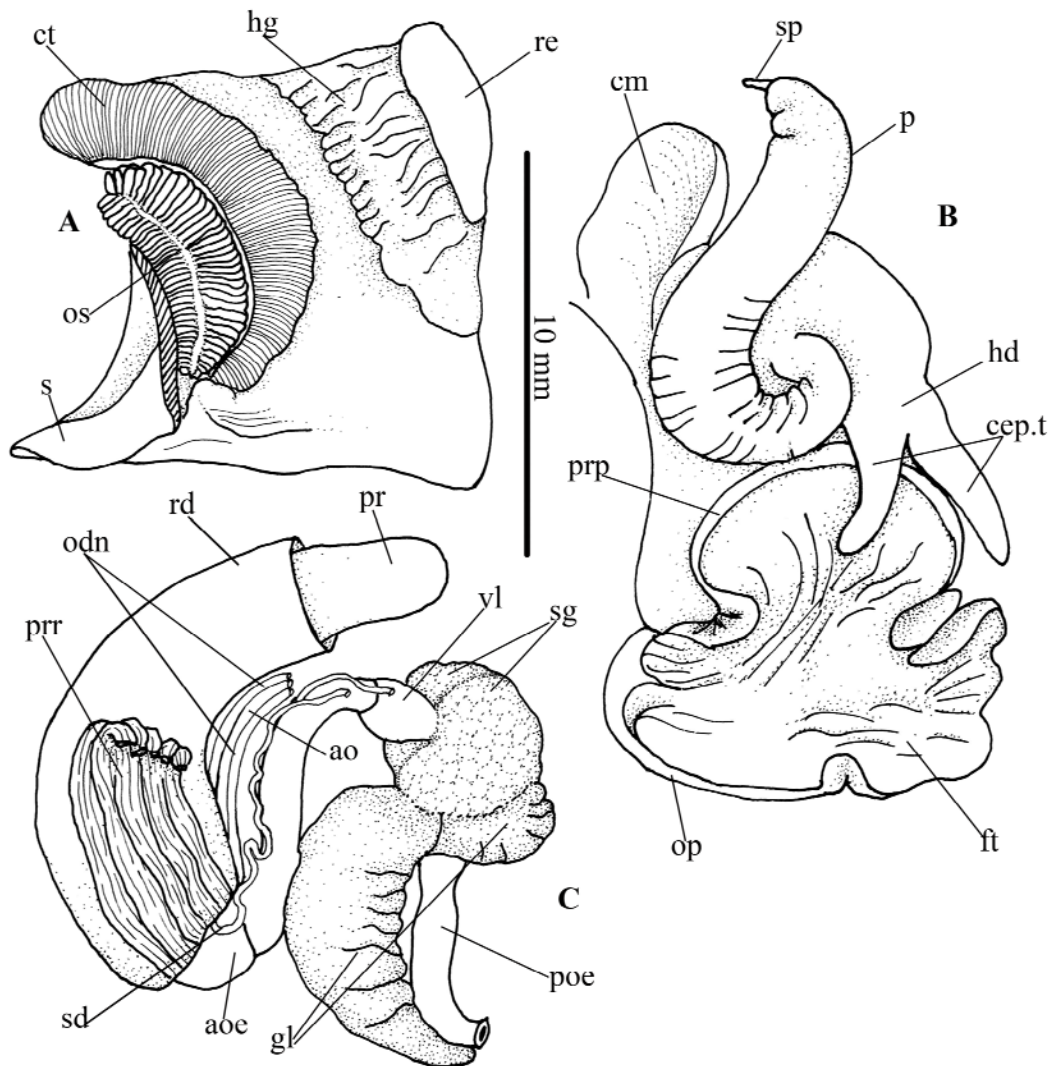


FIG. 22. Anatomy of holotype of *Retimohnia lussae* sp. nov (shell on Fig. 21A, radula on Fig. 23A). A. Mantle. B. Cephalopodium, front view. C. Foregut, lateral view.

РИС. 22. Анатомия голотипа *Retimohnia lussae* sp. nov (раковина на Рис. 21А, радула на Рис. 23А). А. Мантия. В. Цефалоподиум, вид спереди. С. Передний отдел пищеварительной системы, вид сбоку.

rather long thick tentacles, eyes absent (Fig. 22B). Foot contracted; propodium wide, separated by deep propodial groove (Fig. 22B, prp). Mantle as in the previous species (Fig. 22A). Penis with elongated medium wide cone-shaped seminal papilla.

Digestive system. Proboscis short, almost completely retracted into rhynchodaeum (Fig. 22C, pr). Proboscis retractors detach laterally in the middle of rhynchodaeum length as several muscle bands and attach to lateral walls of body haemocoel (Fig. 22C, prr). Buccal mass occupies entire length of proboscis. Rachidian teeth of radula with 3-5 sharp cusps (Fig. 23). In tricuspid rachidian median cusp is longer and wider than marginal cusps. Lateral teeth normally tricuspid, with large wide marginal cusps and much shorter and thinner intermediate cusp, but sometimes with two cusps (Fig. 24A). Teeth formula and radula measurements of type

specimens represented in Table 6. Anterior oesophagus thick and straight, valve of Laiblein rather small, pear-shaped (Fig. 22C). Salivary glands small, rounded, about 0.3 of proboscis length, situated on both sides of nerve ring, tightly attached to it by connective tissue. Salivary ducts thin and convoluted, running parallel to anterior oesophagus (Fig. 22C, sd). Posterior oesophagus of the same diameter as anterior one (Fig. 22C, poe), gland of Leiblein large (gl), folded around posterior oesophagus. Stomach not studied.

Distribution. Type locality (Fig. 3).

Remarks. The species possesses highly variable shell (i.e. shape and prominence of axial sculpture). Radula and anatomy are less variable, and may be distinguished from other species by normally tricuspid rachidian with an intermediate cusp much larger than marginal ones, and tricuspid lateral teeth with

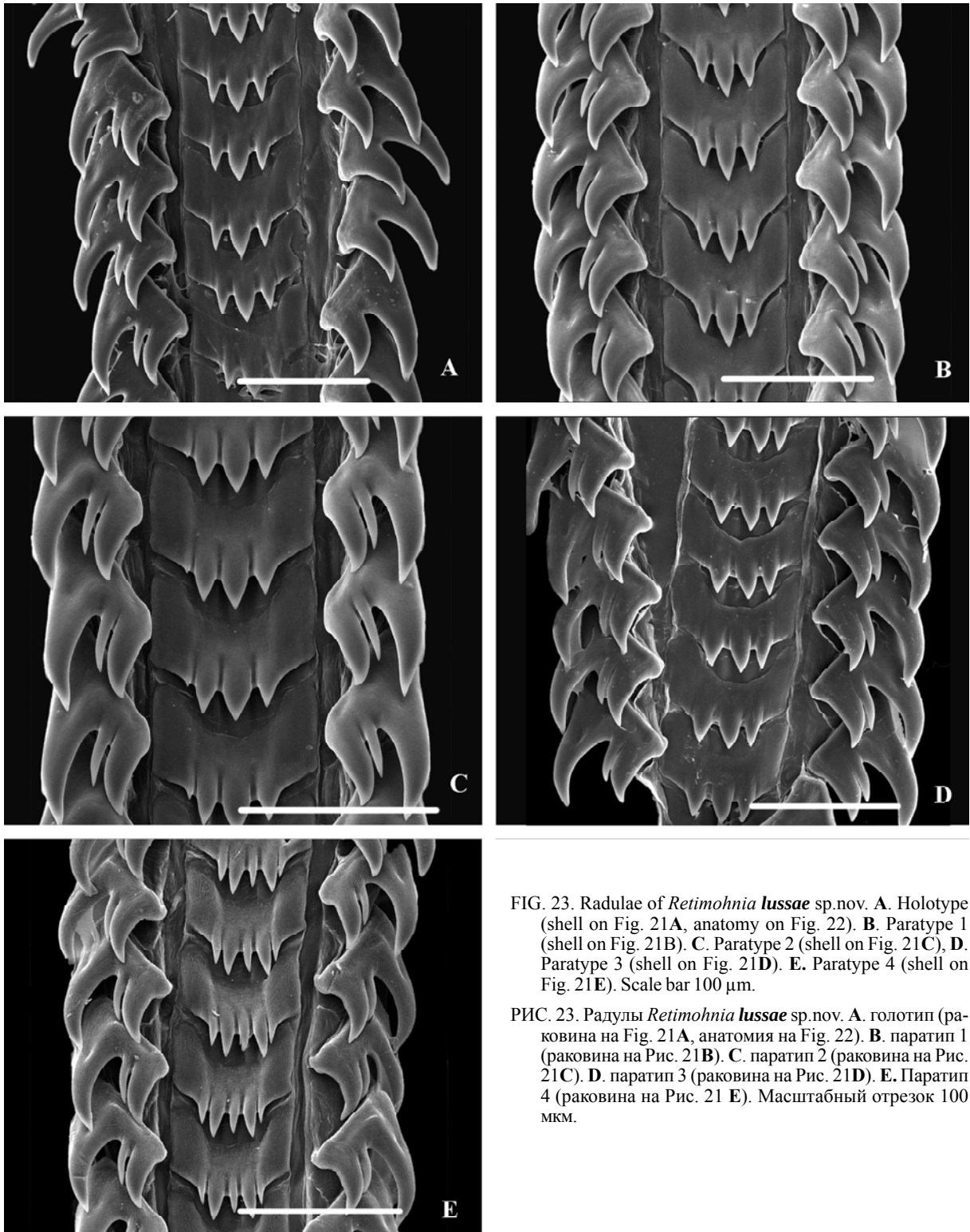


FIG. 23. Radulae of *Retimohnia lussae* sp. nov. **A.** Holotype (shell on Fig. 21A, anatomy on Fig. 22). **B.** Paratype 1 (shell on Fig. 21B). **C.** Paratype 2 (shell on Fig. 21C). **D.** Paratype 3 (shell on Fig. 21D). **E.** Paratype 4 (shell on Fig. 21E). Scale bar 100 μ m.

РИС. 23. Радуды *Retimohnia lussae* sp. nov. **A.** голотип (раковина на Рис. 21A, анатомия на Рис. 22). **B.** паратип 1 (раковина на Рис. 21B). **C.** паратип 2 (раковина на Рис. 21C). **D.** паратип 3 (раковина на Рис. 21D). **E.** Паратип 4 (раковина на Рис. 21E). Масштабный отрезок 100 мкм.

very thin intermediate cusp. The most similar species are *R. frielei*, *R. hondoensis* and *R. mcleani* sp. nov, possessing similar shell shape and high axial ribs. From *R. frielei* the new species differs in lateral teeth of radula with much thinner and narrower intermediate cusps; from *R. hondoensis* – by less prominent axial sculpture and radula with significantly lower

basal part of lateral teeth; from *R. mcleani* – by shell shape with less attenuated spire, shorter siphonal canal and less convex whorls as well as axial sculpture with less frequent and prominent ribs.

Etymology. The species is named after Russian malacologist V.Ya. Lus from P.P. Shirshov Institute of Oceanology, who studied deep-sea buccinids.

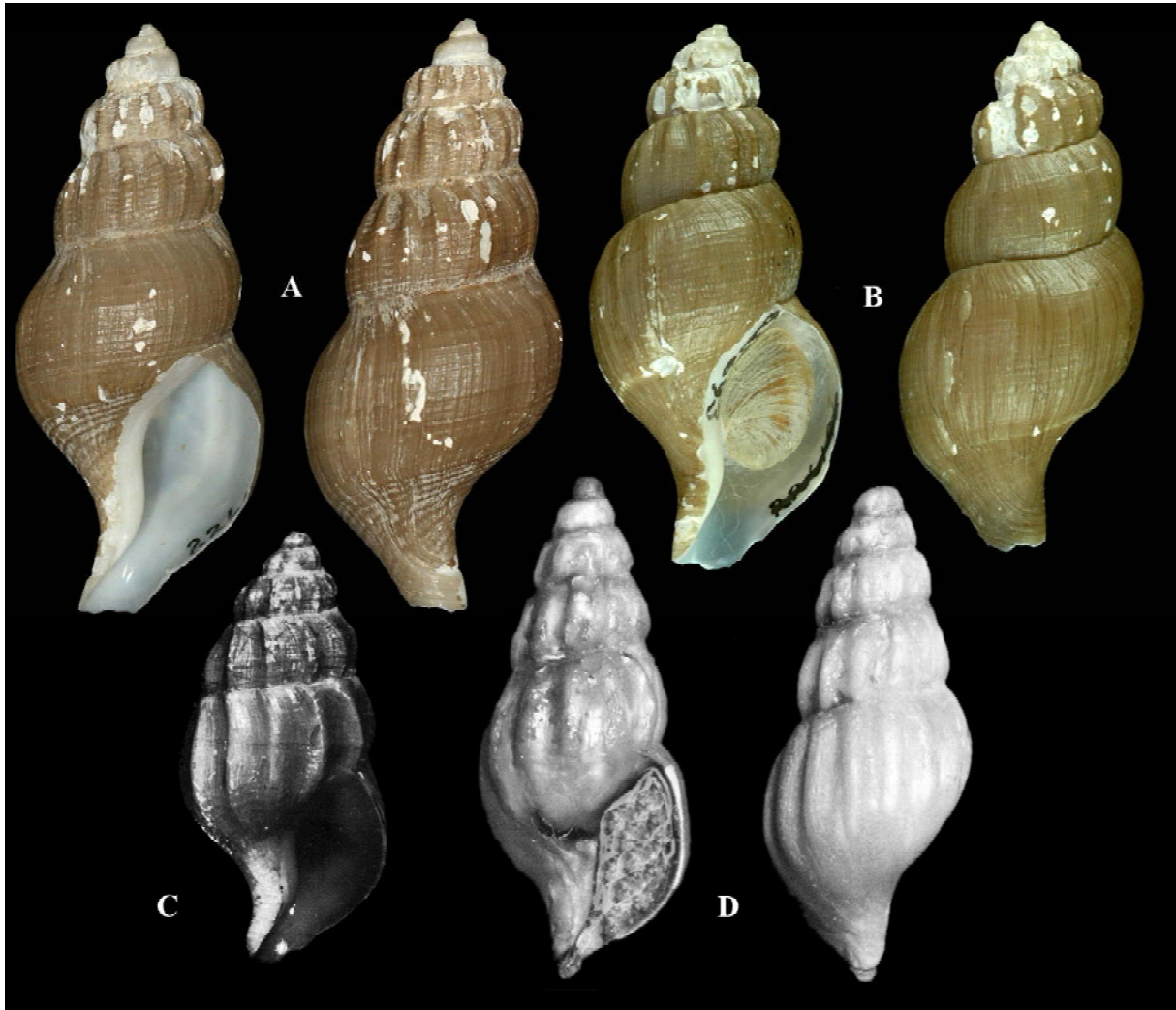


FIG. 24. Shells of *Retimohnia*. **A.** Holotype of *R. robusta* (Dall, 1913) USNM 635693, 54°11'30''N, 167°25'W, 1805 m, 36.5 mm. **B.** Paratype of *R. robusta* USNM 226196, 54°11'30''N, 167°25'W, 1805 m, 34.1 mm. **C.** *R. caelata* (Verrill et Smith, 1880), SE Delaware Bay, 1492 m, 17.6 mm (photo taken from Bouchet, Warén, 1985). **D.** Holotype of *R. acadiana* García, 2008 ANSP 418029, 27°46.904'N 91°30.286'W, 546-555 m, H 20.9 mm. Shells not to scale.

РИС. 24. Раковины *Retimohnia*. **A.** Голотип *R. robusta* (Dall, 1913) USNM 635693, 54°11'30''N, 167°25'00''W, 1805 м, 36,5 мм. **B.** Паратип *R. robusta* USNM 226196, 54°11'30''N, 167°25'W, 1805 м, 34,1 мм. **C.** *R. caelata* (Verrill et Smith, 1880), Ю-В часть залива Делавер, 1492 м (фото из Bouchet, Warén, 1985). **D.** Голотип *R. acadiana* García, 2008 ANSP 418029, 27°46.904'N, 91°30.286'W, 546-555 м, H 20,9 мм.

Retimohnia robusta Dall, 1913
(Fig. 24 A-B)

Mohnia robusta Dall, 1913: 501; Dall, 1921: 91, pl. 10 fig. 12;
Oldroyd, 1927: 199, pl. 17, fig. 3; Kosuge, 1972: pl. 13,
fig. 6; Abbott, 1974, 212; Tiba, Kosuge, 1992: 18 (17-19),
figs. 1-6 on page 18 (17); Higo *et al.*, 2001: fig. G2569
Retimohnia robusta. – McLean, 1995: 40.
Non Hasegawa, 2009: 306, figs. 232-234.

Holotype (by original designation): USNM 226196.

Type locality: Bering Sea, 54°11'30''N, 167°25'W, 1805 m, R/V “*Albatross*”, USFC sta. 3607.

Distribution. Type locality.

Original description. “Shell solid, stout, of

about eight whorls, the apical ones being always eroded in adult shells; the upper whorls with 15-16 axial, rounded, little elevated, nearly straight riblets, which become feebler and finally vanish on the last whorl; suture appressed, slightly constricted; other axial sculpture of rather irregular, retroactively arcuate incremental lines; spiral sculpture of obscurely channeled grooves which become wider with age and on the penultimate whorl are about 14 in number; on the last whorl they are coarser on the base, but nowhere sharp or clean cut; the whole surface is covered with a dark olive periostracum, under which the shell is white; aperture ovate, the body erased white, the pillar gyrate but not pervious, the

outer lip thin, sharp; the canal rather wide and strongly recurved. The nucleus is not preserved on any of the specimens. The operculum is dark horn color and forms about one whorl." [Dall, 1913: 501].

Remarks. Contrary to majority of his descriptions, Dall selected holotype by referring to its size: "Length of type specimen... 36.5 mm" [1913, p. 501]. Eight additional specimens from the same station are stored in USNM 635693. Unfortunately, no radulae were available from holotype or any of the paratypes. Since the shell has typical for *Retimohnia* axial ribs, and operculum of one of the paratypes is clearly subspiral (Fig. 24B), we tentatively attribute *M. robusta* to *Retimohnia*, until more data are available. Specimens, illustrated by Okutani [2000: 463, pl. 230, fig. 49] and Hasegawa [2009] as *Mohnia robusta* possessed shell shape significantly different from the type specimen and were found far from the type locality, in the Sea of Japan. Probably, they represent a distinct species of *Retimohnia* (for more precise identification the data on radula and anatomy are necessary).

Retimohnia caelata (Verrill et Smith, 1880)
(Fig. 24C)

Neptunea caelata Verrill et Smith in Verrill, 1880: 369.

Sipho caelatus. – Verrill, 1882: 506, pl. 57, fig. 19; Verrill, 1884: 172.

Sipho obesus Verrill, 1884: 168.

Sipho caelatus var. *hebes* Verrill, 1884: 172.

Mohnia caelata. – Bouchet, Warén, 1985: 212, figs 433, 454, 548-551.

Retimohnia caelata. – McLean, 1995: 40.

Type material: syntypes (5 spms) USNM 38026.

Type locality: North Atlantic Ocean, Massachusetts, Martha's Vineyard, 894 m, USFC, R/V "Fish Hawk" sta. 894.

Original description. "Shell... small, subfusiform, with an elevated spire... Whorls six, moderately convex, with impressed sutures, the upper whorls decreasing more rapidly. Nuclear whorls very small, regular, smooth, not distinctly incurved. Sculpture broad, rather prominent, rounded ribs, with wider concave interspaces, and over the whole surface numerous small, narrow, unequal, raised spiral lines, separated by wider grooves. The whole surface is also covered with very fine and regular raised lines of growth, which cross and roughen the spiral raised lines, and are more conspicuous in the grooves, producing a fine decussated structure. On the last whorl are 14 to 16 of the transverse ribs or folds; these become obsolete just below the periphery, so that on the base there are only spiral lines and lines of growth. Aperture narrow-ovate. Outer lip evenly rounded in the middle, but contracted at the base of the canal, which is short, rather narrow and distinctly recurved. Columella

decidedly curved. Epidermis thin, yellowish white, closely adherent, with distinct lines of growth." [Verrill, 1880: 369-370].

Distribution. Along the upper part of the continental slope, from North Carolina to S of Iceland, 1000-2500 m (Bouchet, Warén, 1985).

Remarks. The species possesses operculum with subspiral nucleus and high axial ribs on teleoconch whorls. Radula also reminds those of *Retimohnia*, especially of *R. lussae*.

Retimohnia acadiana García, 2008
(Fig. 24D)

Retimohnia acadiana García, 2008: 146, figs. 24-26.

Type material: holotype ANSP 418029.

Type locality: Off Louisiana, "Bush Hill" hydrocarbon cold seeps 27°46.904'N, 91°30.286'W, 546-555 m.

Distribution. Type locality.

Original description. "Holotype 20.9 mm in length, strong, fusiform, (width/length ratio 0.40). Protoconch missing. Teleoconch of 5 slightly convex whorls. Suture narrowly channeled, undulating. Axial ornamentation of strong, rounded ribs; 13 such ribs on penultimate whorl; ribs as wide as interspaces, stretching from suture to suture on early whorls, evanescent below periphery of last whorl; vestiges of secondary axial threads appearing on less corroded surface of shell. Spiral ornamentation of an undulating thread at suture; vestiges of a supra-sutural thread also showing on less corroded surface of shell. Aperture elongate-ovate, less than half the length of shell; labrum thin; columella almost straight; anterior canal moderately long, curved to the left. Shell yellowish-brown." [García, 2008: 146].

Remarks. The description of a new species from the Gulf of Mexico is based on a single dead specimen with eroded shell surface, which strongly reminds and possibly is one of the variations of *Retimohnia caelata*.

Excluded species

The following species were attributed at some stage to *Retimohnia*.

Mohnia toyamana Tiba, 1981
(Fig. 25A)

Mohnia toyamana Tiba, 1981: 86-87, pl. 30, figs. 4-5.

Retimohnia toyamana – Higo et al., 1999: 227, fig. G2558.

Type material: Holotype, UKM 29298 (R09310) in the NSM-Mo, Tokyo, Japan; figured and measured paratype, not located.

Type locality: Toyama Bay (eastern Noto peninsula, Sea of Japan), 400 m.

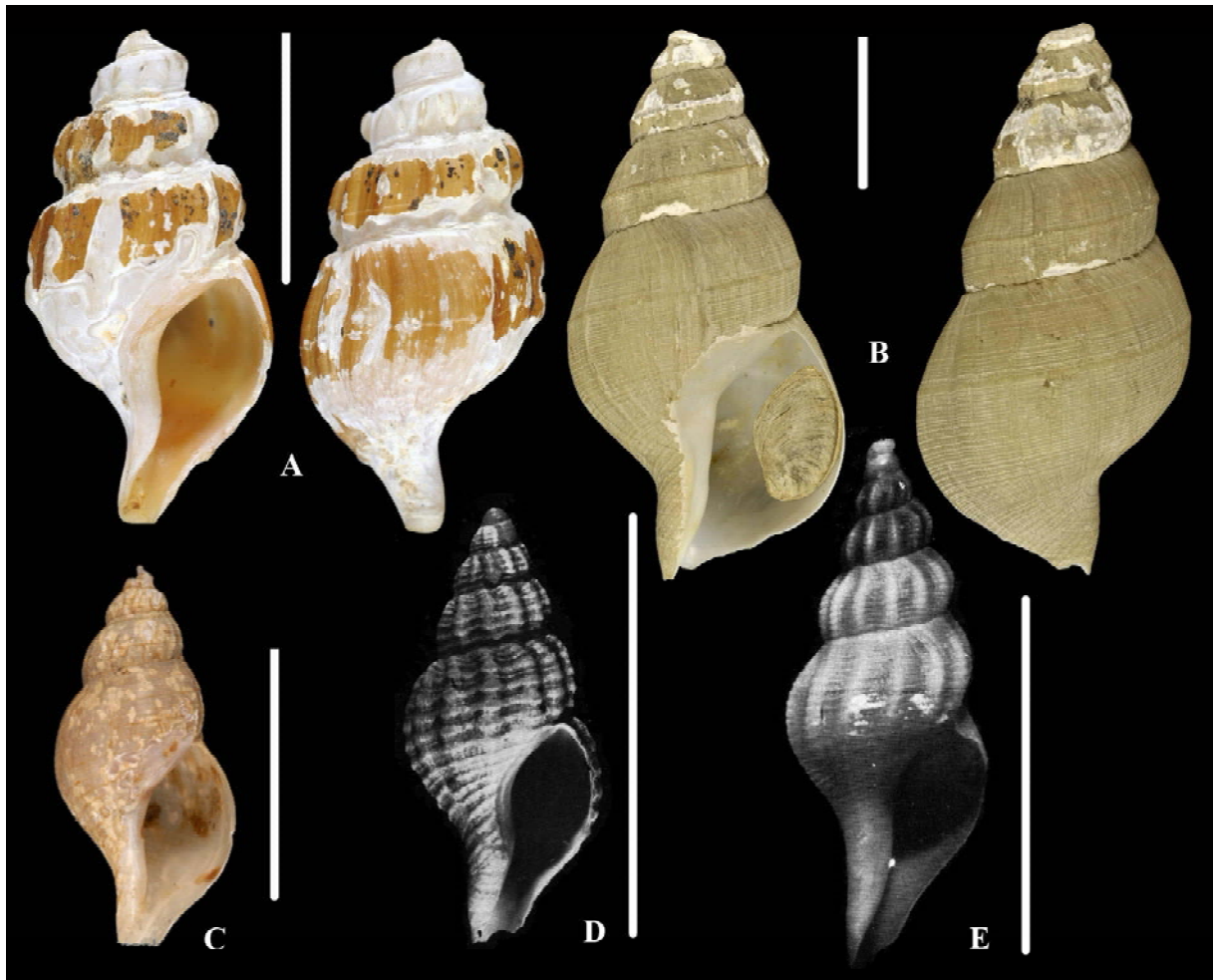


FIG. 25. Species, excluded from *Retimohnia*. **A.** Holotype of *Mohnia toyamana* Tiba, 1981, NSM-Mo UKM 29298 (R09310), Toyama Bay (eastern Noto peninsula, Japan Sea), 400 m, H 20.0 mm. **B.** Holotype of *Mohnia buccinoides* Dall, 1913, USNM 110778, 33°18'10"N, 135°40'50"E, off Hondo, Kobe-Yokohama, 1655 m, H 38 mm. **C.** Holotype of *Mohnia daphnelloides* Okutani, 1964, UMUT RM08831, 36°19.7'N, 141°09.0'E, sea area Kashima-nada, 870 m, H 14.5 mm. **D.** Syntype of *Urosalpinx carolinensis* Verrill, 1884, USNM 35735, North Atlantic Ocean, North Carolina, off Cape Hatteras, 35°14'20"N, 74°59'10"W, 260 m, 11.0 mm (photo taken from Bouchet, Warén, 1985). **E.** *Sipho glyptus* Verrill, 1882, off Martha's Vineyard, Massachusetts, 355 m, 15.8 mm (photo taken from Bouchet, Warén, 1985). Scale bar 10 mm.

РИС. 25. Виды, исключенные из состава рода *Retimohnia*. **A.** Голотип *Mohnia toyamana* Tiba, 1981, NSM-Mo UKM 29298 (R09310), бухта Тояма (восточная часть п-ова Ното, Японское море), 400 м, Н 20,0 мм. **B.** Голотип *Mohnia buccinoides* Dall, 1913, USNM 110778, 33°18'10"N 135°40'50"E, Хондо, Кобе-Йокогама, 1655 м, Н 38 мм. **C.** Голотип *Mohnia daphnelloides* Okutani, 1964, UMUT RM08831, 36°19.7'N, 141°09.0'E, акватория Касима-нада, 870 м, Н 14,5 мм. **D.** Синтип *Urosalpinx carolinensis* Verrill, 1884, USNM 35735, Северная Атлантика, Северная Каролина, около мыса Hatteras, 35°14'20"N, 74°59'10"W, 260 м, 11,0 мм (фото из Bouchet, Warén, 1985). **E.** *Sipho glyptus* Verrill, 1882, о-в Мартас-Винъярд, Массачусетс, 15,8 мм (фото из Bouchet, Warén, 1985). Масштабный отрезок 10 мм.

Remarks. As follows from the original description, the operculum of the species is with terminal nucleus. Radula is unknown, but based on operculum, we tentatively attribute this species to the genus *Retifusus*.

Mohnia buccinoides Dall, 1913
(Fig. 25B)

Mohnia buccinoides Dall, 1913: 503; Dall, 1925: 21, pl. 33, fig. 10; Kosuge, 1972: pl. 12, fig. 5.

Retimohnia buccinoides – WoRMS <http://www.marinespecies.org/aphia.php?p=taxdetails&id=491326>

<http://www.marinespecies.org/aphia.php?p=taxdetails&id=491326>

Holotype USNM 110778.

Type locality: Off Hondo, Kobe-Yokohama, 33°18'10"N, 135°40'50"E, 1655 m, R/V *Albatross*, USFC sta. 4974.

Remarks. The species was not mentioned in the literature since original description. The data on anatomy and radula morphology are absent. We exclude this species from *Retimohnia* based on its large size (holotype 38 mm) and operculum, which is definitely not subspiral, like in *Retimohnia*, but its

nucleus is closer to terminal, shifted leftward, like in *Retifusus*. The shell shape and sculpture, although, does not allow to attribute it to *Retifusus*.

Mohnia daphnelloides Okutani, 1964
(Fig. 25C)

Mohnia daphnelloides Okutani, 1964: 407, pl. 3, fig. 9; The Committee for Celebrating Dr Okutani's Retirement from Tokyo University of Fisheries, 1996: 75-76, pl. 3, fig. 4 (holotype); Okutani, 2000: 463, pl. 230, fig. 51 (reproduction of Okutani, 1964: pl. 3, fig. 9); Hasegawa, 2009: 307, figs. 238-246.

Retimohnia daphnelloides. – WoRMS, <http://www.marine-species.org/aphia.php?p=taxdetails&id=491329>

Holotype: UMUT RM08831.

Type locality. Sea area Kashima-nada, 36°19.7'N, 141°09.0'E, 870 m, R/V "Soyo-maru", sta. 17.

Remarks. As noted by Hasegawa [2009], the species is conchologically very similar to holotype of *Retifusus semiplicatus* (a junior synonym of *Retifusus parvus* [Kosyan, Kantor, 2014]), but twice smaller. Operculum (personal communication by K. Hasegawa) is with terminal nucleus. Thus, this species should be considered within *Retifusus*.

Urosalpinx carolinensis Verrill, 1884
(Fig. 25D)

Urosalpinx carolinensis Verrill, 1884: 237.

Mohnia carolinensis, Radwin, 1972: 339, fig. 1 c-d; Bouchet, Warén, 1985: 212, figs. 434, 457, 555-556.

Retimohnia carolinensis, McLean, 1995: 40.

Types: syntypes (52 spms), USNM 35735

Type locality: North Atlantic Ocean, North Carolina, off Cape Hatteras, 35°14'20"N 74°59'10"W, 260 m, USFC, R/V "Albatross" sta. 2109.

Remarks. According to figures of shells and radula in Radwin [1972] and Bouchet and Warén [1985], the species is more similar to *Mohnia blakei* (Verrill, 1885), both in shell sculpture and radula, possessing unicuspid central tooth. The operculum is subspiral with nucleus shifted leftward and down, so we prefer to place this species into *Mohnia*, as was suggested by Radwin [1972].

Sipho glyptus Verrill, 1882
(Fig. 25E)

Sipho glyptus Verrill, 1882: 505, pl. 57, fig. 22, pl. 58, fig. 1, 1a.

Sipho (Siphonorbis) lindahli Posselt, Jensen, 1898: 180, pl. 1, fig. 5.

Mohnia glyptus. – Bouchet, Warén, 1985: 213, figs. 430, 453, 552-554.

Retimohnia glypta. – McLean, 1995: 40.

Types: holotype of *Sipho glyptus* USNM 38005, holotype of *S. lindahli* SMNH 1566.

Type locality: of *Sipho glyptus*: North Atlantic

Ocean, Massachusetts, Martha's Vineyard, 435 m, USFC, R/V "Fish Hawk" sta. 895; of *S. lindahli*: Umanak, Western Greenland, 270 m.

Remarks. According to Bouchet and Warén [1985], the species possesses elongated-fusiform shell with high attenuated spire and operculum with terminal nucleus. Its radula and protoconch also differ from those of *Retimohnia* and *Mohnia*. The generic position of the species remains unclear.

Discussion

Contrary to other revised by us genera of Colinae, the genus *Retimohnia* appeared to be very heterogeneous and we can not exclude the possibility that in current understanding it may be paraphyletic. Nevertheless, we found it premature to describe new genera based on weak morphological differences, believing that it only confuses the taxonomy of buccinoideans. Therefore we consider *Retimohnia* as a group of deep-water small-sized Colinae with subspiral nucleus and dominating axial sculpture (although with exception of *R. vernalis* and *R. micra*).

The genus *Retimohnia* is quite similar in shape and sculpture of the shell to the genus *Retifusus*. Both genera possess fusiform to broad-fusiform shells of small size, which, in most cases, in addition to the spiral possess well defined axial sculpture. However, shells of *Retifusus*, possibly because of their shallower habitat, have thick and solid walls. Recent revision of *Retifusus* [Kosyan, Kantor, 2014] showed its clear difference from *Retimohnia*. The main external differences between genera are in the structure of the operculum: in all *Retifusus* species it is with terminal nucleus, shifted leftwards, while in *Retimohnia* it is with subspiral nucleus (but in old specimens due to the continuous growth and the breaking of basal pieces, nucleus can move down and become terminal, like in large specimens of *R. bella*). The bathymetric distribution of *Retifusus* is within the range 15-920 m, moreover all species but *R. iturupus*, *R. latericeus* and *R. roseus* were found not deeper than 415 m. Most species of *Retimohnia* live in the range of 400-1700 m.

Anatomical differences mostly concern the radula. In *Retifusus* it is represented by two types: 1) rachidian with five-six cusps and with strongly overlapping rows of teeth; 2) with tricuspid rachidian and slightly overlapping rows of teeth. Long cusps on lateral teeth are always of nearly equal height, 2-3 times longer than the height of the base of the lateral tooth.

Rachidian teeth of *Retimohnia* are usually with 3-6 sharp cusps. Unfortunately, there was only one specimen of *Retimohnia frielei* with soft body in our disposal, so it was impossible to determine the

Table 7. Species excluded from *Retimohnia*.Табл. 7. Виды, исключенные из *Retimohnia*.

Original binomen	First attributed to <i>Retimohnia</i> by:	Current generic position	Reference
<i>Mohnia corbis</i> Dall, 1913	WoRMS	<i>Fusipagoda</i>	Kosyan, Kantor, 2015
<i>Mohnia toyamana</i> Tiba, 1981	McLean, 1995	<i>Retifusus</i>	Herein
<i>Sipho glyptus</i> Verrill, 1882	McLean, 1995	Unknown	Herein
<i>Urosalpinx carolinensis</i> Verrill, 1884	McLean, 1995	<i>Mohnia</i>	Herein
<i>Mohnia buccinoides</i> Dall, 1913	WoRMS	Unknown	Herein
<i>Mohnia daphnelloides</i> Okutani, 1964	WoRMS	<i>Retifusus</i>	Herein
<i>Mohnia okhotskana</i> Tiba, 1981	McLean, 1995	Synonym of <i>Retifusus olivaceus</i> (Bartsh, 1929)	Kosyan, Kantor, 2014
<i>Mohnia japonica</i> , Dall, 1913	McLean, 1995	Synonym of <i>Retimohnia micra</i> Dall, 1913	Herein
<i>Mohnia (Latisipho) clementinus</i> Dall, 1919	McLean, 1995	Synonym of <i>R. clarki</i>	Herein
<i>Mohnia (Retimohnia) yanamii</i> (Yokoyama, 1926)	Okutani, 2000	<i>Retifusus</i>	Kosyan, Kantor, 2014

intraspecific variability of the radula of the type species of *Retimohnia*. In all species of *Retimohnia*, for which we had the opportunity to examine more than one radula the number of cusps on rachidian teeth varied – as little as three, but in most specimens there were additional shorter cusps, bringing total number to 5–6 cusps. *R. vernalis* possesses very unusual in shape rachidian multicuspid tooth, not found in other *Retimohnia* species as well as in *Retifusus*. In all species except *R. frielei* and *R. vernalis*, an intermediate cusp of lateral teeth was much shorter and narrower than marginal cusps. In *R. hondoensis*, *R. clarki* and *R. micra* lateral teeth had high basal parts (see Fig. 2D, a); the height of the inner and intermediate cusps is equal to the height of the base of the tooth underneath) and the highest base was found in several specimens of *R. clarki* (the height of the base was twice the height of the cusps). The remaining species – *R. frielei*, *R. vernalis*, *R. sordida*, *R. bella*, *R. lussae* and *R. mcleani*, had medium-sized basal part of lateral teeth, similar to that for *Retifusus* and other Colinae. Thus basing on radular morphology the species of *Retimohnia* may be divided into four groups: 1) *R. frielei*, 2) *R. vernalis*, 3) *R. bella*, *R. lussae* and *R. mcleani*, 4) *R. hondoensis*, *R. clarki*, and *R. micra*. Salivary sacs on the salivary ducts found in three species of *Retifusus*, were not found in any of the *Retimohnia* representatives.

The species that we exclude herein from *Retimohnia* and were attributed previously to it by different authors are shown in Table 7.

In the result of current revision, we recognize 12 valid species of the genus *Retimohnia*:

R. frielei (Dall, 1891) – off Queen Charlotte Ids., British Columbia, 51°23'N, 130°34'W, 1602 m.

R. hondoensis (Dall, 1913) – the Sea of Japan, western part of the Sea of Okhotsk, 139–1760 m.

R. micra (Dall, 1907) [= *Mohnia japonica* Dall, 1913] – Sea of Japan, 366–1260 m.

R. vernalis (Dall, 1913) – Pacific coast of North America, off Tillamook Bay, Oregon, 1437 m.

R. sordida (Dall, 1907) – Tsugaru Strait, coast of Yesso, Japan, 549 m.

R. clarki (Dall, 1907) [= *Colus (Latisipho) clementinus* Dall, 1919] – California, Alaska and Aleutian Islands, Pacific coast of Kamchatka, southern part of Sakhalin, northern part of the Sea of Japan, 830–1740 m.

R. bella (Ozaki, 1958) – off Choshi, in sea area Kashima-nada, and northwards to off southern Hokkaido, Sea of Japan, Kurile Islands, 200–1398 m.

R. mcleani sp. nov. – Pacific coast of Japan, 40°12'N, 143°35'E, 2500 m.

R. lussae sp. nov. – Bering Sea, 60°24.7'N, 173°46.9'E, 1960 m.

R. robusta (Dall, 1913) – 54°11'30''N, 167°25'00''W, 1805 m.

R. caelata (Verrill, Smith, 1880) – along the upper part of the continental slope, from North Carolina to S of Iceland, 894–2500 m.

R. acadiana García, 2008 – 27°46.904'N, 91°30.286'W, 546–555 m, off Louisiana, “Bush Hill” hydrocarbon cold seeps.

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Ревизия рода *Retimohnia* McLean, 1995 (Gastropoda: Buccinidae)

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РЕЗЮМЕ. На основании признаков раковины, радулы, переднего отдела пищеварительной системы и желудка проведена ревизия рода *Retimohnia* McLean, 1995. В результате в состав рода включено 10 ранее описанных видов: *R. frielei*, *R. bella*, *R. vernalis*, *R. clarcki*, *R. hondoensis*, *R. micra*, *R. sordida*, *R. robusta*, *R. caelata*, *R. acadiana*, и 2 новых: *R. lussae* sp. nov., *R. mcleani* sp. nov. *R. japonica* сведена в младшие синонимы *R. micra*, *R. clementina* – в младшие синонимы *R. clarki*. Пять видов исключены из состава рода. Обозначены лектотипы для *Mohnia frielei*, *Mohnia vernalis*, *Mohnia sordida*, *Mohnia clarki*.