

Two new species of *Moerchia* A. Adams, 1860 (Gastropoda, Pyramidellidae) from southwest Tropical Pacific

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KEY WORDS. Pyramidellidae, *Moerchia*, Tropical south Pacific, new species.

ABSTRACT. Two new species for the genus *Moerchia* A. Adams, 1860 are described, from Solomon and Philippines Islands, in the tropical SW Pacific. Details of the shell morphology obtained by Scanning Electron Microscopy (SEM) are shown, and information about its habitat and geographic range are supplied. *Moerchia* is here placed in the family Pyramidellidae on the basis of last informations. Photos and drawings of previously known species and data on their distribution are included.

RESUMEN. Se describen dos nuevas especies del género *Moerchia* A. Adams, 1860 de las Islas Salomón y Filipinas, Pacífico Tropical Suroeste y se facilitan detalles de la morfología de sus conchas mediante fotografías al microscopio electrónico de Barrido (MEB), así como datos relativos a su hábitat y distribución geográfica. *Moerchia* es emplazado en la familia Pyramidellidae en base a los últimos hallazgos. Al mismo tiempo se muestran fotografías y dibujos de otras especies conocidas, así como datos sobre su distribución.

INTRODUCTION

A. Adams (1860) described the genus *Mörchia* as a subgenus of *Cyclostrema* and hence it was placed in the family Vitrinellidae. It should be noticed that both the spellings *Mörchia* and *Moerchia* were used by Adams but only the latter is correct under IZNC rule 32.5.2.1 (WoRMS).

Believing the taxon name published in April 1860 to be pre-occupied by “Albers, 1850”, Thiele replaced it by *Morchiella*; however, Albers really published the name only in December 1860.

Later, *Moerchiella* Thiele, 1924 (non Nevill G., 1885) was also replaced by *Moerchinella* Thiele, 1931, but this replacement was also unnecessary, since *Moerchia* A. Adams is a valid name.

The genus of Albers (non A. Adams) is not correctly mentioned because it is not valid: it is applied to some land species, such as *Moerchia baudoni* (Petit, 1853) in the family *Systrophidae* Thiele, 1926, from Guadalupe Island, in the Caribbean. This taxon is also erroneously used for *Moerchia montrouzieri* (S.M. Souverbie, 1862).

Almost at the same time, Mayer (1860) described the new genus *Moerchia* in Polichaeta: *Moerchia*

Mayer, 1860: 309–310. Mörch (1861b: 147) recognized *Moerchia* Mayer, 1860 (July) as preoccupied by *Moerchia* [as *Mörchia*] A. Adams, 1860 (1 April), and replaced the former with *Burtinella*.

Cossmann (1918: 76-77) corrected the spelling of *Mörchia* to *Moerchia*, treated it as a subgenus of *Cyclostrema*, wrote a description, and noted the problem of homonymy. Cossmann believed Adams' name to be preoccupied by Albers, “1850” but not knowing if a replacement had already been proposed, wisely refrained from proposing one.

Material and Methods

The material was collected by the MNHN in different expeditions to the Pacific Tropical Expeditions.

Abbreviations

AMS: The Australian Museum, Sydney
MNHN: Muséum national d'Histoire Naturelle, Paris
NHMUK: Natural History Museum, United Kingdom, London
s: empty shell

SYSTEMATICS

Superfamily PYRAMIDELLOIDEA Gray, 1840

Family PYRAMIDELLIDAE Gray, 1840

Genus *Moerchia* A. Adams, 1860

Moerchia A. Adams, 1860. *Annals and Magazine of Natural History* (3)5: 299-303.

Moerchia Martens, 1860 [ex Albers MS] [deemed to be December]. *Die Heliceen*, ed. 2: 71, type species OD *Helix concolor* Ferussac, 1822. Junior homonym of *Moerchia* A. Adams, 1860 [April] Replacement name: Zophos Gude, 1911. *Proceedings of the Malacological Society of London* 9(4): 269, type by typification of replaced species.

Moerchiella Thiele, 1924, *nomen novum* pro *Moerchia*, A. Adams, 1860 non Albers, 1860. [unnecessary replacement]

Moerchinella Thiele, 1931, *nomen novum* pro *Moerchiella* Thiele, 1924, non Nevill G., 1885. [unnecessary replacement]

Liotropica Laseron, 1958: 170 [type species (OD) *Moerchia introspecta* Hedley, 1907] (junior subjective synonym).

Type species (by monotypy): *Moerchia obvoluta* A. Adams, 1860. Recent, Japan. [*Moerchia morleti* Fischer, 1877 erroneous type designation by Cossmann, 1918].

Description: Original diagnosis in Adams (1860): “*Testa oblique ovata, late unibilicata, depressa, superne convexa, inferne plana; anfractibus subito crescentibus, ultimo dilatato ascendente alios involvente usque ad apicem. Apertura oblonga, obliqua, subhorizontalis, infra dilatata, supra angustata; peritremate continuo, incrassato*”.



Fig. 1. *Moerchia* sp. Specimen showing the soft parts, 1.8 mm, Exp. Kavieng, 2014, stn KS57 (MNHN)

The soft parts are similar to other genus of Pyramidellidae: White translucent, two eyes very

close between the tentacles; these are triangular and separated; snout bifid. Operculum ovoid, paucispiral with the nucleus subcentral.

Remarks. In spite of being originally placed in Vitrinellidae [Tornidae], recent authors (Vaught, 1989; Sasaki, 2008) considered the family placement to be uncertain. Sasaki (2008) wrote “*Moerchinella obvoluta* (A. Adams, 1860) (Fig. 2A-B) had been regarded as a vitrinellid species in the past, but the slightly heterostrophic protoconch suggested to him the possibility of it being an Heterobranchia”.

The placement of *Moerchia* in Pyramidellidae were not sufficiently justified, because the light heterostrophy present in the larval shell of *Moerchia obvoluta* and other species studied not constituting reason enough. Other Heterobranchia of the superfamily Valvatoidea Gray, 1840 (families Cornirostridae, Ponder, 1990; Xylodisculidae Warén, 1992; Valvatidae O. F. Müller, 1774 and Hyalogyrinidae Warén & Bouchet 1993) show the same feature, even more strongly, but in spite of that the genus *Moerchia* has not been transferred to any of those families. Really, the protoconch of *Moerchia* is not clearly heterotrophic but the teleoconch. The assignment to Pyramidelloidea by Anders Warén was based on a living specimen, examined and photographed at Panglao, Philippines, 2004. (Geiger et al., 2007: fig. 3J) (Fig. 2G). We confirm this more recently with a new observation of a different species from New Guinea (Fig. 1), photographed by P. Maestrati.

In the Conchology Inc. website there are images of a *Moerchia* coming from Mactan Island, Philippines, tagged as *Moerchiella moreleti* [sic!], whose operculum is unequivocally paucispiral, which is different from the species of the family Valvatoidea, whose operculum is multispiral with a central nucleus.

The only genus in Pyramidellidae which could be similar in shell to the genus *Moerchia* is *Cyclostremiella* Bush, 1897, but this has planispiral shells or with very low spire and the protoconch is clearly heterostrophic. Finally, the soft parts are very similar to the animals of *Odostomia*, *Turbonilla* or *Chrysallidini* which is a reason of the new placement.

Initially, only two species were known in The Register of Marine Species (WoRMS) database: *Moerchia obvoluta* A. Adams, 1860 and *Moerchia introspecta* (Hedley, 1907). But in the book by Bosch et al. (1995) the species *Moerchiella* [sic.] *moreleti* [sic.] (P. Fischer, 1877) is mentioned. Higo et al. (1999) considered *M. moreleti* to be a synonym of *M. obvoluta*, but they did not give any reason for this.

In the WoRMS page, *Moerchia morleti* has been revised:

Citation: Bouchet, P. (2014). *Moerchia morleti* P. Fischer, 1877. Accessed through: World Register of Marine Species at:

<http://www.marinespecies.org/aphia.php?p=taxdetails&id=754936>

***Moerchia obvoluta* A. Adams, 1860**

Fig. 2A-B

Mörchia obvoluta A. Adams, 1860. *Annals and Magazine of Natural History* (3) 5: 301. [Type locality: Washington Sound, off Tsu-Sima, Straits of Korea].

Morchinella obvoluta (A. Adams, 1860): Sasaki, 2008. *Zoosymposia*, 1: 182, fig. 12H.

Type material. Holotype deposited in NHMUK (1878.1.28.195). Not examined. Best figuration: Higo *et al.* (1999) (species number: G990).

Description. Original description in A. Adams, 1860: “*M. parva, opaca, alba, ad peripherian angulata, striis incrementi confertis ornata; umbilicus patulo, ad sutura crenulato*”.

Dimensions: Shell of 3.29 mm in Sasaki (2008).

Habitat. Dredged from 26 fathoms [48 meters], about ¼ mile offshore in a bottom of coarse sand and broken shells (A. Adams, 1860).

Distribution. Tsu-Sima, Takano-Sima, Straits of Korea (A. Adams, 1860); Gulf of Suez (MacAndrew, 1870). *Moerchia obvoluta* A. Adams. Two specimens. Japan.

Remarks. In the original description, A. Adams (1860) explained that the genus closely resembles *Teinostoma* but the base is not covered with a callus and the mouth is not produced. Both *Morchia* and *Teinostoma*, however, together with *Vitrinella*, are not nacreous, which would seem to associate them rather with *Adeorbis* (Tornidae) and *Cyclostrema* than with *Ethalia* among the *Umboniinae* as P. P. Carpenter believes.

The MacAndrew (1870) record for the Gulf of Suez may be considered dubious, because *M. obvoluta* has been cited from Japan and the two countries are too far apart to think that it refers to the same species.

After examining the figure in Sowerby (1866, figs 42-43) and comparing it with the figure of Sasaki (2008, fig. 12H) we consider that the differential characteristic of this species is the lack of carinae which angle the shell, which causes the periphery to be rounded.

***Moerchia morleti* P. Fischer, 1877**

Fig. 2C

Moerchia morleti P. Fischer, 1877. *Journal de Conchyliologie*, 25: 202, pl. IV, fig. 1.

Description. Original description in P. Fischer (1877: 202): *T. minuta, depressa, albida; anfractus 4, priores oblique immersi, ultimus carinatus, ad suturam*

prominens, crenato-tuberculatus, medio radiatim et obsolete costulatus, ad carinam plicato-crenatus; margine dextro incrassato. Diam. maj. 2, min. 1.6 mm.

“*Coquille petite, déprimée, blanche; 4 tours de spire; les premiers obliquement immergés; le dernier caréné, saillant près de la suture, où il est crénelé, denticulé, portant des côtes rayonnantes peu marquées à sa partie moyenne, et denticulé à la périphérie; bord droit épaissi*”.

Dimensions: The holotype in MNHN (IM-2000-27396) measures 2.00 mm in maximum diameter and 1.6 mm in minimum diameter.

Habitat. Sables de fond des mers de Chine (P. Fischer, 1877); dredged at 200 m off Climaco Beach House, Mactan Island, Philippines (G. Poppe) (from the Internet).

Distribution. South China (type locality). The Philippine record in Mactan Island, tagged as *Morchiella moreleti*, in our opinion does not correspond with this taxon, and it is probably a different undescribed species (close to *Moerchia* sp. in Geiger *et al.*, 2007).

Remarks. This species is different from *M. obvoluta* because this lacks of any spiral carena.

***Moerchia introspecta* Hedley, 1907**

Fig. 2D-F

Moerchia introspecta Hedley, 1907. *Proc. Linn. Soc. N.S.W.* 32(3): 493, pl. 20, figs 47-49. [Type locality: 23°32'S, 151°45'E, off Masthead Island, Capricorn Group, Queensland, Australia].

Liotropica introspecta (Hedley, 1907): Laseron (1958). *Records of the Australian Museum*, 24(11): 170-171.

Type material. Type in AMS (C.19332). Examined in photography (Fig. 2F).

Description. Original description in Hedley (1907: 493-494): “*Shell small, solid, hemispherical, bluntly keeled at the base, rounded above. Colour white. Whorls four, parted by furrowed suture, rather rapidly increasing, first two descending, third tilted, fourth inflated, at first ascending then suddenly descending to the margin of the base, so that the spire projects obliquely in a cavity formed by the ascent of the body-whorl. Sculpture: the earlier whorls are smooth and glossy, the last wrinkled towards the suture and ornamented throughout by fine close radial hair-lines. Base slightly concave, the plane of the periphery continued in the aperture, a small umbilicus corresponding to the spire. Aperture horizontal-oblong, adnate to the keel, thickened externally*”.

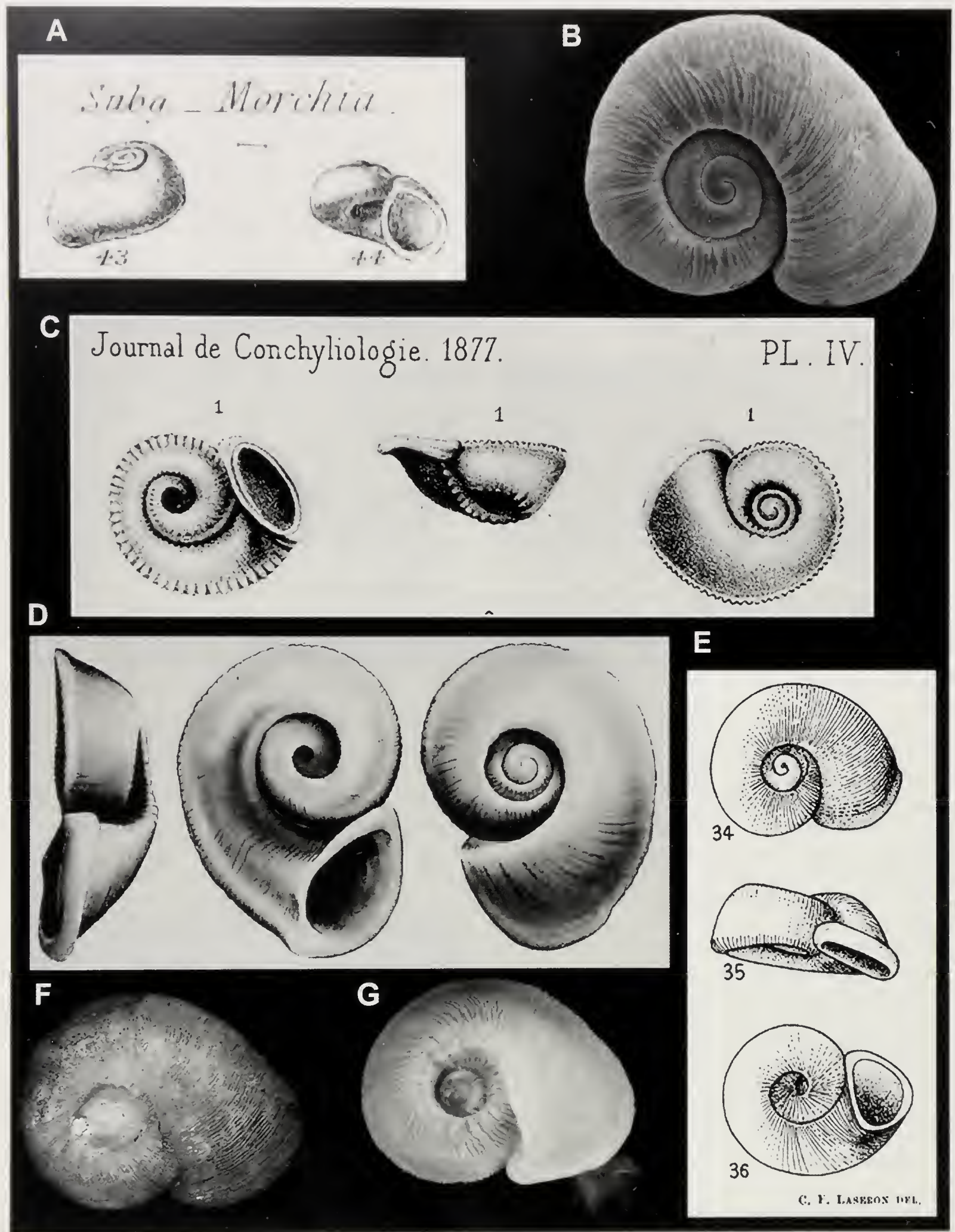


Figure 2A-G. *Moerchia* species. A-B: *Moerchia obvoluta* A. Adams, 1860: A: holotype, in G.B. Sowerby (1866, pl. 255, figs 43-44); B: shell in Sasaki (2008, fig. 12H), 3.29 mm. C: *Moerchia morleti* P. Fischer, 1877. *Journal de Conchyliologie*, 25: 202, pl. IV, fig. 1. D-F: *Moerchia introspecta* (Hedley, 1907). D: original description: 493, pl. 20, figs 47-49; E: figuration in Laseron (1958); F: type in AMS (C.19332). G: *Moerchia* sp. with soft parts, 1.8 mm, Philippines (from Geiger et al. 2007)

Dimensions: type: maximum diam. 2.25 mm; minimum diam. 1.6 mm; height 0.9 mm. Shells from Darwin are smaller: maximum diameter 1.8; minimum, 1.4 mm.

Habitat. This species is common in 31-36 m (Hedley, 1907).

Distribution. Australia, around Masthead Island, Queensland (Hedley, 1907) and Darwin (Laseron, 1958).

Remarks. Hedley (1907) says: "The Chinese *M. moreleti* Fischer, 1877 closely resembles it, but, judging from literature, differs in sculpture, and especially by the denticulate periphery".

Moerchia perforata spec. nov.
Figs 3A-G, 4A-E

Type material. Holotype (MNHN IM-2000-27245, s, Fig. 3A-C) (Stn. DW1762) and one paratype (Stn. DW1781) also in MNHN (IM-2000-27246, s, Fig. 3D).

Type locality. Solomon Islands: Stn. DW1762, 8°40'S - 160°04'E, 396-411 m [SALOMON 1].

Material examined. (6 s): Solomon Islands: 1 s, Exp. SALOMON I, Stn. DW1762, 8°40'S - 160°04'E, 396-411 m (holotype); 1 s, Exp. SALOMON I, Stn. DW1781, 1036-1138 m (paratype). Philippines: 2 s, Panglao, Bolod, PANGLAO 2004, Stn. T4, 9°33.0'N - 123°48.5'E (MNHN); 2 s, Bohol, Cortes, Stn. G1, 9°11.9'N - 123°49.5'E, 100 m (MNHN).

Description. Shell very small, solid, crushed, spire formed by just 2 ½ whorls, with a perforated surface, very wide umbilicus and a mouth in basal position.

Protoconch with little more than one smooth whorl, although its end is not clearly observable; slightly heterostrophic, measuring between 300-320 µm and situated at a lower level than the rest of the shell. The nucleus has a diameter of about 90 µm. Teleoconch with over 1 ½ whorls, ornamented with 3 carinae with small nodules which angled the shell and fine axial lines that are distributed across its surface; of the three carinae, one is subsutural and the other two delimiting the periphery, the basal carina is the most prominent. The periphery is straight or slightly concave, and so is the base.

The last half whorl crosses over the previous one, then leans toward the base. Aperture oval, located in a basal position, continuous, with a very thick peristome. Very wide umbilicus that allows seeing the previous whorls, delimited by fine nodules; just inside fine growth lines can be observed.

Dimensions: the holotype is 1.5 mm in diameter; the paratype measures 1.23 mm in maximum diameter.

Habitat. Bathyal species dredged between 396-411 m and between 1036-1138 m.

Distribution. Only known from Solomon Islands (its type locality) and the Philippines.

Remarks. *Moerchia perforata* spec. nov. can be separated from the other known species by the presence of three nodulous carinae which angle the shell and its surface is covered by numerous pits (micro-perforations).

Due the large distance between its collecting points, the shells from Philippines and Solomon could be different species, but we have not established enough morphological differences to confirm this point and hence prefer to keep them as conspecific.

Etymology. The name alludes to the surface of the shell, which is covered by very small pits (micro-perforations).

Moerchia deformata spec. nov.
Fig. 5A-E

Type material. Holotype in MNHN (IM-2000-27247, s) (Fig. 5A-C).

Type locality. Solomon Islands, Exp. SALOMON I, Stn. DW1767, 8°19'S - 160°14'E, 98-200 m.

Description. Shell very small, solid, crushed, spire formed by 2 ¾ whorls, carinate and widely umbilicated. Protoconch with one whorl, a nucleus of about 160 µm, and a diameter which could be about 400 µm (with doubts due the presence of various scars being not clear which is that of the end of the protoconch); this protoconch is bulbous and slightly heterostrophic, located at a lower level than the rest of the shell. Teleoconch with 2 whorls and 2 carinae which angled the shell and are ornamented by fine axial ribs, more marked on the base, forking near the suture.

In the subsutural area of the last whorl the shell is elevated, forming a marked carina which angles it, its margin being not denticulate or crenulate; a second carina, located at the base of the periphery, is less robust than the subsutural one but more prominent, and its margin is denticulate. There is no cord or periumbilical carina. The shell is dorsally convex and basally concave. Umbilicus very large, inside only thick axial lines are visible. Aperture oval, very thick, basally oriented.

Dimensions: The holotype measures 1.93 mm in diameter.

Habitat. Species dredged in circalitoral deep bottom, between 98-200 m.

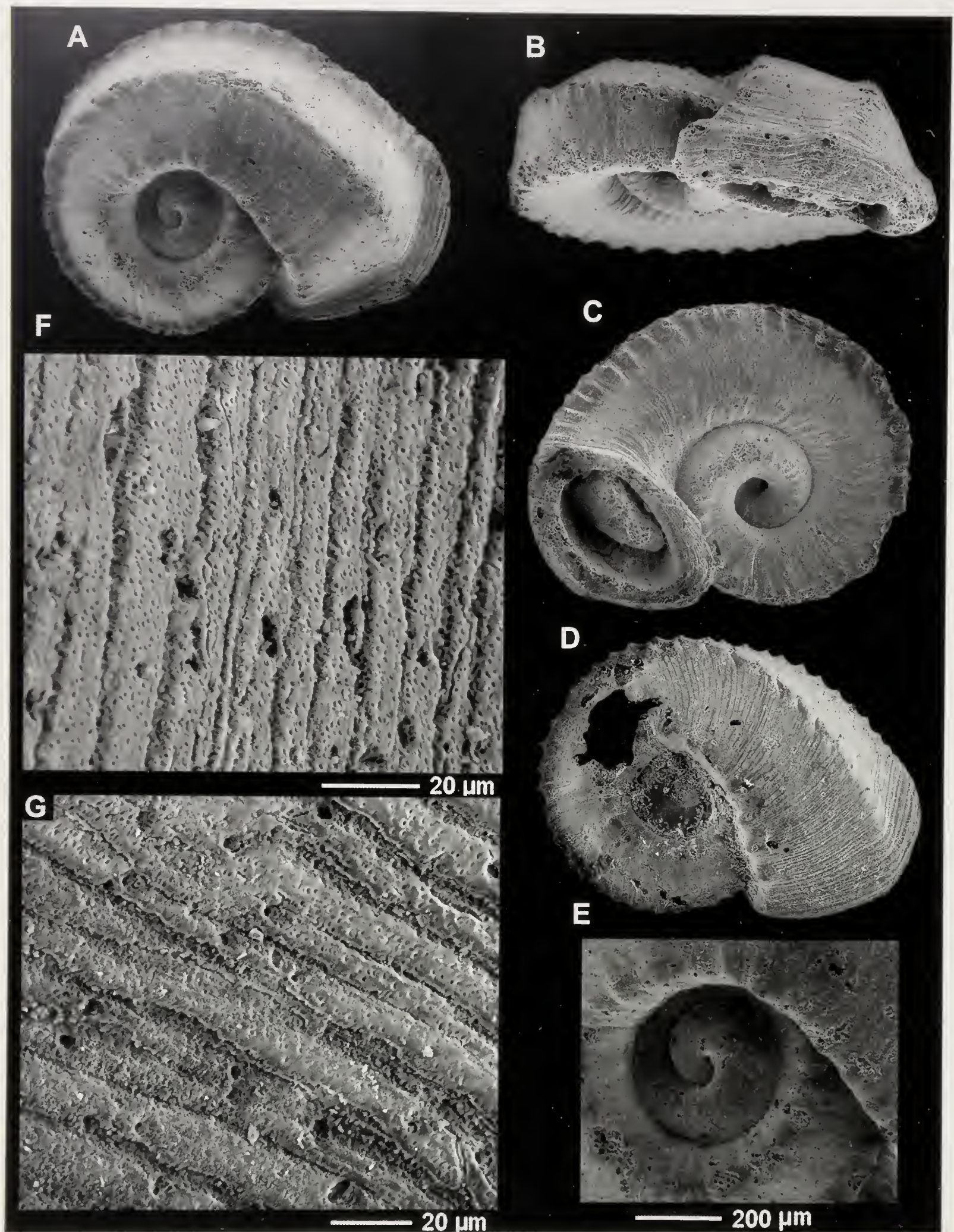


Figure 3A-G. *Moerchia perforata* spec. nov. A-C: holotype, 1.5 mm, Stn. DW1762 (MNHN); D: paratype, 1.23 mm, Stn. DW1781 (MNHN); E: protoconch; F-G: microsculpture. All from Solomon Islands

Distribution. Only known from Solomon Islands, the type locality.

Remarks. *Moerchia deformata* spec. nov. is a little similar to *M. morleti*, from which it differs by the following characters:

1-*Moerchia deformata* has a subsutural carina which is not crenulated or clearly denticulate, in opposition to that of *M. morleti*;

2- In *M. deformata*, the axial ribs are very marked on the entire shell, especially on the base, while in the description of *M. morleti* is said that “*medio radiatum et obsolete costulatus*”.

3- There are no data about the size of the protoconch, but that of *M. deformata* spec. nov. is relatively larger compared to the size of the shell and in comparison with that of the drawing of *M. morleti*.

4- The drawings of the type of *M. morleti* show a shell with a little more of 3 whorls for a maximum diameter of 2 mm; the holotype of *M. deformata* has 2 $\frac{3}{4}$ whorls for a similar size.

5- *M. morleti* present the external border clearly denticulate, and it is possible to count on the last whorl 41 prominences in the Fig. 2C (in fig. 1-left) and 57 (in fig. 1 right). The holotype of *M. deformata* has the prominences on the peripheral carina very small and its number is about 86.

Another point that may be important to establish *M. deformata* spec. nov. and *M. morleti* as two different species is the enormous distance that separates them. *M. morleti* is quoted from South China, while *M. deformata* spec. nov. comes from the Solomon Islands.

Moerchia deformata differs from *M. perforata* by lacking the peripheral carina and by the larger size of its protoconch, and the different microsculpture.

Etymology. The specific name alludes to the irregular coiling of the shell.

ACKNOWLEDGEMENTS

The authors thank Philippe Bouchet for the loan of the material, and the staff from the MNHN (Department of Malacology) for their help and the study of the material collected in numerous expeditions; and also to Jesús Méndez and Inés Pazos for the SEM photographs made in the Centro de Apoyo Científico y Tecnológico a la Investigación (CACTI) of the University of Vigo. António A. Monteiro made the English revision. We thanks also an anonymous referee for the useful notes and advice.

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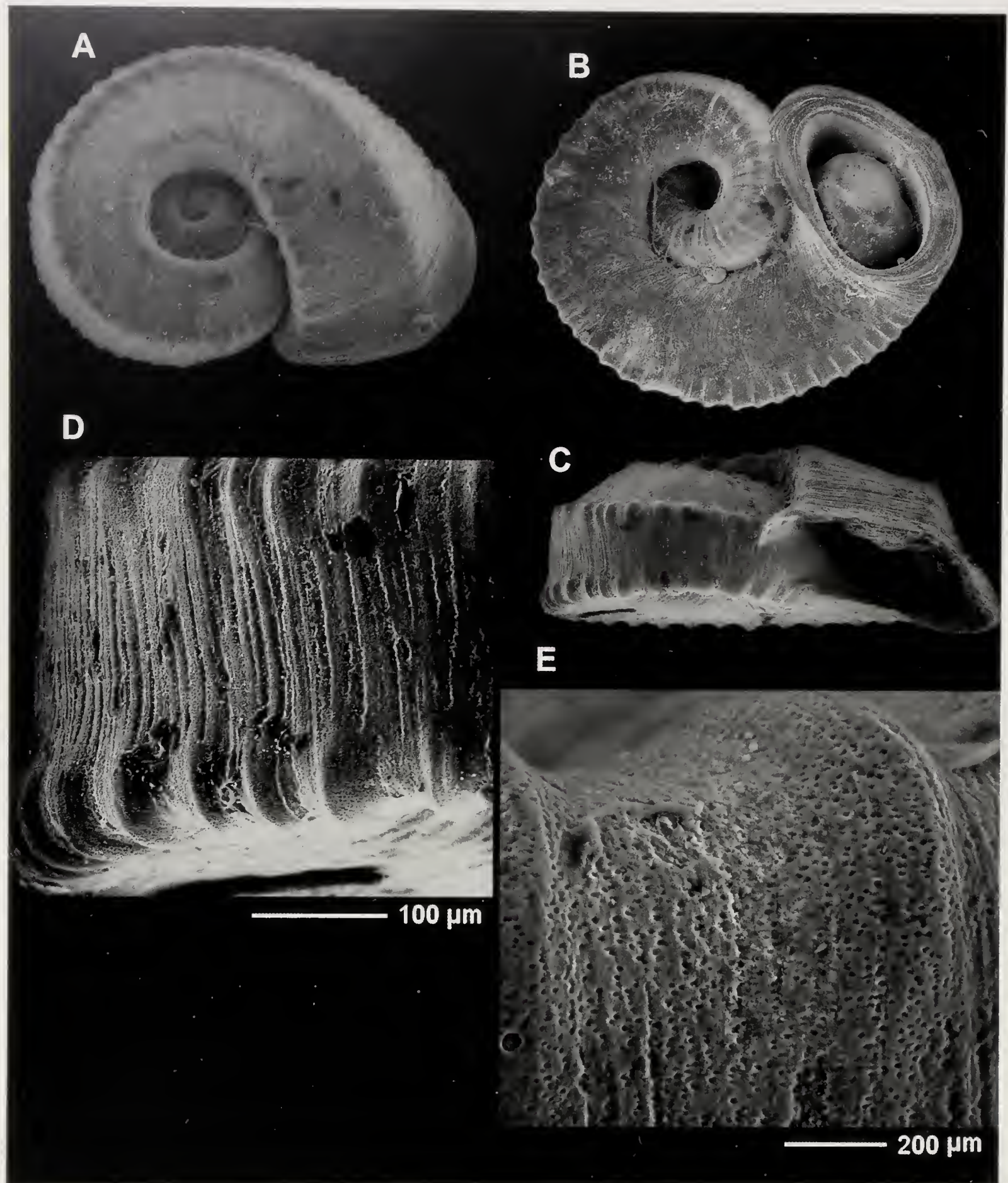


Figure 4A-E. *Moerchia perforata* spec. nov. A-B: shell, 1.27 mm, Philippines, Bohol, Cortes, Stn. G1, 100 m; C: shell, 1.4 mm, Philippines Panglao, Bolod, Stn. T4, 82 m; D-E: microsculpture

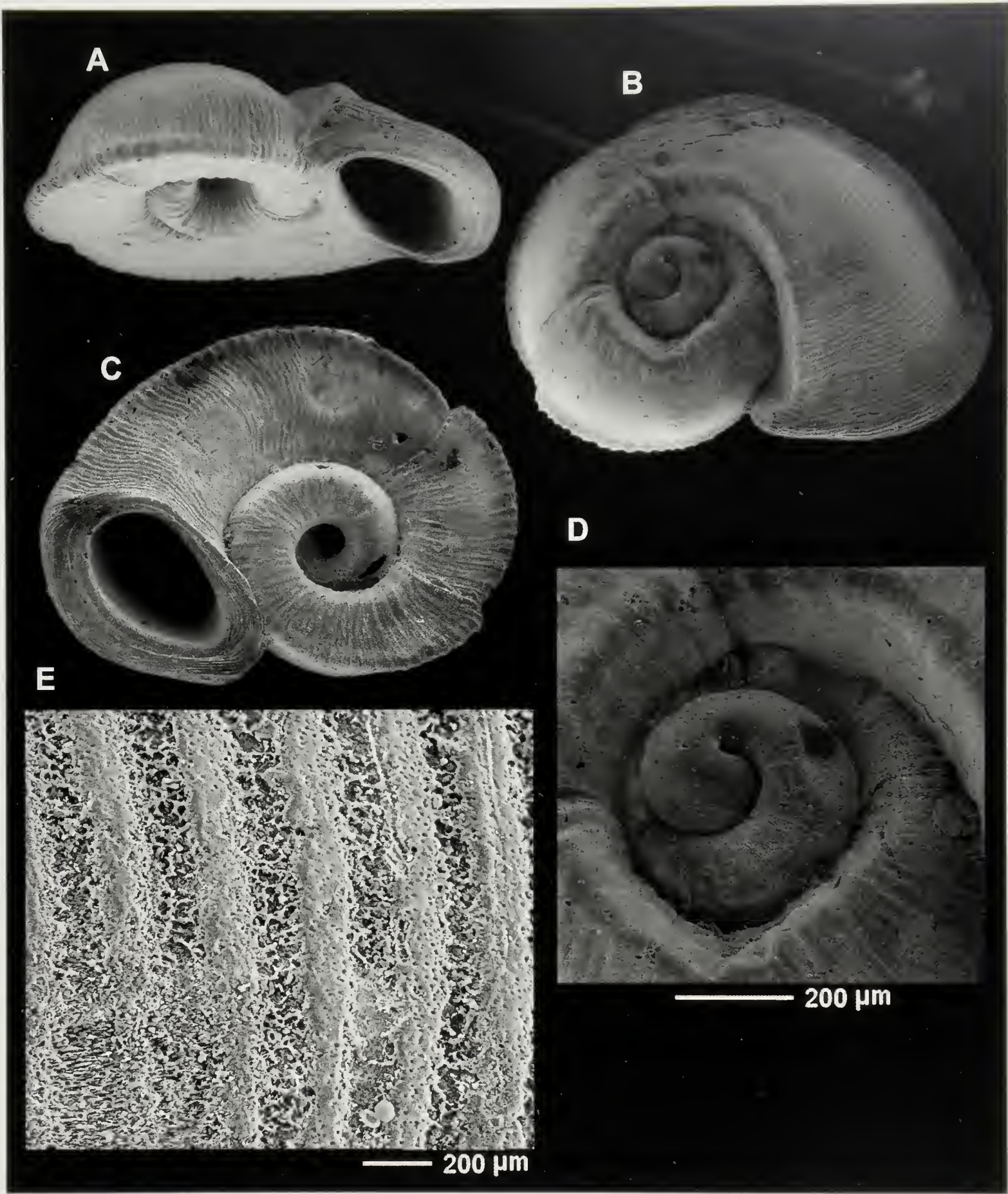


Figure 5A-E. *Moerchia deformata* spec. nov. A-C: holotype, 1.93 mm, Solomon Islands, Stn. DW1767, 98-200 m (MNHN); D: protoconch of the holotype; E: microsculpture