

Report on the Raphitomidae Bellardi, 1875 (Mollusca: Gastropoda: Conoidea) from the China Seas

Baoquan Li^a and Xinzheng Li^{b*}

^aYantai Institute of Coastal Zone Research, Chinese Academy of Science, Yantai, PR China;

^bInstitute of Oceanology, Chinese Academy of Sciences, Qingdao, PR China

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Twenty-seven Raphitomidae species belonging to nine genera, are recorded from the China Seas, including two new species, which are described here: *Asperdaphne paramoretonica* sp. nov., *Daphnella inangulata* sp. nov. Eight species are recorded for the first time from the China Seas.

Keywords: Raphitomidae; China Seas; *Asperdaphne paramoretonica* sp. nov.; *Daphnella inangulata* sp. nov.; new records

Introduction

Taylor et al. (1993), in their reclassification of the superfamily Conoidea, recognized several subfamilies within the restricted family Turridae H. & A. Adams, 1853. More recently, Bouchet et al. (2011) published a genus-level reclassification of Conoidea, in which the subfamily Raphitomininae is elevated to a full family. The raphitomid genera *Kermia*–*Pseudodaphnella* complex constitutes a group with diverse and easily recognizable species by sculpture and colour pattern. Based on the cytochrome oxidase subunit I gene and morphological characters, Fedosov and Puillandre (2012) recently studied the phylogeny and taxonomy of the *Kermia*–*Pseudodaphnella* complex. Their results indicated the close relationships of the genera *Kermia* and *Pseudodaphnella* with members of some other conoidean genera, and high developmental plasticity in the evolutionary history of this group.

In China, the turrids have been poorly studied, with the exception of a few common species reported in some mollusc papers such as those by Yen (1941), Ma (1983, 2004) and Chang (2001). When we sorted the mollusc collection in the Institute of Oceanology, Chinese Academy of Sciences (IOCAS), numerous turrid specimens from the Bohai Gulf, Yellow Sea and East and South China Seas were identified and reported (Liang Li 2007a, 2007b; 2008a, 2008b; Li, Li and Kilburn 2010a; Li, Kilburn and Li 2010b). The fauna of Raphitomidae of the China Seas comprises 109 species (reported as subfamily Daphnellinae Hedley 1922, see Li 2008); however, 103 of these species were only reported from the Taiwan area (China) and were not collected by IOCAS in their many surveys since the 1950s. The aim of this paper is to complete the records of Raphitomidae from the China Seas. As a series report on the turrid material, this paper reports 27 species of the family Raphitomidae (Table 1), including 21 species that are not included in the

*Corresponding author. Email: lixzh@qdio.ac.cn

Table 1. Measurements (in mm) for all Raphitomidae specimens from the China Seas.

| Species | Specimens/type materials | Length | Width | Aperture | W/L | A/L |
|---------------------------------------|--------------------------|--------|-------|----------|------|------|
| <i>Asperdaphne</i> | CN L72B-39 | 14.6 | 5.2 | 7.5 | 0.36 | 0.51 |
| <i>paramoretonica</i> sp. nov. | CN S237B-6 | 13.7 | 4.8 | 6.5 | 0.35 | 0.47 |
| | CN IV220B-33 | 11.8 | 4.0 | 5.5 | 0.34 | 0.47 |
| <i>Asperdaphne perissa</i> | CN 57-033 | 23.9 | 9.5 | 11.0 | 0.40 | 0.46 |
| | CN 57-033 | 23.3 | 8.2 | 11.5 | 0.35 | 0.49 |
| | — | 20.2 | 7.5 | 10.4 | 0.37 | 0.51 |
| | CN N32B-37 | 13.3 | 5.0 | 6.5 | 0.38 | 0.49 |
| | CN y206 | 8.0 | 3.1 | 3.4 | 0.39 | 0.43 |
| <i>Daphnella inangulata</i> sp. nov. | MBM-Li | 7.9 | 3.1 | 4.1 | 0.39 | 0.52 |
| <i>Daphnella interrupta</i> | CN 63M-253 | 12.2 | 4.2 | 7.0 | 0.34 | 0.57 |
| <i>Daphnella mitrellaformis</i> | CN V562B-15 | 24.6 | 9.1 | 14.1 | 0.37 | 0.57 |
| | CN V526B-31-2 | 17.3 | 6.9 | 10.6 | 0.40 | 0.61 |
| | CN V526B-31-1 | 19.5 | 6.9 | 10.9 | 0.35 | 0.56 |
| | CN V507B-17 | 27.8 | 9.8 | 16.3 | 0.35 | 0.59 |
| | CN V469B-35 | 18.2 | 7.2 | 10.5 | 0.40 | 0.58 |
| <i>Daphnella reeveana</i> | CN 58M-1122 | 8.2 | 3.0 | 3.8 | 0.37 | 0.46 |
| <i>Daphnella</i> cf. <i>suluensis</i> | CN V520A | 7.5 | 3.1 | 3.9 | 0.41 | 0.52 |
| <i>Eucyclotoma cymatodes</i> | CN 93NS8-3 | 6.2 | 2.8 | 3.5 | 0.45 | 0.56 |
| | — | 4.7 | 1.9 | 2.5 | 0.40 | 0.53 |
| | CN 58M-1542 | 7.0 | 3.3 | 4.0 | 0.47 | 0.57 |
| <i>Eucyclotoma lactea</i> | CN 58 M-1514 | 18.1 | 6.1 | 8.2 | 0.34 | 0.45 |
| <i>Eucyclotoma tricarinata</i> | CN 58M-1542 | 6.0 | 2.9 | 3.5 | 0.48 | 0.58 |
| <i>Eucyclotoma</i> sp. | CN 58 M-1542-1 | 12.9 | 5.6 | 5.9 | 0.43 | 0.46 |
| <i>Gymmobela ioessa</i> | CN V568B-3 | 37.5 | 14.5 | 18.5 | 0.39 | 0.49 |
| | CN Ky9B-22-1 | 40.6 | 16.5 | 21.8 | 0.41 | 0.54 |
| | CN Ky9B-22-2 | 39.7 | 16.0 | 20.9 | 0.40 | 0.53 |
| | CN Ky9B-22-3 | 28.5 | 11.5 | 14.5 | 0.40 | 0.51 |
| | KY10B-41 | 30.3 | 11.8 | 13.7 | 0.39 | 0.45 |
| <i>Kermia barnardi</i> | CN 58M-152 | 6.1 | 2.3 | 2.8 | 0.38 | 0.46 |
| <i>Kermia bifasciata</i> | CN 78M-121 | 4.5 | 2.0 | 2.5 | 0.44 | 0.56 |
| <i>Kermia cavernosa</i> | | 7.3 | 2.8 | 3.6 | 0.38 | 0.49 |
| | | 6.4 | 2.3 | 3.1 | 0.36 | 0.48 |
| <i>Kermia pumila</i> | CN 58M-1522 | 3.4 | 1.4 | 1.7 | 0.41 | 0.50 |
| <i>Kuroshiodaphne</i> | CN 171 | 26.7 | 7.1 | 12.6 | 0.27 | 0.47 |
| <i>supracancellata</i> | — | 25.8 | 6.4 | 12.3 | 0.25 | 0.48 |
| | — | 29.5 | 7.2 | 12.7 | 0.24 | 0.43 |
| | — | 21.5 | 5.8 | 9.9 | 0.27 | 0.46 |
| | — | 15.5 | 4.5 | 7.5 | 0.29 | 0.48 |
| <i>Pseudodaphnella alternans</i> | CN 78M-111-1 | 5.1 | 2.2 | 2.5 | 0.43 | 0.49 |
| | CN 78M-111-2 | 5.2 | 2.5 | 2.6 | 0.48 | 0.50 |
| | CN 78M-111-3 | 3.8 | 1.7 | 2.0 | 0.45 | 0.53 |
| <i>Pseudodaphnella?</i> | CN 75M-498 | 5.1 | 1.6 | 2.5 | 0.31 | 0.49 |
| <i>crasselirata</i> | | | | | | |
| <i>Pseudodaphnella granicostata</i> | CN 75M-356-1 | 12.8 | 5.4 | 6.9 | 0.42 | 0.54 |

(Continued)

Table 1. (Continued).

| | | | | | | |
|---------------------------------------|---------------|------|-----|-----|------|------|
| <i>Pseudodaphnella philippinensis</i> | CN 58M-1542-1 | 14.3 | 6.3 | 6.9 | 0.44 | 0.48 |
| | CN 58M-1542-1 | 10.5 | 4.3 | 5.5 | 0.41 | 0.52 |
| | CN 58M-1542-2 | 11.6 | 5.0 | 5.9 | 0.43 | 0.51 |
| | CN 58M-1542-2 | 13.6 | 6.6 | 7.0 | 0.49 | 0.51 |
| <i>Pseudodaphnella rubroguttata</i> | CN 58M-1542-3 | 10.5 | 4.8 | 5.2 | 0.46 | 0.50 |
| | CN 78M-111 | 6.2 | 2.5 | 2.9 | 0.40 | 0.46 |
| <i>Pseudodaphnella spyridula</i> | CN SX74013 | 3.5 | 1.2 | 1.2 | 0.34 | 0.34 |
| | CN A-595 | 6.2 | 1.9 | 2.8 | 0.31 | 0.45 |
| <i>Vepracula</i> sp. | CN K146A-15 | 8.8 | 3.7 | 4.3 | 0.42 | 0.49 |

Note: — Missing CN.

list of 109 species (Li 2008), two new species, and eight species that have not previously recorded from the China Seas.

Material and methods

The shells were collected during investigations carried out since the 1950s, including the “National Comprehensive Oceanography Survey” (NCOS, 1958–1960), “China–Vietnam Marine Resource Joint Investigation of the Beibu Gulf” (1959–1962) and “China–Germany Marine Biota Cooperative Investigation of Hainan Island, China” (1990–1992). This material was collected from localities in the East and South China Seas, including the areas off Fujian, Guangdong, Beibu Gulf (Gulf of Tonkin), Hainan Island, Xisha Islands (= Paracel Islands), Nansha Islands (= Spratly Islands), as well as the Yellow Sea and Bohai Gulf.

All the specimens examined are deposited in the Marine Biological Museum, Chinese Academy of Sciences (MBMCAS) in the IOCAS. The genera and species are arranged alphabetically in the text. Measurements are given for no more than five specimens of each species to shorten the text. If more than five are available, the largest, the smallest and three medium-sized specimens were measured. The distributions of each species in this paper are provided not just from the China Seas, but including other countries and regions for reference. To reduce the length of this paper, most of the species are not provided with a normal description, with the exception of the two new species and three other species that need to be re-described because their original descriptions were too short to show the important characters for identification. These three species are *Eucyclotoma cymatodes* (Hervier 1897a), *Kermia cavernosa* (Reeve, 1845) and *Kuroshiodaphne supracancellata* (Schepman 1913). In the synonymy sections, some works are not listed with reference to pages and/or plates because of the absence of illustrations.

The following abbreviations are used in the text: Institution abbreviations: AMS, the Australian Museum, Sydney, Australia; IOCAS, Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China; MBMCAS, Marine Biological Museum of the Chinese Academy of Sciences in the IOCAS; MNHN, Muséum national

d'Histoire Naturelle, Paris, France; NHMUK, The Natural History Museum, London, UK; and ZMA, Zoological Museum of Amsterdam, now transferred to the Naturalis Biodiversity Center, Leiden, the Netherlands.

Other abbreviations: AT, Agassiz trawl; BT, beam trawl; CN, preliminary registration number when the sample(s) was collected; Spec, specimen; ECS, the East China Sea; SCS, the South China Sea Is, Islands.

Species list

The species with an asterisk “*” are new records from the China Seas.

- Asperdaphne paramoretonica* sp. nov. (Figure 1A)
Asperdaphne perissa (Hedley 1909) (Figure 2A)
Daphnella inangulata sp. nov. (Figure 1B)
 **Daphnella interrupta* Pease, 1860 (1C)
Daphnella mitrellaformis (Nomura 1940) (Figure 2B)
Daphnella reeveana (Deshayes 1863) (Figure 3E)
Daphnella cf. *suluensis* Schepman 1913 (Figure 1D)
 **Eucyclotoma cymatodes* (Hervier 1897b) (Figure 1E, F)
Eucyclotoma lactea (Reeve 1843) (Figure 2C)
Eucyclotoma tricarinata (Kiener 1840) (Figure 1G)
Eucyclotoma sp. (Figure 1H)
 **Gymnobela ioessa* Sysoev, 1997 (Figure 2D)
Kermia barnardi (Brazier 1876) (Figure 3A)
Kermia bifasciata (Pease 1860) (Figure 3B)
 **Kermia cavernosa* (Reeve, 1845) (Figure 3C)
Kermia pumila (Mighels 1845) (Figure 3D)
 **Kuroshiodaphne supracancellata* (Schepman 1913) (Figure 2E)
 **Pseudodaphnella alternans* (E. A. Smith 1882) (Figure 3F)
 **Pseudodaphnella?* *crasselirata* (Hervier 1897a) (Figure 3G)
Pseudodaphnella granicostata (Reeve, 1846) (Figure 4A)
Pseudodaphnella philippinensis (Reeve 1843) (Figure 4B)
Pseudodaphnella rubroguttata (Adams 1872) (Figure 3H)
 **Pseudodaphnella spyridula* (Melvill and Standen 1896) (Figure 3I)
Tritonoturris oxyclathrus (Martens 1880) (Figure 2F)
Tritonoturris scalaris (Hinds 1843) (Figure 2G)
Tritonoturris macandrewi (E. A. Smith 1882) (Figure 2H, I)
Veprecula sp. (Figure 4C)

Systematic account

Family **RAPHITOMIDAE** Bellardi, 1875

Genus *Asperdaphne* Hedley, 1922

Type species *Daphnella versivestita* Hedley, 1912



Figure 1. Species of family Raphitomidae. (A) *Asperdaphne paramoretonica* sp. nov. (Holotype SCS, CN L72B-39); (B) *Daphnella inangulata* sp. nov. (Holotype locality, SCS); (C) *Daphnella interrupta* Pease, 1860 (SCS, CN 63M-253); (D) *Daphnella* cf. *suluensis* Schepman, 1913 (ESC, CN V520A); (E, F) *Eucyclotoma cymatodes* (Hervier 1897a) (Nansha Islands, CN 93NS8-3; Xisha Islands, CN 58M-1542); (G) *Eucyclotoma tricarinata* (Kiener 1840) (Xisha Islands, CN 58M-1642); (H) *Eucyclotoma* sp. (Xisha Islands, CN 58 M-1542-1).

Diagnosis

Resembling species of genus *Tritonoturris* Dall, 1924, but protoconch paucispiral of 1.5–2 whorls, bluntly papilliform, with microscopic spiral threads or rows of pits; teleconch sculpture strongly cancellate, and one or two spiral keels on last whorl. Adult length 4.5–24 mm.

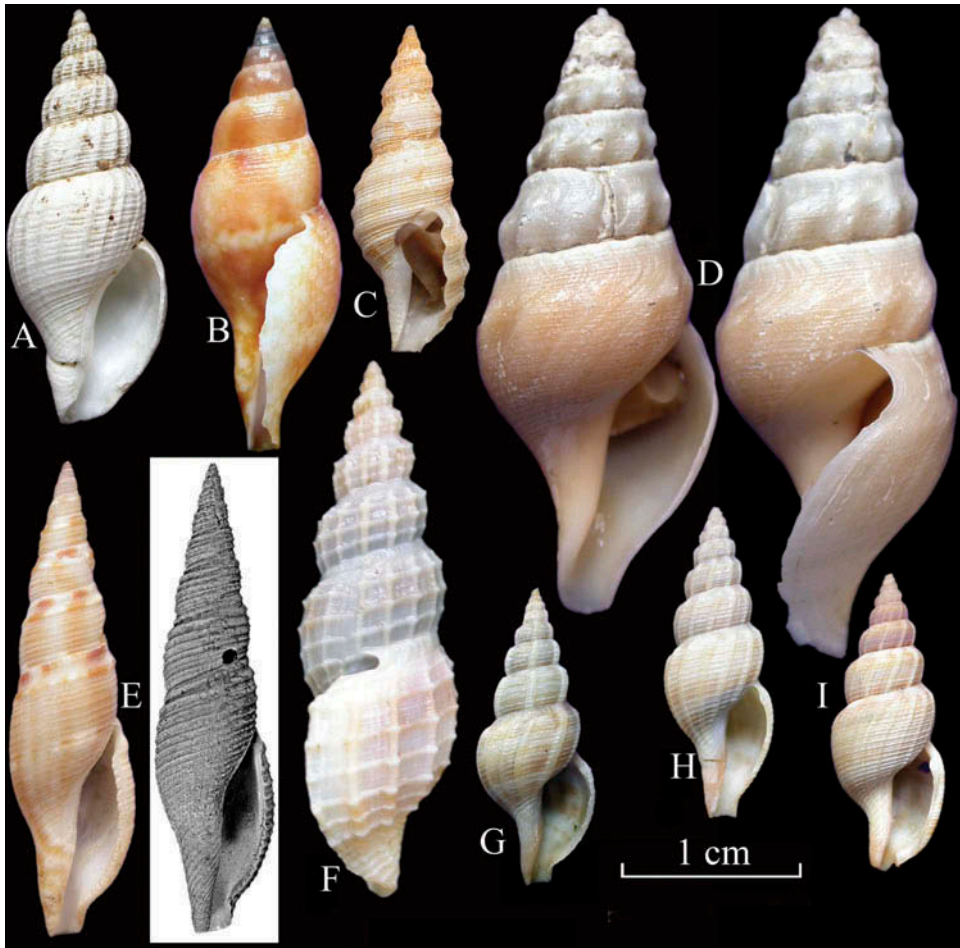


Figure 2. (A) *Asperdaphne perissa* (Hedley 1909) (Bohai Gulf, CN 57-033); (B) *Daphnella mitrellaformis* (Nomura 1940) (ECS, CN V562B-15); (C) *Eucyclotoma lactea* (Reeve 1843) (Xisha Islands, CN 58 M-1514); (D) *Gymnobela ioessa* Sysoev, 1997 (SCS, CN V568B-3); (E) **Kuroshiodaphne supracancellata* (Schepman 1913) (left: SCS, CN 171; right: holotype, provided by Dr Kilburn R. N., personal communication); (F) *Tritonoturris oxyclathrus* (Martens 1880) (SCS, CN L67B-8); (G) *Tritonoturris scalaris* (Hinds 1843) (SCS, RN MBM081112); (H, I) *Tritonoturris macandrewi* (E. A. Smith 1882) (SCS, CN Q283B-22 and X200b-63).

Remarks

Some *Kuroshiodaphne* Shuto, 1965 species may be superficially similar to *Asperdaphne* but differ in the diagonally cancellate sculpture of their protoconch, whereas *Asperdaphne* spp. have a protoconch with microscopic spiral threads or rows of pits.

Distribution

Hong Kong (China); Australia, New Zealand, Indonesia, Japan.

Asperdaphne paramorettonica sp. nov.
(Figure 1A)

Types

Holotype: SCS: 1 spec, CN L72B-39, 20°45' N, 111°00' E, silty mud, 32 m, BT, 26 April 1959. Paratypes: SCS: 1 spec, CN S237B-6, 23°24' N, 117°00' E, silty mud, 14 m, AT, 24 April 1960; 1 spec, CN IV220-B, 18°15' N, 108°45' E, coarse sand and shell debris, 38 m, AT, 16 May 1960.

Description

Shell fusiform, 14.6 × 5.2 mm, with large, wide, long aperture, siphonal canal long, gradually tapering, end broad, truncate, expanded. Outer lip slightly thickened; anal sinus shallow, presenting converse L. Whorls convex, especially the body whorl, weakly bicarinate. Overall sculpture cancellate, with subequal spiral and axial ridges, forming nodules where they cross. Spiral ridges three on first teleoconch whorl, about nine on penultimate whorl, 30 on base of last whorl. Axial ribs almost straight below suture, suture to suture, about 26 on penultimate whorl. Uniform orange brown. Protoconch damaged.

Etymology

“par”, Greek, *para-* = close to, similar to, resembling. The specific name implies the similarity of the new species with *Asperdaphne moretonica* Smith, 1882.

Distribution

Only known from the type locality SCS, China.

Remarks

The new species is very close to *Asperdaphne moretonica* Smith, 1882, but differs from it with its less coarse, less nodular shell sculpture.

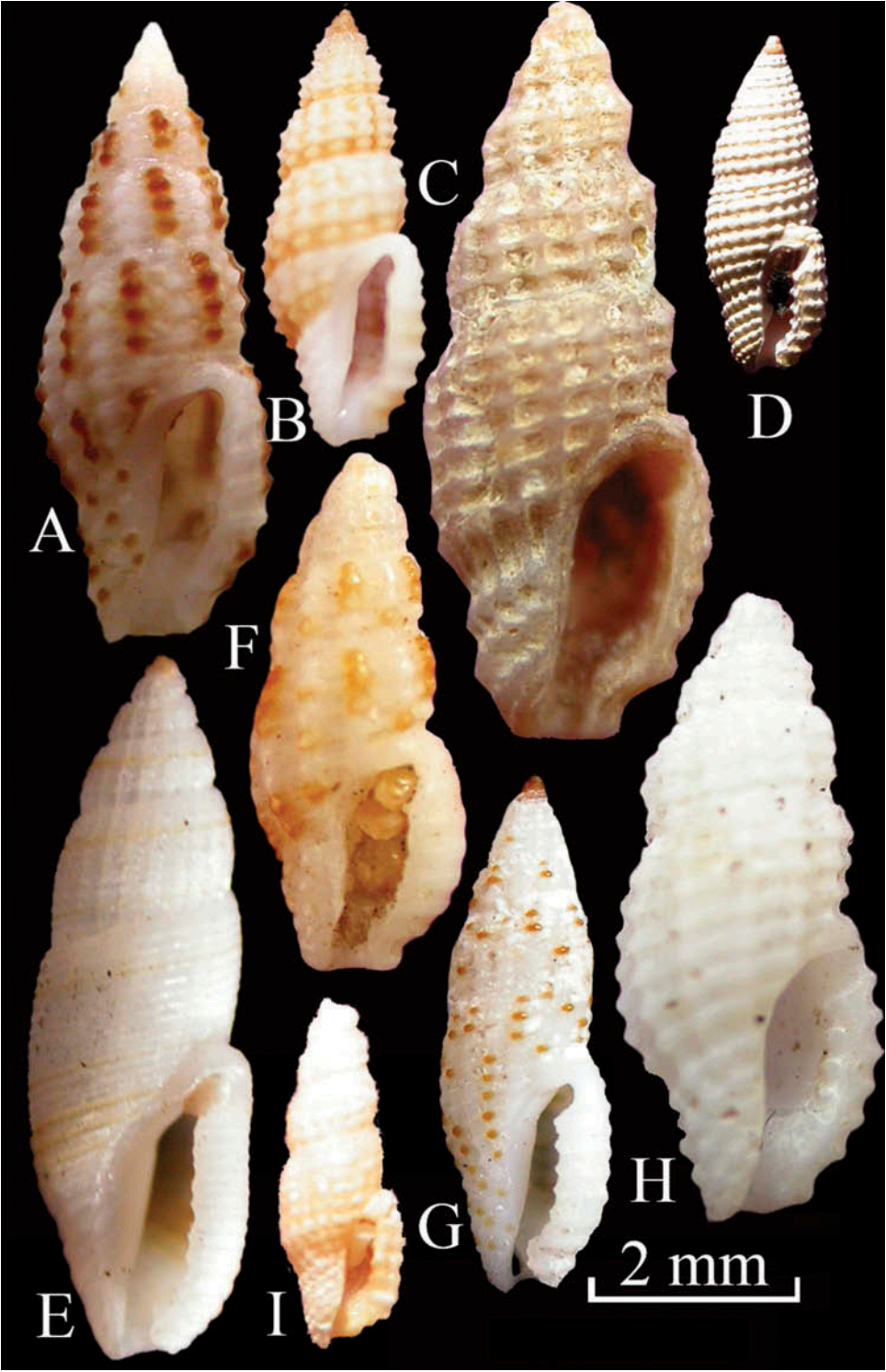
Asperdaphne perissa (Hedley 1909)
(Figure 2A)

Mangelia perissa Hedley, 1909, p. 459, pl. 44, figs. 96, 97.
Asperdaphne perissa – Hedley, 1922, p. 342.

Material examined

Bohai Gulf and Yellow Sea. 2 specs, CN 57–033, 14 April 1957; 1 spec, CN 53–14, 38°46.2' N, 122°20.5' E, sand, mud and shell debris 51 m; 1 spec, CN y206, 38°46.2' N, 122°20.5' E, 51.5 m, 25 October 1957.

SCS. 1 spec, CN N32B-37, 20°09' N, 110°15' E, coarse sand and gravel, 68 m.



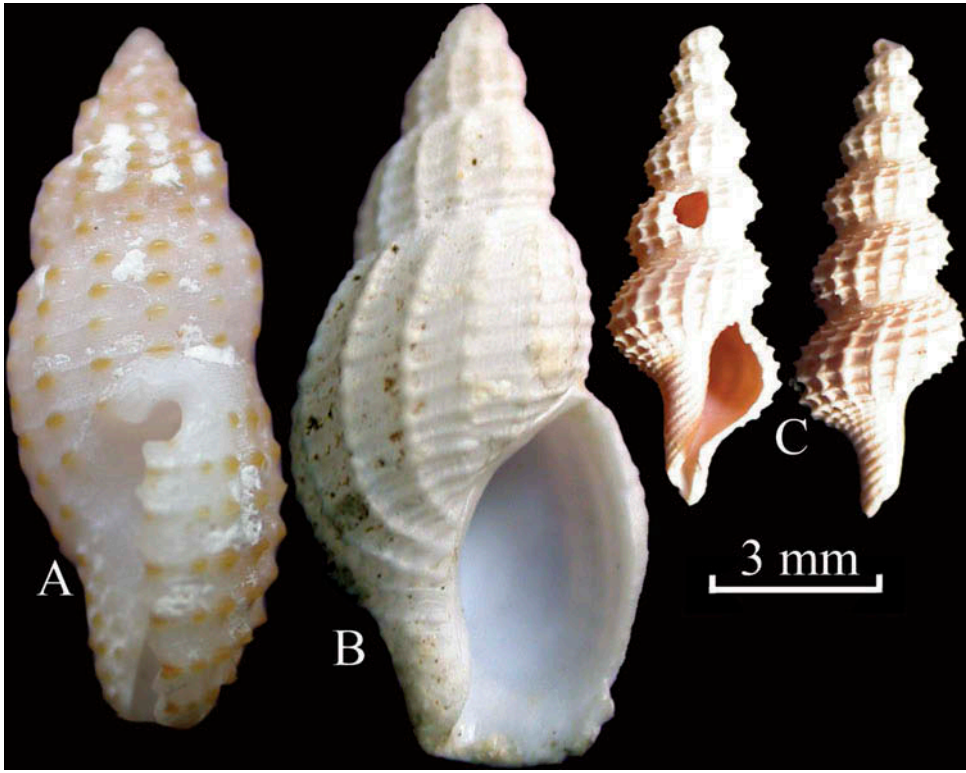


Figure 4. (A) *Pseudodaphnella granicostata* (Reeve, 1846) (Xisha Islands, CN 75M-356-1); (B) *Pseudodaphnella philippinensis* (Reeve 1843) (Xisha Islands, CN 58M-1542-1); (C) *Vepracula* sp. (SCS, CN K146A–15).

Holotype AMS C. 27443, 7.4×2.9 mm, Cairns Reef Lagoon and between Cairns Reef and Hope Island, Great Barrier Reef, Queensland.

Distribution

Bohai Gulf, Yellow Sea, Taiwan and SCS; Japan, Australia.

Remarks

Kuroda et al. (1971) reported the colour of the species, based on specimens from Japanese waters, with light yellowish brown, bearing two vertical and lateral brown

Figure 3. (A) *Kermia barnardi* (Brazier 1876) (SCS, CN 58M-152); (B) *Kermia bifasciata* (Pease 1860) (Xisha Islands); (C) *Kermia cavernosa* (Reeve, 1845) (Yellow Sea); (D) *Kermia pumila* (Mighels 1845) (Xisha Islands, CN 58M-1522); (E) *Daphnella reeveana* (Deshayes 1863) (Xisha Islands, CN 58M-1122); (F) *Pseudodaphnella alternans* (E. A. Smith 1882) (SCS, CN 78M-111-1); (G) *Pseudodaphnella?* *crasselirata* (Hervier, 1897b) (Xisha Islands, CN 75M-498); (H) *Pseudodaphnella rubroguttata* (Adams 1872) (SCS, CN 78M-111); (I) *Pseudodaphnella spyridula* (Melville and Standen 1896) (Xisha Islands, CN SX74013).

zones. All our five specimens are pure white, without colourful zones. This may be caused by long-term preservation in alcohol. The habitat of this species was muddy sand and gravel sediments.

Genus *Daphnella* Hinds, 1844

Type species *Pleurotoma lymneiformis* Kiener, 1840

Remarks

Laseron (1954) proposed *Paradaphne* Laseron, 1954 as a new genus differing from *Daphnella* Hinds, 1844 only geographically, without morphological differences. That is to say, Laseron (1954) classified the Indo-Pacific species as *Paradaphne* while maintaining the Atlantic species in *Daphnella*. Powell (1966) considered *Paradaphne* as a synonym of *Daphnella* and indicated the range of recent species of this genus as from the Philippines, Japan, Australia, New Zealand, New Caledonia, Hawaii to the Caribbean and tropical West America. The present record expands the range of the genus to the China Seas.

Daphnella inangulata sp. nov.

(Figure 1B)

Type material

Holotype: SCS. 1 spec, 20°15' N, 109°30' E, sandy mud, 31 m, 28 January 1959, Registry number MBM-Li, deposited in MBMCAS.

Description

Shell large, fusiform, with tall spire, spire with height about as long as combined height of aperture and siphonal canal. Body whorl obviously enlarged, suture narrow, distinct. Spiral whorls eight, including five teleoconch whorls, cancellated by sinuous fine axial and spiral ribs; and three protoconch whorls, worn to a certain extent, especially the first two protoconch whorls, the last whorl with less cancellate sculpture. Overall sculpture of dense axial and spiral ridges, rendered cancellate and granulose by crossing of even denser axial ribs. With large, wide, sinuous aperture, base of columella slightly foreshortened; siphonal canal wide, fusiform, not indented. Outer lip thin, with weakly notched edge; anal sinus openly, very widely concave, presenting a converse L subsutural. Uniformly light yellowish brown.

Etymology

“in-”, Latin, non, lack. The specific name refers to the close similarity of the new species with *Daphnella angulata*.

Distribution

Only known from the type locality SCS, China.

Remarks

The species is very similar to *Daphnella angulata* Habe and Masuda, 1990, but differs from the latter by the shell shape. In Higo et al. (2001): fig. G. 3856), the figures of the holotype of *D. angulata* show that the angle on the spire is above the middle on spire whorls, instead of the base as in our specimen; the spire whorls of the present type specimen are not shouldered as those in the holotype of *D. angulata*; the spiral ridges of the present specimen are coarser than those of the holotype of *D. angulata*. Additionally, our specimen is more biconical in shape than the holotype of *D. angulata*.

****Daphnella interrupta* Pease, 1860**
(Figure 1C)

Daphnella interrupta Pease, 1860, p. 147.- Cernohorsky, 1978, p. 158, pl. 56, fig. 10. – Higo et al. 2001, p. 110 (fig. of lectotype). Type loc.: Sandwich Is., Hawaii.

Daphnella pilsbryi, Kuroda, 1947, p. 1093, fig. 3100. Type loc.: Hirado, Nagasaki Prefecture, Kyushu, Japan.

Material examined

SCS. 1 spec., CN 63M-253, Baoan, Nanao, Guangdong, 25 July 1963. Lectotype of *Daphnella interrupta*, BMNH 1962849; Sandwich Is. [Hawaii]; 7.6 × 2.9 mm.

Distribution

SCS; Japan. Not previously recorded from the China Seas.

***Daphnella mitrellaformis* (Nomura 1940)**
(Figure 2B)

Colus (Aulacofusus) mitrellaformis Nomura, 1940, p. 110, pl. 1, fig. 1a, b.

Daphnella nomurai – Kuroda, 1941, pp. 178- 179, pl. 103, fig. 43.

Daphnella mitrae mitrellaformis – Habe, 1964, p. 126, pl. 40, fig. 5.

Daphnella mitrellaformis – Powell, 1966, p. 123. – Habe, 1970, p. 126, pl 40, fig. 5. – Kuroda et al. 1971, p. 235, pl. 55, fig. 9. – Higo et al. 1999, p. 327, nr. G3855.

Material examined

ECS. 2 specs, CN V526B-31, 26°30' N, 124°00' E, 139 m, fine sand, AT, 29 August 1976; 1 spec, CN V469B-35, 27°30' N, 126°00' E, 162 m, fine sand, AT, 10 October 1975; 1 spec, CN V562B-15, 31°30' N, 128°00' E, 147 m, fine sand, AT, 30 May 1978; 2 specs, CN V507B-17, 26°10' N, 124°00' E, 138 m, fine sand, AT, 11 January 1978; 1 spec, CN V525B-50, 26°30' N, 124°30' E. 150 m, AT, 28 August 1976.

Distribution

Taiwan, ECS; Japan.

Daphnella reeveana (Deshayes 1863)
(Figure 3E)

Pleurotoma reeveana Deshayes, 1863, p. 106, pl. 12, figs. 5–7. Type loc.: Réunion Is.

Clathurella reeveana – Tryon, 1884, p. 291, pl. 19, figs. 56, 75.

Hemidaphne reeveana – Kantor and Taylor, 2002, p. 97, figs. 13, 20L.

Daphnella (Hemidaphne) reeveana – Kuroda and Habe, 1952; Powell, 1966, p. 124. –
Cernohorsky, 1972, p. 190, pl. 55, fig. 1. – Taylor et al. 1993, figs. 4A, B, 25F. –
Zhang, 1995, p. 286, pl. II, fig. 17. – Higo et al. 1999, p. 327, nr. G 3863.

Material examined

Xisha Is., 1 spec, CN 58M-1122, Beijiao, Xisha Is., 6 April 1958.

Distribution

Taiwan, Xisha Is.; From Mauritius to Japan.

Daphnella cf. suluensis Schepman, 1913
(Figure 1D)

Daphnella suluensis Schepman, 1913, p. 442, pl. 29, fig. 11.

Material examined

ECS. 1 spec, CN V520A, 27°30' N, 122°30' E, fine sand, 100 m, dredged, 28 August 1976.

Distribution

Bohai Gulf, Yellow Sea, SCS; Japan, Philippines, Indian Ocean and Persian Gulf.

Remarks

The specimen is a worn juvenile shell. It is very close to *D. suluensis* Schepman, 1913 in shell profile with exception of the smooth protoconch, whereas in the holotype of *D. suluensis* the base of the protoconch shows remnants of axial ribs.

Genus ***Eucyclotoma*** Boettger, 1895

Type species: *Clathurella bicarinata* Pease, 1863

Distribution

Coral reefs of Indo-Pacific, Mauritius, Philippines, Queensland, Melanesia, Samoa, Tuamotu Archipelago, Hawaii.

**Eucyclotoma cymatodes* (Hervier 1897a)
(Figure 1E, F)

Daphnella cymatodes Hervier, 1897a, p. 47. – Hervier, 1897b, p. 119, pl. 3, fig. 8. – Bouge and Dautzenberg, 1914, p. 208. Type loc.: Lifou.

Material examined

Nansha Is. 1 spec, CN 93NS8-3, Nansha Is. 67 m, 1 May 1993; *Xisha Is.* 1 spec, 58M-1542, Shudao Island (Xisha Is.), 3 May 1958.
Ilet Amédée, Lifou, MNHN, Bouge collection, 9.1 × 3.8 mm

Description

Shell rather oblong, with large, wide, sinuous aperture, expanded basally, base of columella slightly foreshortened; siphonal canal wide, rounded, not indented; suture narrow but, notched. Outer lip slightly thickened, with weakly nodular edge; anal sinus open, very widely concave, parietal pad slight thickening end of lip. Overall sculpture of dense spiral ridges, rendered granulose by crossing of even denser axial ribs; early whorls with submedian angle, later ones evenly convex except for two or three slightly stronger ridges below midwhorl. First teleoconch whorl with median keel, above and below single spiral ridge, cancellated by sinuous, suture-to-suture axial ribs, with foveolate interstices; keel weakening, number of ridges increasing with growth, third and penultimate whorls each with total of 13–15 spiral ridges, two or three (including the weakened keel) slightly stronger than others, all rendered somewhat nodular by close axial ribs, base of last whorl with 12 wide-set spiral ridges, bearing rounded nodules where intersected by axial riblets, plus seven smooth, rounded cords on rostrum. Off-white, streaked with brown.

Distribution

Xisha Is., Nansha Is.; China to New Caledonia. Not previously recorded from the China Seas.

Remarks

The original four syntypes from Lifou were also checked. The species resembles *Eucyclotoma carinulata* (Souverbie, 1875) but differs from the latter in its much broader and finer spiral ridges, not conspicuously keeled. It can be distinguished from *Daphnella tenuiclathrata* (E. A. Smith 1882) by the coarser sculpture and base being not constricted. The species is differentiated from *Daphnella crebriplata* (Reeve, 1846) by the presence of stronger spiral cords and the whorls are less

convex, while *D. crebriplicata* lacks stronger spiral cords, and the whorls are more evenly convex.

Eucyclotoma lactea (Reeve 1843)
(Figure 2C)

Pleurotoma lactea Reeve, 1843, pl. 15, sp. 123.

Eucyclotoma lactea – Powell, 1966, p. 130. – Higo et al. 1999, p. 325, nr. G3836.

Material examined

SCS. CN 58 M-1514, Yongxing Island (Xisha Is.), 20 May 1958.

Syntype, NHMUK 1963778, H. Cuming collection; Bolinao, Luzon Island and Gindulman, Bohol Island, Philippines, under stones at low tide, locality not restricted; 20.1 × 7.9 mm.

Distribution

Xisha Is., Taiwan; Philippines.

Eucyclotoma tricarinata (Kiener 1840)
(Figure 1G)

Pleurotoma tricarinata Valenciennes? in Kiener, 1840, 64, pl. 23, fig. 4.–Reeve, 1843, pl. 15, fig. 121a.

Eucyclotoma tricarinata. – Powell, 1966, p. 130. – Cernohorsky, 1978, p. 160, pl. 57, fig. 8. – Zhang, 1995, p. 292, pl. V, fig. 20. – Higo et al. 1999, p. 326, nr. G3838.

Material examined

Xisha Is. 1 spec, 58M-1542, Shu Island (Xisha Is.), 3 May 1958.

Distribution

Taiwan, Xisha Is.; Japan, Philippines, Fiji, Australia.

Eucyclotoma sp.
(Figure 1H)

Material examined

Xisha Is. 1 spec, CN 58 M-1542-1, Shu Island (Xisha Is.), 3 May 1958.

Description

Shell oblong, rather thick and solid, 12.9 mm in length, 5.6 in width and 5.9 in aperture, with wide, sinuous aperture, expanded basally, base of columella slightly

foreshortened; siphonal canal wide, deep and rounded, not indented; suture distinct, narrow but deep. Outer lip thickened, with coarse nodules edge; anal sinus openly and widely concave, parietal pad thickening of outer lip. Overall sculpture of dense spiral ridges, rendered cancellate and granulose by crossing of even denser axial ribs, spiral ridges different in thickness, two to three stronger spiral ridges in penultimate whorls, about three fine spiral ridges in the interval of two stronger spiral ridges, while, six stronger spiral ridges in the body whorl, and three to five fine spiral whorls in interval zone; axial ribs dense, narrow, suture to suture, about 20 in later whorls. Whorls six, early whorls with sub-median angle by strong spiral ridges, body whorl evenly convex. Protoconch rounded, smooth. Off-white, stained with brown.

Distribution

Only known from Xisha Is., SCS, China.

Remarks

The species is very similar to *Eucyclotoma varicifera* (Pease, 1868) in shell profile and cancellate, granulose sculpture, but differs from the latter by the thicker shell, while the holotype of *E. varicifera* is thin and slightly translucent.

Genus *Gymnobela* Verrill, 1884

Type species: *Gymnobela engonia* Verrill, 1884

Distribution

Global waters, the deepest record was 6096 m (Sysoev, 1988).

* *Gymnobela ioessa* Sysoev, 1997
(Figure 2D)

Gymnobela ioessa Sysoev, 1997, p. 335, figs. 3, 29–33. Type loc. Tanimbar Is., Indonesia.

Material examined

ECS. 3 specs, CN Ky9B-22, silty mud, 1070 m, 4 August 1981; 1 spec, CN KY10B-41, sta. ZIV-4, silty mud, 1115 m, 4 August 1981. SCS. 1 spec, CN V568B-3, sta. 28, silty mud, 2150 m, 2000 m, AT, 10 June 1978.

Distribution

ECS, SCS; Philippines, Indonesia.

Remarks

This benthic species is distributed in more than 1000 m depth, on a silty mud bottom. Sysoev (1997) described this species as dull reddish-violet, whereas our specimens are light brown. This species was not previously reported from the China Seas.

Genus *Kermia* Oliver, 1915

Type species: *Kermia benhami* Oliver, 1915

Remarks

The study on the Indo-Pacific genus *Kermia* Oliver, 1915, is inadequate and its limits are also unclear (Kilburn 2009). Kilburn (2009) reported four new species and four new records of this genus from South African waters and discussed this genus in detail.

Kermia barnardi (Brazier 1876)

(Figure 3A)

Clathurella barnardi Brazier, 1876, p. 157. Type loc. Barnard Is., Australia.

Pseudodaphnella barnardi – Hedley, 1922, p. 345, pl. 55, fig. 178. – Powell, 1966, p. 128. – Zhang, 1995, p. 288, pl. 4, fig. 12.

Philbertia (Kermia) barnardi – Cernohorsky, 1978, p. 161, pl. 57, fig. 11.

Kermia barnardi – Richard, 1985. – Higo et al. 1999, p. 324, nr. G3817. – Kantor and Taylor, 2002, p. 92, figs 10, 20I.

Pseudodaphnella barnardi – Chang, 2001, p. 91, fig. 101b.

Material examined

SCS. 1 spec, CN 58M-152, Dazhou Island (Hainan), 29 March 1958.

Distribution

Taiwan, Hainan; Japan, Australia.

Remarks

This species resembles *Kermia pustulosa* (De Folin, 1867) in shell profile and sculpture, but differs from the latter in shell colour. In *K. barnardi*, the colour alternates brownish purple with distinct white axial nodules where the spiral cords cross the axial ribs, and fifth spiral ribs in body whorl are white; while that of *K. pustulosa* is uniformly yellowish brown, and at the fourth spiral on the last whorl the colour is white.

Kermia bifasciata (Pease 1860)

(Figure 3B)

Borsonia bifasciata Pease, 1860, p. 143. Type loc. Sandwich Is.

Kermia bifasciata – Kay, 1979, p. 360, fig. 118F. – Zhang, 1995, p. 291, pl. 5, fig. 13.

Material examined

Xisha Is. 2 specs, CN 78M-121, Michujiao Reef (Xisha Is.), 6 m, 24 May 1974.

Distribution

Xisha Is., Taiwan; Queensland (Australia); Hawaii.

****Kermia cavernosa* (Reeve, 1845)**
(Figure 3C)

Pleurotoma cavernosa Reeve, 1845, pl. 33, sp. 303. Type loc.: Philippine Is.

Clathurella cavernosa – Tryon, 1884, p. 290, pl. 17, fig. 10; pl. 19, fig. 69.

Clathurina cavernosa – Melvill, 1917, p. 186.

Kermia cavernosa – Kilburn, 2009, p. 227, figs. 25, 26.

Material examined

Yellow Sea. 2 specs, Zhucha Island (Qingdao, Shandong).

Five syntypes, NHMUK 1963801, Philippines; 5.9 × 2.5 mm, one retaining protoconch photographed.

Description

Whorls slightly flattened at periphery. Aperture oblong-ovate, inner lip evenly curved; outer lip weakly curved in side-view, anal sinus openly U-shaped, stromboid notch distinct, lip with up to six short ridges internally, becoming weak anteriorly; terminal varix narrow, raised, short distance behind lip.

Sculpture cancellate, with spiral cords forming sharp nodules where they cross axial ribs; base of last whorl with distinct waist. Axial ribs extending from suture to rostrum, in transect rounded, sides gently sloping, more or less equal in width to intervals; nine ribs on first teleoconch whorl, 11–13 on penultimate one. Spiral ridges sharp, much narrower than intervals, expanded slightly where cross ribs; two to three on early whorls, four to five on penultimate whorl, base of last whorl with one ridge, separated by gap from four to five nodular cords on rostrum; outer edge of lip with seven cords. Interstices with faint to microscopic collabral threads. Protoconch conical, of about three convex whorls, diagonally cancellate. Uniform yellowish-brown with paler nodules. Dimensions: 5.9 × 2.5 mm (syntype *P. cavernosa*).

Distribution

Qingdao (Shandong Province); Philippines. Not previously recorded from China Seas.

***Kermia pumila* (Mighels 1845)**
(Figure 3D)

Pleurotoma pumila Mighels, 1845, p. 23.

Clathurella pumila – Tryon, 1884, p. 298, pl. 19, fig. 68.

Phibertia (Kermia) pumila – Cernohorsky, 1978, p. 162, pl. 57, fig. 14.

Kermia pumila – Zhang, 1995, p. 290, sp. 92, pl. V, fig. 3. – Higo et al. 1999, p. 324, nr. G3814.

Material examined

Xisha Is. 1 spec, CN 58M-1522, Yongxing Island (Xisha Is.), 20 May 1958.

Distribution

Taiwan, Xisha Is.; Japan, Fiji, Reunion, Hawaii.

Remarks

Our only specimen agrees very well with that of Zhang (1995) in shell profile, except for the shell colour, which is light yellow, while Zhang's specimen is uniformly purple.

Genus *Kuroshiodaphne* Shuto, 1965

Type species: *Daphnella fuscobalteata* E. A. Smith, 1879

**Kuroshiodaphne supracancellata* (Schepman 1913)

(Figure 2E)

Daphnella supracancellata Schepman, 1913, p. 76 (440), pl. 29, fig. 7.

Daphnella (Hemidaphne) supracancellata – Powell, 1966, p. 124.

Maoridaphne (Kuroshiodaphne) supracancellata – Shuto, 1970, p. 48, pl. 4, figs. 22–24.

Material examined

ECS. 2 specs, CN V563B-82, 28°30' N, 126°30' E, fine sand, 116 m, AT, 5 June 1978;

Beibu Gulf. 1 spec, CN X229B-24, 18°00' N, 106°35' E, coarse sand and silty clay, 35 m, 17 August 1962; 1 spec, CN X152B-29, 19°00' N, 105°45' E, coarse sand, 13 m, AT, 12 January 1962; 1 spec, CN X74B-24, sta. 6285, muddy sand, 12.8 m, AT, 11 February 1960. SCS. 1 spec, CN 171, 19°45' N, 111°15' E, muddy sand, 72 m, 25 April 1959; 1 spec, 20°30' N, 113°30' E, muddy sand, 88 m, July 14 1959; 1 spec, 19°45' N, 111°15' E, sandy mud, 70 m, 28 January 1959; 1 spec, 19°15' N, 111°00' E, 78 m, 27 January 1959; 1 spec, CN K125B-78, 20°30' N, 112°30' E, muddy sand, 78 m, AT, 9 February 1960; 2 specs, 19° 15' N, 111°0' E, sandy mud, 78 m, 27 January 1959.

Holotype ZMA 3.13.073, Indonesia: Kwandang Bay entrance, 75 m, very fine, hard sand.

Description (based on holotype)

Narrowly fusiform, spire high and acute, siphonal canal slightly oblique, end obliquely truncate, not indented, slightly expanded; early whorls slightly flattened, later ones more convex; suture shallow. Outer lip with its edge notched internally,

corresponding to external ridges, in side-view flattened, slightly prosocline basally; anal sinus slot-like, asymmetrically tongue-shaped, directed very slightly adapically; columella with thin, somewhat rugose, callus.

First four teleoconch whorls with cancellate sculpture of distinct, straight axial ribs, crossed by slightly narrower spiral ridges; ribs 14–17 per whorl, extending from subsutural spiral to lower suture; ribs evanesce after fourth whorl. Spiral ridges narrow, wide-set, three on first whorl, with fourth half-concealed in lower suture, nine on penultimate whorl, of which one forms low, angular subsutural cord, followed by declivous, moderately wide concavity; intervals with finer intermediaries, with one usually stronger than others; base with 25 wide-set spiral ridges. Interstices with dense spiral threads, crossed by weak, flattened axial riblets, visible more as incisions; on last part of last whorl more distinctly incised, almost beading the main ridges.

Protoconch slightly worn, over three whorls, at least last two diagonally cancellate, with sigmoid, opisthocline riblets crossed (on lower three-fifths of the whorl) by prosocline ones; breadth 0.50 mm. Dull reddish-brown, ridges slightly darker, aperture white.

Dimensions: 23.6 × 5.8 mm, aperture 8.2 mm (type specimen).

Distribution

ECS, Beibu Gulf, SCS; Japan, Philippines. Not previously recorded from the China Seas.

Genus *Pseudodaphnella* Boettger, 1895

Type species: *Pleurotoma philippinensis* Reeve, 1843

Distribution

Indo-Pacific, from Persian Gulf to Philippines, Japan, Loyalty Is., Queensland, New South Wales and Tasmania

**Pseudodaphnella alternans* (E.A. Smith 1882)

(Figure 3F)

Pleurotoma alternans Smith, 1882, p. 298.

Material examined

SCS. 3 specs, CN 78M-111, Weizhou Island, Guangxi Province, 1978.

Syntype of *Pleurotoma (Defrancia?) alternans*, NHMUK 1874.5.26.18; 5.8 × 2.4 mm.

Distribution

SCS; Japan.

Remarks

Pseudodaphnella alternans is similar to *P.excellens* (Sowerby III, 1913), but differs from the latter by not having an angle on the shoulder, in having less strong axial ribs, and weak lip denticles. This species was not previously reported from China Seas.

****Pseudodaphnella? crasselirata*** (Hervier, 1897a)
(Figure 3G)

Clathurella albifuniculata var. *Crasselirata* Hervier, 1897a, p. 137.

Pseudodaphnella crasselirata – Hedley, 1922, p. 346, pl. 55, fig. 180.

Material examined

Xisha Is. 1 spec, CN 75M-498, Shudao Island (Xisha Is.), 7 April 1975.

Distribution

Xisha Is.; Japan, Fiji Is. Not previously reported from China Seas.

Remarks

The only specimen has a less strong sculpture than that of the syntype of *Pseudodaphnella crasselirata* (Hervier 1897a) in NHMUK. In the present paper, we concur with Hedley (1922) that Hervier's *crasselirata* should be treated as a full species "in view of the confusion that surrounds *Pleurotoma albifuniculata* Reeve, 1846, I have preferred to use Hervier's name" (Hedley 1922, p. 346). Actually in the absence of type material of the latter, and in view of the unrecognizable type figure, *Pleurotoma albofuniculata* is here regarded as a *nomen dubium*.

Pseudodaphnella granicostata (Reeve, 1846)
(Figure 4A)

Pleurotoma granicostata Reeve, 1846, sp. 323, pl. 35, fig. 323.

Clathurella granicostata – Tryon, 1884, p. 287, pl. 16, fig. 80, pl. 17, fig. 88.

Pseudodaphnella granicostata – Cernohorsky, 1972, p. 191, pl. 55, fig. 3. – Zhang, 1995, p. 288, pl. IV, fig. 11. – Kantor and Taylor, 2002, p. 89, figs. 5.

Material examined

Xisha Is. 1 spec, CN 75M-356-1, Jinyin Island (Xisha Is.), 28 May 1975; 2 specs, CN 58M-1542, Shu Island (Xisha Is.), 3 May 1958.

Syntype, BMNH, 1984157, loc. unknown; 11.8 × 5.4 mm.

Distribution

Taiwan, Xisha Is.; Japan, Philippines and Fiji.

***Pseudodaphnella philippinensis* (Reeve 1843)**
(Figure 4B)

Pleurotoma philippinensis Reeve, 1843, sp. 110, pl. 13, figs. 110a, 110b.

Philbertia (Pseudodaphnella) philippinensis – Zhang, 1995, p. 288, pl. IV, fig. 7. – Higo et al. 1999, p. 323, nr. G3802.

Pseudodaphnella philippinensis – Fedosov and Puillandre, 2012, figs 68–70, 112 (radula).

Material examined

Xisha Is. 3 specs, 58M-1542, Shu Is. (Xisha Is.).

Distribution

Taiwan, Xisha Is.; Japan, Philippines, Fiji.

Remarks

Reeve (1843) described this species with delicate sculpture, and the spiral ribs coloured alternated with irregular white and black. The number of axial ribs on the last whorl are variable, up to 16, with the average number 12 to 14 ribs. Our three specimens were collected from intertidal zone in 1958, purely white, and the axial ribs on the last whorl numbering 13 to 15. Zhang (1995) reported that his specimens collected from Taiwan, were white, with brown on point. The difference in shell colour may be the result of depigmentation by the tidal action and sunshine.

***Pseudodaphnella rubroguttata* (H. Adams 1872)**
(Figure 3H)

Clathurella rubroguttata H. Adams, 1872, p. 14, pl. 3, fig. 25. Type loc.: New Hebrides.

Philbertia (Pseudodaphnella) tinctoria (non Reeve, 1846) – Maes, 1967, p. 144, pl. 16g, textfig. 4H (radula).

Philbertia (Pseudodaphnella) tinctoria – Cernohorsky, 1978, p. 162, pl. 57, fig. 15.

Material examined

SCS. 1 spec, CN 78M-111, Weizhou (Guangxi), 29 April 1978.

Distribution

Taiwan, SCS; New Caledonia, Lifu Is.

Remarks

This species is very similar to *Pseudodaphnella tincta* (Reeve, 1846), but differs from the latter by its shorter base, weak furrow around the base, barely developed fasciole and wider aperture.

****Pseudodaphnella spyridula*** (Melvill and Standen 1896)
(Figure 3I)

Clathurella spyridula Melvill and Standen, 1896, p. 296, pl. 10, fig. 42. Loyalty Is. – Melvill and Standen, 1897, p. 403.

Material examined

Xisha Is. 1 spec, CN SX74013, Michu coral reef, 24 May 1974.

Holotype, Loyalty Is.; 3.7 × 1.4 mm. (Lifou, IRSB, Dautzenberg colln, 3.8 × 1.4 mm.

Distribution

Xisha Is; New Caledonia.

Remarks

The taxonomic validity of this species is uncertain, and was in the status of species *inquirenda* (WoRMS, <http://www.marinespecies.org/aphia.php?p=taxdetails&id=595790>). Kilburn (2009) thought this species perhaps presumably referable to subgenus *Qii* Zhang, 1995 in the genus *Pseudodaphnella*. Kilburn also suggested we place this species in the genus *Pseudodaphnella* (personal communication). This species was not previously reported from China Seas.

Genus *Tritonoturris* Dall, 1924

Type species: *Clathurella robillardi* H. Adams, 1869

Three species of this genus have been recorded from China Seas, i.e., *Tritonoturris oxyclathrus* (Martens 1880), *T. scalaris* (Hinds 1843) and *T. macandrewi* (E. A. Smith 1882).

Tritonoturris oxyclathrus (Martens 1880)
(Figure 2F)

Pleurotoma oxyclathrus Martens, 1880, p. 41, pl. 9, figs 1a–d. Type locality: New Guinea, 46 m, “MacCluer Golf” [f. label] [=Teluk Berau, West Papua, Indonesia].

Clathurella oxyclathrus – Tryon, 1884, p. 283, pl. 16, fig. 19 (after Martens).

Tritonoturris oxyclathrus – BQ. Li, XZ. LI, Kilburn, 2010b a, p. 194, figs 1–2, 9, 10.

Material Examined

SCS: 1 spec, CN L67B-8, 19°30' N, 111°15' E, 86 m, sandy mud, AT, 25 April 1959, MBMCAS; Holotype, ZMHB, Gazelle Expedition.

Distribution

New Guinea to southern China.

***Tritonoturris scalaris* (Hinds 1843)**

(Figure 2G)

Clavatula scalaris Hinds, 1843, p. 39. – Hinds, 1844: 18, pl. 6, fig. 2. Type locality: Straits of Macassar [Makassar], Ujung Pandang, Sulawesi, Indonesia, 12 fath. (22 m).

Pleurotoma scalaris – Reeve, 1845, pl. 26, sp. 233.

Clathurella scalaris – Tryon, 1884, p. 287, pl. 16, fig. 78.

Tritonoturris concinnus Li and Li, 2007b, p. 79. Type locality: SCS, 21°00' N, 114°00' E, 78 m.

Tritonoturris scalaris – BQ. Li, XZ. LI, Kilburn, Li et al. 2010a, p. 196, figs 3, 4, 12.

Material examined

Clavatula scalaris: Holotype BMNH 1879.2.26.95, ex Lombe Taylor colln, slightly chalky. *Tritonoturris concinnus*: Holotype MBMCAS, RN MBM081112, SCS, 21°00' N, 114°00' E, 78 m, 10 April 1959, AT; paratype MBMCAS, RN MBM081113, SCS, 22°00' N, 116°00' E, silty mud, 84 m, 22 April 1960, AT.

Distribution

South China Sea; West Thailand to Indonesia.

***Tritonoturris macandrewi* (E. A. Smith 1882)**

(Figure 2H, I)

Pleurotoma (Daphnella) macandrewi E. A. Smith, 1882, p. 302. Type locality: Persian Gulf.

Daphnella macandrewi – Tryon, 1884, p. 307.

Daphnella macandrewi – Melvill, 1917, p. 192, pl. 9, fig. 11.

Tritonoturris macandrewi – Springsteen and Leobrera, 1986, p. 279, textfig., pl. 80, fig. 7–Higo et al. 1999: 325; 2001, p. 109, fig. G3830.

Material examined

SCS: 1 spec, CN Q295B-19, 20°45' N, 108°30' E, silty mud, 45 m, A T., 11 November 1960; 1 spec, CN X147B-39, 18°00' N, 106°35' E, Beibu Gulf, fine sandy mud, AT, 7 January 1962; 1 spec, CN Q283B-22, 20°15' N, 108°00' E, Beibu Gulf, muddy sand,

51 m, 17 November 1960; 1 spec, 20°15' N, 111°30' E, silty mud and fine sand, 71 m, 26 January 1959; 1 spec, CN X200B-63, 19°30' N, 108°30' E, silty mud, 51 m, AT, 13 April 1962; 1 spec, CN N161B-86, 17° 45' N, 108°30' E, mud and coarse sand, 80 m, AT, 13 March 1960; 1 spec, CN 10–23, SCS, 22°00' N, 116°00' E, silty mud, 93 m, AT, 25 January 1959.

Holotype, BMNH 1874.5. 26.9.17.

Distribution

ECS, SCS Persian Gulf, Philippines, 45–51 m.

Genus *Veprecula* Melvill, 1917

Type species: *Clathurella sykesii* Melvill and Standen, 1903

Distribution

Indo-Pacific: Zanzibar Island, Persian Gulf, Japan, Hawaii Is., Queensland, New South Wales and New Zealand.

Veprecula sp.
(Figure 4C)

Material examined

SCS. 1 spec, CN K146A-15, 20°30' N, 112°00' E, muddy sand, 68 m, 4 April 1960.

Distribution

SCS.

Remarks

This specimen resembles *Veprecula vepratrica* (Hedley, 1903), but differs from the latter in shell shape. The obvious characters of this species are the prickly nodules formed by axial ribs crossing the spiral ridges. This specimen is also close to *Veprecula hedleyi* Melvill, 1917, but differs from the latter by having more numerous and slowly growing whorls, and more teleoconch whorls.

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