

A Small Collection of Rissoid Gastropods (Mollusca: Gastropoda: Rissoidae) Collected from Puerto Galera, Mindoro Island, the Philippines

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Abstract. Rissoid gastropods collected from Puerto Galera, Mindoro Island, Republic of the Philippines, in the intertidal and upper sublittoral zones to a depth of 20 m, are examined taxonomically. They are classified into 24 species in seven genera, including three possible undescribed species. Synonymy and taxonomical problems concerning each species are briefly discussed, based mainly on recent data, and some of the specimens are illustrated for subsequent, more detailed studies on this group. Nomenclatural changes are made as follows: *Rissoina honoluluensis* Watson, 1886 is regarded as a junior synonym of *Rissoa rosea* Deshayes, 1863; *Rissoina tenuistriata* Pease, 1868 is regarded as a junior synonym of *Rissoina modesta* Gould, 1861.

Key words: Rissoidae, Philippines, micro-gastropod, new synonym.

Introduction

The Rissooidea is one of the largest and most diverse groups in the Recent “prosobranch” Gastropoda (Boss, 1971), and the Rissoidae are its largest family-group. Because most of the species belonging to the family are small in size, and possess convergently simple and variable shells, their taxonomy and systematics have not been well settled to date, especially in the Indo-West Pacific region (Ponder, 1985). From Philippine waters, Faustino (1928) listed 53 species of Rissoidae recorded thereto in literature, but no comprehensive lists of this group have been published since then, in spite of the recent rapid progress in gastropod taxonomy.

In 2005, I had an opportunity to participate in a brief field survey for the purpose of taxonomical studies of the intertidal and shallow water invertebrates around Puerto Galera, Mindoro Island, Republic of the Philippines, under the program “Natural History Researches of the Island Arcs in the Western Pacific” funded by the National Science Museum, Tokyo. During the sur-

vey, special attention was paid to microgastropod assemblages associated with algae, rocks, or dead coral, which resulted in the harvest of considerable numbers of specimens in various groups. In the present paper, the rissoid specimens are reported in some detail, in accordance with recent studies based mainly on Japanese specimens.

Materials and Methods

All the material examined was collected by the present author around Puerto Galera, Mindoro Island (Fig. 1), mainly with the aid of SCUBA, in collaboration with the Marine Science Institute of the University of the Philippines. The field survey was carried out from 15–19 March 2005, with the permission of the Department of Agriculture, the Republic of the Philippines, and the City of Puerto Galera.

In order to collect microgastropods, dead coral and rocks were brushed thoroughly in large plastic bags under water, and detached residues containing small animals were collected. Algae and

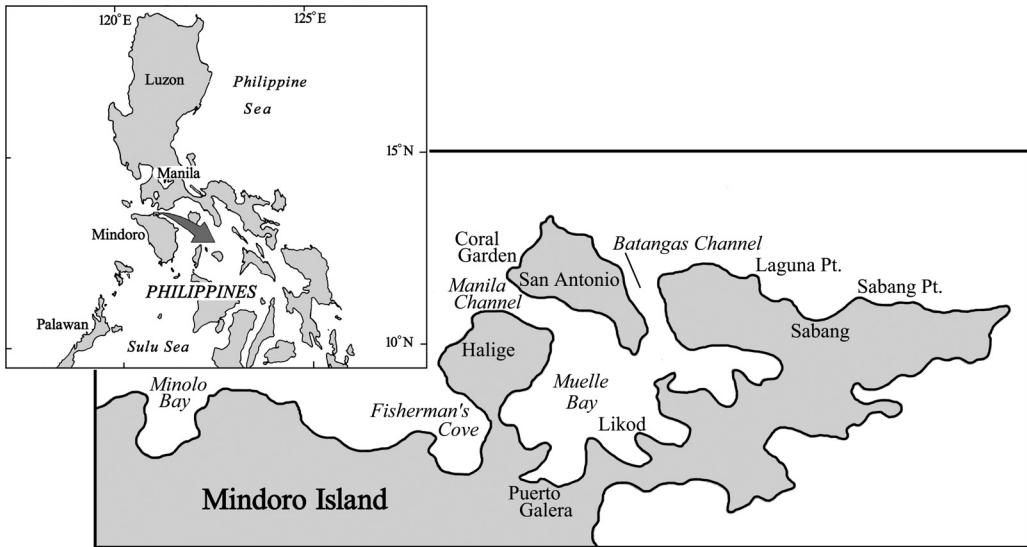


Fig. 1. Map showing the surveyed area around Puerto Galera, the Philippines.

sea grasses were also collected in plastic bags and washed thoroughly in tap water to shake off the attached animals. Sediments and algae-washing residues were then fixed in 10% buffered sea-water formalin for six months, washed thoroughly in tap water, and transferred to 75% ethanol. Animals, including gastropods, were sorted out from the samples under the microscope in the laboratory; specimens with soft parts were kept in ethanol and empty shells were dried for preservation. Specimens examined are to be deposited in the National Science Museum, Tokyo and in the National Museum of the Philippines.

Abbreviations used in the text are as follows: dd, empty shell(s); SH, shell height.

List of stations

PI05-01: Manila Channel, San Antonio Is., 13°31.05'N, 120°56.90'E, 15 m depth, on gravel bottom, algae-washing, 15 March 2005. **PI05-03:** "Coral Garden", San Antonio Is., 13°31.658'N, 120°56.840'E, 9 m depth, coral reef, rock-washing, 15 March 2005. **PI05-04:** near "Ernie's Cave", Sinandigan, 13°31.382'N, 120°58.865'E, 5–9 m depth, coral reef, rock-washing, 16 March 2005. **PI05-05:** South of Dalaruan, Muelle Bay, 13°30.814'N, 120°57.558'E, 2–5 m depth, algae and rock-washing, 16 March 2005. **PI05-07:**

Small La Laguna, west of Sabang, intertidal, rock-washing, 17 March 2005. **PI05-08:** Haligue Beach, Boquete, 13°31.191'N, 120°51.637'E, 1–2 m (A) or 7–8 m (D) depths, coral reef, rock-washing, 17 March 2005. **PI05-09:** Escarceo, Sinandigan, 13°31.359'N, 120°59.384'E, 2–20 m depth, algae and rock-washing, 17 March 2005. **PI05-10:** Manila Channel, Boquete side, 13°31.192'N, 120°51.010'E, intertidal, algae-washing (mostly *Sargassum* spp.), 18 March 2005. **PI05-11:** Fishermen's Cove, 13°30.551'N, 120°56.412'E, 3–5 m depth, rock-washing, 18 March 2005. **PI05-12:** Minolo Bay, 13°30.694'N, 120°55.146'E, 15–20 m depth, algae (partly rock)-washing, 18 March 2005. **PI05-13:** Coral Garden, San Antonio Is., 13°31.766'N, 120°56.959'E, 5–8 m depth, rock-washing, 19 March 2005. **PI05-14:** Batangas Channel, Dalaruan side, 13°31.391'N, 120°57.631'E, 3–8 m depth, rock-washing, 19 March 2005.

Taxonomy

Family **Rissoiidae** Gray, 1847

Pusillina (Haurakia) marmorata (Hedley, 1907)

[Japanese name: Dairiseki-tsubo]

Cithna marmorata Hedley, 1907: 498, pl. 18, figs 27, 28.

Vitricithna marmorata: Laseron, 1956: 452, figs 177, 178;

Kay, 1979: 79, figs 26A, 27E–F.

Pusillina (Haurakia) marmorata: Ponder, 1985: 29–30, fig. 82A–E; Hasegawa, 2000: 149, pl. 74, fig. Rissoidae-1.

Material examined. PI05-01 (3); PI05-04 (1dd); PI05-05: (3); PI05-08D (2+2dd); PI05-09 (5); PI05-11 (2+3dd); PI05-12 (1dd); PI05-13 (25+1dd); PI05-14 (1dd).

Remarks. Although this species has not often been cited in literature, it is widely distributed in the Indo-West Pacific from its type locality in Queensland, Australia, east to Hawaii (Kay, 1979), and north to Japan (Hasegawa, 2000). Kay (1979) noted that the species is common at depths of 3–40 m and may form the dominant component of micromolluscan assemblages at these depths in Hawaii. It is also common in the Nansei Islands, Japan, and northern parts of Sulawesi, Indonesia (Hasegawa, personal observations), but was not found in a similar survey carried out in Hainan Island, southern China (Hasegawa *et al.*, 2001). It is not recorded in Taiwan either (Chang & Wu, 2004), suggesting a possible oceanic distribution.

Alvania isolata (Laseron, 1956)

(Fig. 2)

Haurakia isolata Laseron, 1956: 439, fig. 144; Maes, 1967: 109, pl. 5, fig. E.

Alvania (Alvania) isolata: Ponder, 1985: 40–41, fig. 93A, B.

Alvania isolata: Chang & Wu, 2004: 10–11, fig. 5.

?*Alvinia isolata*: Kay, 1979: 77, fig. 27C.

Material examined. PI05-07 (2dd).

Remarks. This species was originally described from Christmas Island, Indian Ocean, and has subsequently been recorded from Cocos-Keeling Island, Indian Ocean (Maes, 1967), Taiwan (Chang & Wu, 2004), and the Philippines (present study). It is thus probable that this species is widely distributed in the Indo-West Pacific, although the specimen illustrated by Kay (1979) from Hawaii under this name looks slightly different, with thicker and more widely spaced

axial ribs on the shell.

Alvania sp. 1

(Fig. 3)

Alvania (Haurakia) sp. cf. isolata: Ekawa, 1993: 77, pl. 1, fig. 4. [Not *Haurakia isolata* Laseron, 1956]

Onoba isolata: Chang & Wu, 2004: 12, fig. 8. [Not *Haurakia isolata* Laseron, 1956]

Material examined. PI05-03 (2dd); PI05-08D (2); PI05-13 (3dd).

Remarks. This species closely resembles, and has sometimes been referred to, the preceding species, but can be distinguished by its much weaker and indistinct axial ribs and a characteristic reddish brown spot at the apical part of the protoconch. Chang and Wu (2004) illustrated this species as “*Onoba isolata* Kay, 1979”, but the authorship of this nominal species must be attributed to Laseron (1956), and the species is correctly cited as “*Onoba isolata* (Laseron, 1956) fide Kay, 1979 [not *Haurakia isolata* Laseron, 1956]”. No available name is thus applicable to this species.

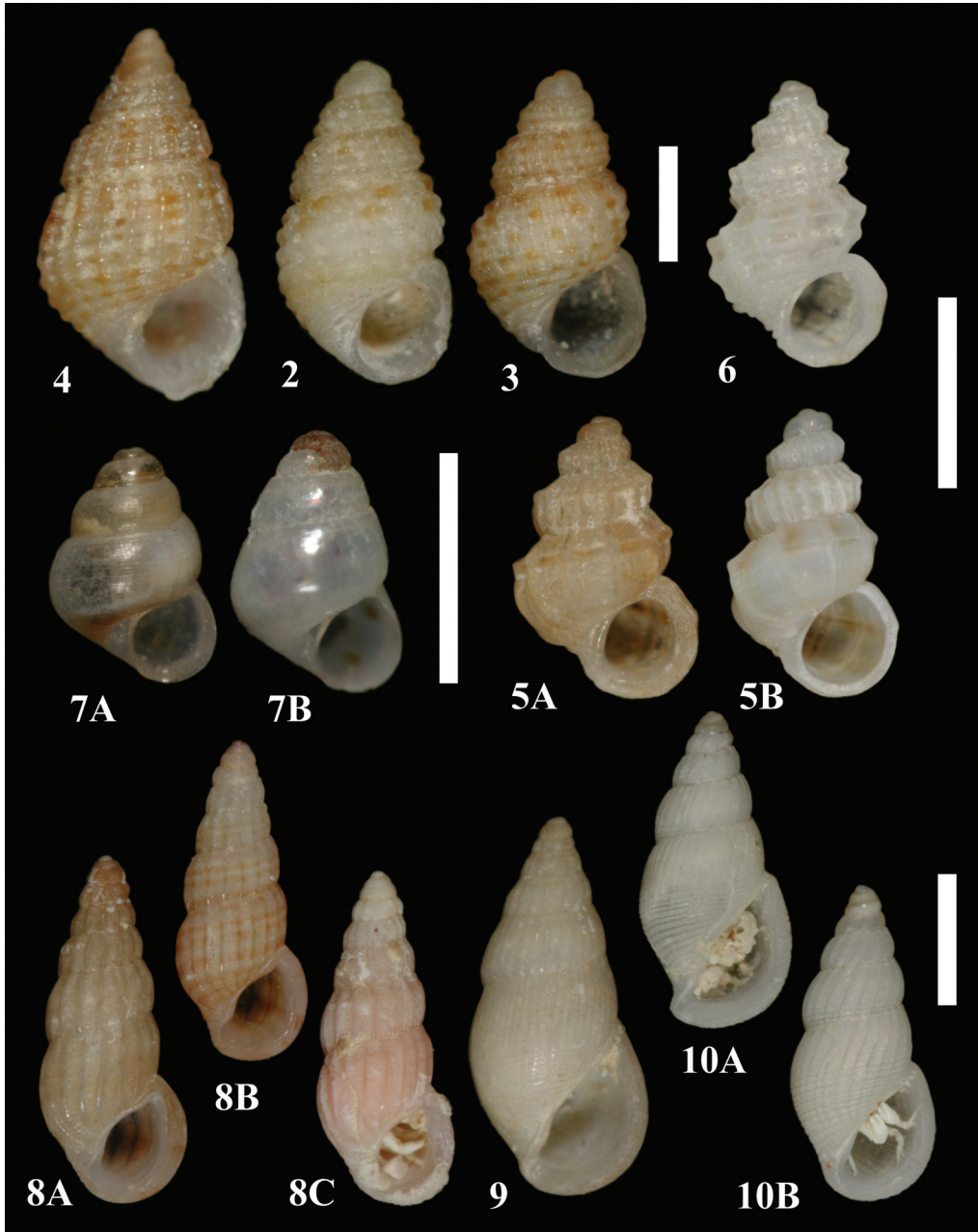
Alvania sp. 2

(Fig. 4)

Alvania sp. cf. firma: Ekawa, 1993: 77, pl. 1, fig. 10. [Not *Haurakia firma* Laseron, 1956]

Material examined. PI05-01 (1); PI05-03 (1+1dd); PI05-05 (3+1dd); PI05-09 (1); PI05-11 (2+3dd); PI05-12 (1dd); PI05-13 (1+2dd).

Remarks. This species closely resembles *Alvania ogasawarana* (Pilsbry, 1904), but can be distinguished from the latter by its thicker spiral ribs that are granulate at the intersection with the axial ribs, and the more pointed apex with a smaller protoconch. Among previously known taxa, *Haurakia firma* Laseron, 1956, described from Keppel Bay, northeastern Australia, may be most closely allied, as previously suggested by Ekawa (1993), but that species has a white and translucent shell.



Figs 2–10. Species of Rissoidae. 2, *Alvania isolata* (Laseron, 1956), PI05-07; 3, *Alvania* sp. 1, PI05-13; 4, *Alvania* sp. 2, PI05-11; 5, *Parashiela ambulata* Laseron, 1956, PI05-08D (A), PI05-04 (B); 6, *Parashiela invisibilis* (Hedley, 1899), PI05-08D; 7, *Lucidestea vitrea* Laseron, 1956, PI05-08D (A), PI05-04 (B); 8, *Rissoina* (*Rissoina*) *rosea* (Deshayes, 1863), PI05-08D (A), PI05-01 (B, C); 9, *Rissoina* (*Rissoina*) *modesta* Gould, 1861, PI05-08D; 10, *Rissoina* (*Rissoina*) *evanida* G. & H. Nevill, 1874, PI05-05 (A), PI05-03 (B). Scales: 1 mm for 2–4, 5 and 6, and 7, respectively; 2 mm for 8–10.

Parashiela ambulata Laseron, 1956

[Japanese name: Mijin-itokake-chojigai]

(Figs 5A, 5B)

Parashiela ambulata Laseron, 1956: 439, fig. 145; Ponder, 1985: 512, figs 29, 104; Ekawa, 1991: 42–43, pl. 1, figs 1, 7; 1993: 79, pl. 2, figs 16–17; Hasegawa, 2000: 151, pl. 75, fig. Rissoidae-11.

Parashiela beetsi Ladd, 1966: 64, pl. 12, figs 8, 9 (fide Ekawa, 1993).

Material examined. PI05-01 (1); PI05-04 (2dd); PI05-05 (1dd); PI05-08D (1dd); PI05-12 (1dd).

Remarks. This species shows a wide range of variations in the color of the shell and the number of axial ribs. Concerning the coloration, Ekawa (1993) noted that of some 1000 examples of this species collected from Amami-Oshima Island, Japan, all were pure white with the exception of only three specimens that possessed reddish brown spiral stripes. However, most of the specimens in the present material showed brownish base color or blotches (Figs 5A, 5B).

As listed in the synonymy, *Parashiela beetsi* Ladd, 1966 can be regarded as a junior synonym of this species, but the specimen illustrated by Kay (1979) as *P. beetsi* does not possess the characteristic spiral rib on the shoulder, and is correctly identified as *P. liddelliana* (Hedley, 1907). The latter species is also known from Japanese waters (Ekawa, 1993, as *Parashiela* sp.; Hasegawa, personal observation), and may also be widely distributed in the Indo-West Pacific.

Parashiela invisibilis (Hedley, 1899)

[Japanese name: Koshime-mijintsubo]

(Fig. 6)

Rissoa invisibilis Hedley, 1899: 418, fig. 9.

Parashiela invisibilis: Ekawa, 1993: 80, pl. 2, fig. 14; Hasegawa, 2000: 151, pl. 75, fig. Rissoidae-12.

Material examined. PI05-08D (2); PI05-13 (3).

Remarks. Although this species has seldom appeared in the literature, it is not rare in shallow water microgastropod assemblages in the tropical

Indo-West Pacific (Hasegawa, personal observation).

Lucidestea vitrea Laseron, 1956

(Figs 7A, 7B)

Lucidestea vitrea Laseron, 1956: 449, fig. 169; Ponder, 1985: 66–67, fig. 121A–E.

Material examined. PI05-01 (1); PI05-04 (4dd); PI05-07 (1dd); PI05-08D (2); PI05-10 (>100); PI05-11 (2dd); PI05-12 (1dd); PI05-13 (7+4dd).

Remarks. The species in the genus *Lucidestea* Laseron, 1956 generally possess a simple and featureless shell, and classification based on shell characters is thus quite difficult. Although the present material shows some heterogeneity and may represent a mixture of several distinct species (Figs 7A, 7B), it is nevertheless tentatively regarded as comprising a single species, because of the presence of intermediate forms.

The present specimens adequately agree with *Lucidestea vitrea*, described from tropical north-eastern Australia, according to the original figure (Laseron, 1956) as well as an SEM image provided by Ponder (1985, fig. 121A–E). However, some of the specimens (Fig. 7A) also closely resemble temperate Japanese-water specimens that have been identified as *L. mundana* (A. Adams, 1860) (Hasegawa, 2000; possible syntype BMNH 1974.5.19.54), and more careful study will thus be necessary for the precise identification of this species or species group.

Rissoina (Rissoina) rosea (Deshayes, 1863)

[Japanese name: Barairo-chojigai]

(Figs 8A–8C)

Rissoa rosea Deshayes, 1863: 61, pl. 7, fig. 29.

Rissoina honoluluensis Watson, 1886: 619, pl. 46, fig. 9.

New synonym.

Rissoina (Schwartziella) rosea: Tryon, 1887: 380, pl. 68, fig. 4.

Rissoina rosea: Habe, 1961: 23, pl. 10, fig. 22; Ekawa, 1993: 91, pl. 7, fig. 80.

Rissoina pulchella: Kay, 1979: 85, fig. 29E. [Not *Rissoina pulchella* Brazier, 1877]

Peripetella sp.: Itoigawa & Nishimoto, 1984: 27, pl. 7, fig. 4a–c (Miocene Mizunami group, central Japan).

Costalynia pulchella: Ekawa, 1993: 90, pl. 7, fig. 81. [Not *Rissoina pulchella* Brazier, 1877]

Rissoina cf. *pulchella*: Bosch *et al.*, 1995: 48, fig. 135. [Not *Rissoina pulchella* Brazier, 1877]

Material examined. PI05-01 (6dd); PI05-03 (2dd); PI05-05 (1dd); PI05-08D (2dd); PI05-09 (1dd); PI05-13 (7+5dd).

Remarks. There has been confusion concerning the identification of this species. It has been often identified as “*Rissoina pulchella* Brazier, 1877” in the literature (see the synonym list), but *R. pulchella* was shown to be a junior synonym of *Rissoina* (*Rissoina*) *ambigua* (Gould, 1849) by Ponder (1985, fig. 129E) who provided an SEM image of a syntype of *R. pulchella*. On the other hand, Habe (1961) identified a small, rose-colored rissoid from Japan as “*Rissoina rosea* Deshayes”, which was originally described from Réunion. Although I have not examined the type of this species, the original illustration, especially the distinct coloration (Deshayes, 1863, fig. 29), sufficiently supports Habe’s identification. Ekawa (1993) recorded both *R. rosea* and “*R. pulchella*” from Amami-Oshima, Japan, as separate species, but stated that “[‘*R. pulchella*’] may be one of the variants of *R. rosea*, but tends to have a more elevated spire and finer axial ribs.” Subsequent authors (e.g., Higo *et al.*, 1999) also treated both forms as different species. However, examination of specimens from various localities reveals that both forms are not distinguishable in terms of coloration or morphology, and they are considered herein to be conspecific.

***Rissoina* (*Rissoina*) *modesta* Gould, 1861**

[Japanese name: Habutae-chojigai]

(Fig. 9)

Rissoina modesta Gould, 1861: 401; Johnson, 1964: 111, pl. 13, fig. 7 (holotype).

Rissoina tenuistriata Pease, 1868: 295, pl. 24, fig. 30; Johnson, 1994: 26, pl. 9, fig. 5 (lectotype). **New synonym.**

Zebinella striata: Kosuge, 1965a: 16 (specimen illustrated in Kosuge, 1965b); Ekawa, 1993: 87, pl. 5, fig. 51 (Japanese name: Habutae-choji-gai). [Not *Rissoina striata* Quoy & Gaimard, 1832]

Rissoina (*Zebinella*) *striata*: Kosuge, 1965b, pl. 15, fig. 8 (Japanese name: Habutae-choji-gai). [Not *Rissoina striata* Quoy & Gaimard, 1832]

Rissoina (*Zebinella*) *tenuistriata*: Cernohorsky, 1978: 46, pl. 12, fig. 3.

Rissoina (*Rissoina*) *tenuistriata*: Higo *et al.*, 1999: 101 (Japanese name: Hosu-habutae-choji-gai).

Rissoina (*Rissoina*) *modesta*: Hasegawa, 2000: 153, pl. 76, fig. Rissoidae-22.

Zebinella tenuistriata: Chang & Wu, 2004: 38, fig. 76.

Material examined. PI05-08D (1dd).

Remarks. This species has rather consistently been cited in Japanese literature as “Habutae-choji-gai”, but its identification has been in a state of confusion. “Habutae-choji-gai” (“Habutae” means closely woven silk cloth, which apparently expresses the delicate fine sculpture of the species) was originally proposed for the specimen(s) collected from Amami-Oshima Island by Kuroda (1928), who identified the species as “*Zebinella striata* (Quoy, 1832)” without any figures or description. Although most of the voucher material of Kuroda (1928) is deposited in the biological collection of the Imperial Household Biological Laboratory (now housed in the Showa Memorial Institute, National Science Museum, Tokyo in Tsukuba), examples of Kuroda’s “*Z. striata*” were not located in the collection. Most subsequent authors (e.g., Higo & Goto, 1993) followed his identification, and Kosuge (1965b, pl. 15, fig. 8) illustrated “Habutae-choji-gai” for the first time as “*Rissoina* (*Zebinella*) *striata*”; the illustrated specimen does not resemble the syntype of *Rissoina striata* Quoy & Gaimard, 1832 illustrated by Sleurs (1993, fig. 25) at all, but agrees well with the lectotype of *Rissoina modesta* Gould, 1861 as illustrated by Johnson (1964, pl. 13, fig. 7), in that the shell is small for the genus (about 5–7 mm SH) with large, semicircular aperture and fine spiral and axial sculpture over the entire surface. Accordingly, Hasegawa (2000) identified “Habutae-choji-gai” with *R. modesta*, and distinguished *R. striata* as “Me-

oni-choji-gai”.

Rissoina tenuistriata Pease, 1868 was originally described from the Paumotos [Tuamotu Archipelago], and has been recorded from several parts of the Indo-West Pacific, such as “Tropical Indo-Pacific” (Cernohorsky, 1978), Amami-Oshima Island (Higo *et al.*, 1999, with the Japanese name “Hoso-habutae-choji-gai”), and Cocos-Keeling Islands (Maes, 1967, as *Rissoina* cf. *tenuistriata*, although the illustrated specimen differs from the typical form of the species in having significantly thicker axial ribs and may belong to closely allied but different species). Johnson (1994, pl. 9, fig. 5) recently published a photograph of the lectotype of *R. tenuistriata*, which is not clear enough for definitive identification, but it is sufficient to consider *R. tenuistriata* as a junior synonym of *R. (R.) modesta*.

Rissoina (Rissoina) evanida

G. & H. Nevill, 1874

(Figs 10A, 10B)

Rissoina evanida Nevill & Nevill, 1874: 25–26, pl. 1, fig. 14.

Zymalata concinna Laseron, 1956: 417, fig. 75.

Zebinella concinna: Ekawa, 1993: 88, pl. 5, fig. 49.

?*Zebinella* sp.: Ekawa, 1993: 87, pl. 5, fig. 50.

Material examined. PI05-03 (1dd); PI05-05 (3dd); PI05-08D (1dd); PI05-11 (1dd).

Remarks. Some of the specimens to hand (Fig. 9A) agree well with the original descriptions and illustrations of *Rissoina evanida* and *Zymalata concinna*, in possessing a characteristic angulation at the anterior edge of the aperture and inclined thick axial ribs. Some other specimens (Fig. 9B; also the specimen illustrated by Ekawa, 1993, pl. 5, fig. 50, as *Zebinella* sp.) considerably differ from the typical form in shell characters and show some affinity to an allied species, *Condylia collaxis* Laseron, 1956. They can, however, be included in a range of intraspecific variations of *R. evanida*, because of the presence of intermediate forms.

Rissoina (Rissoina) ambigua (Gould, 1849)

[Japanese name: Hososuji-chojigai]

(Figs 11A, 11B)

Pyramidella ambigua Gould, 1849: 118.

Rissoina pulchella Brazier, 1877: 367.

Rissoina materinsulae Pilsbry, 1904: 27, pl. 5, fig. 43–43a.

Rissoina fortis: Chang & Wu, 2004: 19, fig. 29. [Not *Rissoina fortis* C. B. Adams, 1852]

See Kay (1979) and Ponder (1985) for additional synonymy and taxonomical discussion.

Material examined. Form A: PI05-04 (1); PI05-07 (2dd); PI05-10 (1dd). Form B: PI05-08A (8dd); PI05-08D (2 dd); PI05-13 (3+4dd).

Remarks. There are a considerable range of intraspecific variations in size, shape, and coloration in this species. The typical specimens (Form A) have a stout shell, with well-inflated whorls (Fig. 10A), whereas some specimens (Form B) have a narrower and straight-sided shell, with less inflated whorls (Fig. 10B). Although the latter form agrees with the figure and description of *Costalyna isolata* Laseron, 1956, Ponder (1985) regarded *C. isolata* as a junior synonym of *R. ambigua*. Chang and Wu (2004: 19, fig. 29) also distinguished the latter form as “*Rissoina fortis*”. However, *R. fortis* C. B. Adams, 1852 is an eastern Pacific species distributed from the Gulf of California to Panama, and is usually regarded as a junior synonym of *Rissoina stricta* Menke, 1850 (Abbott, 1974).

Rissoina (Rissolina) obeliscus

Récluz in Schwartz, 1860

[Japanese name: Kiriko-chojigai]

(Fig. 12)

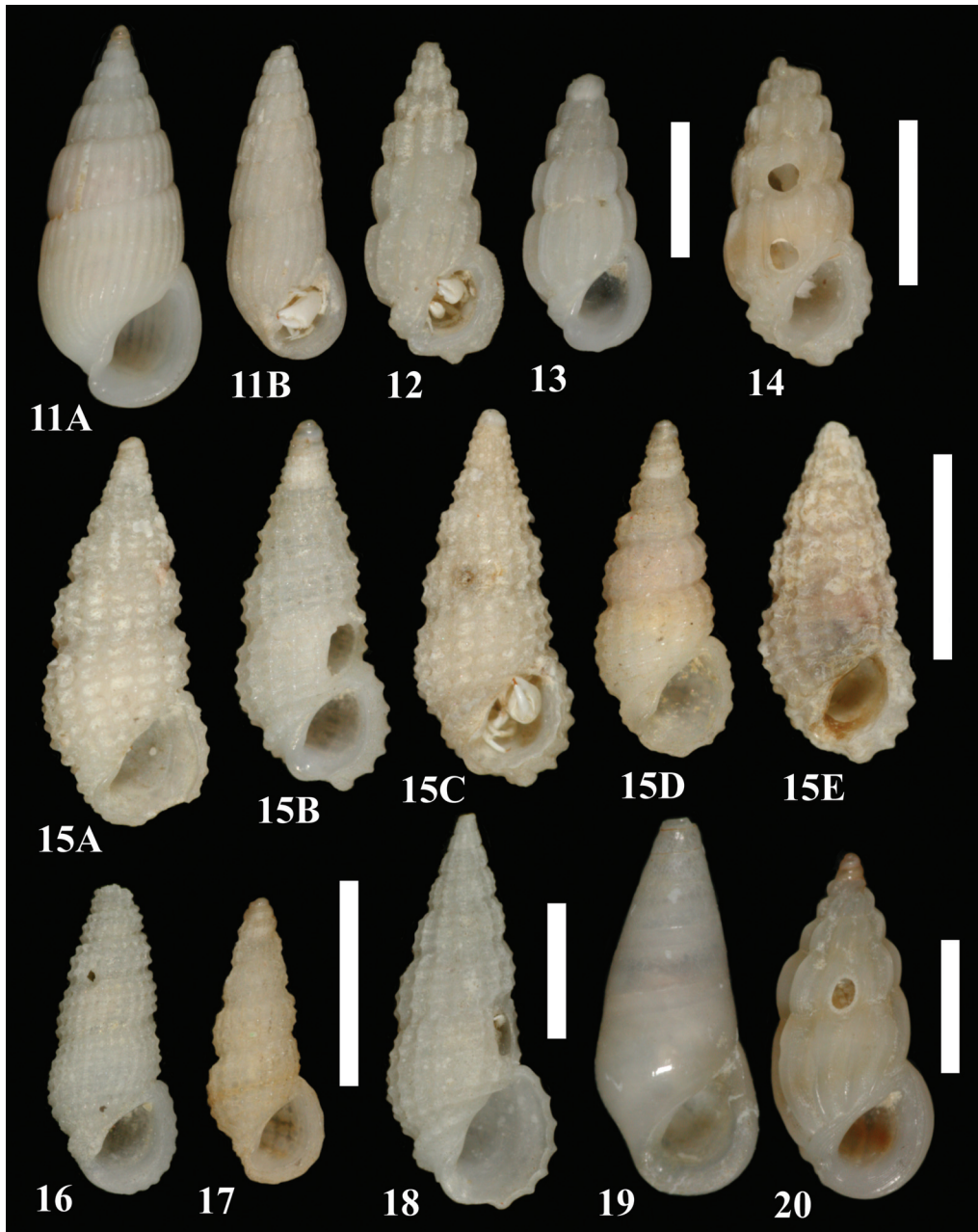
Rissoina obeliscus Récluz in Schwartz, 1860: 53, pl. 2, fig. 15.

Rissolina obeliscus: Ekawa, 1993: 97–98, pl. 6, fig. 73.

Rissoina (Rissoina) obeliscus: Tsuchiya & Habe, 1998: 19 (name only; voucher specimen examined).

Rissoina (Rissolina) obeliscus: Hasegawa, 2000: 155, pl. 77, fig. Rissoidae-36.

Material examined. PI05-01 (1dd); PI05-07 (1dd); PI05-08A (1dd); PI05-08D (2dd).



Figs 11–20. Species of Rissoidae. 11, *Rissoina (Rissoina) ambigua* (Gould, 1849), PI05-07 (A), PI05-08D (B); 12, *Rissoina (Rissolina) obeliscus* Récluz in Schwartz, 1860, PI05-08D; 13, *Rissoina (Rissolina) plicata* A. Adams, 1853, PI05-07; 14, *Rissoina (Rissolina) cardinalis* Brazier, 1877, PI05-01; 15, *Rissoina (Phosinella) tornatilis* Gould, 1861, PI05-07 (A), PI05-03 (B), PI05-08A (C), PI05-11 (D, E); 16, *Rissoina (Phosinella) angusta* (Laseron, 1956), PI05-12; 17, *Rissoina (Phosinella)* sp. 1, PI05-11; 18, *Rissoina (Phosinella)* sp. 2, PI05-14; 19, *Zebina (Zebina) isolata* Laseron, 1956, PI05-08D; 20, *Schwartziella (Schwartziella) triticea* (Pease, 1861), PI05-08A. Scales: 2 mm for 11–13, 14, 15–17, 18, and 19 and 20, respectively.

Remarks. Besides its type locality, Mauritius, this species has only been recorded in Japanese waters, where it is not uncommon. However, it may be distributed widely in the Indo-West Pacific, as shown by the present record, as well as by specimens from Indonesia (Hasegawa, personal observation).

Rissoina (Rissolina) plicata A. Adams, 1853

[Japanese name: Kebori-nise-chojigai]

(Fig. 13)

Rissoina plicata A. Adams, 1853: 264; Tryon, 1887: 357, pl. 56, fig. 58.

Rissolina plicata: Kosuge, 1965a: 16.

Schwartziella plicata: Ekawa, 1993: 90, pl. 7, fig. 77.

Rissoina (Rissolina) plicata: Hasegawa, 2000: 157, pl. 78, fig. Rissoidae-42.

Material examined. PI05-07 (2dd).

Remarks. Identification of this species is based on Tryon's (1887) figure, and examination of the type material will be necessary for precise identification. The specimens examined slightly differ from those from Okinawa in possessing a thicker and more distinct basal fold, but may fall within the range of intraspecific variation of the species. Ekawa (1993) synonymized *Rissoina rissoi* Fischer, 1901 with this species, although it was not confirmed in the present study.

Rissoina (Rissolina) cardinalis Brazier, 1877

[Japanese name: Futasuji-chojigai]

(Fig. 14)

Rissoina cardinalis Brazier, 1877: 368.

Costalyna birestes Laseron, 1956: 397, figs 23, 24.

Rissolina birestes: Ekawa, 1993: 98, pl. 6, fig. 70.

Rissoina (Rissolina) birestes: Hasegawa, 2000: 157, pl. 78, fig. 41.

Material examined. PI05-01 (1dd).

Remarks. This species had been identified in recent Japanese literature as *Costalyna birestes* Laseron, 1956, which was originally described from Torres Strait, northeastern Australia. Although the type specimens of the present species are uniformly white (Laseron, 1956), Japanese

specimens possess a characteristic reddish brown spiral band (Ekawa, 1993; Hasegawa, 2000), which was also observed in the Philippine specimen. Sleurs (1992) regarded *C. birestes* as a junior synonym of *Rissoina cardinalis* Brazier, 1877, which has never been illustrated to date.

Rissoina (Rissolina) plicatula Gould, 1861

[Japanese name: Hosoune-chojigai]

Rissoina plicatula Gould, 1861: 401.

See Sleurs (1992) for additional synonymy.

Material examined. PI05-14 (1dd).

Remarks. One imperfect specimen was identified as this species, which is distributed widely in the tropical Indo-West Pacific (Ponder, 1985). The temperate Japanese species, *Rissoina costulata* Dunker, 1860, is an extremely close ally, or possibly a geographical form of this widely distributed species. Ponder (1985) regarded *Rissoina laevicostulata* Pilsbry, 1904 [= *Rissoina costulata* Dunker, 1860] as a junior synonym of *R. plicatula*, although he did not mention *R. costulata*, which predates *R. plicatula*. On the other hand, several Japanese authors distinguish both forms, and co-occurrences of both forms were reported from Amami Oshima Island (Ekawa, 1993) and Taiwan (Chang & Wu, 2004). More detailed comparative study will be necessary to clarify their taxonomic relationship.

Rissoina (Phosinella) tornatilis Gould, 1861

[Japanese name: Koshibori-chojigai]

(Figs 15A–15E)

Rissoina tornatilis Gould, 1861: 401; Johnson, 1964: 160, pl. 14, fig. 5.

Rissoina transenna Watson, 1886: 620–621, pl. 46, fig. 10.

Phosinella tornatilis: Ekawa, 1993: 93–94, pl. 5, fig. 58; Chnag & Wu, 2004: 32, fig. 60.

Rissoina (Phosinella) tornatilis: Cernohorsky, 1978: 48, pl. 12, fig. 8; Hasegawa, 2000: 157, fig. Rissoidae-45.

Material examined. PI05-01 (1dd); PI05-03 (1dd); PI05-04 (1+1dd); PI05-07 (1dd); PI05-08A (4dd); PI05-08D (1dd); PI05-10 (2dd);

PI05-11 (2dd); PI05-14 (1dd).

Remarks. Classification within the subgenus *Phosinella* Mörch, 1876 is still in a state of confusion and a detailed revision will be necessary before the precise identification of each species can be established. The present material shows a wide range of variation in the sculpture, including the strength of the basal fold (Figs 15A–15E), and it may eventually be separated into several distinct species.

Rissoina tornatilis had been regarded as a senior synonym of *R. dunkerina* (Kuroda & Habe in Habe, 1961) [Japanese name: Kagome-chojigai] in Japanese literature, until Ekawa (1993) pointed out that they were distinct species, based on the figure (Johnson, 1964, pl. 14, fig. 5) of the holotype of *R. tornatilis*. *Rissoina tornatilis* was then regarded as a senior synonym of *R. transenna* Watson, 1886, which had thereto been used for the present species [Japanese name: Koshi-bori-chojigai], and this view has been adopted by subsequent authors including Hasegawa (2000).

Rissoina (Phosinella) angusta (Laseron, 1956)

(Fig. 16)

Phintorene angusta Laseron, 1956: 407, fig. 50.

Rissoina (Phosinella) angusta: Sleurs, 1992: 410–411.

Material examined. PI05-12 (1dd).

Remarks. This species has hitherto been known only from the holotype, which was collected from Michaelmas Cay, northeastern Australia. One incomplete specimen found in the present material agrees well with the original figure and description in having finer sculpture than those of the other species in the genus, as well as a thick and indented basal fold, although it is considerably smaller than the holotype (3.1 mm + α SH in the present material vs. 5.5 mm SH in the holotype). The specimen recorded from Amami Oshima, Japan, as “*Phosinella angustata* [sic] (Laseron, 1956)” by Ekawa (1993: 95, pl. 5, fig. 57) has much coarser sculpture, and may belong to a closely allied but different species.

Rissoina (Phosinella) sp. 1

(Fig. 17)

Material examined. PI05-11 (1dd).

Remarks. This may be one of the variations of *R. tornatilis*, but has a much smaller and narrower shell with a characteristic reddish brown stripe along the periphery. The specimen illustrated as “*Phosinella exasperata* Souverbie, 1866” by Ekawa (1993, pl. 5, fig. 53) may be conspecific.

Rissoina (Phosinella) sp. 2

(Fig. 18)

Material examined. PI05-14 (1dd).

Remarks. The specimen examined is significantly larger than other specimens in the subgenus (5.9 mm + α SH), with a larger aperture and a sharp basal fold. It resembles *Rissoina fusca* (Gould, 1861), which is distributed in temperate waters along the continental China and Japan, but has coarser sculpture and a stronger basal fold. No suitable name is found for this species.

Rissoina (Apataxia) cerithiiformis

Dunker in Tryon, 1887

[Japanese name: Kinsuji-chojigai]

Rissoina cerithiiformis Dunker in Tryon, 1887: 384, pl. 57, fig. 92.

Rissoina miltozona Tomlin, 1915: 321.

Rissoina (Apataxia) cerithiiformis: Fukuda, 1993: 41, pl. 14, fig. 193.

See Sleurs (1993) for additional synonymy.

Material examined. PI05-01 (1); PI05-03 (14dd); PI05-04 (4dd); PI05-05 (5dd); PI05-07 (3dd); PI05-08A (25dd); PI05-08D (15dd); PI05-09 (5dd); PI05-11 (16dd); PI05-13 (22dd).

Remarks. Several authors, such as Kay (1979) and Ponder (1985), regarded *Rissoina cerithiiformis* Dunker in Tryon, 1887 as *nomen nudum*, but Tryon’s name is accompanied by description and a figure, and is considered to be validly introduced following Fukuda (1993) and

Sleurs (1993). This is one of the commonest shallow water rissoids in the Indo-West Pacific with a wide geographic distribution.

Zebina (Zebina) tridentata (Michaud, 1830)

[Japanese name: Kurimushi-chojigai]

See Kay (1979) and Ponder (1985) for synonymy.

Material examined. PI05-08A (1dd).

Remarks. This species is widely distributed in the Indo-West Pacific, and commonly found in beach drift.

Zebina (Zebina) isolata Laseron, 1956

[Japanese name: Sho-kurimushi-chojigai]

(Fig. 19)

Zebina isolata Laseron, 1956: 430, fig. 122; Ekawa, 1993: 86–87, pl. 3, fig. 31; Hasegawa, 2000: 159, pl. 79, fig. Rissoidae-53.

Material examined. PI05-04 (1dd); PI05-08D (1dd); PI05-13 (1dd).

Remarks. Besides its type locality on Christmas Island, Indian Ocean, this species has hitherto been known only from Amami-Oshima Island, Japan (Ekawa, 1993; Hasegawa, 2000). The present record connects these distant localities.

Schwartziella (Pandalosia) ephamilla

(Watson, 1886)

[Japanese name: Hina-chojigai]

Rissoina scalariformis Watson, 1886: 617, pl. 46, fig. 6; Tryon, 1887: 378, pl. 54, fig. 11. [A junior homonym of *Rissoina scalariformis* Adams, 1852]

Rissoina ephamilla Watson, 1886: errata of part XLII (replacement name for *R. scalariformis*); Kay, 1979: 84, fig. 29B.

Pandalosia oceanica Laseron, 1956: 392, figs 8, 9 (fide Ponder, 1985; not confirmed).

Rissoina (Rissolina) ephamilla: Cernohorsky, 1978: 45, text-fig. 9 (reproduction of original figure).

Schwartziella ephamilla: Warén, 1983: 289, figs 71, 72; Dekker & Orlin, 2000: 20.

Pandalosia mizunamiensis Itoigawa & Nishimoto, 1984: 31, pl. 9, fig. 3, pl. 11, figs 1a, b, 2a–f (Miocene Mizu-

nami Group).

Schwartziella (Pandalosia) ephamilla: Ponder, 1985: fig. 139C–H; Hasegawa, 2000: 161, pl. 80, fig. Rissoidae-61.

Pandalosia ephamilla: Chang & Wu, 2004: 16, fig. 22.

Material examined. PI05-01 (1dd); PI05-03 (4dd); PI05-05 (1dd); PI05-08D (2dd); PI05-09 (1dd); PI05-11 (4dd); PI05-12 (1dd); PI05-13 (7 + 5dd).

Remarks. Despite its minute size, this characteristic species is well represented in literature as shown in the synonym list. It has a planktotrophic type of protoconch, and is widely distributed in the Indo-Pacific. However, although Sleurs (1992) synonymized the Eastern Pacific species *Rissoina porteri* Baker, Hanna & Strong, 1930, described from Gulf of California, with the present species, this cannot be supported due to differences in sculpture (axial ribs more inclined in *R. porteri*). Furthermore, some of the specimens illustrated under this name do not actually belong to this species, including those figured by Ladd (1966, pl. 14, figs 5–8, 11, 12) and Maes (1967, pl. 5, fig. D).

Schwartziella (Schwartziella) triticea

(Pease, 1861)

(Fig. 20)

Rissoina triticea Pease, 1861: 438; Kay, 1965: 68, pl. 2, fig. 2.

Schwartziella triticea: Kay, 1979: 86, fig. 29I.

Schwartziella (Schwartziella) triticea: Ponder, 1985: 90, fig. 138D–G.

See Kay (1965) for additional synonymy and Sleurs (1992) for further discussion.

Material examined. PI05-08A (2dd).

Remark. This species name has sometimes been incorrectly used in literature. The specimen illustrated by Cernohorsky (1978, pl. 11, fig. 10) as “*Rissoina triticea*” can correctly be identified as *Rissoina (Rissolina) plicata* A. Adams, 1853, because of the presence of distinct spiral sculpture. On the other hand, the Japanese specimens illustrated as “*Schwartziella triticea*” by Ekawa (1993: 90, pl. 7, fig. 74) and by Hasegawa (2000:

161, pl. 80, fig. Rissoidae-60) have a paucispiral protoconch, and possibly represent *Schwartziella inconspicua* (Brazier, 1877). The specimens from the Philippines have a multispiral conical protoconch, and are correctly identifiable as the present species.

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フィリピン，プエルト・ガレラで採集されたリソツボ科貝類について

長谷川和範

フィリピン・ミンドロ島北部のプエルト・ガレラにおいて実施した浅海性無脊椎動物相調査によって得られたリソツボ科貝類を分類学的に検討した結果，7属24種が確認された．その中には，未記載種と思われるもの4種を含む．それぞれの種について，最近の研究成果に基づきシノニムや分類学的な問題などを議論した．