Results of the Rumphius Biohistorical Expedition to Ambon (1990).

Part 18. The Rissoinidae and Zebinidae (Gastropoda: Caenogastropoda)

Running title: Sleurs and Strack – Rissoinidae and Zebinidae from Ambon

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Abstract

This paper reviews the Rissoinidae and Zebinidae collected during the Rumphius Biohistorical Expedition to Ambon, in 1990, with additional material collected by the second author (HLS). In all, 30 species belonging to the family Rissoinidae and 12 species belonging to the family Zebinidae are recognised. The well known species are listed with a short synonymy and the poorly known species are redescribed in detail and illustrated. The biogeographical relationships of the rissoinid and zebinid fauna from Ambon are briefly discussed.

Introduction

The primary objective of the Rumphius Biohistorical Expedition was to collect marine invertebrates (mainly molluscs and crustaceans) on the localities mentioned by Georg Everhard Rumpf (Rumphius) in his book ‘’D’Amboinsche Rariteitkamer’’. Rumphius’s book did not mention Rissoinidae or Zebinidae. He focused on larger species as was to be expected from a 17th century scientist, and the fact that he became blind would not favourise working on smaller molluscs. But he was well aware of smaller species living in the area. He called these ‘’quisquilas / quisquiliae’’ or ‘’kleine schorri morri’’ (Rumphius, 1705: 75, 98). The Latin quisquiliae can be translated as trifles or trivial things, and the Dutch schorrimorri meaning riffraff.

Another objective of the expedition was to get an insight of the total molluscan fauna, thus attention was also paid to collecting micromolluscs. Micromolluscs were never officially defined, and in the literature and on internet we found maximum sizes ranging between 5 mm and 40 mm. The largest rissoinid species, *Rissoina (Moerchiella) gigantea* (Deshayes, 1848) reaches a length of about 20 mm.

To our knowledge no important study on recent Indonesian micromolluscs has ever been written, with the exception of the work on the Columbellidae of the Rumphius Biohistorical Expedition (deMaintenon, 2008), a family which partly falls in the category of micromolluscs (especially the genus *Zafra* A. Adams, 1860). Expeditions to this area like the Siboga Expedition (1899-1900), Snellius Expedition (1929-1930), and the Mariel King Memorial Expedition (1970) did not actively collect micromolluscs. Although the Snellius II (1984) and a few subsequent smaller expeditions collected sediment samples, including micromolluscs, only part of the material was processed (processing is still continuing, R.G. Moolenbeek, pers. comm. 2020) and no substantial results were ever published. Fossil (Miocene) Rissoininae material from east Borneo was described by Beets (1941, 1986).

Indonesia occupies a central position in the Indo-Pacific, and forms an important part of the Coral Triangle. With more than 17,500 islands and a coastline in excess of 80,000 km, the Indonesian Archipelago is a storehouse of marine diversity (Tomascik et al., 1997). Much of the molluscan diversity is to be found in the smaller species. A study by Bouchet et al. (2002) demonstrated that, of a total of 2738 species collected in one site in New Caledonia, almost 52% have an adult size smaller than 8.8 mm. Indonesia is much neglected in this regard, and one can say that in this region more than half of the marine mollusc species remain unknown because micromolluscs were seldom sampled and never properly studied. The previous study on the Columbellidae by deMaintenon (2008), and now this paper on the two related families Rissoinidae and Zebinidae, should be regarded as a first step towards a more realistic insight into the total species diversity of the marine Mollusca in Indonesia.

Material and Methods

All material was collected during the Rumphius Biohistorical Expedition to Ambon, between November and December 1990, with additional material collected by the second author (HLS) during his stay in Ambon and Ceram in 1997.

The bulk of the Rissoinidae and Zebinidae material was collected sieving washed up sediments or sediments in shallow water (from the intertidal zone up to about 20 m depth) by M.S.S. Lavaleye, A. Fortuin, A.F. de Jong and H.L. Strack. The sieved residu was rinsed in fresh water and dried. Sorting the material was done by M.S.S. Lavaleye and H.L. Strack. Material was also found by turning stones in the intertidal zone and in shallow water.

The large majority of specimens were collected as dead shells, unfortunately no time was available during the expedition to intensively collect living micromolluscs.

For the well known species a concise synonymy is presented. A more detailed synonymy is presented for less known species. All information about the geographical distribution of the species is based on examination of large samples of Rissoinidae and Zebinidae from different localities by one of the authors (WS). Reliable records from the literature are also included. For a detailed description of the sampling stations we refer to the paper of Strack (1993). All specimens are stored in the Naturalis Biodiversity Center (Leiden, the Netherlands).

For the collections the following abbreviations are used: AMS = Australian Museum, Sydney; ANSP = Academy of Natural Sciences of Philadelphia; BMNH = British Museum (Natural History), London; KBIN = Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels; LACM = Los Angeles County Museum, Los Angeles; MHNB = Muséum d'Histoire Naturelle, Bordeaux; MNHN = Muséum National d'Histoire Naturelle, Paris; MCSN = Museo Civico di Storia "Giacomo Doria", Genova; NMV = Naturhistorisches Museum, Vienna; SMF = Senckenberg Museum, Frankfurt am Main; USNM = United States National Museum of Natural History "The Smithsonian", Washington D.C.; ZSI = Zoological Survey of India, Calcutta.

Other abbreviations used: SEM = scanning electron micrograph; spm(s) = specimen(s); stn = station.

Systematic part

Subclass Caenogastropoda Cox, 1959

Superfamily Rissooidea Gray, 1847

Family Rissoinidae Simpson, 1865

In the earlier literature, the Rissoinidae and Zebinidae were usually treated as a subfamily within the family Rissoidae (Ponder, 1985; Sleurs, 1993). A phylogenetic analysis of risooidean and cingulopsoidean families (Criscione & Ponder, 2013), based on molecular data, shows the Rissoininae Stimpson, 1865 should be elevated to the family level. In a recent paper Criscione et al. (2017) provide evidence, on the basis of both molecular and anatomical analysis, that the family Rissoinidae and the Zebinidae are two distinct family-lineages within the superfamily Rissooidea.

Rissoina d'Orbigny, 1840

Rissoina (Rissoina) ambigua (Gould, 1849)

Pyramidella ambigua Gould, 1849: 118

Rissoina (Rissoina) ambigua (Gould) – Ponder, 1985: 79, figs 53 B, 129 E-G

Rissoina ambigua (A.A. Gould, 1849) – Faber & Gori, 2016: 97-98, figs 1-2

Material. – Stn 03 (Leitimur, Batumerah), 2 spms; stn 05 (Leitimur, Tg. Benteng), 1spm; stn 06 (Hitu, Poka), 1 spm; stn 17 (S.E. of Pombo Islet), 1 spm; stn 20 (Hitu, Hitulama), 1 spm; stn 23 (Hitu, Kaitetu), 3 spms; stn 27 (Leitimur, Hutumuri), 5 spms; stn 30 (Hitu, Suli), 19 spms; stn 39 (Hitu), 2 spms; stn 44 (Leitimur, Latuhalat), 1 spm; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 11 spms.

Geographical distribution. – *Rissoina ambigua* is a widespread and very common species in the tropical Indian Ocean and Western Pacific, ranging from Tanzania and Mozambique in the Indian Ocean to an eastern limit at the Marquesas Islands and Pitcairn Islands.

Rissoina (Rissoina) andamanica Weinkauff, 1881

Fig. 1

Rissoina andamanica Weinkauff, 1881: 75, pl. 15b, fig. 6 – Tryon, 1887: 386, pl. 58, fig. 21; Cernohorsky, 1978: 44, pl. 11, fig. 7

Rissoina cylindrica Preston, 1908: 198, fig. 2

Rissoina cf. R. tenuistriata – Orr Maes, 1967: 110, pl. 5, fig. L. (non *Rissoina tenuistriata* Pease, 1867)

Material. – Stn 30 (Hitu, Suli), 3 spms; stn 44 (Leitimur, Latuhalat), 2 spms; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, ca. 1 m depth, 6 spms.

Geographical distribution. – Tropical eastern Indian Ocean and Western Pacific from the Maldives to Samoa.

Remarks. – *Rissoina (Rissoina) andamanica* strongly resembles *R. tenuistriata* Pease, 1867 in shell shape and in having a subangulate, slightly swollen last whorl, but it can be readily distinguished by the subcylindrical instead of the conical protoconch of *R. tenuistriata*, in having a contracted shell base and in having more prominent axial ribs on the adapical spire whorls.

R. andamanica superficially resembles *R. ambigua* (Gould, 1849) in shell-shape and sculpture, but differs in having the subcylindrical protoconch instead of the conical protoconch in *R. ambigua* and in having a more globose last whorl due to the subsutural contraction and the contracted shell base. On the average, specimens of *R. andamanica* are slightly larger than *R. ambigua* and the inner side of the inner apertural lip is much thicker than in the latter species.

Rissoina (Rissoina) evanida G. & H. Nevill, 1874

Fig. 2

Rissoina evanida G. & H. Nevill, 1874: 25, pl. 1, fig. 14

Rissoina (Zebinella) trigonostoma Boettger, 1893: 189

Zymalata concinna Laseron, 1956: 417, fig. 75 (non *Rissoina concinna* A. Adams, 1851)

Rissoina (Rissoina) concinna – Ponder, 1985: 79, fig. 133 D-E (non *Rissoina concinna* A. Adams, 1851)

Rissoina evanida G. Nevill & H. Nevill, 1881– Faber, 2013: 24, figs 43-44

Material. – Stn 01 (Hitu, W. side of Hunut), 2 spms; stn 23 (Hitu, Kaitetu), 2 spms; stn 30 (Hitu, Suli), 10 spms.

Geographical distribution. – Tropical eastern Indian Ocean and Western Pacific, from Andaman Islands to Fiji.

Remarks. – *Rissoina evanida* strongly resembles specimens of *R. tenuistriata* Pease, 1867 with a relative short spire, but it can be readily distinguished by its relatively larger aperture, its more expanded outer lip and in the last whorl being more or less contracted.
R. evanida resembles *R. quasimodo* Faber, 2013, but differs by its less shouldered whorls and less widely spaced axial ribs.

Rissoina (Rissoina) honoluluensis Watson, 1886

Rissoina honoluluensis Watson, 1886: 619, pl. 46, fig. 9 – Tryon, 1887: 373, pl. 54, fig. 13; Faber & Kaiser, 2015: 20, figs 3-4
Austrosina quinita Laseron, 1956: 394, fig. 14
Rissoina pulchella – Kay, 1979: 85, fig. 29E (non *Rissoina pulchella* Brazier, 1877)
Rissoina honoluluensis R.B. Watson, 1886 – Faber & Gori, 2016: 98, figs 6-7

Material. – Stn 27 (Leitimur, Hutumuri), 7 spms; stn 30 (Hitu, Suli), 1 spm; stn 39 (Hitu, S. Side Larike), 2 spms; stn 44 (Leitimur, Latuhalat), 2 spms.

Geographical distribution. – Tropical Indo-Pacific, from the east coast of South Africa to Clipperton Island.

Remarks. - *Rissoina honoluluensis* superficially resembles *R. ambigua* (Gould, 1849), but differs in being markedly smaller, in having less prominent axial ribs and in the protoconch having spirally arranged rows of granules.
R. honoluluensis is similar to *R. catholica* Melvill & Standen, 1896 in shell size and sculpture, but differs essentially in having a protoconch of a planktotrophic larval type; furthermore the

shell of *R. honoluluensis* is more elongately conical than *R. catholica*, the latter being rather ovate.

Rissoina (Rissoina) cf. spiralis Souverbie in Souverbie & Montrouzier, 1866

Fig. 3

? Rissoina spiralis Souverbie in Souverbie & Montrouzier, 1866: 258, pl. 9, fig. 9

? Rissoina debilis Garrett, 1873: 212, pl. 2, fig. 9

? Rissoina nesiotes Melvill & Standen, 1896: 307, pl. 11, fig. 64

Material. – Stn 27 (Leitimur, Hutumuri), 3 spms.

Geographical distribution. – Specimens that are tentatively identified as *Rissoina cf. spiralis* were recorded from Mozambique to Fiji. But as it may turn out to be a species complex, the distribution ranges should be reconsidered.

Remarks. – The single adult specimen from Ambon strongly resembles specimens of *Rissoina spiralis* Souverbie, 1866 from different Western Pacific localities ranging from the Great Barrier Reef to Fiji and New Caledonia. However, among the many specimens examined we observed a considerable degree of variation including all possible intermediates in shell length (observed range: 3.7 mm - 6.9 mm, n = 74), in the height of the spire (more or less elongate) and in the strength of the spiral sculpture on the abapical half of the last whorl; furthermore, the spiral riblets on the abapical half of the last whorl can be more or less distantly spaced. All specimens examined have a protoconch suggesting a non-planktotrophic larval development.

Additional anatomical or molecular information may reveal whether *R. spiralis* is a strongly variable species with respect to some shell characters or should be regarded as a cluster of several strongly similar species.

Rissoina (Rissoina) tenuistriata Pease, 1867

Fig. 4

Rissoina tenuistriata Pease, 1867: 295, pl. 24, fig. 30 – Kay, 1971: 272

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

Material. – Stn 01 (Hitu, W. Side of Hunut), 6 spms; stn 05 (Leitimur, Tg. Benteng), 3 spms; stn 27 (Leitimur, Hutumuri), 3 spms; stn 30 (Hitu, Suli), 16 spms; stn 44 (Leitimur, Latuhalat), 1 spm; Latuhalat, 09-14.XII.1997, H.L. Strack leg., under stones, 0.5 m, 3 spms.

Geographical distribution. – Tropical Indo-Pacific, from the east coast of South Africa, and the Red Sea to the Tuamotu Archipelago as the eastern limit.

Rissoina (Rissoina) vangoethemorum Sleurs, 1994

Fig. 5

Rissoina (Rissoina) vangoethemorum Sleurs, 1994: 13, figs 1 A-D, 3

Rissoina vangoethemorum Sleurs, 1994 – Faber, 2013: figs 33-34

Material. – Stn 30 (Hitu, Suli), 1 spm; stn 44 (Leitimur, Latuhalat), 1 spm; Latuhalat, 09-14.XII.1997, H.L. Strack leg., under stones, 0.5 m, 1 spm.

Geographical distribution. – Tropical Western Pacific, from the Philippines, N.E. Australia, E. Papua New Guinea and New Caledonia.

Rissoina (Rissoina) plicatula species group

Members of this species-group are often included in a distinct genus or subgenus *Rissolina* Gould, 1861, largely on the basis of the presence of more or less prominent axial ribs and a prominent spiral fold near the shell base. The examination of the external and internal anatomy, however, does not show any marked differences with species of *Rissoina* (s.s.). Furthermore, the differences in shell characters are not sufficiently clear-cut, as a wide range of variation in the strength of the basal fold was observed amongst the several species examined. A basal spiral fold is also present in most species of the subgenus *Phosinella* and in species of *Zebina (Pandalosia)*. Consequently, this character appears to be strongly subject to parallel evolution. Ponder (1985: 82), who mentions the strong similarities with *Rissoina* s.s., maintains *Rissolina* "largely as a subgenus of convenience for a distinctive species-group centred in the Indo-Pacific". As the striking similarities in shell characters suggest a probable close phylogenetic relationship between members of this species-group, they are provisionally included here in a distinct species group within the genus *Rissoina (Rissoina)* pending additional information about the phylogenetic relationship with other *Rissoina* species.

Rissoina (Rissoina) duclosi Montrouzier, 1866

Fig. 6

? *Rissoina scalariana* A. Adams, 1853: 265

Rissoina duclosi Montrouzier in Souverbie & Montrouzier, 1866: 257, pl. 9, fig. 8 – Faber, 2013: 21, figs 25-28

? *Rissoina sismondiana*, Issel, 1869: 293, pl.5, fig. 7

Costalynia cardinalis (Brazier) – Laseron, 1956: 395, figs 16-17 (non *Rissoina cardinalis* Brazier, 1877)

Material. – Stn 27 (Leitimur, Hutumuri), 3 spms; stn 30 (Hitu, Suli), 2 spms; stn 44 (Leitimur, Hatuhalat), 2 spms; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m, 13 spms.

Geographical distribution. – Tropical Western Pacific, from the Philippines to Fiji.

Remarks. – *Rissoina (Rissoina) duclosi* strongly resembles *R. canaliculata* Schwartz von Mohrenstern, 1860, but differs essentially in being markedly smaller and in the spiral sculpture -particularly on the adapical spire whorls- being more prominent.
R. duclosi strongly resembles one of the type specimens of *R. plicata* A. Adams, 1853 (BMNH, 1984131 from Philippines, Isle of Masbate), which unfortunately lacks the protoconch and the adapical spire whorls; the remaining whorls of the latter, however, differ in having slightly more prominent spiral lirae and in the basal spiral fold being more nodulose. We have examined only one additional specimen from the Philippines, which is the type locality of *R. plicata*, but also this specimen has a broken apex. Therefore, additional well preserved material from the type locality is required in order to make a well-founded statement about the identity of *R. plicata*.

R. duclosi shows considerable variation among the large number of specimens examined from different localities in the tropical Western Pacific region, with respect to the shell shape, which ranges from weakly to strongly elongately conical, largely depending upon the degree of contraction near the base of the last whorl; furthermore, the number of spiral ribs on the spire whorls and on the last whorl is rather variable.

Examination of Laseron's material in the AMS, reveals that the specimens identified by Laseron (1956) as *Costalynia cardinalis* Brazier are *R. duclosi*.

The syntypes of *R. scalariana* A. Adams are very similar to the title species, but unfortunately they lack the protoconch; furthermore, on the average, they are markedly larger than (up to 8.4 mm) most specimens of *R. duclosi*, but are otherwise indistinguishable from the latter species in shell morphology. The shell length of *R. scalariana* is intermediate between typical specimens of *R. duclosi* and *R. canaliculata* Schwartz. Additional specimens, referable to *R. duclosi* from the Philippines (AMS, C.159814 and AMS, C.160153), do not differ markedly from typical *R. duclosi* specimens. Therefore *R. scalariana* is only tentatively included in the synonymy of *R. duclosi*, pending the availability of well preserved additional material from the Philippines. In case *R. scalariana* may turn out to be conspecific with *R. duclosi*, it takes priority over the latter specific name.

The type material of *R. duclosi* is almost indistinguishable from the type specimen (1 specimen labelled 'Type' in MCSN) of *R. sismondiana* Issel, 1869 from the Red Sea. One syntype of *R. duclosi* clearly shows a protoconch of non-planktotrophic developmental type and also fresh specimens from other localities in the Western Pacific have a protoconch of planktotrophic larval type. At least one fresh specimen that we have seen from Karan Island (Saudi Arabia) and that we tentatively identified as *R. sismondiana* has a protoconch that suggests a planktotrophic larval development, as it consists of 2 glossy whorls, with an abrupt transition to the teleoconch and a deep sinusigeral notch. It is not clear whether *R. duclosi* and

R. sismondiana are two distinct species, which can only be distinguished by protoconch features, until more fresh specimens with intact protoconch are available for examination. Therefore we only tentatively include *R. sismondiana* in the synonymy of *R. duclosi*.

Rissoina (Rissoina) heronensis (Laseron, 1956)

Fig. 7

?*Rissoina obeliscus* Recluz, 1860 – Schwartz von Mohrenstern: 121, fig. 15

Fractoralla heronensis Laseron, 1956: 399, figs 30-31

Rissoina (Rissolina) turricula Pease, 1860 – Orr Maes, 1967: 110, pl. 5, fig. H. (*non Rissoina turricula* Pease, 1860)

Material. – Stn 44 (Leitimur, Latuhalat), 2 spms; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m, 5 spms.

Geographical distribution. – From the Cocos Islands in the Indian Ocean to the Society Islands in the central Pacific.

Remarks. – *Rissoina heronensis* strongly resembles *R. turricula* Pease, 1860 in shell shape and sculpture, but differs essentially in having a cylindrical protoconch of planktotrophic larval type (observed in conspecific specimens from Heron Island).

Schwartz von Mohrenstern (1860) described *R. obeliscus* on the basis of a specimen that was labeled "*Rissoina obeliscus*", which he received from Recluz' collection. Recluz, however, never described the species and consequently the author of this species becomes Schwartz von Mohrenstern. The single specimen of this species which is housed in the NMV agrees with

the description and dimensions of the shell mentioned in the original description and illustration, except that the author did not illustrate the drilling hole, which is clearly visible on the penultimate whorl. Nevertheless, this specimen is considered the holotype of *R. obeliscus* since it agrees very closely to the original description in all other respects. Unfortunately, this specimen lacks the protoconch, but otherwise it strongly resembles the type material of *Factoralla heronensis*, particularly in having the typical fine and very densely spaced spiral lirae on the varix; it differs only from the latter in being slightly smaller (shell length 4.4 mm and shell diameter 1.9 mm) and in having slightly more closely spaced axial ribs. Because the protoconch features remain unknown and because of the small differences in teleoconch characters mentioned above, we only include tentatively *R. obeliscus* in the synonymy of *R. heronensis*.

Rissoina (Rissoina) plicatula Gould, 1861

Fig. 8

Rissoina plicatula Gould, 1861: 401 – Johnson, 1964: 129, pl. 15, fig. 5

Rissoina (Rissolina) signata Boettger, 1893: 187

Fractoralla transita Laseron, 1956: 399, fig. 28

?Rissoina (Rissolina) costulata (Dunker) – Kosuge, 1965: 134, pl.15, fig.3, textfigs 18-28

Material. – Stn 05 (Leitimur, Tg. Benteng), 3 spms; stn 21 (Hitu, Mamala), 2 spms; stn 30 (Hitu, Suli), 2 spms; stn 37 (Hitu, W. side of Laha), 4 spms.

Geographical distribution. – Indonesia, the Philippines, the E. coast of Papua New Guinea and the Great Barrier Reef.

Remarks. - *Rissoina plicatula* shows considerable variation in having the axial ribs - particularly on the abapical whorls- more or less widely spaced.

R. plicatula resembles *R. laevicostulata* Pilsbry, 1904, but differs in being essentially markedly larger (length of figured specimen: 7.0 mm) and in the axial ribs being less closely spaced and less opisthocline.

R. plicatula strongly resembles the syntypes of *R. weinkauffiana* Nevill, 1881 but the latter has a narrower protoconch which lacks the carina on the last whorl; furthermore *R. weinkauffiana* has more closely spaced and less opisthocline axial ribs on the abapical spire whorls and last whorl and lacks the prominent spiral ribs on the abapical half of the external varix.

Johnson (1964: pl.15, fig.5) presents a photograph of the holotype of *R. plicatula* (USNM 947), which clearly shows the presence of the adapical spire whorls. We examined the same specimen in the USNM and it obviously lacks the protoconch and several adapical spire whorls; therefore it is not entirely clear whether the adapical spire whorls of this specimen were decollated subsequently after photographing it, or whether the photographed specimen is not the specimen that we examined.

The holotype of *Fractoralla transita* Laseron (AMS, C.102432) from Darwin is poorly preserved and the protoconch is broken, but judging from the overall shape of the shell and from the sculpture, it may be conspecific with *R. plicatula*.

The single syntype of *R. funiculata* Souverbie in Souverbie & Montrouzier, 1866 (MHNB) is badly damaged, but the shell shape and especially the presence of small striations in the interspaces between the axial ribs strongly suggest it may turn out to be conspecific with *R. plicatula*.

The specimen illustrated by Kosuge (1965) as *Rissoina (Rissolina) costulata* (Dunker), may be *R. plicatula*, but since this specimen lacks the protoconch, it is only tentatively included in the synonymy of the latter species.

Rissoina (Rissoina) subfuniculata Weinkauff, 1881

Fig. 9

Rissoina subfuniculata Weinkauff, 1881: 76, pl. 15b, fig. 8

Rissoina turricula var. *ceylonica* Nevill, 1884: 80 (non *Rissoina turricula* Pease, 1860; non *Rissoina turricula* Angas, 1867)

Rissoina angusta Preston, 1908: 197, pl. 14, fig. 1 (non *Rissoina angusta* Hedley, 1898)

Costalynia bilinea Laseron, 1956: 397, figs 25-26

Rissoina bilinea (Laseron, 1956) – Faber & Gori, 2016: 98, figs 8-9

Material. – Stn 30 (Hitu, Suli), 10 spms; stn 44 (Leitimur, Latuhalat), 1 spm.

Geographical distribution. – Tropical Indo-Pacific, from the Maldives and Sri Lanka to northern Queensland (Australia).

Remarks. – *Rissoina subfuniculata* superficially resembles *R. honoluluensis*, Watson, 1881, but differs essentially in having a rather prominent spiral fold near the shell base, in having more prominent axial ribs and in its protoconch lacking the pustules of the latter species. *R. subfuniculata* is rather variable in shell length, but all possible intermediates between the extreme morphotypes were observed among the extensive lot of specimens examined from

different locations in the Indo-Pacific region. The type material of *R. subfuniculata*, *R. angusta* Preston and *R. bilinea* represent the large morphotype, while the type material of *R. turricula ceylonica* Nevill represents the small morphotype.

Weinkauff (1881) described this species on the basis of specimens he received from Nevill's collection; the specimens were labeled "*Rissoina subfuniculata*", which, at that moment, was a manuscript name. The specimens in the ZSI (ZSI 1992) labeled "*Rissoina subfuniculata* Nevill, Types, Persian Gulf" closely agree with Weinkauff's original description. The type locality of this species is not entirely clear: according to the label of the type material, the type locality of *R. subfuniculata* should be "Persian Gulf", but in his "Hand List" Nevill (1884: 81) mentions the type locality Gwadar (Pakistan); Weinkauff in his description mentions "Persischer Golf, Arakan, Andamanen und Singapore".

Rissoina (Rissoina) torresiana (Laseron, 1956)

Costalynia torresiana Laseron, 1956: 395, fig. 18

Rissoina torresiana (Laseron, 1956) – Faber & Gori, 2016: 102, figs 19-22

Material. – Stn 27 (Leitimur, Hutumuri), 3 juvenile spms.

Geographical distribution. – From the Maldives in the Indian Ocean to the Society Islands in the Central Pacific.

Remarks. – *Rissoina torresiana* superficially resembles *R. cardinalis* Brazier, 1877, but differs essentially in having a more conical protoconch and in lacking the centrally located

carina of the latter species; furthermore *R.torresiana* is smaller than *R. cardinalis* and the whorls are more angulated below the sutures.

Rissoina (Rissoina) sp. A

Fig. 10

Material. – Stn 30 (Hitu, Suli), 2 spms.

Description. – Protoconch broken in both specimens available for examination. Shell length 5.2mm. Teleoconch of about 6 weakly convex whorls; sutures shallow, barely undulating; spire whorls and last whorl with prominent, rather opisthocline, very narrow, widely spaced axial ribs (9 on last whorl and 11 on penultimate whorl), with wide and deep interspaces, the latter with extremely fine axial threads; spiral sculpture absent on spire whorls apart from 1 or 2 very weak spiral lirae located just above the suture; last whorl with about 5 very weak spiral lirae, situated just above the rather weak basal spiral fold; the latter not intersected by axial ribs; spiral fold bearing about 2 tot 3 fine spiral lirae; aperture lenticular; anterior channel wide, shallow; outer lip moderately thickened, bearing some irregular axial ribs, the latter rather variable in strength; outer lip weakly to moderately opisthocline.

Rissoina (Rissoina) sp. B

Fig. 11

Material. – Stn 27 (Leitimur, Hutumuri), 1 spm.

Description. – Shell moderately large (shell length about 5 mm, diameter 2.4mm), very stout, white. Protoconch and adapical spire whorl(s) broken in single specimen available for

examination. Teleoconch whorls strongly angulated below the suture; sutures very weakly undulating, barely impressed; spire whorls and last whorl with very prominent, distantly spaced and very sharp axial ribs, numbering 7 on last whorl and 9 on penultimate whorl; axial ribs strongly biangulated on last whorl; spiral sculpture of rather prominent, densely spaced spiral lirae, sometimes crossing the top of the axial ribs; last whorl with a strongly nodular, rather prominent basal fold, the latter with prominent spiral lirae; aperture lenticular, rather narrow; inner lip very thin; anterior channel deep, very narrow; outer lip orthocline in profile, strongly thickened with a prominent external varix, the latter bearing weak and irregularly spaced axial ribs and prominent spiral lirae.

Remarks. – This specimen strongly resembles specimens of *Rissoina fimbriata* Souverbie, 1872 but differs essentially in having more prominent and less numerous axial ribs; furthermore it has a more robust shell, it is less elongated and the spiral lirae are more prominent, more numerous and more densely spaced; the outer lip lacks the spiral ribs which are very prominent in *R. fimbriata*.

Rissoina sp. B is similar to *R. heronensis* but has a larger, more robust shell with less numerous and more prominent axial ribs.

Rissoina (Rissoina) sp C.

Fig. 12

Material. – Stn 37 (Hitu), 1 spm.

Remarks. – The single specimen is worn and superficially resembles *Rissoina distans* Anton, 1838.

Subgenus *Pachyrissoina* Boettger, 1893

A revision with a detailed description of species that belong to this subgenus was published by Sleurs (1993).

Rissoina (Pachyrissoina) percrassa G. & H. Nevill, 1874

Fig. 13

Rissoina percrassa G. & H. Nevill, 1874: 26, pl. 1, fig. 13

Rissoina (Pachyrissoina) percrassa G. & H. Nevill, 1874 – Sleurs, 1993: 124, figs 48 A-B, 49

Material. – Stn 30 (Hitu, Silu), 2 spms.

Geographical distribution. – Only known from Mauritius, Reunion, Indonesia and N. Queensland.

Subgenus *Apataxia* Laseron, 1956

A revision with a detailed description of species that belong to this subgenus was published by Sleurs (1993).

Rissoina (Apataxia) cerithiiformis Tryon, 1887

? Rissoina erythraea Philippi, 1851: 93

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

Rissoina (Apataxia) cerithiiformis Tryon, 1887 – Sleurs, 1993: 105, figs 32 A-C, 33 A-C, 34 A-D, 35 A-E, 36 A-B, 52 D, 54 C

Apataxia cerithiiformis (Tryon, 1887) – Faber & Kaiser, 2015: 20, figs 8-9; Faber & Gori, 2016: 102-103, figs 25-28

Material. – Stn 03 (Leitimur, Batumerah), 6 spms; stn 05 (Leitimur, Tg. Benteng), 15 spms; stn 06 (Hitu, Poka), 2 spms; stn 23 (Hitu, Kaitetu), 7 spms; stn 27 (Leitimur, Hutumuri), 28 spms; stn 30 (Hitu, Suli), > 50 spms; stn 37 (Hitu, W. side of Laha), 4 spms; stn 39 (Hitu, S. side Larike up to and including Batu Suangi), 28 spms; stn 44 (Leitimur, Latuhalat), 42 spms; Lakuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 40 spms.

Geographical distribution. – *Rissoina (Apataxia) cerithiiformis* is a widespread and very common species in the tropical Indian Ocean and Western Pacific ranging from the Red Sea and Tanzania to an eastern limit at the Hawaiian Islands and Clipperton Island.

Subgenus *Moerchiella* Nevill, 1885

A revision with a detailed description of species that belong to this subgenus was published by Sleurs (1993).

Rissoina (Moerchiella) antoni Schwartz von Mohrenstern, 1860

Rissoina antoni Schwartz, 1860: 167, fig. 63

Rissoina (Moerchiella) antoni Schwartz, 1860 – Sleurs, 1993: 74, figs 2 A-H, 3 A-D, 4, 5 A-E, 53 A

Material. – Stn 44 (Leitimur, Latuhalat), 1 spm.

Geographical distribution. – Tropical Indo-West Pacific, from Mozambique to New Caledonia.

Rissoina (Moerchiella) dorbignyi A. Adams, 1853

Fig. 14

Rissoina dorbignyi A. Adams, 1853: 265

Rissoina (Moerchiella) dorbignyi A. Adams, 1851 – Sleurs, 1993: 84, figs 11 A-E, 12 A-B, 13 A-D, 14, 15 A-D, 16, 17 A-C, 18 A-B, 19 A-B, 53 C

Material. – Stn 17 (S.E. side of Pombo I.), 2 spms; stn 27 (Leitimur, Hutumuri), 2 spms.

Geographical distribution. – Tropical Indo-West Pacific, from the Red Sea to Fiji. Bogi et al. (1984) report this species from the Mediterranean, probably due to recent migration throught the Suez Canal.

Rissoina (Moerchiella) gigantea (Deshayes, 1848)

Rissoa gigantea Deshayes, 1848: pl. 77, figs 18-20

Rissoina (Moerchiella) gigantea (Deshayes, 1848) – Sleurs, 1993: 92, figs 20 A-B, 54 A

Material. – Stn 30 (Hitu, Suli), 1 spm.

Geographical distribution. –The Philippines, Indonesia, Papua New Guinea, the Solomon Islands, northern Australia and New Caledonia.

Rissoina (Moerchiella) striata (Quoy and Gaimard, 1833)

Fig. 15

Rissoa striata Quoy & Gaimard, 1833: 493, pl. 33, figs 38-39

Rissoina (Moerchiella) striata (Quoy and Gaimard, 1833) – Sleurs, 1993: 99, figs 25, 26 A-B, 27, 28, 29 A-B, 52 B, 54 B

Material. – Stn 27 (Leitimur, Hutumuri), 3 spms.

Geographical distribution. – Indian Ocean and tropical Western Pacific as far east as Vanuatu.

Rissoina (Moerchiella) striolata A. Adams, 1853

Rissoina striolata A. Adams, 1853: 266

Rissoina (Moerchiella) striolata A. Adams, 1851 – Sleurs, 1993: 103, figs 30 A-B, 31 A-C

Material. – Stn 27 (Leitimur, Hutumuri), 1 spm.

Geographical distribution. –Indonesia (Ambon), the Philippines and S.E. Papua New Guinea.

Subgenus *Phosinella* Mörch, 1876

Phosinella differs from the subgenus *Rissoina* in the clathrate sculptured shell, but is otherwise very similar in all other respects of shell morphology. Still, because of the homogeneity of this 'species-group', particularly with respect to the shell morphology and penial characters, we recognize *Phosinella* as a distinct subgenus within the genus *Rissoina*. However, some species are intermediate in shell morphology between 'typical' *Rissoina (Rissoina)* species and *Rissoina (Phosinella)* species, making subgeneric allocation extremely difficult, particularly if the allocation is exclusively based on shell morphology.

Rissoina (Phosinella) cf. bellula A. Adams, 1853

Fig. 16

? *Rissoina bellula* A.Adams, 1853: 266.

? *Phosinella bellula* (A. Adams, 1853) – Faber & Gori, 2016: 103, figs 33-34

Material. – Stn 03 (Leitimur, Batumerah), 1 spm; stn 05 (Leitimur, Tg. Benteng), 22 spms; stn 23 (Hitu, Kaitetu), 3 spms.

Geographical distribution. – If the reported specimens are conspecific with *R. (P.) bellula*, the record from Ambon would represent the most southern locality of this species, as only records from the type locality (Philippines, Mindoro) and Okinawa are known to us.

Remarks. – This species strongly resembles the holotype of *Rissoina bellula* A. Adams, 1853 in overall shell shape but differs essentially in having more prominent, much less numerous and less densely spaced spiral ribs, numbering 6 on last whorl and 4 to 5 on penultimate whorl; spiral and axial ribs are equidistantly spaced and equally prominent in the Ambon specimens, while the spiral ribs are subequal in strength to the axial ribs in the holotype of *R. bellula*. Furthermore, the protoconch is slightly more elongate in the Ambon specimens than in the holotype of *R. bellula.*

Faber & Gori (2016) report *R. bellula* from the Maldives. This figured specimen (figs 33-34) is identical to the holotype of *R. bellula* (BMNH, 1984.138) from the Philippines.

Rissoina (Phosinella) cf. costatogranosa Garrett, 1873

Figs 17-18

? *Rissoina costatogranosa* Garrett, 1873: 211, pl. 2, fig.7

Rissoina costatogranosa Garrett, 1873 – Faber, 2013: 22, figs 51-52

Material. - Stn 21 (Mamala, Hitu, 20 m, 21.XI.1990), 1 spm; Yassi II reef, Nagada (50°09.2’S, 145°50.2’E), Astrolabe Bay, Madang Province, Papua New Guinea, 24 m, sand, 26.VIII.1980, leg. T. Bratcher, 5 spms. (LACM, 80-22).

Geographical distribution. – *R. (P.) costatogranosa* is only known from its type locality Fiji and from Panglao Islands (Philippines).

Description. – Shell: moderately large (Ambon shell measuring 5.6 mm), strongly fusiformly elongate; rather stout. Protoconch of non-planktotrophic larval stage, of 1¼ whorls; glossy, transparent; last whorl with 2, very fine, rather distantly spaced spiral lirae, the adapical one situated near the centre, the abapical one just above the suture; transition to teleoconch with a very shallow sinusigeral notch; margin not thickened. Teleoconch of 7 1/4 slightly to moderately convex whorls; sutures barely undulating, very weakly impressed; all whorls with rounded axial ribs, the latter relatively more prominent on adapical spire whorls than on abapical whorls and last whorl; axial ribs densely spaced, very weakly opisthocline, very weak on last whorl and almost absent on abapical half; all whorls with weak, narrow, densely spaced spiral ribs, forming nodules where intersecting the axial ribs; spiral ribs less prominent than axial ribs except on abapical half of last whorl; basal fold absent. Microsculpture of very fine, densely spaced spiral striations in interspaces between axial ribs and continuous on axial ribs; aperture lenticular; inner lip very thin, weakly thickened near transition to weakly elongated, rather wide and shallow anterior channel; outer lip weakly to moderately thickened externally, and weakly opisthocline in profile; outer lip bearing very fine, irregular spiral riblets.

Remarks. – Apart from the slightly more convex abapical spire whorls, the single specimen examined from Ambon is indistinguishable in both protoconch and teleoconch features from 5 specimens from Astrolabe Bay, Papua New Guinea (LACM, 80-22) and are probably conspecific with *R. costatogranosa* Garrett, 1873. The two ‘types’ of *R. costatatogranosa*, housed in the ANSP (ANSP 19225) are similar in teleoconch chararacters, apart from the number of axial ribs on the last whorl which are markedly less numerous (16) than in the

specimens from Ambon and Papua New Guinea (23-27). The protoconch of both the specimens of Papua New Guinea and Ambon and one of the 'types' of *R. costatogranosa* with a well preserved protoconch, are of non-planktotrophic larval developmental type. The fine lirae were not observed in the 'type' of *R. costatogranosa*, but this might be due to the rather poor condition of preservation of the shell.

R.(P.) costatogranosa is very similar to *R. maestratii* Faber, 2013, but differs in being larger and in having a more prominent axial and spiral sculpture.

Rissoina (Phosinella) digera (Laseron, 1956)

Fig. 19

Phintorene digera Laseron, 1956: 408, fig. 52

Rissoina (Phosinella) alexisi Ladd, 1966: 70, pl. 13, figs 13-16

Phosinella digera (Laseron, 1956) – Faber & Gori, 2016 : 106.

Material. – Stn 01 (Hitu), 5 spms; stn 03 (Leitimur, Batumerah), 1 spm; stn 05 (Leitimur, Tg. Benteng), 4 spms; stn 27 (Leitimur Hutumuri), 1 spm; stn 30 (Suli), 1 spm.

Geographical distribution. – Tropical Indo-Pacific, from the Red Sea and Madagascar to the Tuamotu Archipelago.

Remarks - *Rissoina (Phosinella) digera* appears to be very uniform in shell shape and sculpture, and barely any variation was observed among both the series of specimens from

Ambon and the large series of specimens examined from different localities in the tropical Indo-Pacific (Red Sea to the Tuamotu Archipelago).

Rissoina (Phosinella) emina (Laseron, 1956)

Figs 20-21

Phintorene emina Laseron, 1956: 407, fig. 51

Material. – Stn 05 (Leitimur, Tg. Benteng), 2 spms; stn 06 (Hitu, Poka), 1 spm; stn 23 (Hitu, Kaitetu), 1 spm; stn 27 (Leitimur, Hutumuri), 1 spm; stn 30 (Hitu, Suli), 22 spms; stn 37 (Hitu, W. side Lata), 1 spm; stn 39 (Hitu, S. side Larike), 1 spm; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 3 spms.

Geographical distribution. – Tropical Western Pacific, from Thailand to Papua New Guinea.

Remarks.- *Rissoina (Phosinella) emina* is rather variable in shell length and the shell can be more or less elongate, but otherwise it is rather constant in shell sculpture.
R. (P.) emina strongly resembles *R.(P.) quasillus* Melvill & Standen, 1896, but differs in the last whorl having usually 5 spiral ribs instead of 6 ribs in *R. quasillus* and in having slightly more angulated whorls; furthermore, the nodules on the basal spiral fold are axially elongated in *R. quasillus*. Immature specimens or beach worn specimens of both species, however, are almost indistinguishable from each other.
Some specimens of *R. (P.) emina* are superficially similar to some specimens of *R. (P.) media* Schwartz, 1860 -particularly specimens with the double spiral basal folds fused to a single fold- but they differ essentially in having less numerous and more prominent spiral ribs and

more prominent axial ribs; furthermore, the shell of *R. (P.) emina* is somewhat more conical and the nodules on the intersecting points between the axial and spiral ribs are more prominent than in *R. (P.) media*.

Rissoina (Phosinella) media Schwartz von Mohrenstern, 1860

Fig. 22

Rissoina media Schwartz von Mohrenstern, 1860: 160, fig. 56

Alvania pura Gould, 1861: 402

Alvania fusca Gould, 1861: 403 – Yen, 1944: 567, pl. 50, figs 18-19; Johnson, 1964: 239, pl. 12, fig. 3

Phintorene allanae proxima Laseron, 1956: 405, fig. 45 (non *Rissoina allanae* Laseron, 1950)

Planapexia fractura Laseron, 1956: 409, fig. 54

Rissoina (Phosinella) media Schwartz – Kosuge, 1965: 131, pl. 15, fig. 4; text figs 1-17

Rissoina (Phosinella) fractura (Laseron) – Ponder, 1985: 184, fig. 135 I

Material. – Stn 03 (Leitimur, Batumerah), 4 spms; stn 05 (Leitimur, Tg. Benteng), 4 spec; stn 17 (S.E of Pombo I.), 1 spm; stn 21 (Hitu, Mamala), 1 spm; stn 44 (Leitimur, Latuhalat), 3 spms; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 12 spms.

Geographical distribution. – From Sri Lanka in the Indian Ocean to the Solomon Islands in the Western Pacific.

Remarks. – Apart from the somewhat variable shell length, *Rissoina (Phosinella) media* appears to be very uniform in both shell shape and sculpture.

R. (P.) media resembles *R. (P.) seguenziana* Issel, 1869 s.l. in shell shape and sculpture, but differs in having two or three weak spiral folds near the shell base instead of the single prominent fold in *R. (P.) seguenziana*.

Rissoina (Phosinella) seguenziana Issel, 1869 s.l.

Fig. 23

? Rissoina erythraea Philippi, 1851: 93

Rissoina seguenziana Issel, 1869: 209 – Bouchet & Danrigal, 1982: 15, fig. 82

Rissoina seguenziana var. *parvula* Nevill, 1884: 84

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

Rissoina (Phosinella) quasillus Melvill & Standen, 1896: 308, pl. 11, fig. 65

Rissoina durbanensis E.A. Smith, 1906: 47, pl. 7, fig. 15

Rissoina (Phosinella) transenna Watson, 1886 – Cernohorsky, 1978: 48, textfig. 12

Material. – Stn 03 (Leitimur, Batumerah), 2 spms; stn 05 (Leitimur, Tg. Benteng), 2 spms; stn 23 (Hitu, Kaitetu), 2 spms; stn 30 (Hitu, Suli), 25 spms; stn 44 (Leitimur, Latuhalat), 2 spms.

Geographical distribution. – Red Sea, Indian Ocean and tropical Western Pacific as far east as Fiji.

Remarks. – Amongst the large series of specimens examined from other localities in the tropical Indo-Pacific, we observed variation in shell length and in the shell being more or less elongated; also the width of the axial ribs shows considerable variation; furthermore, in some specimens there is a weak swelling on the inner lip, near the transition to the extremely short and wide

posterior channel. We admit the possibility, that with the availability of additional anatomical data (particularly with respect to the penial characters), more than one very similar species are involved.

R. (P.) seguenziana s.l. strongly resembles *R. (P.) media* Schwartz von Mohrenstern, 1860 and is contrasted under the remarks of the latter species.

R. (P.) seguenziana resembles *R.(P.) exasperata* Souverbie in Souverbie & Montrouzier, 1866, but differs essentially in having a multispiral rather than a paucispiral protoconch as in the latter species.

R. transenna Watson, 1886 may be a junior synonym of *R. (P.) seguenziana*, but since the holotype of the former species is worn and lacks the protoconch, this species is only tentatively included in the synonymy of *R. (P.) seguenziana*.

Rissoina (Phosinella) sumatrensis Thiele, 1925

Fig. 24

Rissoina sumatrensis Thiele, 1925: 299, pl.7, fig.9

Material. – Stn 01 (Hitu, W. side of Hunut), 4 spms.

Geographical distribution. – Only known from the type locality Padang (Sumatra) and Ambon.

Description. – Shell small (length 3.2 to 3.4 mm), semi-transparent, elongate conical. Protoconch of planktotrophic larval type, of 2 rather convex whorls with the suture moderately

impressed; last quarter of last whorl with a very weak carina; transition to teleoconch with a rather shallow sinusigeral notch, with a strongly thickened margin. Teleoconch: of about 5½ very weakly convex whorls; sutures not impressed, very weakly undulating; spiral sculpture of narrow, rather fine ribs, numbering 2 to 3 on adapical whorls, 4 to 5 on penultimate whorl and 6 on last whorl; adapical spiral ribs on each whorl slightly more prominent than abapical ribs; spiral ribs intersected by rather weak, densely spaced axial ribs, forming weak to moderately prominent nodules where intersecting the spiral ribs; number of axial ribs about 19 to 21 on last whorl and 20 to 22 on penultimate whorl; last whorl with a rather prominent basal spiral fold, intersected by axial ribs; basal fold without spiral sculpture; microsculpture of very fine axial striations, the latter continuous on axial ribs; aperture semi-lenticular; inner lip very weakly concave, very thin; anterior channel wide, shallow; posterior channel absent, outer lip moderately opisthocline, with a thick and rather wide varix, the latter bearing spiral ribs; varix without any trace of axial sculpture.

Remarks. – *R. (P.) sumatrensis* resembles *R. (P.) angusta* (Laseron, 1956) in having numerous, but rather fine spiral and axial ribs, but differs in being less elongated and in having less numerous whorls [about 7 in *R. (P.) angusta*].

Rissoina (Phosinella) teres Brazier, 1877

Figs 25-27

Rissoina teres Brazier, 1877: 367 – Hedley, 1901: 127, fig. 27

Rissoina curtisi E.A. Smith, 1884: 63, pl. 5, fig. M

? *Rissoina sculpturata* Preston, 1908: 198, pl. 14, fig. 5

Phosinella teres (Brazier) – Laseron, 1956: 404, fig. 40

Material. – Stn 05 (Leitimur, Tg. Benteng), 2 spms; stn 23 (Hitu, Kaitetu), 1 spm.

Geographical distribution. – Ambon, Queensland (Australia) and Tonga; possibly also from the Andamans.

Remarks. - *Rissoina (Phosinella) teres* is identical to *R. (P.) hystrix* Souverbie, 1877 in teleoconch characters, but differs in having a multispiral protoconch with a deep sinusigeral notch near the transition to the teleoconch, possibly of planktotrophic larval type, instead of the paucispiral non-planktotrophic protoconch in the latter species.

Family Zebinidae Coan, 1964

According to Criscione et al. (2017), members of the family Zebinidae differ anatomically from members of the Rissoinidae by having a shorter posterior stomach chamber. The shell morphology differs in the aperture lacking the anterior notch; in contrast to the members of the Rissoinidae, species of Zebinidae lack the opercular peg.

Zebina H. & A. Adams, 1854

Recent species of the genus *Zebina* are readily distinguished from species of the genus *Rissoina* and *Stosicia* by the presence of parallel threads on the outer margin of the inner side of the outer lip. The shell sculpture ranges from smooth to weakly to prominently axially ribbed whorls.

Zebina (Zebina) bidentata (Philippi, 1845) *s.l.*

Fig. 28

Rissoa bidentata Philippi, 1845: 64

Material. – Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 4 spms.

Geographical distribution. – Tropical Indo Pacific, from Mozambique to Hawaii.

Remarks. – This species is hard to define on the basis of shell morhology only and probably several distinct species are involved which show considerable overlap in shell characters. We include here in *Zebina (Zebina) bidentata* (Philippi) s.l. some Indo-Pacific *Zebina* s.s. species, characterized by a small to medium-sized ovate shell, with a non-globose last whorl; protoconch of non-planktotrophic developmental larval type; some or several adapical spire whorls with more or less prominent axial plications or ribs; inner side of outer lip with 1 to 3, more or less prominent denticles.

This species-group most closely resembles *Z. tridentata* (Michaud, 1836), but differs essentially in having a less globose last whorl, in lacking the moderately prominent contraction near the shell base and in the inner lip being rather continuous posteriorly while the latter is ending abruptly in *Z. tridentata.*

The specimen from Latuhalat is rather large (5.6 mm), with a protoconch of non-planktotrophic developmental type; 2 adapical spire whorls bearing moderately prominent opisthicline axial ribs; sutures rectilinear, shallow; spire whorls very weakly convex to almost

rectilinear, last whorl moderatey constricted near the shell base; inner lip of aperture with 2 prominent adapical denticles.

Zebina (Zebina) oryza (Garrett, 1873)

Fig. 29

Rissoina oryza Garrett, 1873: 210, pl. 2, fig. 4

Zebina nitens Laseron, 1956: 429, figs 119-120

Zebina hebes Laseron, 1956: 430, fig. 121

Material. – Stn 05 (Leitimur, Tg. Benteng), 1 spm; stn 30 (Hitu, Suli), 22 spms; stn 39 (Hitu, S. Side Larike), 1 spm; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 1 spm.

Geographical distribution. – Tropical Western Pacific from Okinawa to the Gilbert Islands. The record from Ambon is so far the most eastern record reported of this species.

Remarks. – *Zebina (Zebina) oryza* strongly resembles *Z. stoppanii* (Issel, 1869) from the Red Sea, but as only a limited number of specimens of *Z. stoppanii* from the type locality were available for examination, we hesitate to consider both species conspecific. Furthermore, both syntypes (in MCSN) of '*Rissoina stoppanii*' Issel are badly worn.
Z. oryza resembles *Z. subulina* (Weinkauff, 1881) but differs essentially in having a protoconch of planktotrophic larval development.

Zebina (Zebina) striaticallosa Faber, 2011

Fig. 30

Zebina striaticallosa Faber, 2011: 71-72, figs 1-9

Material. – Stn 27 (Leitimur, Hutumuri) 3 spms; Stn 30 (Hitu, Suli), 6 spms; stn 44 (Leitimur, Latuhalat) 1 spm.

Geographical distribution. – Only reported from Vanuatu (type locality) and Ambon,

Description. – Shell: small, length 2.2 to 3.0 mm (n=7), ovate, conical. Protoconch rather bulbous, of non-planktotrophic developmental larval type; transition to teleoconch rather discrete. Teleoconch of ca. 4 smooth whorls, apart from some very fine growth lines; spire whorls almost flat-sided; last whorl moderately swollen near the centre; sutures rectilinear, barely impressed; aperture moderately high (compared to total shell length), pyriform; inner lip rather thick, externally widely expanded over the shell base, bearing 3-5, modertaly distantly spaced, very prominent parallel ridges (rather than threads), which continue as very fine spiral threads on the inner side of the outer lip and on the shell base; inner side of outer lip with 3, moderately prominent teeth (2 near the shell base and 1 near its centre); outer lip weakly to very weakly opisthocline, barely thickened externally. Shell colour: white.

Remarks. – *Zebina (Zebina) striaticallosa* most closely resembles *Z. (Z.) bidentata* (Philippi, 1845) s.l. from Lord Howe Island, but differs essentially in lacking the axial plications on the spire whorls and in having a more widely expanded inner lip.

Zebina (Zebina) tridentata (Michaud, 1836)

Rissoa tridentata Michaud, 1836: 6, figs 5-6

Zebina (Zebina) tridentata Michaud – Ponder, 1985, fig. 136 A-D

Zebina (Zebina) tridentata (Michaud) – Springsteen & Leobrera, 1986: 56, pl. 12, fig. 5

Zebina tridentata (Michaud) – Cernohorsky, 1978: 50, pl. 12, fig. 12

Material. – Stn 17 (S.E. side of Pombo Islet), 1 spm; stn 27 (Leitimur, Hutumuri), 1 spm.

Geographical distribution. – Tropical and subtropical (Kyushu, Japan) Indo-West Pacific, from the Red Sea and Mozambique to Hawaii and the Tuamotu Archipelago.

Zebina (? Zebina) malagazzae Sleurs & Van Goethem, 2002.

Zebina (? Zebina) sp. Sleurs & Preece, 1994: 77, pl.3, figs 4-5

Zebina (? Zebina) malagazzae Sleurs & Van Goethem, 2002: 183, figs 1 a-b, d-e, 2

Z. malagazzae Sleurs & Van Goethem, 2002 – Faber, 2013: 27, fig. 55

Material. – Stn 30 (Hitu, Suli), 1 spm.

Geographical distribution. – A very rare but seemingly widespread species in the tropical Indo-West Pacific ranging from the east coast of South Africa to the Society Islands and Pitcairn Islands.

Subgenus *Schwartziella* Nevill, 1881

Species of the subgenus *Schwartziella* differ from species of *Zebina (Zebina)* by the prominent axial ribs on both the spire whorls and the last whorl. The axial ribs on the last whorl are continuous to the shell base. As Ponder (1985) noticed, the anatomical features of members of both (sub)genera show hardly any difference. The center of diversity of this subgenus is in the tropical Eastern Pacific (roughly from the Gulf of California to Ecuador) and the tropical Western Atlantic, Saint Helena, and Cape Verde. Only a few species occur in the tropical Indo-West Pacific area.

Zebina (Schwartziella) triticea (Pease, 1860)

Fig. 31

Rissoina triticea Pease, 1860: 438

Rissoina (Schwartziella) triticea – Cernohorsky, 1978: 46, pl. 11, fig. 10

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

Schwartziella (Schwartziella) triticea – Ponder, 1985: 187, fig. 138 D-G

Material. – Stn 27 (Leitimur, Hutumuri), 2 spms; stn 30 (Hitu, Suli), 43 spms; stn 39 (Hitu, S. side Larike), 1 spm; stn 44 (Lzeitimur, Latuhalat), 25 spms; Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m, 95 spms.

Geographical distribution. – A rather common species in the Red Sea and the tropical Indian Ocean from Madagascar to Hawaii in the E. Pacific.

Subgenus *Pandalosia* Laseron, 1956

The subgenus *Pandalosia* was established to include species which strongly resemble *Schwartziella* species, but which differ essentially in having a prominent basal fold. The other shell features are almost identical to *Schwartziella*, apart from the more elongate and narrower shell. Only two species that belong in this subgenus are known. The anatomy is unknown, but judging from the shell characters both species likely represent a monophyletic group.

Zebina (Pandalosia) ephamilla (Watson, 1886)

Fig. 32

Rissoina scalariformis Watson, 1886: 617, pl. 46, fig. 6 (non *Rissoa scalariformis* C.B. Adams, 1852)
Rissoina ephamilla Watson, 1886: errata to part XLII (*scalariformis* corrected to *ephamilla*)
Schwartziella (Pandalosia) ephamilla (Watson) – Ponder, 1985: 91, fig. 139 C-H
Pseudoschwartziella jordanica Bandel, 2006: 103, pl.11, figs 6-9
Pandalosia ephamilla (Watson, 1886) – Faber & Kaiser, 2015: 20-21, figs 6-7

Material. – Stn 01 (Hitu, W. side of Hunut), 4 spms; stn 03 (Leitimur, Batumerah), 1 spm; stn 05 (Leitimur, Tg. Benteng), 19 spms; stn 06 (Hitu, Pta), 1 spm; stn 23 (Hitu, Kaitetu), 19 spms; stn 27 (Leitimur, Hutumuri), 95 spms; stn 30 (Hitu, Suli), 10 spms; stn 37 (Hitu, W. side of Laha), 13 spms; stn 39 (Hitu, S. side Larike), 17 spms; stn 44 (Leitimur, Latuhalat), 8 spms.; Ceram, Pira Bay, 28 &30.XI.1997, H.L. Strack leg., 3 m, 17 spms.

Geographical distribution. – Tropical Indo-Pacific, from the east coast of South Africa to Hawaii and Clipperton Island. One of us (WS) examined one specimen from Costa Rica

(LACM, 72-72), which may suggest that planktotrophic larvae of this species occasionally are transported from the central Pacific to the tropical Eastern Pacific coasts.

Zebina (Pandalosia) subfirmata (Boettger, 1887)

Fig. 33

Rissoina (Schwartziella) subfirmata Boettger, 1887: 126, pl. 6, fig. 1

Rissoina illustris Sowerby III, 1894: 155, pl. 12, fig. 15

Pandalosia excelsis Laseron, 1956: 391, fig. 5 – Ponder, 1985: 188, fig. 139 A-B

Pandalosia darwinensis Laseron, 1956: 391, fig. 6

Pandalosia subulata Laseron, 1956: 392, fig. 7

Pandalosia obtusa Laseron, 1956: 392, figs 10-11

Costalynia decapitata Laseron, 1956: 396, fig. 20

Costalynia truncata Laseron, 1956: 396, fig. 21

Material. – Stn 01 (Hitu, W. Side of Hunut), 3 spms; stn 05 (Leitimur, Tg. Benteng), 8 spms; stn 23 (Hitu, Kaitetu), 2 spms; stn 27 (Leitimur, Hutumuri), 9 spms; stn 30 (Hitu, Suli), 32 spms; stn 34 (Hitu, Ruhmatiga), 1 spm; stn 39 (Hitu, S. Side Larike), 2 spms; stn 44 (Leitimur, Latuhalat), 2 spms.

Geographical distribution. – Tropical Indo-Pacific, from the east coast of South Africa to the Society Islands.

Remarks. - *Zebina (Pandalosia) subfirmata* strongly resembles *Z. (P.) ephamilla* (Watson, 1886), but differs in being markedly larger, in having a more cylindrical protoconch,

while the latter is more conical in *Z. (P.) ephamilla*, in having a moderately prominent posterior channel and a thickening on the inner side of the outer lip, near the transition to the posterior channel and in having a more opisthocline outer lip.

Genus *Stosicia* Brusina 1870

A revision with a detailed description of species that belong to this subgenus was published by Sleurs (1993). Criscione et al. (2017) using both molecular and anatomical data recognized the Rissoinidae and Zebinidae, the latter including species of the genus 'Stosicia', as two distinct families. Faber & Gori (2016) introduced the Stosiciinae as a new subfamily of the Zebinidae, containing the genera *Stosicia* Brusina, 1870, *Bittinella* Dall, 1924, *Isseliella* Weinkauff, 1881 and a nameless clade containing a.o. '*Stosicia*' *aberrans* C.B. Adams, 1850. Furthermore the authors suggest a new and distinct genus may be needed to accommodate the morphologically deviant species '*Stosicia*' *bourguignati* (Issel, 1869). We largely agree with the latter authors that members of the subfamily Stosiciinae differ substantially from members of the Zebinidae (s.s.). in shell characters and in some anatomical features. However, we believe a more in-depth study is needed to clarify the phylogenetic relationship between the Zebinidae (s.s.) and Stosiciinae and that study may possibly reveal that the elevation of the Stosiciinae to the family rank might be justifiable. Pending an in-depth study however, we prefer at this moment not to use any subfamily devision, following Criscione et al. (2017).

Stosicia abnormis (G. & H. Nevill, 1875)

Fig. 34

Rissoina (?) abnormis, G. & H. Nevill, 1875: 100, pl.8, fig.23

Stosicia abnormis (G. & H. Nevill, 1875) – Sleurs, 1996: 123, figs 5 E, 10 A-J

Material. – Stn 44 (Leitimur, Latuhalat), 7 spms; Latuhalet, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 12 spms.

Geographical distribution. – From Reunion in the Indian Ocean to the Samoa Islands in the central South Pacific.

Remarks. – The Ambon specimens most closely resemble the holotype of *Isselia undulata* Laseron, 1956, which is considered a junior synonym of *Stosicia abnormis* by Sleurs (1996), but they differ in having 7-11 obvious ridges on the inner side of the outer apertural lip, compared to 7 ridges in the holotype of *I. undulata*.
In some specimens the axial ribs on the last whorl are less prominent.

Stosicia incisa (Laseron, 1956)

Isselia incisa Laseron, 1956: 412, fig. 63
Stosicia incisa (Laseron, 1956) – Sleurs, 1996: 144, fig. 15 A-F

Material. – Latuhalat, 9-14.XII.1997, H.L. Strack leg., under stones, 0.5 m depth, 3 spms.

Geographical distribution. – Christmas Island (S. of Java), Ambon and Okinawa, Japan.

Stosicia lochi Sleurs, 1996

Stosicia lochi Sleurs, 1996: 146, figs 6D, 17 D-I

Bittinella lochi (Sleurs, 1996) – Faber & Gori, 2016: 109

Material. – Stn 27 (Leitimur, Hutumuri), 1 spm; stn 44 (Leitimur, Latuhalat), 1 spm.

Geographical distribution. – From the Red Sea and from the Maldives to the Great Barrier Reef.

Remarks. – Faber & Gori (2016) include this species in the genus *Bittinella* Dall, 1924. The differences in shell morphology with 'typical' *Stosicia* species are rather small and as no anatomical data is available of *Stosicia lochi* we consider *Bittinella* synonymous with *Stosicia*.

Stosicia mirabilis (Weinkauff, 1881)

Rissoina (Isseliella) mirabilis Weinkauff, 1881: 67, pl. 15a, fig. 5

Stosicia mirabilis (Weinkauff, 1881) – Sleurs, 1996: 349, figs 1 A, 4 A-B, 5 A-D, 6 C, 15 G-I, 16 F-H, 17 A-B, 19 A-D

Material. – Stn 05 (Leitimur, Tg. Benteng), 1 spm; stn 21 (Hitu, Mamala), 1 spm.

Geographical distribution. – From the Red Sea, and from the Maldives to Queensland (Australia).

Discussion

The material collected in Ambon must be considered an important contribution to the knowledge about the distribution of the Rissoinidae and Zebinidae in this part of the Indo-Pacific region, as sample coverage with respect to both families is very sparse in the Banda Sea. We found only very small amounts of samples from this region and from Indonesia in general in the vast collections examined of other institutes and musea such as the AMS, ANSP, KBIN, LACM, MNHN and USNM.

Ambon is situated in the Coral Triangle, which is a part of the tropical Indo-Polynesian biogeographical province, as defined by Bowen et al. (2016). The Coral Triangle is well recognized as a biodiversity hotspot or as a center of tropical marine biodiversity by several authors studying biogeographical and phylogeographical aspects of the central Indo-Pacific marine fauna (a.o. Briggs & Bowen, 2013; Bowen et al., 2016; Carpenter et al., 2011; Förderer et al., 2018; Veron et al., 2009).

A total of 30 species belonging to the Rissoinidae and 12 species belonging to the Zebinidae were collected during the Rumphius biohistorical expedition.

The material we examined does not contain any rissoinid or zebinid species endemic of Ambon. Examination of Rissoinidae and Zebinidae in the context of the unpublished Ph.D. thesis by WS (1992), revealed a total of 47 species belonging to the family Rissoinidae and 17 species belonging to the Zebinidae collected in different localities within the Coral Triangle (Table 1 and 2). Additionally we found 3 undescribed species which are reported in the present paper as *Rissoina sp*. A, B and C respectively and 7 species were described later by Faber (2011, 2013) and 2 by Faber & Gori (2016), which brings the total number of Rissoinidae species of the Coral Triangle to 58 and the number of Zebinidae species to 18.

The highest species diversity was recorded from the Philippines: 40 rissoinid and 10 zebinid species (Table 2).

18 out of 30 rissoinid species reported from Ambon are characterized by a planktotrophic larval development; only 4 species have a non-planktotrophic development, while the protoconch of 8 species is unknown. 7 out of the 12 zebinid species have a planktotrophic larval development and 5 are characterized by a non-planktotrophic larval development. Out of the total number of 42 species (Rissoinidae and Zebinidae) those with a planktotrophic larval development outrange substantially those with a non-planktotrophic development. According to Veron et al. (2009) "biodiversity is reflected in biogeographic patterns and the environments that created those patterns: […] Diversity may be the result of (a) a high level of endemism or (b) the overlap in the ranges of species with wide ranges". The number of endemic rissoinid and/or zebinid 'shallow water' species of the Coral Triangle ranges between 7.5% and 18.4% (Table 3), depending on whether or not doubtful species are included. This relative low number of endemism is in line with the observed low degree of coral endemism (2.5%) within the Coral Triangle (Veron et al. 2009). As well as for the explanation of the biodiversity of coral in the Coral Triangle (Veron et al. 2009), the high diversity of rissoinid and zebinid species in the Coral Triangle is due to the overlap of large species ranges which extend in the Indian Ocean and the Pacific.

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Table captions

Table 1. Records of Rissoinidae and Zebinidae from different localities situated within the Coral Triangle (P: species with a planktotrophic larval development; NP: species with a non-planktotrophic development; ?: type of larval development unknown; * only known from a limited number (1-7) of specimens; ** possible species-complex; X = species present; O = species absent).

Table 2. Number of shallow water rissoinid and zebinid species recorded from the Coral Triangle (Table 1) compared to the number recorded form the Philippines and Ambon (Rumphius biohistorical expedition), with reference to the larval development of the species (Phil: Philippines; P: species with a planktotrophic larval development; NP; species with a non-planktotrophic development; ?: type of larval development unknown).

Table 3. Rissoinidae and Zebinidae species so far only recorded from the Coral Triangle.

Illustration captions

Figs 1-5. Rissoinidae from Ambon. **Fig. 1.** *Rissoina (Rissoina) andamanica* Weinkauff, 1881, Latuhalat; **1a.** Adult shell (SEM), scale bar = 2mm; **1b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 2.** *Rissoina (Rissoina) evanida* G. & H. Nevill, 1874, stn 23 Hitu, Kaitetu; **2a.** Adult shell (SEM), scale bar = 1mm; **2b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 3.** *Rissoina (Rissoina) cf. spiralis* Souverbie 1866, stn 27 Letimur, Hutumuri; **3a.** Adult shell (SEM), scale bar =1mm; **3b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm; **3c.** Protoconch (SEM), scale bar = 0.1mm. **Fig. 4.** *Rissoina (Rissoina) tenuistriata* Pease, 1867, stn 30 Hitu, Suli; **4a.** Adult shell (SEM), scale bar = 1mm; **4b.** Microsculpture of teleoconch (SEM), scale bar = 0.05mm. **Fig. 5.** *Rissoina (Rissoina) vangoethemorum* Sleurs, 1994, stn 31, Amahusu, Letimur, adult shell (SEM), scale bar = 1mm.

Figs 6-9. Rissoinidae from Ambon. **Fig. 6.** *Rissoina (Rissoina) duclosi* Montrouzier, 1866, Latuhalat; **6a.** Adult shell (SEM), scale bar = 1mm.; **6b.** Protoconch (SEM), scale bar = 0.2mm; **6c.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 7.** *Rissoina (Rissoina) heronensis* (Laseron, 1956), stn 44, Leitimur, Latuhalat; **7a.** Adult shell (SEM), scale bar = 1mm; **7b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 8.** *Rissoina (Rissoina) plicatula* Gould, 1861, stn 21, Hitu, Mamala. Adult shell, scale bar = 1mm. **Fig. 9.** *Rissoina (Rissoina) subfuniculata* Weinkauff, 1881, stn 30, Hitu, Suli; **9a.** Adult shell (SEM), scale bar = 1mm; **9b.** Protoconch (SEM), scale bar = 0.1mm. **9c.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm.

Figs 10-15. Rissoinidae from Ambon. **Fig. 10.** *Rissoina (Rissoina) sp. A*, stn 30, Hitu Suli; scale bar = 0.7mm; **10a.** Frontal view of adult shell; **10b.** Lateral view of adult shell, showing varix. **Fig. 11.** *Rissoina (Rissoina) sp. B*, stn 27, Leitimur, Hutumuri; **11a.** Adult shell (SEM), scale bar = 1mm; **11b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 12.** *Rissoina sp. C*, stn 37, Hitu, west-side Laha, adult shell, scale bar = 1mm. **Fig. 13.** *Rissoina (Pachyrissoina) percrassa* G. & H. Nevill, 1874, stn 30, Hitu, Suli, strongly damaged adult shell, scale bar =1mm. **Fig. 14.** *Rissoina (Moerchiella) dorbignyi* A. Adams, 1853, stn 27, Leitimur, Hutumuri, scale bar = 5mm. **Fig. 15.** *Rissoina (Moerchiella) striata* (Quoy and Gaimard, 1833), stn 27, Leitimur, Hutumuri, scale bar = 5mm.

Figs 16-22. Rissoinidae from Ambon and Papua New Guinea. **Fig. 16.** *Rissoina (Phosinella) cf. bellula* A. Adams, 1853 from Ambon, stn 5, Leitimur, Tg. Benteng (=”Galghoek”), adult shell, scale bar = 1mm. **Fig. 17.** *Rissoina (Phosinella) cf. costatogranosa* Garrett, 1873 stn 21, Hitu, Mamala, Ambon; **17a.** Adult shell (SEM), scale bar = 1mm. **17b.** Protoconch (SEM), scale bar = 0.1mm; **17c.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 18.** *Rissoina (Phosinella) cf. costatogranosa* Garrett, 1873 Astrolabe Bay, Madang Province, Papua New Guinea, Protoconch (SEM) showing transition to teleoconch , scale bar = 0.1mm. **Fig. 19.** *Rissoina (Phosinella) digera* (Laseron, 1956), stn 30, Hitu, Suli; **19a.** Adult shell (SEM), scale bar = 1mm; **19b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 20.** *Rissoina (Phosinella) emina* (Laseron, 1956), stn 5, Leitimur, Tg. Benteng (= “Galghoek”), adult shell (SEM), scale bar = 1mm. **Fig. 21.** *Rissoina (Phosinella) emina* (Laseron, 1956), stn 44, Leitimur, Latuhalat, microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 22.** *Rissoina (Phosinella) media* Schwartz, 1860, stn 21, Hitu, Mamala; **22a.** Adult shell (SEM), scale bar = 1mm; **22b.** Protoconch (SEM), scale bar = 0.1mm; **22c.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm

Figs 23-27. Rissoinidae from Ambon. **Fig. 23.** *Rissoina (Phosinella) seguenziana* Issel, 1869 *s.l.*, stn 30, Hitu, Suli; **23a.** Adult shell (SEM), scale bar = 1mm; **23b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 24.** *Rissoina (Phosinella) sumatrensis* Thiele, 1925, stn 1, Hitu, west side of Hunut; **24a.** Adult shell (SEM), scale bar = 1 mm; **24b.** Microsculpture of teleoconch (SEM), scale bar = 0.05mm. **Fig. 25.** *Rissoina (Phosinella) teres* Brazier, 1877, stn 23, Hitu, Kaitetu; **25a.** Adult shell (SEM), scale bar = 1mm; **25b.** Microsculpture of teleoconch (SEM), scale bar = 0.1mm. **Fig. 26.** *Rissoina (Phosinella) teres* Brazier, 1877, stn 5, Leitimur, Tg. Benteng (= "Galghoek"), adult shell (SEM), scale bar = 1mm. **Fig. 27.** *Rissoina (Phosinella) teres* Brazier, 1877, stn 5, Leitimur, Tg. Benteng (= "Galghoek"), scale bar = 1 mm; **27a.** Frontal view of adult shell; **27b.** Lateral view of adult shell, showing the varix.

Figs 28-34. Zebinidae from Ambon. **Fig. 28.** *Zebina (Zebina) bidentata* (Philippi, 1845) *s.l.*, adult shell (SEM), Latuhalat, scale bar = 2mm. **Fig. 29.** *Zebina (Zebina) oryza* (Garrett, 1873), adult shell (SEM), stn 30, Hitu, Suli, scale bar = 1mm. **Fig. 30.** *Zebina (Zebina) striaticallosa* Faber, 2011, stn 27, Leitimur, Hutumuri; **30a**. Adult shell (SEM), scale bar = 1mm; **30b.** Protoconch (SEM), scale bar = 0.1mm. **Fig. 31.** *Zebina (Schwartziella) triticea* (Pease, 1860), stn 30, Hitu, Suli, adult shell (SEM), scale bar = 1mm. **Fig 32.** *Zebina (Pandalosia) ephamilla* (Watson, 1886), stn 30, Hitu, Suli; **32a.** Adult shell (SEM), scale bar = 1mm; **32b**. Microsculpture of teleoconch (SEM), scale bar = 0.05mm. **Fig. 33.** *Zebina (Pandalosia) subfirmata* (Boettger, 1887), stn 44, Leitimur, Latuhalat, adult shell (SEM), scale bar = 1mm. **Fig. 34.** *Stosicia abnormis* (G. & H. Nevill, 1875), stn 44, Leitimur, Latuhalat, adult shell (SEM), scale bar = 1mm.