

## A new Indo-Pacific *Zebina* species (Mollusca : Gastropoda : Rissoidae)

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### Abstract

A new, widespread, but uncommon Indo-Pacific rissoinine species, *Zebina* (? *Zebina*) *malagazzae* sp. nov. is described. It is compared with its morphologically closest relative, the tropical Eastern Pacific species *Zebina axeliana* (STRONG & HERTLEIN, 1951), with the holotype of *Zebina constricta* LASERON, 1956 from Christmas Island and with *Zebina* (?*Zebina*) *japonica* (WEINKAUFF, 1881).

**Key words:** Gastropoda, Rissoidae, *Zebina*, Indo-Pacific.

### Introduction

The subfamily Rissoininae (family: Rissoidae) is well represented in the Indo-Pacific. In an ongoing revision of this subfamily, the number of rissoinine species, both described and yet undescribed that occur in the tropical Indian Ocean and the Western-Pacific is roughly estimated at about 200.

Within the subfamily Rissoininae, the genus *Zebina* is represented in the Indo-Pacific area by at least 30 species, which represents about 35% of the total number of known *Zebina* species, both described and yet undescribed.

Species of the genus *Zebina* are readily distinguished from species of other rissoinine genera 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 or prominently axially ribbed whorls. The spiral sculpture, if present, consists usually of fine spiral threads.

Among the Indo-Pacific *Zebina* species, we found one species with a rather unusual spiral sculpture on the teleoconch, consisting of very closely spaced grooves. Only one similar species, described from the tropical Eastern Pacific could be found. We consider it therefore a new species, which is described here.

### Abbreviations

|      |   |
|------|---|
| AMS  | Australian Museum, Sydney   |
| JT   | Collection Jean Tröndle, La Force, France                           |
| KBIN | Koninklijk Belgisch Instituut voor<br>Natuurwetenschappen, Brussels |
| LACM | Los Angeles County Museum, Los Angeles                              |
| MNHN | Muséum National d'Histoire Naturelle, Paris                         |
| MNZ  | Museum of New Zealand Te Papa Tongarewa,<br>Wellington              |

|      |  |
|------|--|
| NM   | Natal Museum   |
| NNM  | Nationaal Natuurhistorisch Museum, Leiden (the<br>Netherlands) |
| UMZC | University Museum of Zoology, Cambridge                        |

### Description

Family Rissoidae GRAY, 1847  
Subfamily Rissoininae STIMPSON, 1865  
*Zebina* (? *Zebina*) *malagazzae* sp. nov.  
(Figs 1a,b,d,e, 2)

1994 *Zebina* (? *Zebina*) sp.; SLEURS & PREECE, p. 77, pl. 3, figs 4-5.

### Type material

Holotype (Fig. 1a): empty shell (coated with gold for S.E.M.) from Laing Island, Papua New Guinea (stn. 77-94) (KBIN). Paratypes: 1 empty shell from Laing Island, Papua New Guinea (stn. 78-225) (KBIN); 1 empty shell (Fig. 1e: coated with gold for S.E.M.) from Matupi I., Rabaul Harbour, New Britain, Papua New Guinea, beach grit, "subfossil", VII.1977, pres. C. PRIOR (AMS, C.154436); 1 empty shell from Euston Reef, off Cairns (16°40'S, 146°13'E), Queensland, Australia, 21m, at bottom of sandy slope below steep coral walls, S.W. side of reef, 30.XI.1972, coll. P.H. COLMAN (AMS, C.153992).

### Type locality

Laing Island (04°10'S, 144°52'E), Madang Province, Papua New Guinea.

### Description

*Shell* (Fig. 1a,b): small, elongately conical, glossy.  
*Protoconch* (Fig. 1b): of planctotrophic larval type; strongly elongately conical; of about 3 moderately convex whorls; abapical two whorls with a narrow, spiral thread just below the suture; transition to teleoconch abruptly, with a narrow and deep sinusigeral notch; margin not thickened.

*Teleoconch*: of 5-6 flat-sided to moderately convex whorls; shell base weakly convex; sutures rectilinear, deeply impressed to narrowly channeled.

Adapical spire whorls almost smooth, except for some very faint spiral threads; subsequent spire whorls and last whorl with numerous (numbering about 40 on last whorl and 22 on penultimate whorl of holotype), densely spaced, rounded to sharp, narrow and weak spiral lirae; interspaces shallow, about as equal as spiral lirae.

Grooves between spiral lirae with numerous, submicroscopical, irregular pits (Fig. 1e).

*Aperture*: pyriform; inner lip rather thin, moderately expanded abapically, partly covering the shell base; anterior channel absent; inner lip with a very weak thickening near the transition to the posterior channel; the latter very narrow, weakly elongate; outer lip weakly thickened internally with about 7-8 parallel threads on the outer margin; externally with a rather weak, rounded, smooth and narrow varix; outer lip strongly opisthocline in profile.

*Colour*: protoconch glossy, pale brown; teleoconch semitransparent, white.

*Operculum, radula and anatomy*: unknown.

### Shell dimensions

See table 1.

### Variation

There is little variation in shell dimensions among the rather small series of specimens examined (length of adult specimens ranging from 2.7 to 4.0 mm), but otherwise *Zebina* (? *Zebina*) *malagazzae* sp. nov. appears to be very uniform in both shell shape and sculpture.

### Additional material examined

**SOUTH AFRICA**: Zululand, Kosi Bay, main reef, 1-4 km S. of estuary mouth, ca. 18 m, underwater pump, dived, leg. D. HERBERT & K. BLOEM, 06.V.1990, 1 spec. (NM, S 4237); Zululand, between Bhanga Neck and Kosi Bay, reef off marker 13 north, ca. 13 m, hand dredged sand, dived, 04.V.1990, D. HERBERT, 3 spec. (NM, S 3143); Zululand, Kosi Bay, main reef, 1-4 km S. of estuary mouth, stone surfaces, ca. 15 m, 04.V.1990, dived, D. HERBERT, 1 spec. (NM, S 2878); Mzamba, Transkei, beachdrift, 12-30.V.1986, leg. R. KILBURN & D. HERBERT, 1 spec. (NM, D 2706); Natal, Aliwal Shoal, off Scottburgh, 10 m, sand and reef debris, hand-dredged, leg. D. HERBERT, 04.IV.1992, 1 spec. (NM, S V5293); Natal, Aliwal Shoal off Scottburgh, ca. 14 m, underwater pump, dived, leg. D. HERBERT & K. BLOEM, 06.V.1990, 1 spec. (NM, S4237); Aliwal Shoal, ca. 16 m, hand-dredged sand, dived, leg. D. HERBERT, 26.V.1990, 2 spec. (NM, S5702); Aliwal Shoal, off Scottburgh, 10-20 m, hand-dredged sand, dived, leg. D. HERBERT, 30.VI.1991, 8 spec. (NM, S5711); Aliwal Shoal off Scottburgh, ca. 14 m,

|  | L(mm) | Ls(mm) | D(mm) | no. whorls                   |
|--|-------|--------|-------|------------------------------|
| Holotype (KBIN)                        |       |        |       |                              |
| Fig. 1a                                | 2.7   | 1.7    | 1.1   | 5                            |
| Paratypes                              |       |        |       |                              |
| KBIN (PNG 78-225)                      |       |        |       |                              |
|  | 2.7   | 1.7    | 1.1   | 5                            |
| AMS, C.154436                          |       |        |       |                              |
| Fig. 1e                                | 3.6   | 2.4    | 1.4   | 6                            |
| AMS, C.153992                          |       |        |       |                              |
|  | 3.0   | 1.9    | 1.2   | 5                            |
| Mzamba (NM, D.2706)                    |       |        |       |                              |
|  | 3.9   | 2.5    | 1.5   | 6<br>(protoconch decollated) |
| Aliwal Shoal (NM, S.5707)              |       |        |       |                              |
|  | 3.3   | 2.2    | 1.3   | 6                            |
| (NM, S.5711)                           |       |        |       |                              |
|  | 4.0   | 2.6    | 1.4   | 6 1/2                        |
|  | 3.7   | 2.4    | 1.5   | 6 1/2                        |
|  | 3.7   | 2.4    | 1.5   | 6 1/4                        |
|  | 3.4   | 2.2    | 1.3   | 6                            |
|  | 3.2   | 2.1    | 1.3   | 5 3/4                        |
| Réunion, stn. DC.1 (MNHN)              |       |        |       |                              |
|  | 3.4   | 2.2    | 1.3   | 5 3/4                        |
| Ko Racha Noi, Thailand (LACM, 79-99)   |       |        |       |                              |
|  | 2.8   | 1.8    | 1.2   | 5                            |
| Manig Point, Luzon (LACM, 84-163)      |       |        |       |                              |
|  | 2.7   | 1.7    | 1.1   | 5                            |
| Marion Reef, Queensland (LACM, 77-119) |       |        |       |                              |
|  | 3.4   | 2.3    | 1.2   | 6                            |
| Moorea I. (LACM, 76-36)                |       |        |       |                              |
|  | 2.9   | 1.8    | 1.3   | 5 1/4                        |
| Tahiti (JT, BP1753)                    |       |        |       |                              |
|  | 2.9   | 1.8    | 1.3   | 5 1/4                        |
|  | 2.9   | 1.8    | 1.2   | 5                            |

Table 1. *Zebina* (? *Zebina*) *malagazzae* sp. nov. Shell dimensions. (L: total shell length; Ls: spire length; D: diameter of last whorl; no. whorls: number of teleoconch whorls).

underwater pump, dived, 02.V.1991, leg. D. HERBERT, 2 spec. (NM, S5707); Natal, Landers Reef, off Park Rynie, sand, dived, 34 m, leg. D. HERBERT, 02.VI.1991, 1 spec. (NM, S 5698).

**REUNION**: Réunion (21°13'S, 55°49'E), 150-160m, stn. DC.1, 1982, 1 spec. (MNHN).

**CHRISTMAS ISLAND**: off N.E. Point (10°25'S, 105°42'E), 183m, coll. R. KIRKPATRICK, 1 spec. (AMS, C.160199).

**THAILAND**: Ko Racha Noi, S. of Phuket (07°30'4N, 98°20'E), 10.I.1979, leg. BILLEE D. MABRY, 2 spec. (LACM, 79-99).

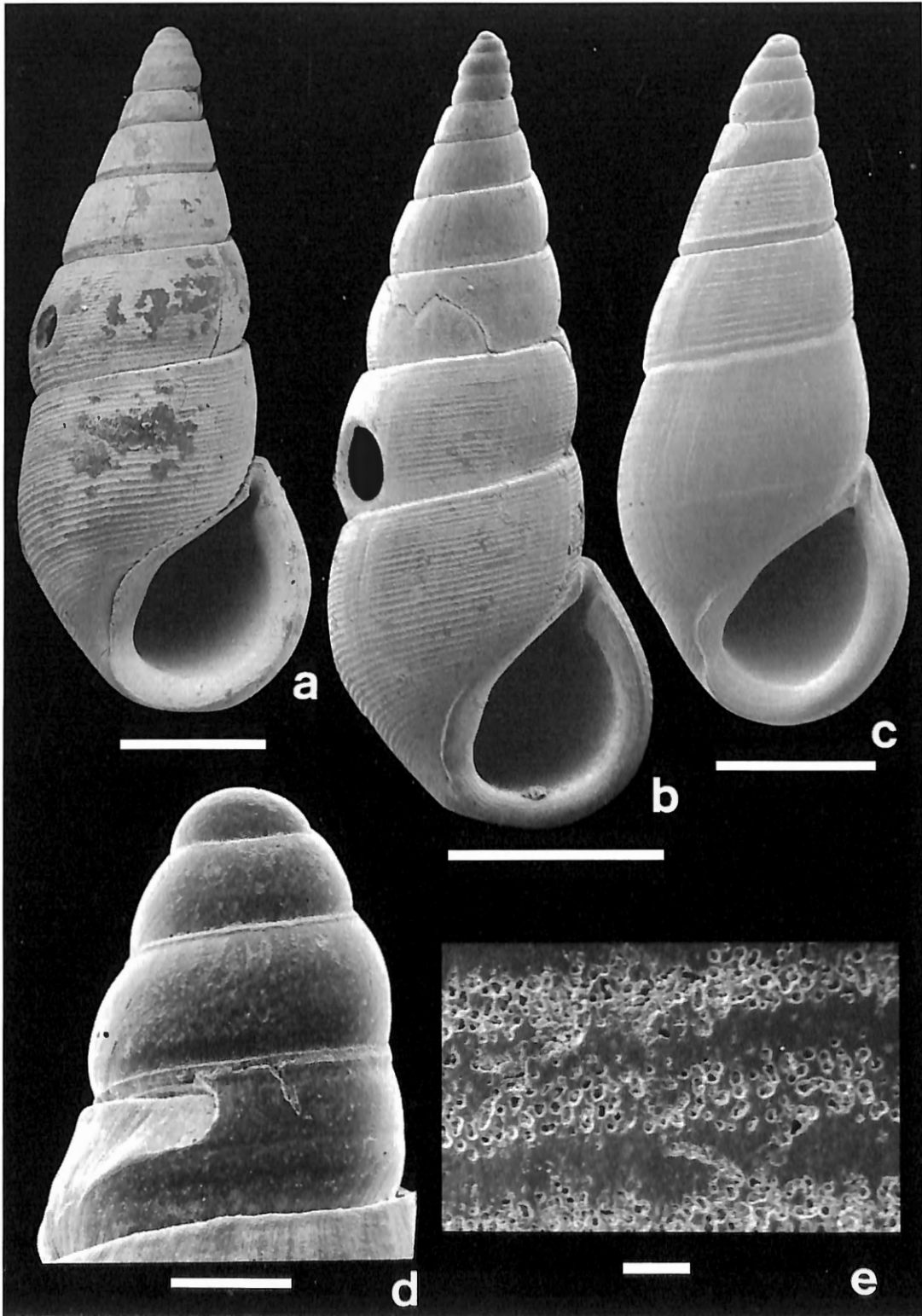


Fig. 1a,b,d,e. *Zebina* (? *Zebina*) *malagazzae* sp. nov.

a. Holotype. Laing Island, Papua New Guinea, stn. 77-94 (KBIN).

b,e. Suli, Hitu, Ambon, Indonesia, stn. 30 (NNM).

d. Paratype. Matupi Island, Rabaul Harbour, New Britain, Papua New Guinea (AMS, C.154436).

Fig. 1c. *Zebina* (? *Zebina*) *axeliana* (STRONG & HERTLEIN, 1951). N. side of Isla del Cano, Puntarenas Province, Costa Rica (LACM 72-63).

Scale: a,c: 0.5 mm / b:1 mm / d: 0.1 mm / e: 0.01 mm

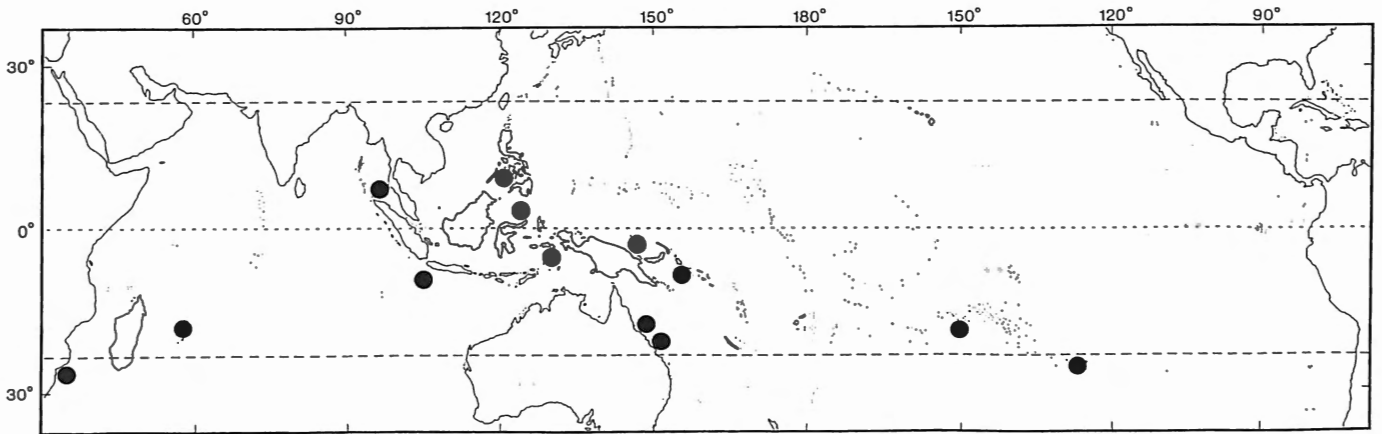


Fig. 2. Distribution of *Zebina* (? *Zebina*) *malagazzae* sp. nov.

INDONESIA: S. side of Bunaken and Siladen Islets, off Manado, N. Sulawesi (01°36.2' N, 124°46.0' E), 5-20 m, rubble of steep coral slope, 09-10.IV.1988, leg. J.H. MCLEAN, 1 spec. (LACM, 88-55); Ambon, Hitu, Suli, 6 m, Rumphius Biohistorical Expedition, 1990, sta. 30, 1 spec. (NNM).

PHILIPPINES: Manig Point, Batangas Prov., Luzon (13°41' N, 120°53.5' E), 20 m, coral and rock bottom, 12.I.1984, leg. T. BRATCHER, 1 spec. (LACM, 84-163).

SOLOMON ISLANDS: Dry Sand Cay, S. of Mbankia I., Russell Islands, Central District (09°09' S, 159°11.5' E), 25-110 ft, fine sand, 19.VII.1978, Am-Mela Exped. (sta.24), leg. T. BRATCHER, 2 spec. (LACM, 78-75); Yandina, Banika I., Russell Islands, sand sievings, 24.10.1965, leg. R.K. DELL, 1 spec. (MNZ, MF30688/BS623).

AUSTRALIA: Queensland: Michaelmas Cay (16°35' S, 145°59' E), paratype of *Zebina nitens* LASERON, 1 spec. (AMS, C.108593); Marion Reef, Coral Sea, off Great Barrier Reef (19°06' S, 152°12' E), 8-16m, M/V 'Coralita', 1.XII.1977, leg. A.J. FERREIRA, 1 spec. (LACM, 77-119).

SOCIETY ISLANDS: Tahiti, reef, sediment, 1980, Coll. J. & H. TRÖNDLE, 2 spec. (JT, BP.1753); W. Side of Moorea I., near Club Mediterranean (17°30' S, 149°46' W), 6-8 ft., 28.I.1974 & 1.II.1974, leg. D.E. KOONTZ, 1 spec. (LACM, 74-36).

PITCAIRN ISLANDS: Henderson I.: East Beach, Oct-Dec., 1991, coll. R.C. PREECE, 3 spec. (UMZC).

### Geographical distribution

Tropical Indo-West Pacific, from the E. African coast to the Society Islands (Fig. 2).

### Affinities and differences

*Zebina* (? *Zebina*) *malagazzae* sp. nov. strongly resembles the tropical E. Pacific species *Zebina* (? *Zebina*) *axeliana* (STRONG & HERTLEIN, 1951) (Fig. 1c) in having a strongly conical, elongate and multispiral protoconch, in the adapical spire whorls being sharply angulate just above the sutures,

and in the teleoconch having closely spaced spiral lirae. *Zebina* (? *Zebina*) *malagazzae* sp. nov. differs however, in being slightly more elongate and in the aperture being slightly more pyriform, the latter due to the narrower and slightly more elongate posterior channel. Furthermore, the sutures are more deeply impressed in *Z. (? Z.) malagazzae* sp. nov.

*Zebina* (? *Zebina*) *malagazzae* sp. nov. superficially resembles *Zebina* (? *Zebina*) *japonica* (WEINKAUFF, 1881) in having spiral lirae, but differs essentially in having a protoconch of planctotrophic larval type, in having a rather elongate posterior channel and in having prominent parallel threads on the outer margin of the inner side of the outer lip.

*Zebina* (? *Zebina*) *malagazzae* sp. nov. resembles the holotype of *Zebina constricta* LASERON, 1956, from Christmas Island in shell shape and shell dimensions and in the shape of the aperture. Notwithstanding the latter specimen is badly worn, the following differences are obvious: the protoconch of *Zebina* (? *Zebina*) *malagazzae* sp. nov. is slightly more conical and the shell base less contracted. Furthermore, *Z. constricta* shows some traces of axial riblets, particularly on the adapical spire whorls, which were never observed in specimens of *Z. (? Z.) malagazzae* sp. nov. Furthermore, the sutures are slightly canaliculate in *Z. (? Z.) malagazzae* sp. nov., while they are only impressed in *Z. constricta*.

### Derivation of name

Refers to Malagazza, the name given by the native people to Laing Island (Hansa Bay, Madang Province, Papua New Guinea), which is the type locality of this new species.

### Remarks

The presence of the parallel threads on the outer margin of the inner side of the outer lip and the absence of the anterior channel strongly suggest that *Zebina* (? *Zebina*) *malagazzae* sp. nov. belongs to *Zebina* s. s. However, the presence of the spiral lirae on the abapical whorls of the teleoconch is a

rather unusual character within this genus, which is only shared by the tropical E. Pacific species *Zebina* (? *Zebina*) *axeliana* (HERTLEIN & STRONG, 1951) (Cf. Affinities and differences). Judging from the striking similarities between both species, as mentioned above, we feel it may be possible that both species share a relatively recent common ancestor. Both *Zebina* (? *Zebina*) *axeliana* and *Zebina* (? *Zebina*) *malagazzae* are tentatively included in *Zebina* s.s., pending the examination of the head-foot characters and the internal anatomy, which may reveal they belong to a distinct (sub)genus.

*Zebina* (? *Zebina*) *malagazzae* sp. nov. is a very rare species (only 43 specimens were available to us among the extensive collections that we examined), which may explain the apparently very disjunct distribution of this new species.

The presence of the planctotrophic larval development highly probably explains the very wide geographic distribution range of this species (Fig. 2).

One paratype of *Zebina nitens* LASERON, 1956 belongs to *Zebina* (? *Zebina*) *malagazzae* sp. nov. *Z. nitens* is a junior synonym of *Zebina oryza* (GARRETT, 1873), a tropical Western Pacific species with smooth whorls.

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