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# Six new species of Mitridae from the Indian and Pacific Oceans, with remarks on *Mitra abacophora* Melvill, 1888 (Neogastropoda: Muricoidea)

Hans Turner

## ABSTRACT

Contrib. Nat. Hist. 10: 1–39.

About 280 species of worldwide recent Mitridae have been recognized as valid, but taxonomic research and the rapidly increasing exploration brought to light 60 new species during the last few years. Here are described six new species from various regions of the Indo-Pacific, mainly from shallow water: *Mitra (Mitra) leforti* n. sp. from Madagascar, *M. (M.) thachi* n. sp. from Vietnam, *M. (Nebularia) gracilefragum* n. sp. widespread in the Indo-West-Pacific (Maldives to Marquesas), *M. (N.) silviae* n. sp. from the Maldive Islands, Indonesia and Malaysia, *Domiporta polycincta* n. sp. from the Philippines (deep water), and *Scabricola gorii* n. sp. widespread in the Indian Ocean (Mozambique to Papua New Guinea). *M. (Strigatella) abacophora* Melvill, 1888, is recognized as a valid species and *M. (S.) nebrias* Melvill, 1895 as its synonym.

Keywords: Gastropoda, Mitridae, *Mitra (Mitra)*, *Mitra (Nebularia)*, *Mitra (Strigatella)*, *Domiporta*, *Scabricola*, taxonomy, new species, Indo-West-Pacific, Mozambique, Archipel des Comores, Madagascar, Maldive Islands, Indonesia, Malaysia, Vietnam, Philippine Islands, Okinawa, Papua New Guinea, Solomon Islands, Marquesas Islands.

## Introduction

Mitridae, one of the largest families in the rachiglossate group of Neogastropoda, can be traced back to middle Cretaceous times (Albien-Cenoman). The first members of this family evolved from forerunners closely related to Fasciolaridae and Buccinidae.

Eight mitriform species (*paupercula*, *cornicula*, *caffra*, *sanguisuga*, *vulpecula*, *plicaria*, *episcopalis* and *papalis*) were originally classed with the genus *Voluta* by Linnaeus (1758) who assigned only one mitriform species (*scabriculum*) to *Buccinum*. Forty years after Linnaeus' classical work, Röding (1798)

proposed the genera *Mitra*, *Pterygia* and *Vexillum*, and the Mitridae were removed from the Volutidae due to differing shell characters. Later, in 1854, Gray created the subfamily Volutomitrina which was raised to full family status by Cernohorsky (1970). In 1860, Macdonald in his prospective classification of the Gastropoda, based on anatomical and dentition characters, separated the Costellariidae from the Mitridae, a procedure finally proved and confirmed by Ponder (1972) and Cernohorsky (1976b).

At present the Mitridae are represented in tropical, subtropical and temperate waters of the Indo-West-Pacific, South African and Austral-Neozelanic regions, Eastern Pacific, Caribbean, Atlantic and Mediterranean oceans. Many species live in coral reef habitats, feeding on sipunculans (Taylor 1989, 1993). Both Mitridae monographs by Cernohorsky (1976a, 1991) as well as later additions and clarifications by various authors like Arnaud & al. (2002), Boutet (2002), Bozzetti (1997), Cernohorsky (1970, 1980), Cossignani & Cossignani (2005a, 2005b, 2006), Li, Zhang & Li (2005) Lozouet (1991), Poppe & Tagaro (2006), Salisbury & Guillot de Suduiraut (2003), Salisbury & Wolff (2005), Turner (1990, 1997a, 2001) and Turner & Cernohorsky (2003) brought to our knowledge that at present there are about 280 named and accepted as valid living species and subspecies of Mitridae worldwide, classified in 12 genera and 6 subgenera. Increased exploration yielded additional 60 new (not yet described) recent species of Mitridae, partially trawled with tangle nets by local fishermen from marine bottoms several hundreds of metres deep, on the other hand collected also at depths of scuba range and even in very shallow intertidal to subtidal zones. Six new species from the Indian and Pacific Oceans are described herein.

## Acronyms

ANSP	Academy of Natural Sciences, Philadelphia
BMNH	The Natural History Museum, London
HT	Collection of Hans Turner, Rovio (Switzerland)
MNHN	Muséum national d'Histoire naturelle (Malacologie), Paris
NMBE	Naturhistorisches Museum, Bern
NMW	National Museum of Wales, Cardiff
NHMW	Naturhistorisches Museum, Wien
ZMA	Zoölogisch Museum, Amsterdam

## Systematics

Class	Gastropoda Cuvier, 1795
Clade	Neogastropoda Thiele, 1929
Superfamily	Muricoidea Rafinesque, 1815
Family	Mitridae Swainson, 1831
Genus and subgenus	<i>Mitra (Mitra)</i> Lamarck, 1758
Type-species by tautonymy:	<i>Voluta mitra</i> Linnaeus, 1758. Recent; O. Asiatico.

### ***Mitra (Mitra) leforti* n. sp.** (Figs. 1–3)

1980 *Mitra* species — Heinicke, Hawaiian Shell News, 28 (5): 3, Fig. 1.

1989 *Mitra (Mitra) fulgurita* f. *nympha* — Turner, Club Conchylia Informationen 21 (5–6): Taf. 1, Fig. 16 (non *Mitra fulgurita* Reeve, 1844; non *Mitra nympha* Reeve, 1845).

#### **Description:**

Shell ovate-fusiform, solid, up to 42 mm in length; width 33–40% of shell length. Protoconch not preserved in type specimens. Teleoconch with up to 8 rather straight-sided, slightly convex whorls which are subangulate at the sutures, each whorl sculptured by distinct fine spiral grooves and wider axial furrows, resulting in a coarsely nodulous surface; distinct fossules are developed where the spiral grooves and axial furrows intersect; spiral grooves more regularly spaced than the axial furrows, accordingly the beaded spiral cords are rather equal in width, whereas the beaded axial folds are more irregular in width. Some of the axial folds are stronger than the neighbouring ones. Sutures distinct, whorls faintly beaded anterior to the sutures. Penultimate whorl with 5–7 spiral cords and 30–40 axial folds. Body whorl with 17–19 spiral cords (apart from the siphonal fasciole with 4–5 densely arranged oblique cords) and 30–40 axial folds, the latter becoming very narrow growth rolls towards the aperture in fully adult specimens. Aperture slightly shorter or longer than the spire, relatively narrow, particularly at the slit-formed posterior part, smooth within, outer lip moderately thickened and only slightly crenulate, inner lip well protruding at the anterior half in adult specimens. Columella with four or five rather weak plaits, no callus in the posterior aperture angle, siphonal notch deep and wide. Fresh specimens dark to moderate brown, with a distinct broad whitish zone on the body whorl, this striking whitish zone comprising six spiral cords below the posterior aperture angle. Within the brown-coloured parts of the shell some of the beads and nodules are dot-

ted white, in particular the occasional stronger axial folds are strikingly white, and many spiral grooves are underlined darker brown; columella and aperture light brown to beige. Periostracum thin, colourless and translucent.

**Type material:**

Holotype (Fig. 1): Length 41.8 mm, width 14.0 mm, aperture length 20.2 mm, fully adult, outer lip thick, inner lip well developed over the entire length of aperture; from Tulear, S. W. Madagascar; ex Jean-Paul Lefort coll., deposited in NMBE (24857).

Paratypes No. 1–3 from the type locality. No. 1: 29.2 x 11.3 mm, aperture 16.5 mm, immature, outer lip thin, no inner lip; in Jean-Paul Lefort coll.; No. 2: 38.3 x 14.6 mm, aperture 21.0 mm; in Günter Stossier coll.; No. 3: 36.9 x 14.9 mm, aperture 23.1 mm; in Jean-Claude Martin coll.

Paratype No. 4 (Fig. 2): 32.8 x 13.0 mm, aperture 19.0 mm, immature; from Fort-Dauphin (Faradofay, 25°03'S, 47°E), southern Madagascar, depth 25–30 m; in Günter Stossier coll.

**Other material studied:**

Two specimens collected dead, from doubtful localities:

1. (Fig. 3): 30.7 x 11.3 mm, aperture 17.0 mm, immature, outer lip broken and filed at anterior half; from unknown locality (possibly South China Sea?, „ex old collection“, purchased 1979); in Hans-Heinrich Heinicke coll.
2. 28.8 x 10.8 mm, aperture 16.0 mm, immature, colour faded; „Philippines“ (this location is questionable); in Hans-Heinrich Heinicke coll.

**Type locality**

Southwestern Madagascar: Tulear (= Toliara, 23°21'S, 43°40'E).

**Distribution and habitat:**

Reliably known only from southwestern and southern Madagascar (doubtful other locations are South China Sea and the Philippines). In subtidal water, on bottoms of sand and rubble.

**Etymology:**

Named in honour of Mr. Jean-Paul Lefort of Maeva (Huahine, French Polynesia), a friend and keen student of Mitridae and Costellariidae, who first brought this species to the author's attention (1998) and who generously donated the holotype.



**Figs. 1–2: *Mitra (Mitra) leforti* n. sp.**

**1: Holotype (41.8 mm); S.W. Madagascar: Tulear.**

**2: Paratype No. 4 (32.8 mm); S. Madagascar: Fort-Dauphin (Faradofay).**

### Differential diagnosis:

*M. (M.) leforti* n. sp. (Fig. 3) was first illustrated by Heinicke (1980) as an unidentified shell which he compared to *Mitra (M.) puncticulata* Lamarck, 1811 and more closely to a shell which was illustrated by Kaicher (1977: card 1468) as „*Scabricola lacunosa* (Reeve)“. [The true identity of Kaicher's shell (from East Africa? Natal Mus. 61296) remains doubtful, but it is certainly not conspecific with *M. leforti* n. sp.]. In the opinion of Cernohorsky (1980) the „mystery mitre“ of Heinicke „falls within the range of known variability of *Mitra lacunosa* Reeve, 1844“.

*M. (M.) leforti* n. sp. is similar to *M. (M.) nymphe* Reeve, 1845 (Fig. 4) in size and shape. *M. nymphe* differs however in having a much smoother shell surface and a wider aperture. In addition, *M. nymphe* shows a different colour pattern with a creamy-yellow or light orange base colour, lacking the broad whitish zone on the body whorl (so strikingly evident in *M. leforti* n. sp.), but shows a spiral row of alternate brown and white nodules anterior to the sutures; the columella and aperture are white.

*M. leforti* n. sp. was on the other hand also confused with *M. (M.) lacunosa* Reeve, 1844 (Figs. 5–6). Reliable distinctive features are that *M. lacunosa* shows strongly rounded to angulate presutural ramps of the whorls, lacks a pustulate sculpture, and is white or cream in colour with some large brown blotches on the spire whorls and 1–2 broad brown zones on the body whorl.

It was also suspected that *M. leforti* n. sp. could be *M. abacophora* Melvill, 1888, a taxon which was never carefully reviewed and never illustrated since its original description (from unknown locality), but was put with some uncertainty into the synonymy of *M. (M.) bovei* Kiener, 1838 by Cernohorsky (1976a: 311). Thanks to the courtesy of Mrs. Harriet Wood (NMW) photographs of the holotype of this enigmatic species (Fig. 7) can here be shown. Evidently this is a quite different species, having practically nothing in common with *M. leforti* n. sp. nor with *M. bovei*, but has to be taken as a species in its own right. Communication with Richard Salisbury, a prominent connoisseur of Mitridae, has led to the conviction that James Cosmo Melvill had written correctly in his original description of *M. abacophora* („the board-bearing mitre“): „This interesting shell is one of the subgenus *Strigatella* (Swn.)...“. It became also evident that *M. abacophora* is an earlier name of *M. (Strigatella) nebrias* Melvill, 1895 (type locality: Aden).

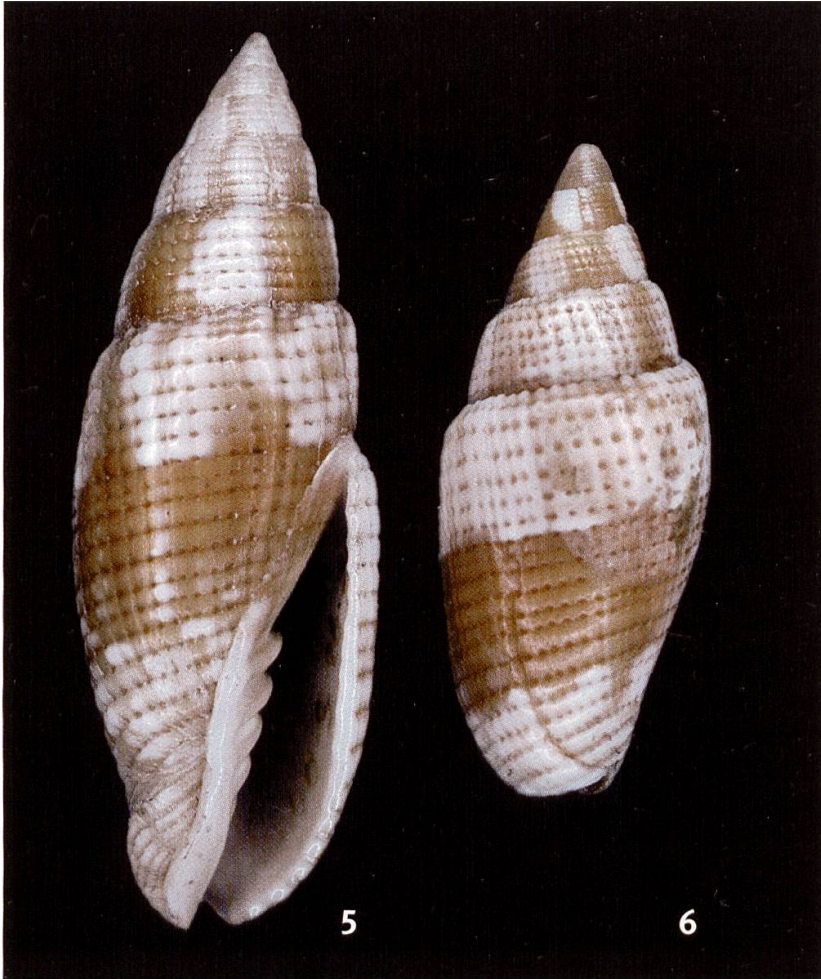


**Figs. 3–4:**

**3:** *Mitra (Mitra) leforti* n. sp. Specimen 30.7 mm; locality unknown.

**4:** *Mitra (Mitra) nympa* Reeve, 1845. Specimen 43.7 mm; Sri Lanka; in Günter Stossier coll.

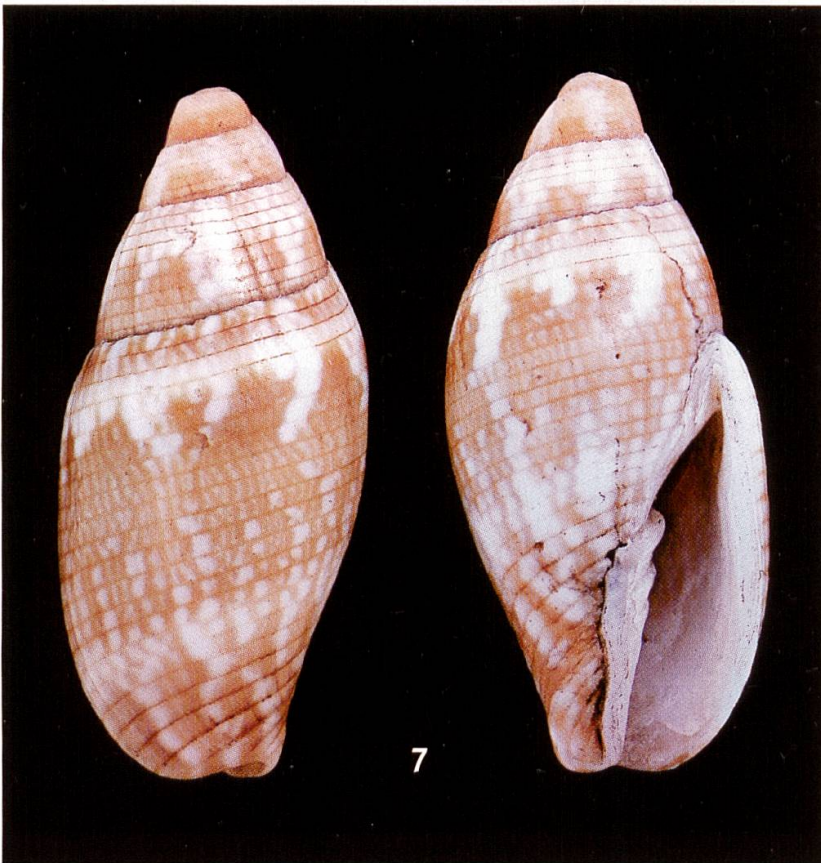




**Figs. 5–6: *Mitra (Mitra) lacunosa* Reeve, 1844.**

**5: Paralectotype No. 1  
BMNH 1967790 (35.5  
mm); locality unknown.**

**6: Paralectotype No. 2  
BMNH 1967790 (25.0  
mm); locality unknown.**



**Fig. 7: *Mitra (Strigatella) abacophora*  
Melvill, 1888. Holotype  
NMW.1955.158.00096;  
Melvill collection (24.0  
x 10.7 mm, aperture  
length 14.9 mm);  
locality unknown.  
Foto: James Turner  
(NMW).**

***Mitra (Mitra) thachi* n. sp.** (Figs. 8–9)

2002 *Mitra cardinalis* — Thach, *Of Sea and Shore* 25 (1): 43, pl. 1, fig. 1 (= holotype).

**Description:**

Shell elongate-fusiform, up to 86 mm in length, width 28–30% of shell length, spire rather long (46–51% of shell length). Protoconch not preserved in type specimens. Teleoconch with 9–10 flat-sided smooth whorls which are transversely impressedly striated, striae finely punctured, 6 spiral striae on late spire whorls, 17–23 spirals on body whorl (not all striae distinct); base of shell including the siphonal fasciole only shallowly grooved. Aperture rather narrow (width = 19–20% of height); columella with 5 plaits which decrease in size anteriorly; inner lip slightly elevated only at the anterior half of aperture in fully mature specimens; outer lip thin, with about 12 weak and widely spaced denticles situated where the most distinct spiral striae enter the lip; siphonal notch rather wide and very deep. Colour pattern consists of chestnut-brown squarish blotches on a white shell, the blotches being arranged rather regularly in 5 spiral rows on spire whorls and 15–16 rows on body whorl; most blotches extending over 2 to 3 spirals. Most of the spiral striae are underlined brown, expressed by brown points on the denticles of the outer lip.

**Type material:**

Holotype (Fig. 8): Length 83.0 mm, width 23.3 mm, aperture length 40.9 mm, from the type locality, collected live by Nguyen N. Thach, April 2002; deposited in NMBE (24858).

Paratypes No. 1 (Fig. 9: 85.7 x 25.2 mm, aperture 46.4 mm, in Thach coll.) and No. 2 (68.2 x 20.6 mm, aperture 35.5 mm, in HT); both from the type locality, leg. Nguyen N. Thach, April 2002. Paratype No. 3 (83.1 x 24.6 mm, aperture 44.1 mm, apex and first 2–3 spire whorls missing), from Central Vietnam, Ninh Thuan Province, sand on coral reef at 20 m, February 2004; in HT.

**Type locality:**

Phan Rang City (11°34'N, 108°59'E, 80 km south of Nha Trang City), Province Ninh Thuan, Vietnam.

**Distribution and habitat:**

Only known from Central Vietnam. Living in sand near reef at approx. 15 m depth.

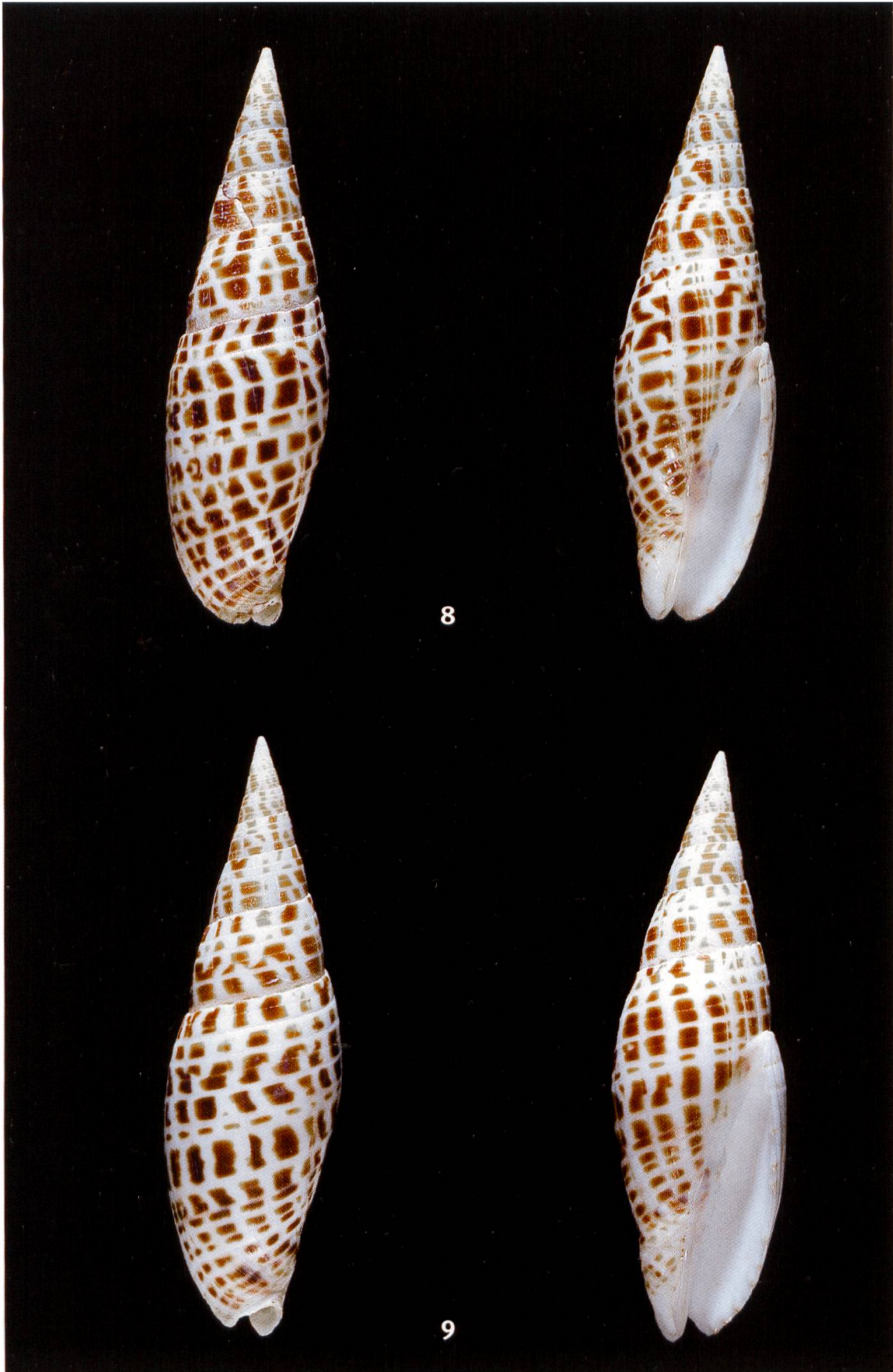
**Etymology:**

Named for Dr. Nguyen Ngoc Thach (Nha Trang, Vietnam) who has collected all type specimens and brought them to the author's attention.

**Differential diagnosis:**

The above described species resembles *M. (M.) cardinalis* (Gmelin, 1791) (Figs. 10–11), but is more slender in shape (width = 28–30% versus 35–38% of shell length), has a longer spire (46–51% versus 34–43% of shell length), has fewer and more widely spaced spiral striae (16–18 versus 28–29 spirals on body whorl), fewer and more widely spaced denticles (12 versus around 25) on the outer lip. Further differences are the rather smooth shell base in *M. thachi* versus the roughly sculptured shell base with raised threads in *M. cardinalis*. Finally the rather regularly arranged brown blotches in *M. thachi* are in contrast to the blotches usually fused into irregular axial streaks in *M. cardinalis*. Cernohorsky (1976a: 312–313, pl. 264) did not mention any record of *M. cardinalis* from Vietnam. Dr. Thach has collected miters along the coast of Central Vietnam (Provinces of Khanh Hoa and Ninh Thuan) since 1975 and found one specimen of the typical broad formed *M. cardinalis* (Fig. 10) in the Ninh Thuan Province of Central Vietnam. So it is evident that both species live sympatrically at the type locality of *M. (M.) thachi* n. sp.

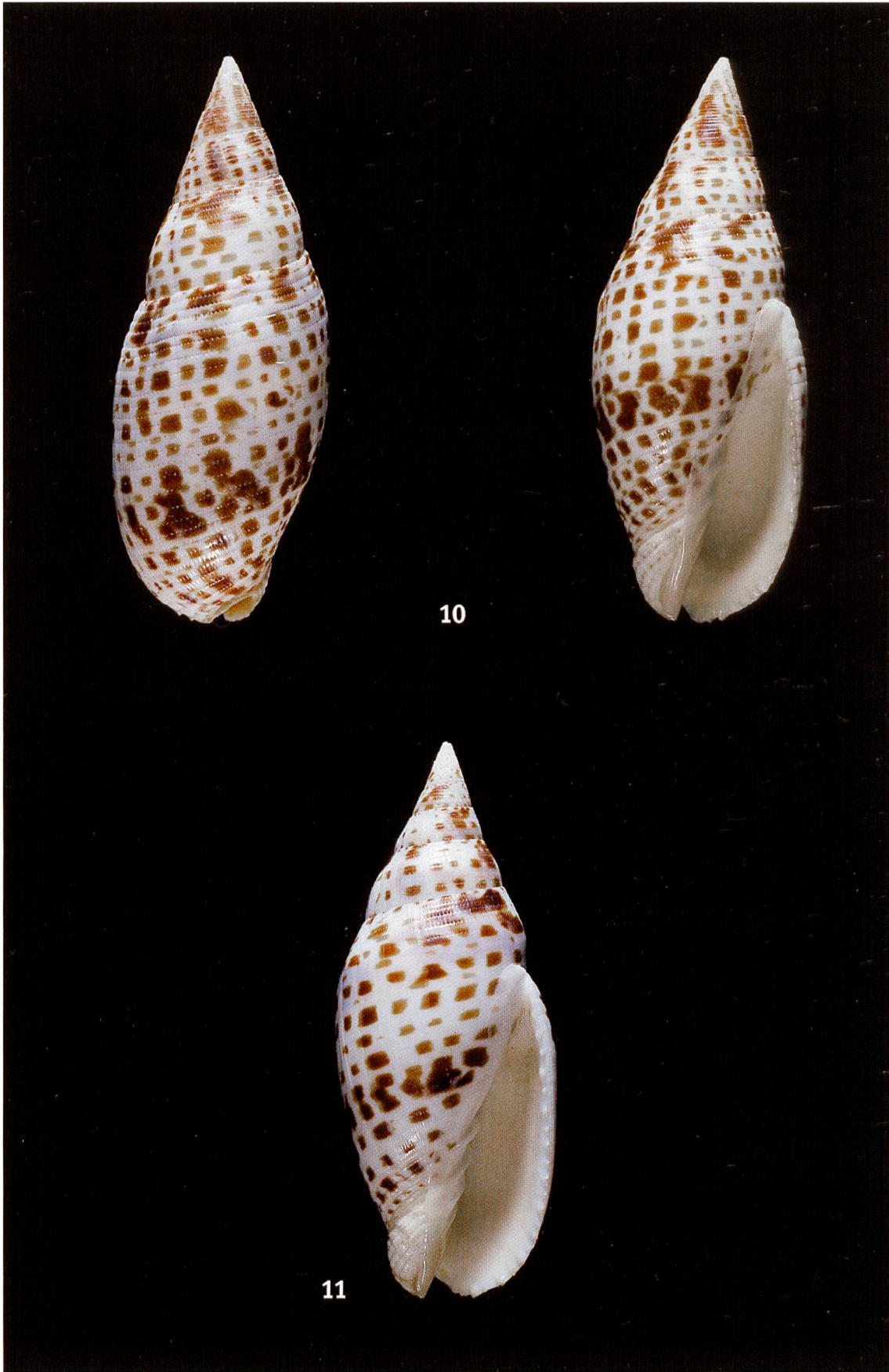
*M. (M.) thachi* n. sp. can not be confused with *M. (M.) raphaeli* Drivas & Jay, 1990 (Fig. 12) from Réunion Island. The two types of the latter species are smaller (shell length 30.7 and 55.6 mm), their outer lip is thick and smooth, and the brown blotches are smaller, do not extend over several spirals but are restricted to individual flattened spiral cords; one peripheral cord does not bear any blotch.



Figs. 8–9: *Mitra (Mitra) thachi* n. sp.

8: Holotype (83.0 mm); Vietnam: Ninh Thuan Province: Phan Rang City, in sand near reef.

9: Paratype No. 1 (85.7 mm); same collection data as holotype.



Figs. 10–11: *Mitra (Mitra) cardinalis* (Gmelin, 1791).  
10: Specimen (80.7 mm); Vietnam: Ninh Thuan Province, in sandy bottom near reef area at 5–15 m.  
11: Specimen (79.5 mm); Northern Mozambique: Nacala Bay, scuba depth, 1989

Fig. 12: *Mitra (Mitra) raphaeli* Drivas & Jay, 1990. Holotype MNHN (30.7 mm); Réunion Island west coast: "Souris-Chaude", near Saint Leu, at a depth of 66 m. (From Robin & Martin (2004): pl. M-6).



Genus *Mitra* Lamarck, 1798

Subgenus *Nebularia* Swainson, 1840

Type-species by subsequent designation (Herrmannsen, 1847): *Mitra contracta* Swainson, 1820. Recent; Anaa Island, Tuamotu Islands (type locality designated by Cernohorsky 1976a: 394).

***Mitra (Nebularia) gracilefragum* n. sp.** (Figs. 13–17)

1980 *Mitra (Nebularia) fraga* — Pechar, Prior & Parkinson, *Mitre Shells Pac. Ind. Oceans*: pl. 7, figs. 8 and 13 (P.N.G., Rabaul; specimens 14 and 18 mm) (non *Mitra fraga* Quoy & Gaimard, 1833).

1986 *Mitra (Nebularia) lienardi* — Springsteen & Leobrera, *Shells of the Philippines*: 205, pl. 56, fig. 20 (Philippines, Cebu, Punta Engano; specimen 22.9 mm) (non *Mitra lienardi* G. B. Sowerby II, 1874).

2002 *Mitra (Nebularia) lienardi* Red-spotted colour form — Thorsson & Salisbury, *Internet Hawaiian Shell News „Living Mitridae“*: p. 5, pl. 212 (non *Mitra lienardi* G. B. Sowerby II, 1874).

2004 *Mitra (Nebularia) lienardi* — Robin & Martin, *Mitridae Costellariidae*: pl. M-12, 24.8 mm — Philippines (non *Mitra lienardi* G. B. Sowerby II, 1874).

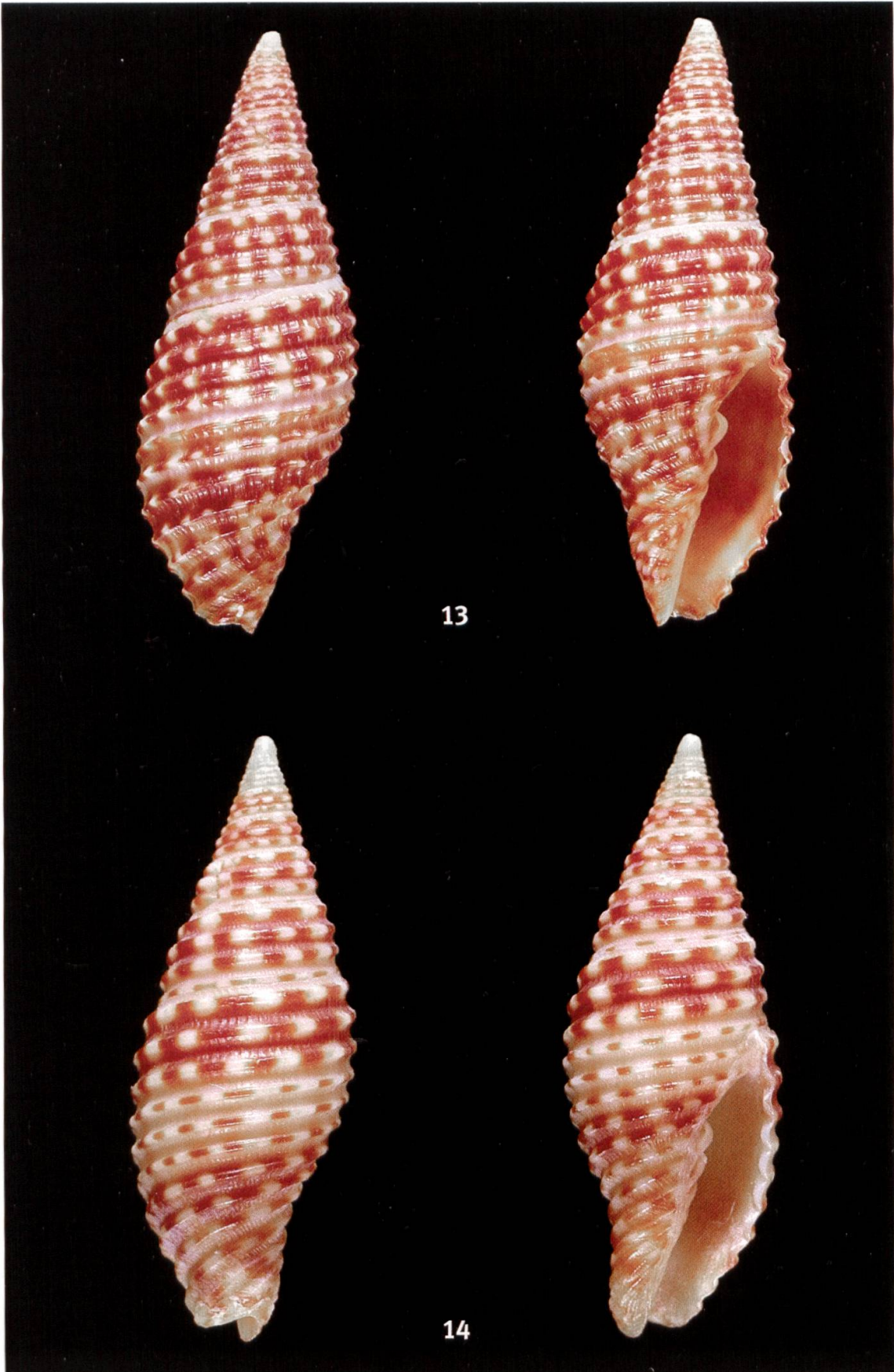
**Description:**

Shell elongate-fusiform, up to 29 mm in length; width 34–38% of shell length in adult specimens (width up to 45% of length in immature/subadult specimens). Protoconch formed like a truncated cone, involute-paucispiral, with 2.0–2.5 glossy, rounded, beige coloured embryonic whorls (Fig. 17). Teleconch up to 8 whorls; whorls not angulate at the sutures which are rather indistinct, narrowly ledged; side lines of spire slightly concave, spire whorls flat-sided; first 2–3 post-nuclear whorls with 3 prominent spiral cords, later spire whorls with 4 spiral cords, the 4<sup>th</sup> spiral being more slender; last part of penultimate whorl occasionally with an additional 5<sup>th</sup> slender spiral cord; body whorl with 11 prominently elevated spiral cords (apart from the siphonal fasciole), first 3 spirals below the suture being strong and rounded, the remaining 8 spirals are more slender and rather widely spaced; the interspaces between the spiral cords are deeply concave and axially lamellate. Aperture slightly shorter to slightly longer than the spire (aperture length 46–53% of total shell length); outer lip only slightly thickened in fully mature specimens, crenulate in accordance with the highly elevated spiral cords and deeply concave interspaces; inner lip only developed in fully mature specimens (e.g. paratype No. 16 from Vietnam). Columella with 4–5 oblique folds which decrease strongly in size anteriorly; siphonal fasciole with 5–7 densely arranged oblique cords; siphonal notch moderately wide and rather shallow, siphonal canal short and only slightly recurved. Shell ground colour strawberry-red or dark crimson to ruby-coloured, ornamented with regular white spiral streaks on the ridges of the spiral cords, except a light coloured peripheral zone of the body whorl where the 4<sup>th</sup> to 6<sup>th</sup> spiral cords of the body whorl (counted from the suture) are white and ornamented with regular red spiral streaks on their ridges. (Only in few subadult specimens these red streaks on the ridges of the spiral cords within the light coloured peripheral zone are lacking or only faintly visible.) Siphonal fasciole also strawberry-red, mottled with white; aperture and columella reddish to beige.

**Type material:**

Holotype (Fig. 13): Length 24.6 mm, width 9.1 mm, aperture length 11.7 mm, protoconch only partially preserved; Philippines, N. Bohol, Calituban Island, taken by tangle net at 120 m depth, purchased from Luis Ferreira, Oct. 2000; ex HT, deposited in NMBE (24859).

Paratypes No. 1–3 from the type locality. No. 1 (23.9 x 8.5 mm, aperture 10.9 mm) in HT; No. 2 (27.4 x 10.4 mm, aperture 13.2 mm) in Ted W. Baer coll. No. 3 (25.3 x 9.2 mm, aperture 13.4 mm) in Sandro Gori coll.



**Figs. 13–14:** *Mitra (Nebularia) gracilefragum* n. sp.

**13:** Holotype (24.6 mm); Philippines: N. Bohol: off Calituban Island, 120 m.

**14:** Paratype No. 20 (14.9 mm); Maldives: N. Male Atoll: Helengeli, house-reef, shallow water.



Paratype No. 4 (23.8 x 7.9 mm, aperture 12.3 mm) from Caubian Island, N. Bohol, Philippines, by diver at 30 m depth, 2003; in Ted W. Baer coll.

Paratypes No. 5–7 from Mactan Island, Cebu, Philippines, depth 20 m, ex Ray Walker, May 1984, in HT. No. 5 (15.8 x 6.3 mm, aperture 7.6 mm), immature, protoconch intact. No. 6 (14.2 x 5.7 mm, aperture 7.2 mm), immature, tip of protoconch broken. No. 7 (Fig. 17) (12.4 x 5.1 mm, aperture 6.4 mm), immature, protoconch intact.

Paratype No. 8 (26.0 x 9.8 mm, aperture 13.5 mm) from Olango Island (10°16'N, 124°03'E), Cebu, Philippines, by diver at 25 m, Oct. 2004; in Ted W. Baer coll.

Paratypes No. 9–12 from the Bohol Strait off Cebu, deep water, May 1999. No. 9 (28.6 x 9.8 mm, aperture 14.0 mm), apex worn. No. 10 (26.7 x 9.6 mm, aperture 12.4 mm), protoconch damaged. No. 11 (25.9 x 9.2 mm, aperture 13.0 mm), apex worn; all 3 in Brian Hayes coll. No. 12 (24.4 x 7.0 mm, aperture 12.5 mm) in Ted W. Baer coll.

Paratypes No. 13–15 from Bohol, Philippines, taken by tangle net of a native fisherman, 18 May 1997, in Mitsuo Chino coll. No. 13 (13.2 x 5.3 mm, aperture 6.0 mm). No. 14 (15.5 x 6.0 mm, aperture 7.3 mm). No. 15 (15.8 x 6.1 mm, aperture 7.7 mm).

Paratypes No. 16–17 from Bohol, Philippines, by diver at 10–15 m, April 2005, in Ted W. Baer coll. No. 16 (26.8 x 9.6 mm, aperture 12.8 mm). No. 17 (26.1 x 9.6 mm, aperture 13.1 mm).

Paratype No. 18 (17.0 x 7.6 mm, aperture 9.5 mm) from the Sulu Sea off Aliquay Island, N.W. Mindanao, Philippines, trawled at 100–150 m depth, 2004; in Ted W. Baer coll.

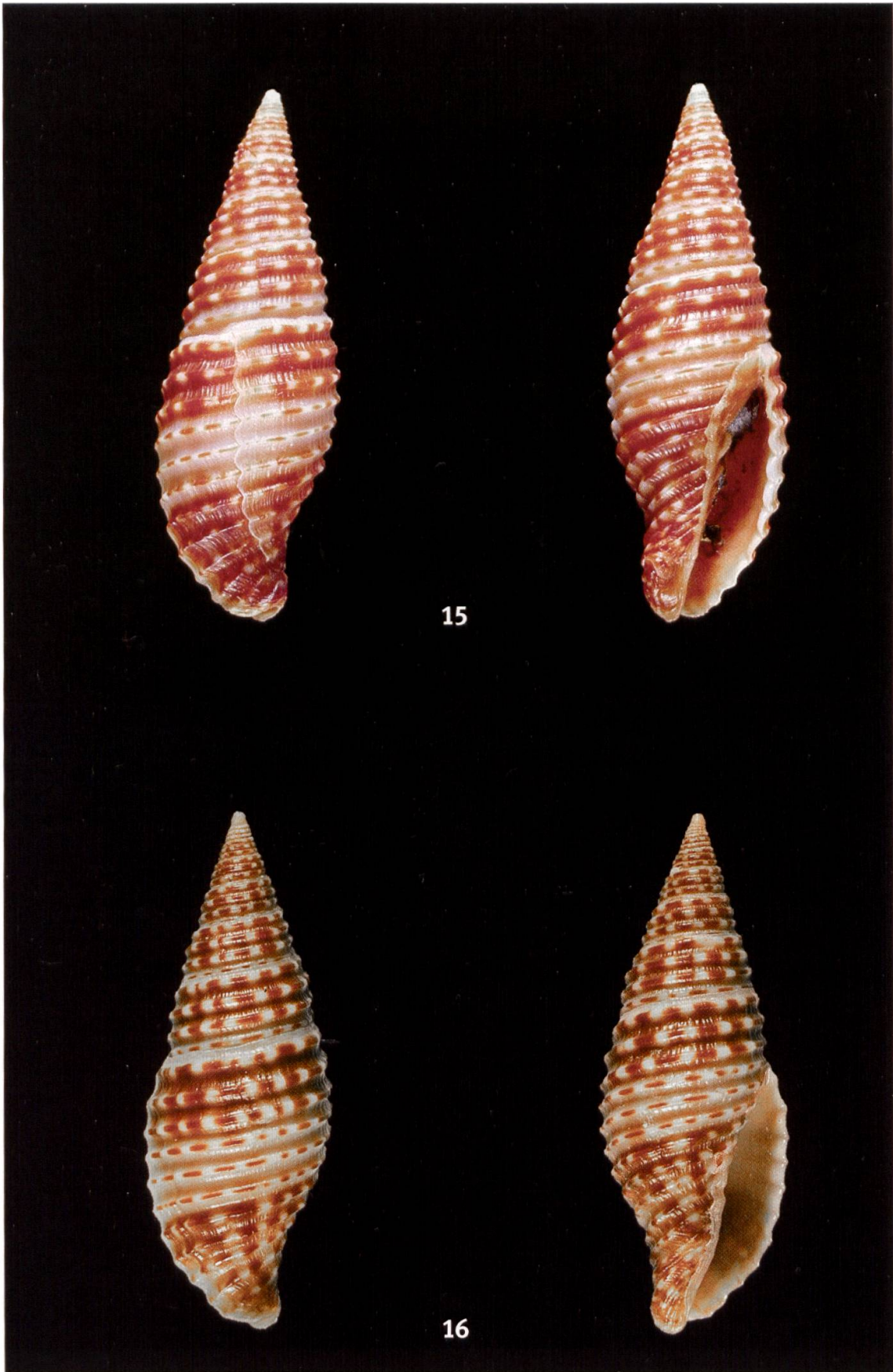
Paratype No. 19 (18.3 x 6.65 mm, aperture 9.5 mm) from Zamboanga, S. Mindanao, Philippines; in Günter Stossier coll.

Paratype No. 20–22 from the Maldive Islands, N. Male Atoll, Helengeli, house-reef, shallow water, leg. Silvia Frantzen, 1983. No. 20 (Fig. 14) (14.9 x 5.5 mm, aperture 7.7 mm). No. 21 (14.0 x 5.6 mm, aperture 7.1 mm); both in HT. No. 22 (13.6 x 4.6 mm, aperture 6.45 mm), in Günter Stossier coll.

Paratypes No. 23–24 from the Maldive Islands, N.E. of Ari Atoll, southern edge of Rashdhoo Atoll, Kuramathi Island, Feb. 1992; in Ted W. Baer coll. No. 23 (8.0 x 3.3 mm, aperture 4.4 mm). No. 24 (15.0 x 5.4 mm, aperture 7.8 mm).

Paratype No. 25 (14.8 x 5.4 mm, aperture 7.7 mm, apex worn) from the Maldive Islands, Felidhoo Atoll, Hurahu Kanduu, oceanside dropoff, in rubble of cave at 35 m depth, 20 Nov. 1995, Sandro Gori leg. & coll.

Paratype No. 26 (9.5 x 3.7 mm, aperture 5.0 mm, protoconch intact) from the Maldive Islands, Felidhoo Atoll, Rackedhoo Kanduu, at 35 m depth, 11 Nov. 1997, Sandro Gori leg. & coll.



**Figs. 15–16: *Mitra (Nebularia) gracilefragum* n. sp.**

**15: Paratype No. 28 (24.8 mm); Vietnam: Nha Trang: Hon Tan, by diver, 8 m, on reef.**

**16: Paratype No. 31 (21.0 mm); Solomon Islands: Guadalcanal: Marau Sound: Wahere.**



**Figs. 17:** *Mitra (Nebularia) gracilefragum* n. sp. Close-up of protoconch and early spire whorls of paratype No. 7 (12.4 mm, immature); Philippines: Cebu: Mactan Island, 20 m, May 1984.

Paratype No. 27 (25.5 x 9.1 mm, aperture 13.5 mm) from Indonesia, Batang Island (north of Pantar) (08°14'50"S, 124°06'E), shallow water, Oct. 2001, ex Felix Lorenz, in Ted W. Baer coll.

Paratype No. 28 (Fig. 15) (24.8 x 8.5 mm, aperture 12.2 mm), apex missing, dried animal inside aperture, from Vietnam, Nha Trang, Hon Tan, taken live by diver in 8 m depth on reef, ex Luis Ferreira, Dec. 1999, in HT.

Paratype No. 29 (11.0 x 4.0 mm, aperture 5.6 mm) from Japan, Okinawa, Cape Zampa, 10 m, diver, in Sandro Gori coll.

Paratype No. 30 (14.5 x 5.4 mm, aperture 7.5 mm) from Papua New Guinea, New Ireland, Binnegem Island, Albatross Channel dropoff, 02°45'03"S, 150°43'30"E, 18 m, 16 Nov. 2002, Sandro Gori leg. & coll.

Paratype No. 31 (Fig. 16) (21.0 x 7.6 mm, aperture 11.1 mm) from the Solomon Islands, Guadalcanal, Marau Sound, Wahere, in Günter Stossier coll.

Paratypes No. 32–33 from the Marquesas Islands, Nuku Hiva Island. No. 32 (12.9 x 5.5 mm, aperture 6.8 mm), don. Jacques Colomb, March 1999, in HT. No. 33 (13.9 x 5.5 mm, aperture 7.0 mm, 2+ embryonic whorls preserved), in Jean-Paul Lefort coll.

Paratypes No. 34–36 from the Solomon Islands, in Richard Salisbury coll. No. 34 (15.1 x 5.8 mm, aperture 7.75 mm), Bougainville, trawled 180 m, Feb. 1971. No. 35 (18.0 x 6.7 mm, aperture 9.0 mm), N'Gela Island, dead in sand at



Figs. 18–19: *Mitra (Nebularia) lienardi* G. B. Sowerby II, 1874.

18: Specimen 29.5 mm; Madagascar; in Jean Paul Lefort coll.

19: Specimen 18.8 x 7.4 mm, aperture length 8.4 mm; Philippines: Mactan Island; in Günter Stossier coll.

a depth of 11 m, Sept. 1983. No. 36 (14.0 x 4.8 mm, aperture 6.6 mm), N'Gela Island, dead in sand at a depth of 11 m.

Paratype No. 37 (11.7 x 4.4 mm, aperture 5.4 mm), Philippines, Cebu, Mactan Island, off Punta Engano, in deep water 180 m, from fisherman's net, April 1980, in Richard Salisbury coll.

**Type locality:**

Calituban Island north of Bohol, central Philippines, in shallow to moderately deep water.

**Distribution and habitat:**

Tropical Indo-Pacific (Maldives, Indonesia, Vietnam, Philippines, Okinawa, Papua New Guinea, Solomons, Marquesas Islands). From fairly shallow subtidal water (8–20 m) to deep water (180 m), on bottoms of sand and coral rubble.

**Etymology:**

The specific name, a composed Latin substantive of neutral gender, means



Figs. 20–21: *Mitra (Nebularia) fraga* Quoy & Gaimard, 1833.

20: Specimen (f. *typica*) 15.9 mm; North Queensland: Cairns, under rocks on reef, leg. Barbara Collins, April 1980; in HT.

21: Specimen (f. *peregra* Reeve, 1844) 31.0 mm; Solomon Islands; in Günter Trappe coll.

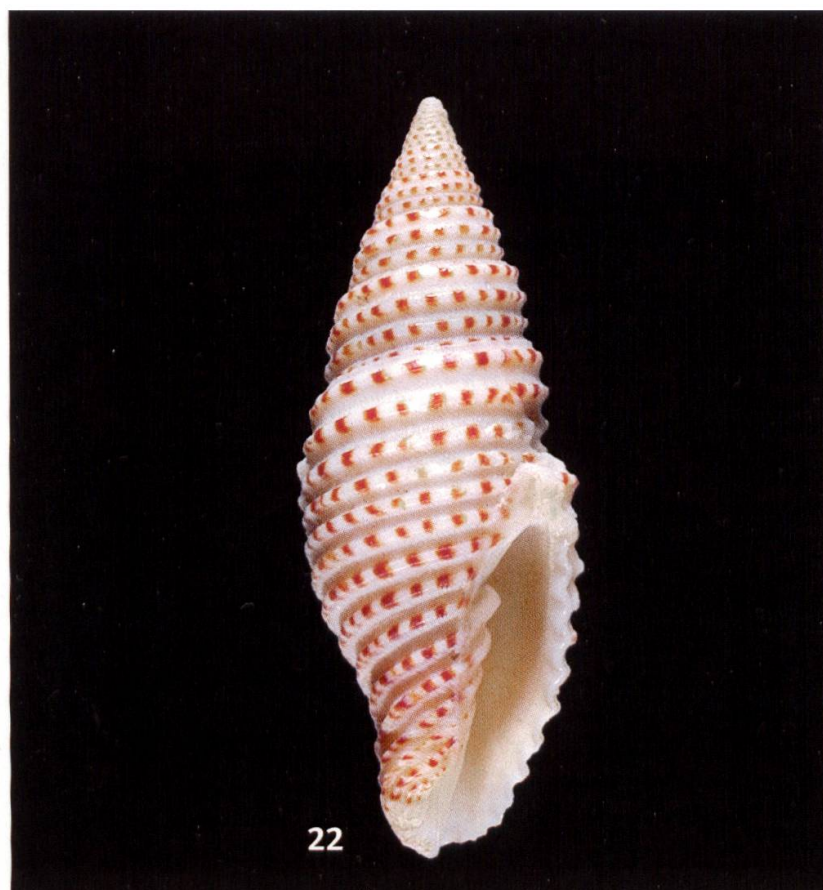
slender strawberry, referring to the elongate-fusiform shape and strawberry-red aspect of the shell.

**Differential diagnosis:**

*M. (Nebularia) gracilefragum* n. sp. has mainly been confused with *M. (Nebularia) lienardi* Sowerby, 1874 (Figs. 18–19; see also Cernohorsky 1976a: 399–400, pl. 336, fig. 5, showing the probable holotype of *M. lienardi* ANSP 28725: 24.2 x 8.6 mm). From *M. lienardi* the here described *M. gracilefragum* n. sp. differs in the following characters:

- 1) The shell shape is elongate-fusiform (not elongate-ovate as in *M. lienardi*);
- 2) the side lines of the spire are slightly concave (not convex to straight as in *M. lienardi*);
- 3) the shell base is more contracted and elongate;
- 4) the shell is without axial folds;
- 5) 11 spiral cords on body whorl (13–14 in *M. lienardi*);
- 6) the spiral cords on the body whorl are prominently elevated from deeply

Fig. 22: *Mitra (Nebularia) dovpeledi* Turner, 1977. Holotype NHMW 89.537 (31.2 mm); Red Sea: Israel: Eilat, depth 9–12 m, on coral reef in sand.



concave axially lamellate interspaces (whereas in *M. lienardi* the spiral cords are more rounded with axially finely striate interspaces);

7) the (three) spiral cords within the peripheral light coloured zone in most specimens show regularly arranged and comparatively very narrow red streaks approximately equal in length as the alternating white interstices (a character not found in *M. lienardi*);

8) the lower part of body whorl including siphonal fasciole is red, mottled with white (not with a uniformly light coloured siphonal fasciole as in *M. lienardi*).

*M. (Nebularia) gracilefragum* n. sp. has also been confused with *M. (Nebularia) fraga* Quoy & Gaimard, 1833 (Figs. 20–21) although this species differs in having an ovate-bulgy shell shape, its whorls are angulate to subangulate at the sutures, its aperture is definitely longer than the spire, and the colour pattern of the body whorl lacks the whitish peripheral zone with red streaks on the 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> spiral ribs so peculiar and typical for *M. gracilefragum* n. sp.

*M. (Nebularia) gracilefragum* n. sp. resembles in shape and general aspect to some degree also *M. (Nebularia) dovpeledi* Turner, 1997, from the Red Sea (Fig. 22). This species may be confidently distinguished as its spiral cords and grooves on body whorl remain the same in relief, width and colour pattern

from the suture to the base, and — even more noticeable — its shell ground (including the interior of aperture) is not red in colour (as in *M. gracilefragum* n. sp.), but white.

***Mitra (Nebularia) silviae* n. sp.** (Figs. 23–24)

**Description:**

Shell small, ovate-acuminate, up to 13 mm in length, width 49–53% of shell length, spire side lines concave, base contracted and recurved, sutures distinctly impressed. Protoconch truncate-conoidal, involute-paucispiral, with 2.5 glossy, rounded, yellowish-brown coloured embryonic whorls. Teleoconch with 6–7 whorls; spire whorls flat-sided and only slightly angulate at the sutures, each spire whorl with 3 spiral cords and grooves, on the first post-nuclear spire whorl spiral cords gemmately sculptured like strings of pearls, on all later whorls the spiral cords have smooth ridges, the spiral grooves in interspaces are V-shaped in cross-section and axially striate; body whorl with 11 spiral cords, apart from the siphonal fasciole consisting of 5–6 densely arranged oblique cords. Aperture longer than the spire (aperture length 53–63% of total shell length), very narrow, additionally narrowed by the thickened outer lip which protrudes into the aperture by 5–6 strong teeth particularly in the posterior third; inner lip with thickened rounded edge at the anterior two thirds of the aperture. Columella with 3–4 oblique folds which decrease strongly in size anteriorly; siphonal notch deep, siphonal canal short but strongly recurved. Uniformly tan to yellowish-brown in colour, columella and strong teeth of outer lip slightly lighter coloured. Periostracum thin and light-brown.

**Type material:**

Holotype (Fig. 23): Length 9.9 mm, width 4.9 mm, aperture length 5.2 mm, protoconch nearly perfect, anteriormost part of outer lip at the siphonal canal slightly damaged; Helengeli house-reef, North Male Atoll, Maldives, freshly dead at a depth of 3 m on coral rubble, leg. Silvia Frantzen, 1982; ex Silvia Frantzen-Woltemas, deposited in NMBE (24860).

Paratype No. 1 (10.0 x 4.9 mm, aperture 6.4 mm), protoconch damaged, anteriormost part of outer lip at the siphonal canal slightly damaged, shell rather worn, periostracum preserved only in spiral grooves; same collection data as the holotype; in Silvia Frantzen-Woltemas coll.

Paratype No. 2 (Fig. 24) (12.9 x 6.4 mm, aperture 7.5 mm); protoconch intact, subrecent, faded to white; Male, in sediment at site for reclamation of land, leg. Silvia Frantzen, Dec. 1984; in HT.



Figs. 23–24: *Mitra (Nebularia) silviae* n. sp.

23: Holotype (9.9 mm); Maldives: N. Male Atoll: Helengeli, house-reef, 3 m, in coral rubble.

24: Paratype No. 2 (12.9 mm, subrecent); Maldives: Male, in sediment on site for reclamation of land.



Paratype No. 3 (8.1 x 4.4 mm, aperture 4.9 mm); protoconch damaged, shell faded to white, of adult stage with mature lip; Old Shark Point, Villingili Island, North Male Atoll, Maldives, found dead at 30 m depth, in sand of cave; leg. Sandro Gori, Nov. 14, 1994; in Sandro Gori coll.

Paratype No. 4 (9.1 x 4.1 mm, aperture 5.0 mm); protoconch intact, teleoconch 6.1 whorls; Indonesia, central Banda Sea, south side of Sekaro Reef (05°34'S, 127°27'E), on wall ledges in sand pocket among coral at 8–40 m; leg. Hugh Morrison, Oct. 16, 2005; in Maxwell P. Marrow coll.

Paratype No. 5 (7.6 x 4.1 mm, aperture 4.0 mm); apex and base of body whorl broken, 5+ whorls left, bore hole on dorsal side of penultimate whorl; Malaysia, Borneo (Kalimantan), northern Sabah province, Banguay & Balam-bang Islands, Banguay W. Channel, amongst coral rubble at 5–7 m, leg. Hugh Morrison, Oct. 18, 2006; in Maxwell P. Marrow coll.

Paratype No. 6 (9.4 x 4.5 mm, aperture 5.0 mm); protoconch partially preserved, teleoconch 6+ whorls, red sponges on first two spire whorls; Malaysia, Spratly Islands, east side of Investigator Shoal (08°09'N, 114°55'E), along sand wall at 60–70 m, leg. Hugh Morrison, Oct. 22, 2006; in Maxwell P. Marrow coll.

**Type locality:**

North Male Atoll, Maldivian Islands.

**Distribution and habitat:**

Known from the Maldivian Islands, Malaysia and Indonesia. Subtidal, freshly dead at 3 m depth of water on a coral rubble bottom. Dead and faded white specimens also found at greater depth (to 70 m) in sand of cave, amongst coral rubble, and subrecent in sediment. [This new species ranges certainly wider than hitherto known. As it can be confused with *M. (Nebularia) turgida* Reeve, 1845, it may be detected in collections under that name.]

**Etymology:**

The species is named for Mrs. Silvia Frantzen-Woltemas (Dreitzsch, Germany) who has detected it in 1982 while working as a diving-teacher at North Male Atoll, Maldivian Islands.

**Differential diagnosis:**

*M. (Nebularia) silviae* n. sp. is certainly most closely related to *M. (Nebularia) turgida* Reeve, 1845 (Fig. 25), which is widely distributed in the tropical Indo-Pacific and lives compatriotic with *M. silviae* at the Maldivian Islands, in Indonesia and Malaysia. Shell morphology of the two species differs in several characters as follows:



Fig. 25: *Mitra (Nebularia) turgida* Reeve, 1845. Specimen 13.4 mm; Fiji: S. Viti Levu: Beqa Island, in 18 m, under coral, leg. Stan Jazwinski, Jan. 1986; in HT.

- 1) Body whorl circumference not interrupted by axial folds (such folds are typical for *M. turgida*);
- 2) protoconch truncate-conoidal-involute with 2.0 to 2.5 embryonic whorls yellowish-brown in colour (not conoidal-multispiral with 3+ glassy-white embryonic whorls as in *M. turgida*);
- 3) only the first post-nuclear spire whorl is gemmately sculptured by spiral cords like strings of pearls (whereas in *M. turgida* three post-nuclear whorls are sculptured in this way);
- 4) further spire whorls with strictly only 3 regular spiral cords (in *M. turgida* with up to 4, rarely even 5, spiral cords);
- 5) spiral grooves V-shaped in cross-section (in *M. turgida* U-shaped);
- 6) siphonal canal long and strongly recurved (in *M. turgida* short and only slightly recurved);
- 7) aperture narrowed by thickened and bended outer lip protruding with strong teeth especially in the posterior part (in *M. turgida* not narrowed in this way).

## Genus *Domiporta* Cernohorsky, 1970

Type-species by original designation: *Voluta filaris* Linnaeus, 1771. Recent; Tonga Islands (type locality designated by Cernohorsky 1991: 90).

### *Domiporta polycincta* n. sp. (Figs. 26–28)

1989 *Ziba cloveri* — Turner, Club Conchylia Informationen 21 (5–6): pl. 3, fig. 19 (= paratype No. 11) [non *Cancilla (Ziba) cloveri* Cernohorsky, 1971].

2004 *Ziba interlirata* — Robin & Martin, Mitridae Costellariidae, pl. M-28, text-figure (right), 30.9 mm [non *interlirata* Reeve, 1844].

### **Description:**

Shell elongate-fusiform, up to 39 mm in length, width 28–30% of shell length.

Aperture longer than the spire (52–57%, average 54.5%, of total shell length). Protoconch not preserved in type specimens. Teleoconch of 7–9 slightly convex whorls, separated by rather indistinct sutures, clathrate, with slender spiral ridges, and with axial riblets & grooves in the interspaces. Spiral ridges number 6–8 on the penultimate whorl (3–4 of them are coloured reddish-brown) and 25–30 on the body whorl (12–14 of them are coloured reddish-brown); additional 3–4 oblique and densely arranged, partially also reddish-brown coloured cords on the siphonal fasciole. Axial grooves in the interspaces do not intersect most of the spiral cords, but leave their ridges smooth; only few of the spiral cords are weak, and these are nodulously intersected by the axial grooves. Aperture smooth within, outer lip moderately thickened and rather smooth in adult specimens, lip thin and crimped in immature specimens; inner lip rounded and weakly developed only at the anterior half. Columella with six plaits, decreasing in size anteriorly. Shell white, the majority of spiral cords reddishbrown, crossed by striking irregular brown axial streaks which number 14–15 per whorl, edge of outer lip spotted brown in immature specimens, aperture and columella white. Periostracum thin, colourless and translucent.

### **Type material:**

Holotype (Fig. 26): Length 38.8 mm, width 11.1 mm, aperture length 21.4 mm, apex broken, 8 teleoconch whorls preserved, bore hole on ventral side of body whorl; from the type locality, collected dead; donated by Mitsuo Chino, deposited in NMBE (24861).



**Figs. 26–27: *Domiporta polycincta* n. sp.**

**26: Holotype NMBE (38.8 mm); Central Philippines: Cebu, 100 m.**

**27: Paratype No. 15 (34.4 mm); Southern Philippines: Mindanao: off Zamboanga, deep water.**

There are 17 paratypes, No. 1–10 from the type locality.

Paratype No. 1 (29.0 x 8.0 mm, aperture 15.1 mm); Magellan Bay near Cebu City, 90–110 m, November 1983; ex HT, deposited in BMNH. No. 2 (30.0 x 8.5 mm, aperture 15.9 mm); S. Cebu, net; in Al Deynzer coll. No. 3 (28.2 x 8.6 mm, aperture 16.1 mm); 1986; in Ted W. Baer coll. No. 4 (30.5 x 8.6 mm, aperture 16.4 mm); Mactan Island, Punta Engano, tangle net (20–150 m); in Jean-Paul Lefort coll.

Paratypes No. 5–6 from South Cebu, Oslob, tangle net, 120 m. No. 5 (31.7 x 9.0 mm, aperture 16.5 mm); in André Lefait coll. No. 6 (30.0 x 9.2 mm, aperture 16.8 mm); in HT.

Paratype No. 7 (30.7 x 9.2 mm, aperture 16.6 mm); tangle net 150–160 m, 2004; in Ted W. Baer coll.

Paratypes No. 8 (29.7 x 8.7 mm, aperture 15.8 mm) and No. 9 (30.2 x 9.2 mm, aperture 16.9 mm), depth 100 m, 25 Dec. 2002; both in Mitsuo Chino coll.

Paratype No. 10 (28.9 x 8.4 mm, aperture 15.7 mm); depth 100 m, from tangle net, Oct. 1972, in Richard Salisbury coll.

Paratypes No. 11 (36.1 x 10.7 mm, aperture 21.3 mm) and No. 12 (32.9 x 9.3 mm, aperture 17.9 mm) from the Camotes Sea off S. Bohol, Panglao, Balicasag Island, by net at 140 m depth, on a bottom of broken coral and sand; in Emmanuel G. de Suduiraut coll.

Paratype No. 13 (32.2 x 9.0 mm, aperture 17.3 mm); Bohol, collected dead by net at 110 m depth, Oct. 1990; in Maxwell P. Marrow coll.

Paratype No. 14 (29.0 x 8.6 mm, aperture 16.0 mm); protoconch damaged, teleoconch 8 whorls); Sulu Sea off northwestern Mindanao, Aliguay Island, collected in deep water by local fishermen, 2006; in Jean-Paul Lefort coll.

Paratypes No. 15–17 from the southern Philippines. No. 15 (Fig. 27) (34.4 x 10.3 mm, aperture 18.3 mm); Mindanao, Zamboanga, tangle net, 180–200 m, 1983; in HT. No. 16 (Fig. 28) (33.0 x 9.4 mm, aperture 18.0 mm) and No. 17 (31.1 x 8.7 mm, aperture 16.2 mm), both from Mindanao, Davao del Sur, Balut Island (05°24'N, 125°23'E) taken by tangle net from deep water; both in Jean-Paul Lefort coll.

**Type locality:**

Cebu (eastern and southern part), central Philippines, subtidal (20–160 m).

**Distribution and habitat:**

Central and southern Philippines. From fairly shallow subtidal water (20 m) to depths of approx. 200 m, on bottoms of sand and coral rubble.



Fig. 28: *Domiporta polycincta* n. sp.  
Paratype No. 16 (33.0 mm); Southern Philippines: Mindanao: Davao del Sur: Balut Island: from deep water by tangle net.

**Etymology:**

The specific name, a Latin adjective, means encircled by many rings, referring to the shell encircled by more than 10 distinct brown lines on spiral ridges of the body whorl, a characteristic feature of the species.

**Differential diagnosis:**

*Domiporta polycincta* n. sp. has been confused with the next related species *Mitra* (“*Ziba*”) *cloveri* (Cernohorsky, 1971) (Figs. 29–30), but differs in size, sculpture as well as in colour pattern. The species *cloveri* is smaller (shell length only up to 27 mm versus 39 mm), has a smoother sculpture, lacking the distinct elevated spiral ridges and axial riblets in interspaces especially in the lower 3 quarters of the body whorl, and differs also in colour pattern which lacks the pronounced irregular brown axial streaks of *D. polycincta*, but shows rather regular straight or a bit wavy axial lines bisecting the spirals.



Figs. 29–30: *Mitra* (“*Ziba*”) *cloveri* (Cernohorsky, 1971).  
29: Specimen 15.4 mm; Solomon Islands; in J. Bertard coll.  
30: Specimen 19.0 mm; S.W. Taiwan: off Kaohsiung, 275 m, 1975; in HT.

## Genus *Scabricola* Swainson, 1840

Type-species by subsequent designation (Gray 1847): *Mitra serpentina* Lamarck, 1798 = *Scabricola variegata* (Gmelin, 1791). Recent; Indo-Pacific.

### *Scabricola gorii* n. sp. (Figs. 31–33)

#### **Description:**

Shell subcylindrical to ovate, turreted, solid, up to 25 mm in length, width 43–47–50% of shell length in adult specimens, aperture longer than the spire (54–60–67% of total shell length). Protoconch like a truncated cone in shape, involute-paucispiral, with 2.0–2.5 glossy, rounded, white embryonic whorls. Teleoconch of 5–6 angulate whorls which are distinctly tabulate at sutures. Sculptured with strong spiral cords which bear highly elevated protuberances, number of cords 3–4 on the penultimate whorl and 11–12 on the body whorl, apart from 4–5 fine and narrowly arranged oblique cords of the siphonal fasciole. Protuberances are strongest on the first subsutural spiral cord where protuberances number 13–15 on the body whorl. The deep V-shaped spiral grooves are smooth, but have deep fossules where they are intersected by axial furrows which divide the spiral cords into protuberances. Aperture smooth within, outer lip crimped, inner lip strongly protruding especially in the two anterior thirds, columella with 3–4 strong plaits. Base colour white, ornamented with irregular orange-red blotches on the spire and upper two thirds of body whorl, broad orange-red spiral zone on the lower part of the body whorl; very striking fine interrupted red lines at the bottom of the spiral grooves on all whorls. Aperture and columella white.

#### **Type material:**

Holotype (Fig. 31): Length 17.6 mm, width 8.3 mm, aperture length 10.6 mm, from the Maldive Islands, Felidhoo Atoll, Dhiggaluvashee Kuda Kanduu, south oceanside, 29 m, in cave, under sand, collected live, leg. Sandro Gori, 16 Nov. 2001; deposited in NMBE (24862).

Paratypes No. 1–2 from the Maldive Islands, Ari Atoll, Mushimasmingili Thila, 30 m, leg. Sandro Gori, 18 Nov. 1996. No. 1 (17.8 x 8.3 mm, aperture 9.6 mm). No. 2 (16.1 x 7.0 mm, aperture 9.0 mm); 6 bore holes on ventral side of body whorl. Both in Sandro Gori coll.

Paratypes No. 3–4 from the Maldive Islands, Nilandhe Atoll, leg. Sandro Gori, 11 Feb. 2005; in HT. No. 3 (19.8 x 9.0 mm, aperture 11.4 mm); Filitheyo





**Fig. 31:** *Scabricola gorii* n. sp.  
**Holotype** (17.6 mm); Maldive Islands: Felidhoo Atoll: Dhiggaluvashee Kuda Kandu, south oceanside, 29 m, in cave, under sand.

Kandu, 24 m. No. 4 (16.3 x 7.8 mm, aperture 10.4 mm); Fieeali Island, Miyaru Kandu, 12 m.

Paratypes No. 5–9 from Northern Mozambique, Quissimajul Bay, 1–3 m, on coral and sand, 2005, in Ted W. Baer coll. No. 5 (Fig. 32) (22.9 x 10.6 mm, aperture 13.6 mm). No. 6 (21.9 x 10.7 mm, aperture 14.7 mm). No. 7 (21.0 x 9.6 mm, aperture 11.9 mm). No. 8 (20.1 x 10.8 mm, aperture 13.7 mm); immature, lip thin. No. 9 (24.1 x 10.6 mm, aperture 13.8 mm); apex worn.

Paratype No. 10 (Fig. 33) (16.5 x 8.1 mm, aperture 10.6 mm); from Papua New Guinea, New Ireland, Binnegom Island, Albatross Channel dropoff, 02°45'03"S, 150°43'30"E, collected by diver; in Sandro Gori coll.

Paratype No. 11 (17.9 x 8.4 mm, aperture 10.6 mm); from N. Mozambique, Quissimajul Bay, on a coral and sand bottom, depth 2–3 m, by diver, March 2005; in Richard Salisbury coll.

Paratype No. 12 (25.0 x 10.6 mm, aperture 14.6 mm); from the Comores Islands, Mayotte, leg. Dr. Jean-Pierre Arnaud 2003–2006; in Arnaud coll.



Figs. 32–33: *Scabricola gorii* n. sp.

32: Paratype No. 5 (22.9 mm); Northern Mozambique: Quissimajul Bay, 1–3 m, on coral and sand.

33: Paratype No. 10 (16.5 mm); Papua New Guinea: New Ireland: Binnegom Island: Albatross Channel dropoff.

**Type locality:**

Maldive Islands.

**Distribution and habitat:**

East Africa (Northern Mozambique), Comores Islands (Mayotte), Maldive Islands (Ari, Felidoo and Nilandhe Atolls) and Papua New Guinea (New Ireland). From very shallow subtidal water (1–3 m) to scuba depths (20–30 m), on bottoms of sand and coral rubble, also in caves at reef dropoffs.

**Etymology:**

Named in honour of Mr. Sandro Gori (Livorno, Italy), a friend and malacologically very active colleague, who is well known for his many productive scuba diving trips to many seas of this world.

**Differential diagnosis:**

The typical shell characters of the above described species, in particular the spiral rows of robust and sharp protuberances, are not known in any other species of Mitridae. In respect of other shell characters there are rather slight similarities to *Pterygia scabricula* (Linnaeus, 1758), *Scabricula* (*Scabricula*) *eximia* (A. Adams, 1853) and *Scabricula* (*Scabricula*) *splendidula* Salisbury & Suduiraut, 2003. The classification of *gorii* n. sp. in the genus *Scabricula* is provisional, pending future examination of radula and anatomical details.

*Pterygia scabricula* (Fig. 34) is similar in general aspect (shape, rather strong spiral ridges, reddish colouring), differs however in size and important details of sculpture and colour pattern. *P. scabricula* is considerably larger (up to 44 mm, versus only 24 mm in *S. gorii* n. sp.), has a prominently different, less coarse sculpture lacking sharply angulate whorls, lacking also the spiral rows of strong tubercles (especially on the first subsutural spiral cord), and has wider spiral grooves with axial riblets which are unknown in *S. gorii* n. sp. *P. scabricula* differs also in lacking the broad reddish-brown zone on the lower half of the body whorl and the fine interrupted red lines in the spiral grooves, shows also a fawn to brown interior of the aperture versus the pure white columella and aperture of *S. gorii* n. sp.

*Scabricula eximia* is similar in size, shape, rough sculpture and reddish colouring, but differs likewise in lacking spiral rows of robust and sharp protuberances, has smooth spiral cords and wider spiral grooves with axial riblets, and is lacking a broad reddish zone near the base of the body whorl, differs furthermore in lacking interrupted red spiral lines in the spiral grooves and in showing a brown columella and brown interior of the aperture.

A slight similarity with *Scabricula splendidula* (Fig. 35) rests mainly on its



Figs. 34–35:

34: *Pterygia scabricula* (Linnaeus, 1758). Specimen 33.8 mm; Fiji: S. Viti Levu: Beqa Island, in 1–2 m, in sand, leg. Stan Jazwinski, Jan. 1986; in HT.

35: *Scabricola splendidula* Salisbury & Suduiraut, 2003. Specimen 11.0 mm; Philippines: S. Bohol: Balicasag Island, 160 m, on sand, by tangle net; in Jean-Paul Lefort coll.

pustulate spiral cords; however the nodules of the spiral cords are much finer and are a result of bisecting the cords by many narrowly spaced deep axial grooves; also in other respects a confusion with *S. gorii* n. sp. appears hardly possible, for *S. splendidula* is much smaller (only up to 15 mm in length), has a much more acuminate spire and a quite different colour pattern with two broad white zones on the body whorl.

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