

New Cancellariidae (Neogastropoda) from the western Indian Ocean

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Abstract: *Trigonaphera dekkeri* n. sp. from off Somalia and Yemen is described. A single shell of *Merica* (*Sydaphera*) from the Mozambique Channel, Madagascar, is recognised as a potentially new, but still undescribed and unnamed species.

Introduction: The cancellariid species living in the Indian Ocean are still poorly known in number and identity of the species, as well as in their geographic distribution.

The western Indian Ocean is here defined as the sea area between the East-African continental coastline to the west, and the longitude of Cape Comorin, 77°33'E, the southernmost point of India, to the east. The line connecting the limit of the continental flat south of Cape Agulhas (South Africa, 34°50'S, 20°E) and that south of Cape Leeuwin (West-Australia, 34°22'S, 115°E) is chosen as the southern limit for the whole Indian Ocean. About 48 species of cancellariids can be listed in the western Indian Ocean (e. g. Bosch *et al.*, 1995; Lussi *et al.*, 2004; Melvill & Standen, 1901; Petit, 1987; Petit & Harasewych, 2000; Thiele, 1925; Verhecken 1986; Verhecken & Bozzettii, 2006).

While studying the cancellariids from the western Indian Ocean, two undescribed taxa, which are discussed here, were detected. One of them is hereby fully described and named as a new species to science. The other one, however, is not named, and described as a *species inquirendum*, because it is represented by only one single shell from a commercial source.

Terminology of protoconch characteristics, and counting of protoconch whorls is according to Verduin (1982).

Abbreviations:

AM: Australian Museum, Sydney.

AV: author's collection.

HD: collection of Henk Dekker, Winkel, the Netherlands.

RBINS: Royal Belgian Institute of Natural Sciences, Brussels.

WAM: Western Australian Museum, Perth.

Subfamily Cancellariinae

Genus *Trigonaphera* Iredale, 1936

The generic position of the species here described is not evident. Many Indo-Pacific cancellariid species have been classified in the genus *Scalptia* Jousseaume, 1887. Yet, the type species of this genus, *Cancellaria obliquata* Lamarck, 1822, has a very rounded shell outline and a short spire. This contrasts with the slenderer shell shape of *Trigonaphera* Iredale, 1936, type species *Trigonostoma vinnulum* Iredale, 1925, with a higher spire. Nevertheless, *Trigonaphera* has often been considered a synonym of *Scalptia* (Kuroda, Habe & Oyama, 1971: 203; Vaught, 1989: 56). The use of the genus *Trigonaphera* has recently been discussed (Verhecken, 2018: 83-84). Many of the species usually placed in *Scalptia* may have to be classified under *Trigonaphera*.

Trigonaphera dekkeri new species

Figs 1-12

Type material: Holotype: RBINS, I.G.28671/MT.3250 (POP.13452), 13.1 x 8.4 mm, Mogadishu, Somalia (Figs 1-2). **Paratypes:** Somalia: **(1)** Mogadishu: RBINS, I.G.28671/MT.3251 (POP.12565), 14.0 x 9.1 mm (Figs 3-4); **(2-3)** AV0324, 2 shells, 15.4 x 9.6, 12.8 x 8.4 mm (Figs 5-6); **(4)** Cape Ras Hafun: AV0592, 15.9 x 9.7 mm,

50-150 m. (5) Yemen, al-Mahrah, Khaysayt, HD39149, 13.2 x 9.7 mm, Leg. H. Dekker & F. G. de Ceuninck van Capelle, sand beach, undercut limestone cliff with ascidians and sponges, khawr. Tibia-II Expedition, stn. 1995-38, 16°36'06"N, 52°11'02"E (Figs 11-12).

Type locality: Mogadishu, Somalia.

Other material known: Somalia, Ras Hafun (AV1797, 12.2 x 8.5 mm), trawled by shrimp boat, 150-250 m.

Distribution: Somalia and Yemen (paratype 5).

Description: Protoconch white, naticoid, with impressed sutures, multispiral with 2.0 whorls, D = 0.9-1.2 mm, d = 0.3-0.5 mm, exposed height 0.7-1.0 mm; surface smooth and shiny. Teleoconch with up to 4 ¼ whorls. Axial ribs with 11-13, 9-11, 7-10, and 7-9 ribs on first to fourth teleoconch whorl, and 6-8 on the last whorl. Spirals softly indicated, mainly where they cross the axial ribs, practically absent in between, numbering 5-6, 5-8, 3-8 on 1st-3rd whorl, sometimes with one secondary spiral between the primaries. On the last whorl, there are 9-12 primary spirals. Suture not deeply impressed; the sutural area sloping down abaxially from about the third whorl on. Aperture rounded triangular, with adapical part almost horizontal, with one tooth delimiting the posterior canal on the inside. The inside of the outer lip has 8-10 teeth. Columella straight, axial, with three folds, the adapical fold the strongest, the abapical the weakest. Columellar callus thin and transparent in the adapical part, white in the abapical part where it partly covers a narrow umbilicus or umbilical slit formed by a softly indicated siphonal fasciole.

The holotype has a small nodule on the lower callus placed at a height between the two abapical columellar folds, but spirally outside the apertural plane: in front view this looks like a small fourth columellar fold (Fig. 1). The same applies to paratypes 2 and 3 (Figs 5, 7).

Remarks: This new species has a multispiral protoconch, while its early spire whorls are normal for a *Trigonaphera* species. On the later whorls, the small number of broad, slightly prosocline axial ribs, and the shoulder plane descending abapically, distinguish it from other *Trigonaphera* species.

At first sight, some of the shells studied look rather different from each other. Yet, these differences are here interpreted as intraspecific variation, possibly due to e. g. attacks by predators, eroded shell surface (Figs 7-8) or repaired breaks (Figs 11-12).

The holotype and paratype 1 are in good condition and are very much alike, the holotype has a deeper brownish colour. Paratypes 2 and 3 are somewhat eroded, but clearly have the same shape as the holotype and paratype 1. Paratype 5 has a more stunted shell and shows a strong repair mark on the last whorl; this may have given the shell a more rounded profile. The shell of paratype 4 is the largest of the type lot, but the aperture is not fully formed: this may explain why the columella has only two folds, since in cancellariids the columellar folds are only periodically completely formed (Harasewych & Petit, 1982: 111).

The new species, and especially paratype 5, has a superficial resemblance to *Nipponaphera cyphoma* Bouchet & Petit (2002: fig. 22) from New Caledonia, but differs in its multispiral protoconch, angled shoulder and the shoulder plane sloping outwards abapically. The neocaledonian species has a more rounded shell, a groove between the two posteriormost folds, and was found in deeper habitat (350-400 m). The axial ribs of *T. dekkeri* are prosocline; those of *N. cyphoma* are orthocline.

In general shell shape, the new species has some resemblance to the fossil *Tribia uniangulata* var. *dertopercostulata* Sacco (1894: pl. II fig 53) from the Italian Tortonian (upper Miocene), 13.5 x 10.2 mm; the specimen figured by Sacco is also shown by Ferrero-Mortara (1984: pl. 31 figs. 10a-b), and by Brunetti *et al.* (2006: fig. 4c) as a *Sveltia*: it has only got two columellar folds and a weak one bordering the siphonal canal. Because of insufficient material studied, Brunetti *et al.* (2006: 46) are not convinced that this variety indeed belongs to *Tribia uniangulata*. A fossil form similar to *Trigonaphera dekkeri* has not yet been documented for the Paratethys sea (Harzhauser & Landau, 2012).

Etymology: This new species is named in honour of Mr Henk Dekker (Winkel, the Netherlands) who brought this species to the author's attention.

Genus *Merica* H. & A. Adams, 1854
Subgenus *Sydaphera* Iredale, 1929

These two genus-group names were discussed by Verhecken (2011: 13, 17); the variability of the species involved and DNA sequence data (Modica *et al.*, 2011) lead to the classification used here.

Species inquirendum
Figs 13-15

Material: A single shell (AV1148), 26.8 x 15.1 mm, off Morondava, Mozambique Channel, Madagascar, 600-800 m, protoconch is missing.

Locality: Madagascar, off Morondava, said to have been trawled by a shrimp in the Mozambique Channel, 600-800 m in the year 2000 (from commercial source). This depth, on a steep descent to about 3100 m, is reached some 20 miles off the town of Morondava (Google Earth, consulted 20171208).

Distribution: Only the shell described here is known.

Description: Shell off-white, rather solid, medium-sized, of slender shape, with $4\frac{3}{4}$ teleoconch whorls. The protoconch of the shell is missing (broken, not corroded); only a small fraction of the last protoconch whorl surface remains: it has a smooth surface, and the transition to the teleoconch sculpture is abrupt. Axial sculpture consists of narrow, slightly prosocline ribs, separated by a space much wider than the ribs; they number about 30 on first teleoconch whorl; 21, 19 and 16 on 2nd to 4th whorl; 14 on last whorl, but on the last half whorl they are fading out in strength. On the last whorl, there are about nine narrow growth lines between each pair of axial ribs. Spiral sculpture: 6 on 1st and 2nd; 7 on 3d and 4th whorl; the last whorl has 18 main spirals, on the posterior half of the whorl a secondary spiral occurs. Suture slightly impressed, forming a very narrow and shallow canal. Aperture pointed ovoidal. Outer lip sharp-edged, with 15 relatively strong inner lirae. Columellar callus very thin, transparent, covering a very narrow umbilical slit, only visible anteriorly. Columella vertical, with three folds placed deep in the aperture: the posterior one the strongest, the anterior one at the rim of a short siphonal canal. Siphonal fasciole very weak.

Remarks: This shell is the only one known and the protoconch is missing. It was indirectly obtained from the late Pierre Charles (France), who regularly visited Madagascar. Hence there is no absolute certainty about its locality or depth; for these reasons it is not yet named here.

This taxon has some resemblance to a few species living far away from Madagascar, mostly in Australian and western Pacific waters:

It resembles *Sydaphera christiana* Verhecken, 2008, (Fig. 18) from the Philippines, from which it differs in its less rounded whorls, much finer and neatly indicated sculpture, and its absence of colour.

In general shape and spiral sculpture, the present shell resembles the holotype of *Sydaphera panamuna* (Garrard, 1975) (Fig. 20), known from 8 shells from off Western Australia. The Madagascar shell is larger (26.8 x 15.1 mm versus 17.2 x 6.9 mm for the *S. panamuna* holotype) and has a predominant sculpture of 16 axial

ribs on the penultimate whorl, whereas *S. panamuna* has about 50 fine axial ribs, stated to be “vertical” (= orthocline?), hardly visible in the photograph of the holotype (Garrard, 1975: fig. 2 (7)) and a predominant spiral sculpture. Yet, the shape of the aperture, the columella and its folds are very much alike.

Cancellaria purpuriformis Kiener, 1841 was discussed earlier (Verhecken, 2011: 16). Its exact identity is not very clear: described on only one shell, holotype lost, no type locality. A few shells from the Philippines and from Australia have been identified as this species, but the identification of the Australian material by Garrard (1975: 15) is uncertain.

Sydaphera tasmanica (Tenison-Woods, 1876), from King’s Island, Tasmania, 18.5 x 10 mm, has no holotype (but one shell, AM N° C. 48996, from the type locality, might perhaps be a syntype), has never been figured and its original description can apply to many cancellariids. *S. tasmanica* was considered a synonym of *C. purpuriformis* by Garrard (1975: 15). The description does not mention an axial sculpture. It is “nearer in form and habit to Gould’s *C. viridula* (Sowerby’s Thesaurus, vol 11, p. 449, pl. 96, fig. 102) than any other form” (Tenison-Wood, 1876: 150); the cited Sowerby figure has a sculpture with predominant axial orthocline ribs.

Cancellaria maccoyi Pritchard & Gatliff, 1899 (p.182, pl. XX fig. 6), from Shoreham, Western Port, Victoria, Australia, type 19 x 11 mm, is also considered a synonym of *C. purpuriformis* by Garrard (1975: 15) and Hemmen (2007: 199, 257).

Sydaphera anxifer (Iredale, 1925), known from 38 shells from off New South Wales and one from Tasmania (Garrard, 1975: 10), is similar to the *species inquirendum* in shell shape and axial sculpture. It was proposed as a subspecies of *Cancellaria purpuriformis* Kiener, but was considered a separate species by Laseron (1955: 269), Garrard (1975: 10) and Hemmen (2007: 40). A photo of the holotype of *S. anxifer*, made by Des Beechey (AM), is included here (Fig. 19), showing that its axial sculpture is not as predominant as in the Madagascar species. Another shell of *S. anxifer* figured by Beechey (2005: figs 1-2) also has a somewhat less pronounced sculpture than the holotype.

In general shape and sculpture, this shell from Madagascar resembles *Crawfordina crawfordiana* (Dall, 1891) (Fig. 16), from off California, western North America, which grows larger (up to at least 43 x 21 mm), has a narrow flat sutural area, a narrower aperture and is more pointed anteriorly. It has 11-12 lirae in the aperture, versus 15 in the *species inquirendum*. Moreover, the columellar folds of *C. crawfordiana* (two, strongly inclined, and possibly a third one at the rim of the siphonal canal) are slightly weaker, while the shell has a

brown periostracum, which easily peels off.

In general shape, the *species inquirendum* has some resemblance to a few *Merica* species, e.g. *Merica laticostata* (Loebbecke, 1881) (Fig. 17) from Japan, preliminarily proposed as a variety of *Cancellaria reeveana* Crosse, 1861 (itself an unnecessary *nomen novum* for *C. elegans* Sowerby, 1822); but in its straight columella the *species inquirendum* differs from the heavier-shelled *Merica* species with curved columella with strong folds.

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Plate 1:**1- 12:** *Trigonaphera dekkeri* new species

1-2: Holotype, RBINS I.G.28671, MT.3250 (POP.13452), 13.1 x 8.4 mm, Mogadishu, Somalia.

3-12: Paratypes

3-4: Paratype 1. Somalia, Mogadishu, RBINS I.G.28671, MT.3251 (POP.12565), 14.0 x 9.1 mm

5-6: Paratype 2. Somalia, Mogadishu, AV0324-1, 15.4 x 9.6 mm

7-8: Paratype 3. Somalia, Cape Ras Hafun, AV0324-2, 12.8 x 8.4 mm

9-10: Paratype 4. Somalia, Cape Ras Hafun, AV0592, 15.9 x 9.7 mm, 50-150 m.

11-12: Paratype 5. Yemen, al-Mahrah, Khaysayt, HD39149, 13.2 x 9.7 mm, Tibia-II Expedition, stn. 1995-38, 16°36'06"N, 52°11'02"E (Figs. 11-12).

Plate 2:**13-15:** *Merica (Sydaphera) species inquirendum*

AV1148, 26.8 x 15.1 mm,
off Morondava, Mozambique Channel, 600-800 m.

16: *Crawfordina crawfordiana* (Dall, 1891)

AV0440-1, 33.3 x 17.3 mm,
Redondo Beach, California.

17: *Merica laticostata* (Loebbecke, 1881)

AV1800, 28.3 x 16.2 mm,
Port of Mogi, Nagasaki, Japan.

18: *Sydaphera christiana* Verhecken, 2008.

Paratype 3, AV1184, 26.0 x 14.9 mm,
Aliguay Island, Philippines.

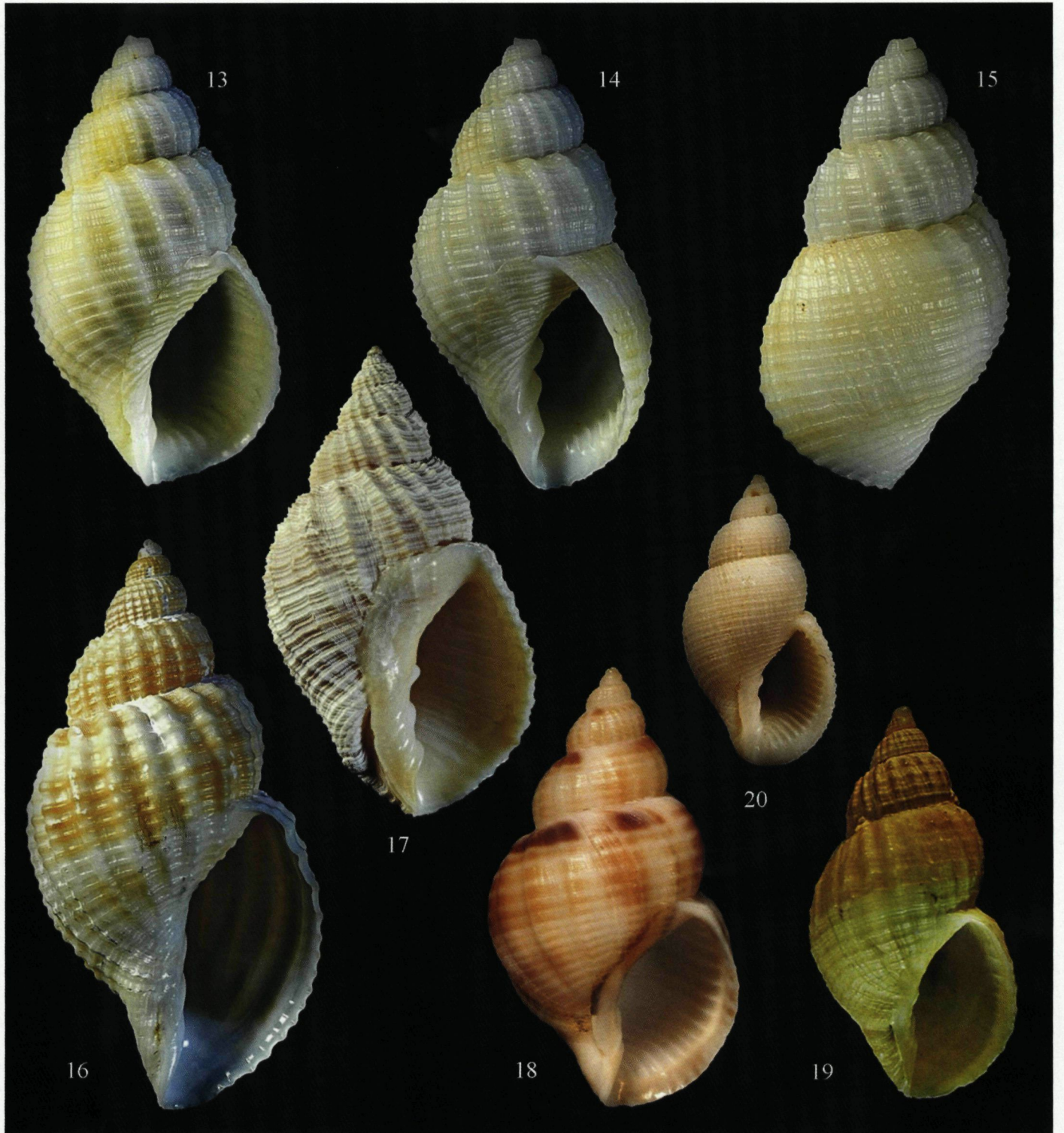
19: *Sydaphera anxifer* (Iredale, 1925)

Holotype, AM C. 53773, 23 x 12 mm,
off Eden, New South Wales, 45-54 m.
(photo: Des Beechey, AM)

20: *Sydaphera panamuna* (Garrard, 1975)

Holotype, WAM 551-71, 17.2 x 6.9 mm,
20 miles NW Anchor Island, off Onslow, Western
Australia.





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