



XENOPHORA

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Couverture

Prionovolva wilsoniana Cate, 1973

Lacerda Light House 20-22 m Mozambique

Photo José Rosado

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New species of Cerithiopsidae (Mollusca: Gastropoda) from Walters Shoal

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Résumé.

Au cours de l'expédition du NO Marion Dufresne II (MD208) doi.org/10.17600/17002700 pour étudier la faune du mont sous-marin Walters Shoal, à 800 km au large au sud de Madagascar, 53 spécimens appartenant à la famille Cerithiopsidae ont été identifiées, dont 7 sont décrites dans cet article comme nouvelles.

Cerithiopsilla oceanica sp. nov., *Clathropsis hourdezi* sp. nov., *Prolixodens spadoneae* sp. nov., *Seila remota* sp. nov., *Specula barrerei* sp. nov., *Specula gallettiae* sp. nov., *Specula profunda* sp. nov.

Abstract.

During the expedition of the NO Marion Dufresne II (MD208) doi.org/10.17600/17002700 to study the fauna of the Walters Shoal seamount, 800 km off-shore south of Madagascar, 53 specimens belonging to the family Cerithiopsidae were identified, of which 7 are described in this article as new.

Cerithiopsilla oceanica sp. nov., *Clathropsis hourdezi* sp. nov., *Prolixodens spadoneae* sp. nov., *Seila remota* sp. nov., *Specula barrerei* sp. nov., *Specula gallettiae* sp. nov., *Specula profunda* sp. nov.

Keywords.

Triphoroidea, Cerithiopsidae, new species, south-western Indian Ocean.

Introduction.

Few authors have studied and illustrated species of the family Cerithiopsidae from the Indian Ocean; the first reports from the northern area were by Issel (1869) for the Red Sea and by Melvill (1893, 1910, 1912), Melvill & Standen (1903, 1906) and Bosch *et al.* (1995), for the Persian Gulf and Oman. The first species from the south-western area were determined by Sowerby (1897), Smith (1906), Bartsch (1915), Thiele (1925) and Turton (1932) from the South African coast. More recently, an important contribution on Cerithiopsidae has been published by Jay & Drivas (2002) for Réunion, including SEM photos showing sculptural details of the teleoconch and protoconch. Further MNHN expeditions have brought to light other cerithiopsid specimens that have formed the basis of several other publications; from

southern Madagascar (ATIMO VATAE expedition 2010), to Cecalupo and Perugia (2014) and from South Africa (VEMA expedition 1963), Mozambique (INHACA expedition 2011) and Comoros Islands (BIOMAGLO expedition 2017, Cecalupo and Perugia 2021).

In this paper, 7 new species of the family Cerithiopsidae described, collected during the expedition, WALTERS SHOAL (MD208), to examine the fauna of the Walters Shoal seamount, 800 km south of Madagascar. In total, 53 specimens of Cerithiopsidae were collected; from 36 examined species, 7 new species were separated: *Cerithiopsilla oceanica* sp. nov., *Clathropsis hourdezi* sp. nov., *Prolixodens spadoneae* sp. nov., *Seila remota* sp. nov., *Specula barrerei* sp. nov., *Specula gallettiae*, sp. nov., *Specula profunda* sp. nov.

The Walters Shoal / MD208 expedition (PIs: Philippe Bouchet, Laure Corbari) took place on board N.O. *Marion-Dufresne* between April 30 and May 15, 2017. It was part of the IUCN project "Areas Beyond National Jurisdiction (ABNJ) of the South West Indian Ocean (SWIO)", funded by Fonds Français pour l'Environnement Mondial (FFEM).

Material and methods.

All material studied from Walters Shoal was collected during the Tropical Deep-Sea Benthos programme, Cruise MD208 and is deposited in the Muséum National d'Histoire Naturelle in Paris, France. Samples were washed with fresh water and specimens in the best condition were selected and photographed with a digital camera and SEM. Shell size was measured manually with a microscope at 20/40x (objective with millimetre scale). Species descriptions are based on morphological characteristics of the shell only, the soft parts being unknown. For generic assignment, priority was given to features of the protoconch, however, after examination of many cerithiopsid species, we believe that generic assignments based only on features of the protoconch and/or teleoconch remain questionable, and require confirmation through study of the soft parts or analysis of molecular data. The higher classification follows that of Bouchet *et al.* (2017) and generic characters and terminology relating to shell size follow those used by Marshall (1978).

Abbreviations.

MNHN Muséum national d'Histoire naturelle, Paris.

W/H shell width/height.

Systematics

Superfamily Triphoroidea Gray, 1847

Family Cerithiopsidae H. Adams & A. Adams, 1853

Genus *Cerithiopsilla* Thiele, 1912

Type species: *Cerithiopsilla cincta* Thiele, 1912

accepted as *Cerithiella cincta* (Thiele, 1912)

accepted as *Cerithiella antarctica* (E. A. Smith, 1907)

(type by original designation)

Cerithiopsilla oceanica n. sp.

Plate 1, Figs. 1 A-D, F-H

Type material.

holotype (MNHN-IM-2000-39850), 3.45 x 1.35 mm, protoconch 0.15 x 0.25 mm, stn DW4890.

paratype 1 (MNHN-IM-2000-39851), 3.20 x 1.17 mm, stn DW4879.

paratype 2 (MNHN-IM-2000-39852), 3.70 x 1.33 mm, stn DW4879.

paratype 3 (MNHN-IM-2000-39853), 3.70 x 1.38 mm, stn DW4880.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

Stn DW4879 - Slopes, N.O. "Marion Dufresne", 288-300 m, spms 3, 33°17'S-43°52'E, 01MAY2017;

Stn DW4880 - Slopes, N.O. "Marion Dufresne", 275-318 m, spms 2, 33°17'S-43°51'E, 01MAY2017;

Stn DW4881- Slopes, N.O. "Marion Dufresne", 377-382 m, spm 1, 33°16'S-43°50'E, 02MAY2017;

Stn DW4890 - Slopes, N.O. "Marion Dufresne", 492-588 m, spm 1, 33°09'S-43°59'E, 04MAY2017;

Stn DW4893 - Slopes, N.O. "Marion Dufresne", 623-629 m, spms 3, 33°16'S-43°58'E, 04MAY2017.

Description.

Shell medium, conical with flat sides, sculpture of 2 prominent spiral cords, sutures not very discernible, base excavate; color opaque, slightly yellowish. Protoconch of about 0.75 whorl, smooth, transition to teleoconch not distinguishable. Teleoconch of 5.5 whorls with spiral sculpture of 2 prominent spiral cords, spiral interspaces crossed by very fine close-set axial threads (of growth?). In the 1.5 whorls shows only a median spiral cord, in the following whorls shows a second spiral cord, narrower and slightly less prominent, bordering the suture and completely surmounting a third spiral chord clearly visible in the aperture and thin outer lip. Limit between columella and base highlighted by an angle. Columella

short and broad, obliquely truncated, crossed by thin obsolete lines; columellar callus bordering a sub-quadrate aperture, siphonal canal and anal sulcus distinct. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks.

The generic classification of *Cerithiopsilla* is based on the similarity with *Cerithiopsilla georgiana* (Pfeffer, 1886) (see the original figure in **Plate 1 fig. E**) from the central Atlantic (South Georgia), which differs mainly for the more robust and prominent spiral cords that confer a greater convexity to the whorls and deeper sutures. For further discussion on this species, Davolos & Moonenbeek (2005) will publish the SEM photo of the species *C. georgiana* and the relative protoconch, later Engl (2012) (pages 31, 123, plate 42 fig.2), draws up a short remarks.

Another similar species with a sculpture of 2 more prominent spiral cords are in the family Pyramidellidae se *Pseudoscilla babylonica* (C.B. Adams 1845) with distribution from the Caribbean to Brazil, and in the family Eulimidae, as *Teretianax pagoda* Powell, 1926 from North New Zealand and *Scalenostoma exsul* Iredale (MS no data) from Kermadec Is. (see <https://malacopics.nl>), all mainly differ for the typical protoconch. The generic status of these species remains uncertain at the moment.

Etymology.

oceanica of Oceanos, God of Greek mythology, in English oceanic.

Genus *Clathropsis* Laseron 1956

Type species: *Clathropsis impedita* Laseron, 1956 (original designation) Recent, Queensland.

Clathropsis hourdezi sp. nov.

Plate 2, Figs. 2 A-C

Type material.

holotype (MNHN-IM-2000-36412), 5.00 x 1.52 mm, protoconch 0.75 x 0.38 mm, stn DW4880.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn DW4880, slopes, 275-318 m, spms 2, 33°17'S-43°51'E, 01MAY2017.

Description of holotype.

Shell medium conical, regularly increasing, sutures impressed. Colour sandy yellow, columella darker. Protoconch cylindrical, 3.5 convex whorls; under SEM first

three whorls with a dense graininess. Teleoconch of about 7.5 convex whorls with reticulate sculpture of three spiral cords (first cord immediately after suture less prominent) crossed by axial ribs, 16 on last whorl, spiral cords and axial ribs of similar size with beads at each intersection. A fourth cord at base of last whorl emerging from insertion of outer lip; limit between columella and base highlighted by an angle. Columella short, acuminate, smooth; columellar callus bordering a subcircular aperture, outer lip bordered by sculpture of the teleoconch; siphonal canal and anal sulcus not very evident. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks

Clathropsis *is* *hourdezi* sp. nov. is compared with species having a similar protoconch: *Clathropsis zannii* Cecalupo & Perugia, 2012 of Indo-Pacific range differs in being narrower (W/H 0.24 vs. 0.30) and having 9 whorls for a height of 5.55 mm; *Clathropsis sparacioi* Cecalupo & Perugia, 2017 from Papua New Guinea differs in having a pale colour, a protoconch with less evident graininess and a teleoconch sculpture with 20 axial ribs; *Clathropsis kolasinskiae* Cecalupo & Perugia, 2021 from the Comoros is proportionately longer (W/H 0.22 vs. 0.30) and has fewer axial ribs.

Etymology.

Named for Stephane Hourdez, polychaete specialist and member of the diving team that explored the summit area of Walters Shoal during the MD208 expedition.

Genus *Prolixodens* Marshall, 1978

Type species: *Cerithiopsis infracolor* Laseron, 1951 (original designation), recent, New South Wales and New Zealand.

Prolixodens spadoneae sp. nov.

Plate 2, Figs. 2 D-I

Type material.

holotype (MNHN-IM-2000-36413), 4.03 x 1.20 mm, protoconch 0.43 x 0.25 mm, stn DW4890.

paratype 1 (MNHN-IM-2000-36414), 3.10 x 1.33 mm, protoconch 0.42 x 0.27 mm, stn DW4879.

paratype 2 (MNHN-IM-2000-36415), 2.68 x 1.30 mm, protoconch 0.43 x 0.27 mm, stn DW4893.

paratype 3 (MNHN-IM-2000-36416), 3.75 x 1.30 mm, protoconch missing, stn DW4893.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn DW4879, slopes, 288-300 m, spms 2, 33°17'S-43°52'E,

01MAY2017; stn DW4890, slopes, 492-588 m, spm 1, 33°09'S-43°59'E, 04MAY2017; stn DW4893, slopes, 623-629 m, spms 3, 33°16'S-43°58'E, 04MAY2017; stn WS03, South-West summit area, 40 m, spm 1, 33°12,2'S-43°50,8'E, 30APR2017.

Description of holotype.

Shell of medium size, conical with impressed sutures and slightly constricted base; colour uniformly dark orange. Protoconch conical of 4.5 convex whorls; seen under SEM first 1.5 embryonic whorls of holotype smooth due to abrasion, next whorls show a sculpture of thin axial prosocline riblets (about 20 per whorl), suture to suture, regularly spaced; embryonic whorls of paratype MNHN-IM-2000-36414 clearly show eight thin spiral striae; in subsequent whorls interspaces between riblets show very close-set obsolete irregular opisthocline threads. Teleoconch of 8.5 whorls with reticulate sculpture of three spiral cords; first three whorls with only two spiral cords, from fourth whorl onward a third cord emerges immediately beneath adapical suture, becoming progressively more evident. Spirals crossed by axial ribs, about 16 on last whorl with beads at their intersection. A fourth cord at base of last whorl emerges at insertion of outer lip; limit between columella and base highlighted by an angle. Columella short and broad, obliquely truncated; columellar callus thin, bordering an oval aperture; anal sulcus and siphonal canal well defined. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks.

The only comparable species is *Mendax mascarensis* Jay & Drivas, 2002 from Réunion, which is similar in colour and protoconch morphology, but *Prolixodens spadoneae* sp. nov. differs in having a slightly constricted base and only two spiral cords on the early teleoconch whorls.

Etymology.

Named for Aurélie Spadone, project officer with IUCN's Global Marine and Polar Programme, under which the Walters Shoal expedition was conducted.

Genus *Seila* A. Adams, 1861

Type species: *Triphoris dextroversus*

A. Adams & Reeve, 1850

(original designation), Recent, China Seas.

Seila remota sp. nov.

Plare 3, Figs. 3 A-D

Type material.

holotype (MNHN-IM-2000-36417), 8.20 x 2.30 mm, protoconch missing, stn WS07.

paratype 1 (MNHN-IM-2000-36418), 3.00 x 1.23 mm, pro-

toconch 0.77 x 0.37 mm, stn WS07.

paratype 2 (MNHN-IM-2000-36419), 5.80 x 2.10 mm, protoconch damaged, stn WS08.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn WS04, South-West summit area, 40 m, spms 2, 33°12,2'S-43°50,8'E, 30APR2017;

stn WS07, South summit area, 30-33 m, spns 4, 33°15,4'S-43°52,2'E, 02MAY2017;

stn WS08, South-East summit area, 30-33 m, spm 1, 33°13,7'S-43°55,9'E, 02MAY2017.

Description of holotype.

Shell large, perfectly conical with flat sides, sutures not discernible, base excavate. Protoconch (paratype MNHN-IM-2000-36418) subcylindrical, comprising 3.5 smooth convex whorls, mammillate under SEM; colour whitish. Teleoconch of 11.5 whorls with spiral sculpture of three flat-topped spiral cords, first broader, second narrower; spiral interspaces crossed by fine close-set axial threads. A fourth cord at base of last whorl emerges at insertion of outer lip, followed by a fifth, close and very thin. Boundary between columella and base delineated by cord. Columella short and broad, obliquely truncate; columellar callus bordering a circular aperture; siphonal canal distinct; outer lip expanded outwards. Colour orange. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks

Similar *Seila* species from other regions include: *Seila africana* Bartsch, 1915 from South Africa, which is chestnut-brown in colour, has less impressed sutures, and a protoconch with dimensions 0.65 x 0.37 mm; *Seila alfredensis* Bartsch, 1915 also from South Africa, is light chestnut-brown, maculated with white; *Seila tenuis* Laseron, 1951 from New South Wales, is pale orange and differs chiefly in having a subcylindrical protoconch with much less convex whorls; *Seila carinata* (E.A. Smith, 1872) from W. Africa, has a similar protoconch, but is chestnut-brown, maculated with white; *Seila japonica* Habe, 1970 from Japan, is chestnut-brown with a white protoconch.

Etymology.

From *remotus*, -a, -um (L.) - remote, distant; in reference to the isolation of Walters Shoal.

Genus *Specula* Finlay, 1926

Type species: *Cerithiopsis styliformis* Suter, 1908 (original designation), Recent, New Zealand.

***Specula barrerei* sp. nov.**

Plate 3, Figs. 3 L-N

Type material.

holotype (MNHN-IM-2000-36424), 2.97 x 1.15 mm, protoconch 0.25 x 0.25 mm, stn WB05.

paratype 1 (MNHN-IM-2000-36425), 2.53 x 1.02 mm, protoconch 0.26 x 0.24 mm, stn DW4886.

paratype 2 (MNHN-IM-2000-36426), 2.87 x 1.07 mm, protoconch 0.26 x 0.25 mm, stn DW4880.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn DW4880, slopes, 275-318 m, spm 1, 33°17'S-43°51'E, 01MAY2017; stn DW4886, slopes, 573-582 m, spm 1, 33°17'S-43°56'E, 03MAY2017; stn WB05, South summit area, 26-30 m, spm 1, 33°15,1'S-43°54,5'E, 01MAY2017.

Description of holotype.

Shell small, conical, sutures impressed, white, opaque. Protoconch conical of 2.0-2.5 smooth whorls, apex dome-shaped. Teleoconch of 6.5 whorls with reticulate sculpture of three spiral cords (first cord immediately below suture less prominent) crossed by axial ribs, 14 on last whorl with an acute bead at each intersection; another cords at base of last whorl emerging from insertion of outer lip; boundary between columella and base highlighted by an angle. Columella short, acuminate, obliquely truncate; aperture subquadrate (damaged in holotype). Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks.

In respect of its teleoconch sculpture, *Specula barrerei* sp. nov. resembles *Specula styliformis* (Suter, 1908) from New Caledonia (see Cecalupo & Perugia 2017), but that species has a blunt protoconch of only 1-2 whorls. *Specula puillandrei* Cecalupo & Perugia, 2013 from Vanuatu has a larger cylindrical protoconch with a globose, partially grainy first whorl.

Etymology.

Named for Alain Barrère, natural history teacher at the Lycée de Stella, Saint-Leu, Réunion, coordinator of the pedagogic component of the MD208 Walters Shoal expedition.

***Specula gallettiae* sp. nov.**

Plate 3, Figs. 3 E-G

Type material.

holotype (MNHN-IM-2000-36427), 2.10 x 0.87 mm,

protoconch 0.27 x 0.20 mm, stn WB09.

paratype 1 (MNHN-IM-2000-36428), 1.82 x 0.75 mm, protoconch 0.27 x 0.20 mm, stn WB09.

paratype 2 (MNHN-IM-2000-36429), 1.97 x 0.82 mm, protoconch 0.27 x 0.20 mm, stn WB09.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn WB09, North-West summit area, 27-30 m, spms 3, 33°13,8'S-43°55,8'E, 04MAY2017; stn WR01, South-West summit area, 36 m, spms 2, 33°12,2'S-43°50,8'E, 30APR2017.

Description of holotype.

Shell small, conical, sutures impressed. Protoconch small, conical of 2.5 smooth convex whorls, colour first whorl opaque white, subsequent protoconch whorls and teleoconch pale sandy-brown, with paler beads. Teleoconch of 5.0 whorls with spiral sculpture of three spiral cords (first less prominent), crossed by axial ribs (about 18 on last whorl), with a bead at each intersections; a fourth beaded cord at base of last whorl emerging at insertion of outer lip; boundary between columella and base delineated by an angle. Columella short and broad, obliquely truncate, crossed by crisp growth lines; aperture incomplete. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks.

Specula gallettiae sp. nov. is similar to *Specula subcastanea* Cecalupo & Perugia, 2018 from Papua New Guinea, but the latter differs being proportionately shorter, with a constricted base and a cylindrical protoconch. Another comparable species is *Specula queenslandica* Laseyron, 1956 from Hope Island, Queensland, which differs chiefly in having much less impressed sutures.

Etymology.

Named for Florence Galletti, IRD researcher in maritime law and a participant in the MD208 Walters Shoal expedition.

***Specula profunda* sp. nov.**

Plate 3, Figs. 3 H-K

Type material.

holotype (MNHN-IM-2000-36430), 1.77 x 0.70 mm, protoconch 0.37 x 0.27 mm, stn DW4886.

paratype 1 (MNHN-IM-2000-36431), 1.72 x 0.68 mm, protoconch 0.37 x 0.27 mm, stn DW4886.

paratype 2 (MNHN-IM-2000-36432), 1.55 x 0.72 mm, protoconch 0.37 x 0.27 mm, stn DW4886.

Type locality.

Walters Shoal seamount, off 800 km south Madagascar.

Material examined.

stn DW4886, slopes, 573-582 m, spms 3, 33°17'S-43°56'E, 03MAY2017.

Description of holotype.

Shell very small, conical, sutures impressed, colourless and glassy. Protoconch cylindrical, of 2.5 convex whorls, surface densely granular under SEM. Teleoconch of 4.25 convex whorls with reticulate sculpture of spiral cords crossed by axial ribs; in early whorls there are two central spiral cords, but in fourth whorl an inconspicuous spiral develops below adapical suture; axial ribs about 13 on last whorl with acute beads at intersections with cords. Another cord at base of last whorl emerging from insertion of outer lip; boundary between columella and base delineated by an angle. Columella short, acuminate, obliquely truncate; aperture ovate. Living specimen unknown.

Distribution.

Known only from Walters Shoal seamount, off 800 km south Madagascar.

Remarks.

Specula profunda sp. nov. can be compared with: *Specula puillandrei* Cecalupo & Perugia, 2013 from Vanuatu and North Sulawesi, which has a similar protoconch, but a cylindrical shape, larger size and yellowish-grey colour; *Specula jemeauensis* Cecalupo & Perugia, 2021 from New Caledonia, which has a sculpture of only two spiral cords, and a shorter, less granular protoconch.

Etymology.

From *profundus*, -a, -um (L.) - deep; in reference to the depths of discovery on Walters Shoal.

Stations Campagne MD208.

Stn DW4879- Slopes, N.O. "Marion Dufresne", 288-300 m, 33°17'S-43°52'E, 01MAY2017.
 Stn DW4880- Slopes, N.O. "Marion Dufresne", 275-318 m, 33°17'S-43°51'E, 01MAY2017.
 Stn DW4881- Slopes, N.O. "Marion Dufresne", 377-382 m, 33°16'S-43°50'E, 02MAY2017.
 Stn DW4886- Slopes, N.O. "Marion Dufresne", 573-582 m, 33°17'S-43°56'E, 03MAY2017.
 Stn DW4890- Slopes, N.O. "Marion Dufresne", 492-588 m, 33°09'S-43°59'E, 04MAY2017.
 Stn DW4893- Slopes, N.O. "Marion Dufresne", 623-629 m, 33°16'S-43°58'E, 04MAY2017.
 Stn DW4897- Slopes, N.O. "Marion Dufresne", 490-584 m, 33°09'S-43°59'E, 05MAY2017.
 Stn DW4899- Slopes, N.O. "Marion Dufresne", 707-720 m, 33°09'S-44°02'E, 06MAY2017.
 Stn WB05- West summit area, N.O. "Marion Dufresne", 26-30 m, 33°15,1'S-43°54,5'E, 01MAY2017.
 Stn WB09- North-West summit area, N.O. "Marion Dufresne", 27-30 m, 33°13,8'S-43°55,8'E, 04MAY2017.
 Stn WR01- South-West summit area, N.O. "Marion Dufresne", 36m, 33°12,2'S-43°50,8'E, 30APR2017.
 Stn WS03- South-West summit area, N.O. "Marion Dufresne", 40m, 33°12,2'S-43°50,8'E, 30APR2017.
 Stn WS04- South-West summit area, N.O. "Marion Dufresne", 40m, 33°12,2'S-43°50,8'E, 30APR2017.
 Stn WS07- South summit area, N.O. "Marion Dufresne", 30-33m, 33°15,4'S-43°52,2'E, 02MAY2017.
 Stn WS08- South-East summit area, N.O. "Marion Dufresne", 30-33m, 33°13,7'S-43°55,9'E, 02MAY2017.

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Plate 1

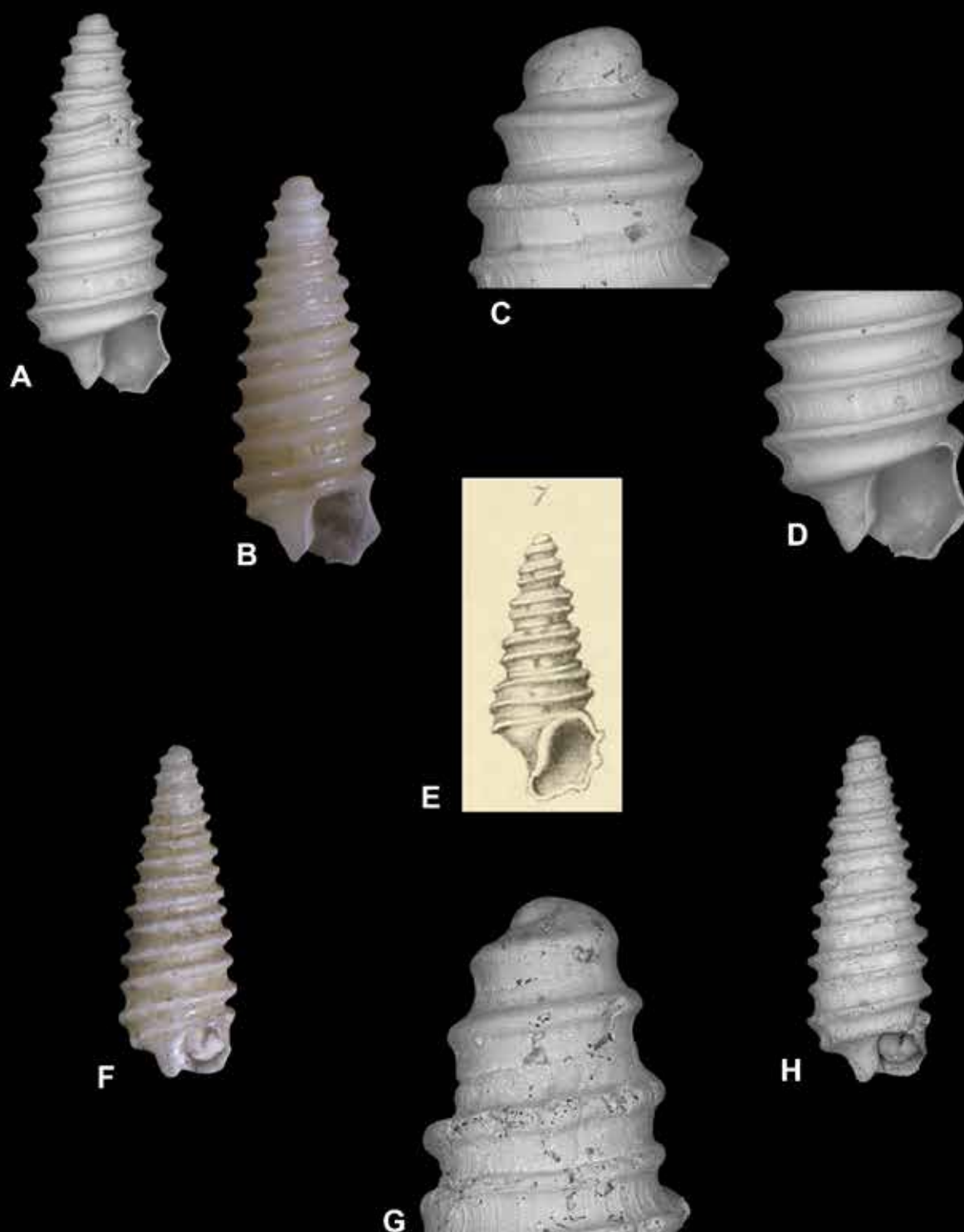


Fig. 1. A-D. *Cerithiopsilla oceanica* n. sp., holotype, 3.45 x 1.35 mm (MNHN-IM-2000-39850) stn DW4890; **C.** protoconch 0.15 x 0.25 mm; **D.** body whorl; **E.** *Cerithiopsilla georgiana* (Pfeffer, 1886) original figure taken from von Martens & Pfeffer, 1886: 97, taf. 2, fig. 7, (not scaled); **F-H.** *Cerithiopsilla oceanica* n. sp., paratype 1, 3.20 x 1.17 mm (MNHN-IM-2000-39851) stn DW4879.

Plate 2

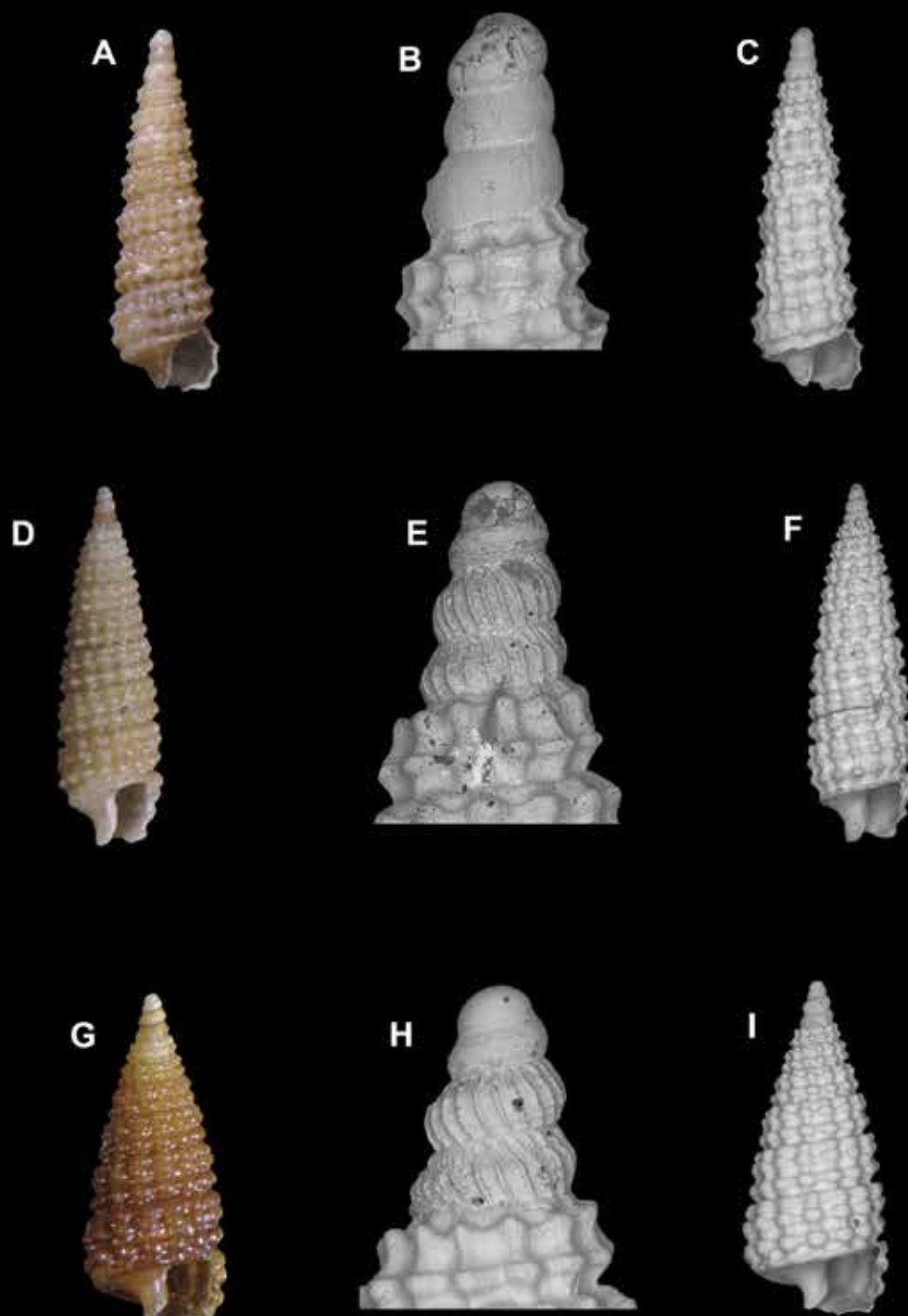


Fig. 2. A-C. *Clathropsis hourdezi* n. sp., holotype, 5.00 x 1.52 mm. (MNHN-IM-2000-36412) stn DW4880; **B.** protoconch 0.75 x 0.38 mm; **D-F.** *Prolixodens spadoneae* n. sp. holotype, 4.03 x 1.20 mm (MNHN-IM-2000-36413) stn DW4890; **E.** protoconch 0.43 x 0.25 mm; **G-I.** *Prolixodens spadoneae* n. sp. paratype **I**, 3.10 x 1.33 mm (MNHN-IM-2000-36414) stn DW4879; **H.** protoconch 0.42 x 0.27 mm.

Plate 3

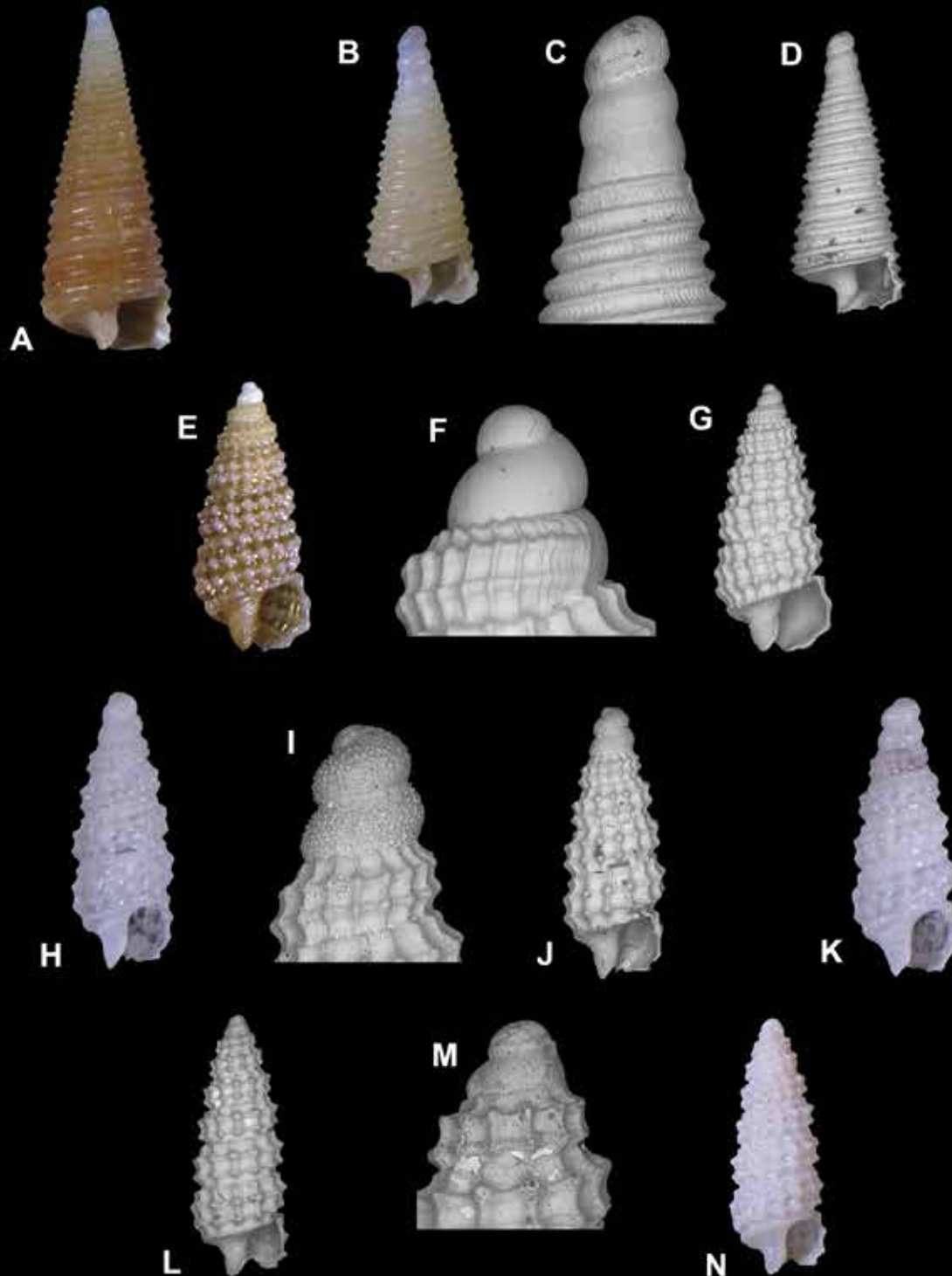


Fig. 3. A-D. *Seila remota* n. sp., holotype, 8.20 x 2.30 mm (MNHN-IM-2000-36417) stn WS07; B-D. paratype 1, 3.00 x 1.23 mm (MNHN-IM-2000-36418) stn WS07; C. protoconch 0.77 x 0.37 mm; E-G. *Specula gallettiae* n. sp., holotype, 2.10 x 0.87 mm (MNHN-IM-2000-36427) stn WB09; F. protoconch 0.27 x 0.20 mm; H-J. *Specula profunda* n. sp., holotype, 1.77 x 0.70 mm (MNHN-IM-2000-36430) stn DW4886; I. protoconch 0.37 x 0.27 mm; K. *Specula profunda* n. sp., paratype 1, 1.72 x 0.68 (MNHN-IM-2000-36431) stn DW4886; L-N. *Specula barrerei* n. sp. holotype, 2.97 x 1.15 mm (MNHN-IM-2000-36424) stn WB05; M. protoconch 0.25 x 0.25 mm. (MNHN-IM-2000-36424).

Misidentification of *Elysia furvacauda* Burn, 1958 in the Mediterranean Sea

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Abstract.

A recent paper in *Xenophora Taxonomy* (Issue 48, 2025) claimed the first Mediterranean record of the south-eastern Australian sacoglossan *Elysia furvacauda* Burn, 1958, based on a specimen photographed at Crete, Greece. Here, morphological and biogeographic evidence is presented that demonstrates that this identification is incorrect. The animal figured in the original publication lacks the diagnostic characters of *E. furvacauda* and is instead consistent with the endemic Mediterranean species, *Elysia gordanae* Thompson & Jaklin, 1988.

Keywords: *Elysia furvacauda*, *Elysia gordanae*, Sacoglossa, Mediterranean Sea, taxonomy, misidentification, alien species, range extension.

INTRODUCTION

Slater *et al.*, (2025, in “First record of the alien *Elysia furvacauda* Burn, 1958 (Sacoglossa: Elysiidae) for the Mediterranean Sea, and some other Heterobranchia for Greece” recently reported the sacoglossan *Elysia furvacauda* Burn, 1958 from Crete, Greece, claiming the first record of this species in the Mediterranean Sea and designating it as a new alien introduction. This record is extraordinary in that *E. furvacauda* is an endemic species of south-eastern Australia with no documented history of invasive behaviour or long-distance dispersal.

A critical review of the photographs presented in Figure 1 of Slater *et al.* (2025) in comparison to images of Australian animals and the original description by Burn, 1958 suggest that the specimen documented from Crete does not belong to that species. Rather, the animal is fully consistent with the original description and other contemporary photographic records of the Mediterranean endemic *Elysia gordanae* Thompson & Jaklin, 1988. Presented here is a formal account of the evidence supporting an alternative identification.

MORPHOLOGICAL ASSESSMENT

Characters of *Elysia furvacauda* in its native range.

Burn (1958) described *E. furvacauda* from Victoria, Australia, and the species has a south-eastern Australian distribution extending from southern Queensland south and west to South Australia (Burn, 2006, 2015; Coleman, 2015; Nimbs *et al.*, 2020; Nimbs & Smith, 2017; VNPA, 2022). The diagnostic characters are well established and consistent across documented native-range material: the body is dark reddish-brown to olive-brown overall; the parapodia, when apposed dorsally, form two distinct, separate openings rather than a single fused slit; the distal tip of the tail is prominently marked with black

pigment; and the rhinophoral tips are similarly tipped with black. The parapodial margins are uniform in coloration, without pale pustules or tubercles (Fig 1).



FIGURE 1. *Elysia furvacauda* Burn, 1958 from Sandy Beach, New South Wales, Australia, showing diagnostic characters: dark reddish-brown coloration, black-tipped tail and rhinophores, and paired dorsal parapodial openings. Photo: MJN, 26 December 2014.

Characters of the Crete specimen (Slater *et al.*, 2025).

The specimen illustrated in Figure 1/Plate 1 of Slater *et al.* (2025) presents a markedly different animal. The body is green rather than dark reddish-brown with scattered sky-blue spots. The tail and rhinophores conspicuously lack the black pigment that are a consistent and reliable diagnostic feature of *E. furvacauda*. Instead, the parapodial margins carry a series of pale white pustules or tubercles. Taken together, these characters are irreconcilable with Burn's (1958) original description, and with reliably-documented native-range material.

ALTERNATIVE IDENTIFICATION: *ELYSIA GORDANAE* THOMPSON & JAKLIN, 1988

Elysia gordanae was described by Thompson & Jaklin (1988) from specimens collected in the northern Adriatic Sea and is a recognised component of the sea slug fauna of the Mediterranean (Poursanidis & Koutsoubas, 2016). The species is characterised by a pale greenish body, sky blue spots and by the presence of white pustules or whitish raised markings along the inner parapodial margins (Fig 2) — precisely the features visible in the Crete photographs presented by Slater *et al.* (2025).



FIGURE 2. *Elysia gordanae* Thompson & Jaklin, 1988 photographed at Île Rieu, Marseille, showing pale green body, sky blue spots and white pustulate parapodial margins. Photo: cmarmotte, 21 August 2025, iNaturalist [<https://www.inaturalist.org/observations/311923865>], used here under licence CC-BY-NC.

The Crete animal shares the distinguishing external characteristics of *E. gordanae* (Fig 2). and not *E. furvacauda* (Fig 1). The identification of the Crete specimen as *E. gordanae* is unambiguous on morphological grounds.

BIOGEOGRAPHIC CONSIDERATIONS

Biogeographic implausibility further undermines the species identification. *Elysia furvacauda* is a species endemic to temperate and subtropical waters of south-eastern Australia. It is not listed as invasive or as a non-indigenous species in any other region, and there are no credible published records outside of this native range. A Mediterranean record would imply a natural or human-mediated dispersal event of more than 12,000 km across multiple ocean basins and through extreme environmental gradients — from cool temperate and subtropical conditions — for a sacoglossan with limited direct-developing or short-lived larval stages.

By contrast, *Elysia gordanae* is a well-established Mediterranean taxon, with confirmed records from the Adriatic, Aegean, and eastern Mediterranean regions (Thompson & Jaklin, 1988; Poursanidis & Koutsoubas, 2016). Observations from Crete sit well within the natural distributional range for this species and requires no extraordinary assumptions. The most parsimonious identification strongly favours *E. gordanae* as the correct identification.

IMPLICATIONS AND RECOMMENDATION

Erroneous alien species records carry significant practical consequences. Alien species databases including the Mediterranean non-indigenous species registers and others systematically incorporate published first records; once entered, such records are difficult to retract and are routinely used to inform management decisions, biosecurity assessments, and invasion risk models. For this reason it is imperative that erroneous records are corrected.

ACKNOWLEDGEMENTS

The author is grateful to the editor of *Xenophora Taxonomy* for the opportunity to correct this error.

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Notes on Volutidae Taxonomy

from 2016 to 2026 (Part 1: 2016-2020)

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Introduction

Our purpose is to study all the recently described taxa of Volutidae and give our opinion on the validity of these.

In fact, there were over 125 new taxa described in ten years, to be compared to 360 species until then. In *Xenophora* 153, from 2016 Patrice Bail listed 81 new Volutes described since 1992 (24 years).

The passing of Allan Limpus and Patrice Bail respectively in 2022 and 2023 took away the two best Volutidae experts from the period between 1988 and 2022.

The number of publications has been increasing since then and we feel there is a need to have a close look at the new species and subspecies and try to determine if they are valid or doubtful, as many recent authors neglect to take into account the possible intraspecific variability.

The criteria of specific validity used here are the ones mentioned by Patrice Bail and included on *La Collection de Volutidae de Patrice Bail* page 9: isolated population without noticeable intergrades with other neighbouring populations. In fact the available information is often the shell morphology (pattern, shape, sculpture, columellar plaits, protoconch...) and the biogeographical data (location, depth, type of substrate...), noting that due to the quasi-absence of planktotrophic development in this family, the exchange of genetic material between isolated populations is turned almost impossible.

The present work merely reflects our personal opinion, and it was undertaken to try to fight an excessive inflation of taxa.

This study is divided in three parts based on the description dates: after the first part describing taxa created from 2016 to 2020, the second part will cover 2021 to 2023 and the third concerns species dated with millesimes 2024 and 2026.

The bibliography used as reference for this article is mentioned in the Part 1.

The holotypes locations are mentioned in page 24.

Abbreviations

AMNH	American Museum of Natural History, New York, USA
AMS	Australian Museum, Sydney, NSW
BSRF	Blue Sky Research Foundation, Cairns, QLD
LACM	Los Angeles County Museum, Los Angeles, USA
MMM	Malacologia Mostra Mondiale, Cupra Marittima, Italy.
MNHN	Musée National d'Histoire Naturelle, Paris, France
MNRJ	Museu Nacional do Rio de Janeiro, Brazil
MZB	Museum Zoologi Bogor, Indonesia
MZUSP	Museu de Zoologia da Universidade de São Paulo, Brazil
NMR	Natuurhistorisch Museum Rotterdam, The Netherlands
NMSA	Kwazulu-Natal Museum, Pietermaritzburg, South Africa
NTM	Museum and Art Gallery of the Northern Territory, Darwin, NT

QMMO	Queensland Museum, Brisbane, QLD
RBINS	Royal Belgium Institute of Natural Sciences, Brussels, Belgium
SAM	South Australian Museum, Adelaide, SA
SBMNH	Santa Barbara Museum of Natural History, USA
WAM	Western Australian Museum, Perth, WA

NSW	New South Wales, Australia
NT	Northern Territory, Australia
QLD	Queensland, Australia
SA	Southern Australia, Australia
USA	United States of America
WA	Western Australia, Australia

AR	Alain Robin
J&MC	José and Marcus Coltro
JR	José Rosado
OC	Olivier Crabos
PB	Patrice Bail
RW	Ray Walker
WM	Werner Massier

ROV	Remotely Operated Vehicle
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2016

Amoria stricklandi Bail & Limpus, 2016 in *Novapex* 17(1).

This new species from Western Australia is compared to the allopatric *A. dampieria* (Weaver, 1960). Moreover it occupies a different bathymetric niche (75-95 m instead of 20-30 m), the shell pattern shows thinner and more numerous lines, and the overall background is flesh coloured instead of white.

In our opinion this is a valid species.



Amoria stricklandi 31 mm, off Broome, WA, Australia, 80 m, Coll. PB, photo AR (left).

Amoria dampieria 33.4 mm, Weld Island, WA, Australia, Coll. PB., photo AR (right).

Fulgoraria philippsi Thach, 2016 in *Vietnamese new mollusks. Seashells – Land snails – Cephalopods*.

The descriptions of Thach Vietnamese species were published in books that are rather difficult to find on the market.

It looks quite close to *Fulgoraria callomoni* Thach, 2015, being distinguished by a more inflated body whorl, a smooth shoulder, not stepped spire whorls and closer lines for *philippsi*. In *La Collection de Volutidae de Patrice Bail* (page 20) it is designated by *F. alforum* forma *philippsi* but in page 98 it is designated by *F. callomoni* forma *philippsi*... In our opinion the morphology and the pattern differences from both *F. alforum* and *F. callomoni* justify the creation of a new species.



Fulgoraria philippsi holotype, 120 mm, off Nha Trang, Khanh Hoa Province, Vietnam, MNHN Paris (M. Caballer) (left).

Fulgoraria callomoni paratype, 133 mm, off Dak Doa, Gia Lai Province, Vietnam, MNHN Paris (M. Hennion) (right)

2017

Cymbium coenyei Nolf, 2017 in *Neptunea* 14(3).

This new species from Angola is compared to *Cymbium patulum* (Broderip, 1830), *C. pachyus* (Pallary, 1930) and *C. fragile* Fittkau & Stürmer, 1985

C. pachyus is not present in the region of Congo river mouth and has a wider adapical notch. *C. fragile* has a narrow and has a wider sutural ramp, a slender outline and a protruding protoconch. *C. patulum* shows a more bulbous outline (as there is frequent sexual dimorphism in this genus, this criterion should be relativized), its mouth is creamy instead of blueish grey and its protoconch is not covered by a callus.

In our opinion this is a valid species, very localized, and distinct from all other *Cymbium*. As stressed by the author this genus was rather neglected in its Southern range.



Cymbium coenyei, 122 mm, Congo Republic, Coll. OC (left).

Cymbium patulum, 164 mm, Angola, 100 m, photo J&MC (right).

Callipara africana pumila Bail & R. Aiken, 2017 in *Novapex* 18(1).

This new subspecies can only be compared with *C. africana africana* (Reeve, 1856) and *C. bullatiana* Weaver & DuPont, 1967, but the latter has a different shape, cylindrical with a very reduced spire, instead of stocky with a turreted spire.

Its area of distribution is 120 km distant from *C. africana africana* extreme Eastern range, its shell is smaller (35-45 mm compared to 55-95 mm), and its protoconch



Callipara africana pumila, 43 mm, off Port Shepstone, KwaZulu-Natal, South Africa, photo J&MC (left).

Callipara africana, 88.2mm, South Africa, Coll. PB, photo AR (right)

is permanently smaller than that of the specimens of the nominal subspecies.

One confusing point is that it is found in the locality of *Pumila* but its name comes from *pumilus*, meaning dwarf in Latin.

We do consider it a valid subspecies.

Lyria mitraeformis grockeae (Petuch & Berschauer, 2017) in *The Festivus* 49(1).

The main point mentioned to differentiate this new taxon from the nominal subspecies is its pale white cream-yellow colour without pattern.

Morrison in *Conchylia* 53(1-2) in 2022 shows that its ratio shell-length/shell-width is identical to the corresponding ratio for the nominal subspecies. As there are no other significant criteria of distinction proposed and validated, it should be considered as a colour form of *Lyria mitraeformis* (Lamarck, 1811).



Lyria mitraeformis form *grockeae*, 44 mm, Bairds Bay, SA, at low tide, Coll. OC, photo JR (left).

Lyria mitraeformis, 41.4 mm, Bunbury, WA, Australia, Coll. PB, photo AR (right).

Athleta abyssicola massieri Petuch & Berschauer, 2017 in *The Festivus* 49(1).

The main comparison is to the nominal subspecies *A. abyssicola abyssicola* (Adams & Reeve, 1848).



Athleta massieri, 48 mm, between Walvis Bay and Lüderitz, Namibia, 350-450 m, Coll. OC, photo JR (left).
Athleta abyssicola, 109 2mm, off Constantia, South Africa, photo J&MC (right).

First, the nominal subspecies is a South African shell found in Cape of Good Hope, whereas the new subspecies is a Namibian shell. Both shells are found at 300-500 m depth.

Second, the sizes of shells of the two taxa are rather different, *A. abyssicola abyssicola* is a 65-100 mm shell whereas adult *A. abyssicola massieri* reach 45-52 mm only.

Third, the nominal species has a relatively light shell when *A. abyssicola massieri* is heavy and compact.

Fourth, when measuring the ratio length/width of the shells shown in S. Veldsman & J. H. Veldsman in *Visaya* supplement 17 from 2022, *A. abyssicola abyssicola* has a value of 2.25, while the value for *A. abyssicola massieri* reaches 1.93, the new subspecies being 17% shorter.

In our opinion the geographical gap and the morphological differences of the shells justify its elevation to species rank as proposed by S. Veldsman and J.H. Veldsman in 2022.

Athleta easoni Petuch & Berschauer, 2017 in *The Festivus* 49(4).



Athleta lutosa forma *easoni*, 81 mm, off Lüderitz, Namibia, 360-370 m, photo J&MC (left).
Athleta lutosa, 94 mm, between Walvis Bay and Lüderitz, Namibia, 300-320 m, Coll. OC, photo WM (right).

The reference species with which it is compared in its description is *Athleta lutosa* (H. J. Koch, 1948) from Namibia.

Both species can be found in the same waters, like in Lüderitz (Namibia).

In addition to some supposed shape differences not supported by actual measurements, one important criterion seems to be the number of columellar plicae, 9-10 for *A. easoni* compared to 5-7 for *A. lutosa*. Surprisingly, having purchased a specimen of *A. easoni* from the main Namibian supplier, we counted 5 plicae!

In our opinion, *A. easoni* should be treated as a form of *A. lutosa* until some DNA analysis is performed on shells showing all the range of the number of plicae...

Fulgoraria ngocngai Bail & Thach, 2017 in *New shells of Southeast Asia. Sea shells & Land snails*.

This new species is compared to *Fulgoraria bailorum* Thach, 2014, but has a heavier and broader shell, thicker outer lip, smaller protoconch and with some black stains over the pattern.



Fulgoraria ngocngai holotype, 99 mm, off Ninh Thuan, Vietnam, MNHN Paris (M. Caballer).

We believe it is a good species as no other *Fulgoraria* shares the same characteristics.

Fulgoraria patricebaili Thach, 2017 in *New shells of Southeast Asia. Sea shells- Land snails*.

This species shows a small shell for the genus, patternless and very heavy. Not found on the shell market. It is compared by the author with *Fulgoraria rupestris* (Gmelin, 1791) but differs by its smooth outer lip, and with *Fulgoraria hamillei* (Crosse, 1869) but has a rounded shoulder and more inflated spire whorls.

We believe it is a good species as no other *Fulgoraria* shares the same characteristics.



Fulgoraria patricebaili holotype, 82 mm, off Khan Hoa, Vietnam, 150-180 mm, MNHN Paris (M. Caballer).

2018

Cymbiola alexisallaryi Cossignani, 2018 in *Malacologia Mostra Mondiale* 98.

This Philippines species is described from the Sulu Sea (Southern Philippines). It is mentioned that the holotype comes from Rasilan Island but it is probably a confusion with Rasa Island near Palawan in Sulu Sea. Douté & Bail described in 2000 two *Cymbiola* distinct from *C. aulica* ([Lightfoot], 1786) called *C. malayensis* and *C. palawanica*. T. Cossignani went on to split *C. aulica* again. But without doubt the holotype shows a shell of *C. aulica* with a dark spotted pattern on a paler background, with a protoconch as dark as the spots, and showing nodules on the shoulder of the teleoconch. The author mentions that his species is distinct from *C. aulica* by having 4 columellar plaits (instead of 3), a smaller shell in average, a banded pattern and a chocolate protoconch. Like Patrice Bail in *La Collection des Volutidae de P. Bail* p. 30, we do not agree to distinguish it from *C. aulica*: in fact, *C. aulica* bears 4 columellar plaits (like the new species), has notably a variable size (from 84 to 177 mm in the J. and M. Coltro site) and coloration.



Cymbiola alexisallaryi holotype, 89 mm, Rasa Island, Sulu Sea, Philippines, 45 m, MNHN Paris (M. Caballer) (left).
Cymbiola aulica, 94.1 mm, Pilas Island, Mindanao, Philippines, Coll. PB, photo AR (right).

Callipara aikenii bazarutensis R. Aiken & Rosado, 2018 in *The Festivus* 50(1).

This Mozambican shell is found at the extreme Northern area of repartition of the species *Callipara aikenii* J. H. Veldsman, 2012, in Bazaruto region, at 250 km from Inhambane.

In addition, its shell is quite distinct, exhibiting no nodules on its shoulder, and it is the smaller shell of the whole species including its different subspecies. Its aspect is different of the neighbouring *Callipara aikenii inhacaensis* J.H. Veldsman 2012, with a smaller, broader



Callipara bazarutensis, 35 mm, off North Bazaruto, Mozambique, 250 m, Coll. OC, photo JR (left).
Callipara aikenii inhacaensis, 68.7mm, Maputo, Mozambique, Coll. PB, photo AR (right).

shell and a pattern without the very contrasted lines.

We do consider these criteria sufficient to separate it as a valid species to be renamed *C. bazarutensis*, following the opinion of the co-author Roy Aiken in personal communication.

Fulgoraria baili Thach, 2018 in *New shells of Southeast Asia. Sea shells- Land snails-Freshwater Shells*.

No paratypes were designated in the original description of this species. It is very similar to *Fulgoraria allaryi* Bail, 2005 except the presence of subtle grooves on its spire. Thach indicates it is slenderer than *Fulgo-*



Fulgoraria baili holotype, 173 mm, off Nha Trang, Khanh Hoa Province, 400-600 m, MNHN Paris (M. Caballer) (left).
Comparison of spires *F. baili* left *F. allaryi* right, photo PB.

raria allaryi and has 3 columellar folds instead of 4. He also mentions it is taller but there are 240 mm shells of *F. allaryi* and no *F. baili* of this size...

Like Patrice Bail in personal communication, we consider it as a synonym of *F. allaryi*.

Fulgoraria allanlimpusi Thach & Bail, 2018 in *New shells of Southeast Asia. Sea shells-Land snails-Freshwater Shells*.

This new species shell has a very corrugated surface and an evanescent pattern.



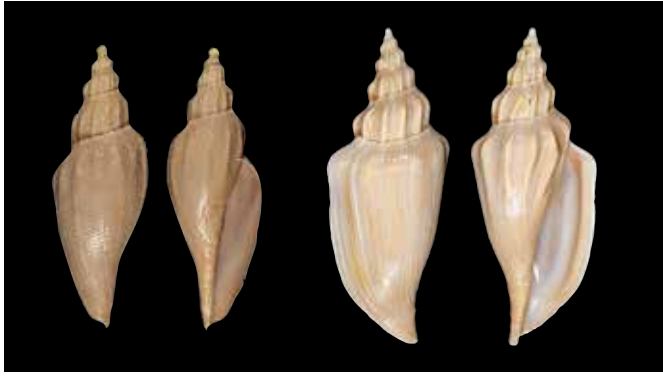
Fulgoraria allanlimpusi holotype, 118 mm, off Nha Trang, Khanh Hoa Province, 150-180 m, MNHN Paris (M. Caballer)

Following Patrice Bail's opinion in personal communication, we consider this is a valid species.

Fulgoraria hitoshiikedai Thach & Bail, 2018 in *New shells of Southeast Asia. Sea shells-Land snails-Freshwater Shells*.

It is a species with a big fragile patternless shell bearing 8 thin columellar plaits.

Following the opinion of Patrice Bail (pers. comm.), we consider this is a valid species.



Fulgoraria hitoshiikedai holotype, 130 mm, off Nha Trang, Khanh Hao Province, MNHN Paris (M. Caballer) (left).
Fulgoraria hitoshiikedai, 171 mm, off Southeastern Nha Trang, Khanh Hao Province, Vietnam, 180-200 m, photo J&MC (right)

Fulgoraria philippii kevinii Thach, 2018 in *New shells of Southeast Asia. Sea shells-Land snails-Freshwater Shells*.

It was described after a single shell. Thach claims it is smaller and more robust than its nominal subspecies. Patrice Bail did put it as synonym of *F. alforum* Thach, 2014 in *La Collection de Volutidae de Patrice Bail* page 20. We believe this is a dwarf form, synonym of the nominal subspecies.



Fulgoraria philippii kevinii holotype, 107 mm, offshore Nha Trang Khanh Hoa Province, Vietnam, 150-180 m, MNHN (M. Caballer) (left)
Fulgoraria philippii holotype, 120 mm, off Nha Trang, Khanh Hoa Province, Vietnam, MNHN Paris (M. Caballer) (right).

Fulgoraria alforum elaineae Thach, 2018 in *New shells of Southeast Asia. Sea shells-Land snails-Freshwater Shells*.

It was described from a single shell. Thach distinguishes it from its nominal subspecies by a slenderer shape, yellow protoconch and darker pattern.

We share the opinion of Patrice Bail, who put it as



Fulgoraria alforum elaineae holotype, 144 mm, off Phan Thiet, Binh Thuan Province, 150-180 m, MNHN Paris (M. Caballer) (left).
Fulgoraria alforum, 120.2 mm, South Vietnam, Coll. PB (right)

synonym of *Fulgoraria alforum* Thach, 2014 in *La Collection de Volutidae de Patrice Bail* page 20.

Arctomelon boreale R.N. Clark, 2018 in *The Festivus* 50(4).

This species from Central Aleutian Islands was initially called *Arctomelon borealis*, but that was grammatically incorrect in Latin.

It is close to the 3 other *Arctomelon* species of the region, *A. stearnsii* (Dall, 1872), *A. tamikoae* Kasuge, 1970, *A. ryosukei* (Habe & Ito, 1965), but with a smaller (82-126 mm) and more compact shell.

The shell is brown (while the other species are blue grey) and it shows proportionally larger nuclear whorls.

We consider it a valid species due to the differences from the other species of the genus.



Arctomelon boreale holotype, 82 mm, South of Chuginadak Isl., Aleutian Isl., Alaska, USA, 148 m, R. Clark photo *The Festivus* (left)
Arctomelon stearnsii, 133 mm, Auke Bay, Alaska, USA, Coll. PB, photo AR (right).

Amoria mihali Morrison, 2018 in *Conchylia* 48(3-4).

This Northern Australian shell from Timor Sea is distinguishable from the other *Amoria* by its extremely thick lip (like *A. rinkensi* Poppe, 1992, but this one has no pattern), its stepped white protoconch, the fine parallel lines of the body and its suture that looks like filled with silicone. This species cannot be confused with any other *Amoria* species.



Amoria mihali, 47 mm, 500 kms NorthEast of Darwin, Arafura Sea, NT, Australia, 150-200 m, Coll. OC (left)
Amoria rinkensi, 90 mm, Arafura Sea, Australia, Coll. PB (right)

2019

Amoria peterstimpsoni Cossignani & Allary, 2019 in *Malacologia Mostra Mondiale* 102.

This Western Australian *Amoria* shell was found by ROV at 200-300 m. It is obviously very close from *A. undulata* (Lamarck, 1804), sharing its overall aspect (wavy brown lines on an ivory background), but its structure is thicker and heavier, and its habitat is clearly different, *A. undulata* being a shallow water species.

We do agree with Drew Strickland (pers. comm.) in considering it a valid species.



Amoria peterstimpsoni, 69 mm, off South of Augusta, WA, Australia, 230 m, photo J&MC (left)

Amoria undulata, 92.5 mm, Streaky Bay, SA, Australia, Coll. PB (right).

Scaphella stimpsonorum Cossignani & Allary, 2019 in *Malacologia Mostra Mondiale* 103.

This Mexican *Scaphella* is close to *Scaphella junonia* (Lamarck, 1804) but shows smaller and more dispersed dark brown spots and a pointier spire. In addition, *S. stimpsonorum* from Cabo Catoche lives about 720 km from *S. junonia* which lives off Sanibel Island.

The main question is to determine if this is a full species or if this should be treated as a subspecies of *S. junonia*. We keep it as a valid species pending further molecular studies.



Scaphella stimpsonorum, 88 mm, Gulf of Campeche, North Yucatan, East Mexico, 100-120 m, photo J&MC (left)

Scaphella junonia, 149.8 mm, Saint George Isl., Florida, USA, Coll. PB (right)

Scaphella junonia curryi Petuch & Berschauer, 2019 in *The Festivus* 51(2).

This subspecies of *Scaphella junonia* (Lamarck, 1804) lives on the Campeche bank, South of Gulf of Mexico, and shows big square to rectangular dark brown patches covering most of the shell surface. In addition, shells are more elongated than the nominal subspecies.



Scaphella junonia curryi, 111 mm, Gulf of Campeche, North Yucatan, East Mexico, 50-80 m, photo J&MC (left)

Scaphella junonia, 149.8 mm, Saint George Isl., Florida, USA, Coll. PB (right)

We consider it a good subspecies, quite easily distinguishable from the nominal subspecies.

2020

Paramoria weaveri peterstimpsoni Cossignani & Allary, 2020 in *Malacologia Mostra Mondiale* 106.

It was studied by Morrison in *Conchylia* 54(1-2) in 2023: the subspecies is based on two shells, and the criteria of differentiation from the nominal species are not clearly verified. Cossignani and Allary mention 3 oblique columellar folds, higher spire and protoconch, less squat and more elongated shell and more prominent spines. The only really differentiating criterion appears to be the number of columellar folds but it is not clear whether the paratype meets this characteristic, and there is often an aborted fold on *P. weaveri*. In addition, the subspecies is found in the same region as the nominal subspecies.

In conclusion we agree with H. Morrison : it is a synonym of *P. weaveri*.



Paramoria weaveri peterstimpsoni holotype, 28 mm, off Bernier Island, WA, Australia, 200 m, photo J&MC (left)

Paramoria weaveri, 27.5 mm, Shark Bay, WA, Australia, Coll. PB (right)

Harpulina stimpsonorum Cossignani & Allary, 2020 in *Malacologia Mostra Mondiale* 108.

Patterson, Ravinesh and Biju Kumar (2022) in "Molluscs of the Gulf of Mannar, India and adjacent waters: A fully illustrated guide" on page 172 place this taxon in synonymy with *Harpulina lapponica* (Linnaeus, 1758).

It seems to be a form of *Harpulina lapponica* (Linnaeus, 1767) characterized by dots regrouped in thin vertical lines showing characteristics intermediate between *H. lapponica* and *H. loroisi* (Valenciennes, 1863).



H. lapponica stimpsonorum, 77 mm, off Cuddalore, Southern Chennai (Madras), India, 50-60 m, photo J&MC (left)
H. lapponica, off Pondichery, Coromandel Coast, Tamil Nadu State, India, 20-40 m, photo J&MC (right)

We agree with the above mentioned authors in classifying it as *H. lapponica*.

Amoria thoriae Healy, 2020 in *Memoirs of the Queensland Museum - Nature*. 62.

This is an Eastern Australia species found in Queensland and New South Wales. Its wavy pattern is close to the one of *Amoria necopinata* Darragh, 1983 and *A. benthalis* McMichael, 1964. But its size is smaller (24/32 mm) and its shape is far narrower than both *A. benthalis* and *A. undulata* (Lamarck, 1804).

A. necopinata is found in Queensland, around Swain Reef and Capricorn Channel, 600 kms up. And the wavy lines of its pattern are not continuous, contrary what is seen in *A. thoriae*. Having both species in our collection



Amoria thoriae, 26 mm, off Hixson Cay, Capricorn Channel, QLD, Australia, 200 m, Coll. OC, photo JR (left).
Amoria necopinata, 33 mm, Capricorn Channel, QLD, Australia, 130 m, Coll. OC, photo JR (right).

we recognize they are distinct species, as mentioned by Bail and Limpus in 2001.

Callipara casaana Childs, R. Aiken & Bail, 2020 in *The Festivus* 52(4).

This species was named in a study on *Callipara (Festilyria) festiva* (Lamarck, 1811), which concluded that this taxon designated in fact only the medium sized shells later found in Masirah Island (Oman). Consequently,



Callipara casaana, 203 mm, off Mogadiscio, Somalia, 50-60 m, Coll. OC photo JR (left).
Callipara festiva, 75 mm, Al Jazar Province, Oman, photo S. Albehairy (right).

there was a need to describe and name the big species from Somalia (previously named *C. festiva* as well), *casaana* means red in Somali.

Callipara festiva* var *dobsonae and ***Callipara festiva* var *lizzae*** Childs, R. Aiken & Bail, 2020 in *The Festivus* 52(4)

These beautiful varieties are distinguished from the nominal subspecies by the coloration of their shells. As varieties, they have no status within the rules of the Code of Zoological Nomenclature.



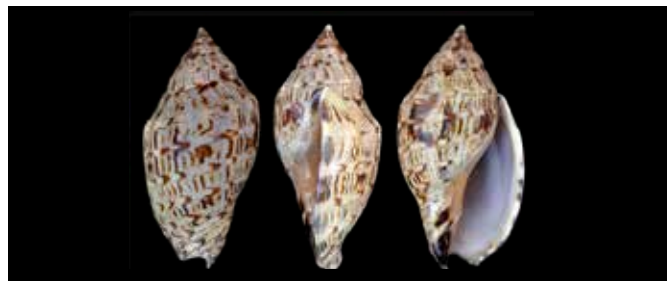
Callipara festiva var *lizzae*, 118 mm, Masirah Island, Oman, Coll. OC.



Callipara festiva var *dobsonae*, 68 mm, Masirah Island, Oman, Coll. A. R. R. Childs.

Callipara victoriae Childs, R. Aiken & Bail, 2020 in *The Festivus* 52(4)

This rare species with an oval “plum” shape, very different from the other *Callipara* species of the region, was earlier considered to be a possible male shell of *Callipara festiva* (Lamarck, 1811), both present in Masirah Island, as there can be some sexual difference in Volutidae. But the authors correctly identified it as a new species, noting some shape similarity with the *Harpulina* genus.



Callipara victoriae, 120 mm, Masirah Isl., Oman photo Massimo Scali

Magnavictoria Poppe & Tagaro, 2020 in *Visaya* 5(4).

This new subgenus of *Cymbiola* Swainson 1831 was described to include two species from the Coral Sea, *Cymbiola perplicata* (Hedley, 1902) and *Cymbiola thatcheri* (McCoy, 1868) were previously included in the subgenus *Cymbiolacca* Iredale, 1929. But its different location (Coral Sea instead of Queensland) and the slenderer spire differentiate it from the latter.

Cymbiola perplicata mattskei*, *Cymbiola perplicata ronmoylani*, *Cymbiola perplicata lihouensis Poppe & Tagaro, 2020 in *Visaya* 5(4).

In the same paper, the authors described 3 new subspecies of the beautiful *Cymbiola perplicata* (Hedley, 1902) from the Coral Sea, differentiated by their shape, their pattern and their location (Willis Island for *ronmoylani*, Lihou Reef for *lihouensis* and Mellish Reef for *mattskei*).



Cymbiola (Magnavictoria) perplicata ronmoylani, 65 mm, Willis Island, Coral Sea, QLD, Australia, 8-12 m, photo RW.



Cymbiola (Magnavictoria) perplicata lihouensis 54 mm, Lihou Reef, Coral Sea, QLD, Australia, Coll. OC, photo JR.



Cymbiola (Magnavictoria) perplicata mattskei, 62 mm, Chesterfield Islands, photo J&MC.

C. perplicata ronmoylani presents a large number of axial riblets all over the surface of the body whorl, the shoulder knobs are more raised and more pointed and the shape is slenderer.

C. perplicata lihouensis has a slender shell, a darker coloration and a denser pattern.

C. perplicata mattskei has a smaller shell, a broad protoconch, very blunt numerous nodules and a paler, more yellowish colour.

We believe these subspecies are valid due to shell differences and isolated range.

Fulgoraria ngai Thach, 2020 in *New shells of South Asia. Volume 2. Seashells-Freshwater-Land snails*.

It is compared to *Fulgoraria alforum* Thach, 2014 and is distinguished as smaller, less rectangular, bearing less columellar plaits and having weaker axial ribs on the last whorl.



Fulgoraria ngai peterstimpsoni, holotype, 84 mm, off Khan Hoa Island, Vietnam, MNHN (A. Lardeur) (left). *Fulgoraria rupestris*, 82 mm, off Amami Island, South Japan, photo J&MC (right).

In our opinion, judging from the picture of the shell, this species is a form of *F. rupestris* (Gmelin, 1791), unfortunately not used in the original description for comparison.

Fulgoraria phanhayi Thach, 2020 in *New shells of Southeast Asia. Volume 2. Seashells-Freshwater-Land snails*.

It is compared with *Fulgoraria bailorum* Thach, 2014, being differentiated by a more robust shell, narrower axial ribs, deeper spiral grooves, more angulate outer lip, greyer background and pointed protoconch (instead of rounded). All these characters only represent very slight differences.

In *La Collection de Volutidae de Patrice Bail* page 20 it is considered as a possible synonym of *F. bailorum*. We agree with this opinion.



Fulgoraria phanhayi holotype, 111 mm, off Ninh Thuan, Vietnam, MNHN Paris (A. Lardeur) (left).
Fulgoraria bailorum, 121 mm, off Nha Trang, Vietnam, 100-120 m, photo J&MC (right).

Fulgoraria limpusi* Thach, 2020 in *New shells of South Asia. Volume 2. Seashells-Freshwater-Land snails.

It is compared with *Fulgoraria allaryi* Bail, 2005 and *F. baili* Thach, 2018. It is distinguished from *F. baili* by the intensity of several characters, none seeming decisive. In our opinion and judging from the shell picture, this species is a form of *F. allaryi*, the latter being subtly differentiated by Thach with more oblique and constricted sutures and stronger axial ribs on the body whorl.



Fulgoraria limpusi holotype, 154 mm, off Southeast of Ninh Thuan, Vietnam, MNHN Paris (A. Lardeur) (left).
Fulgoraria allaryi, 192 mm, off Hong Kong, South China Sea, 500-600 m, photo J&MC (right).

Fulgoraria hamillei huberi* Thach, 2020 in *New shells of Southeast Asia. Sea shells- Land snails-Freshwater Shells.

The variability of *Fulgoraria hamillei* (Crosse, 1869) is such that it seems difficult to establish if this new taxon deserves the rank of form or variety. The differences from the nominal shell are subtle: mainly a less rounded protoconch and a taller and slenderer spire. It seems these variations are not important enough to justify a subspecific rank.



Fulgoraria hamillei huberi holotype, 115 mm, Southeast of Ninh Thuan, Vietnam, MNHN (A. Lardeur).

Validity of taxa

	Species or genus	valid	doubts	proposed name	holotype location
2016	<i>Amoria stricklandi</i>	yes			WAM Perth
	<i>Fulgoraria philippsi</i>	yes			MNHN Paris
2017	<i>Cymbium coenyei</i>	yes			RBINS Brussels
	<i>Callipara africana pumila</i>	yes			NMSA Pietermaritzburg
	<i>Lyria mitraeformis grockeae</i>	no		<i>Lyria mitraeformis form grockeae</i>	SAM Adelaide
	<i>Athleta abyssicola massieri</i>	yes		<i>Athleta massieri</i>	LACM Los Angeles
	<i>Athleta easoni</i>	no		<i>Athleta lutosa</i>	LACM Los Angeles
	<i>Fulgoraria ngocngai</i>	yes			MNHN Paris
	<i>Fulgoraria patricebaili</i>	yes			MNHN Paris
2018	<i>Cymbiola alexallaryi</i>	no		<i>Cymbiola aulica</i>	MNHN Paris
	<i>Callipara aikenii bazarutensis</i>	yes		<i>Callipara bazarutensis</i>	NMSA Pietermaritzburg
	<i>Fulgoraria baili</i>	no		<i>Fulgoraria allaryi</i>	MNHN Paris
	<i>Fulgoraria allanlimpusi</i>	yes			MNHN Paris
	<i>Fulgoraria hitoshiikedai</i>	yes			MNHN Paris
	<i>Fulgoraria philippsi kevinii</i>	no			MNHN Paris
	<i>Fulgoraria alforum elaineae</i>	no			MNHN Paris
	<i>Arctomelon boreale</i>	yes			SBMNH Santa Barbara
	<i>Amoria mihali</i>	yes			NTM Darwin
2019	<i>Amoria peterstimpsoni</i>	yes			MMM Cupra Marittima
	<i>Scaphella stimpsonorum</i>	yes			MMM Cupra Marittima
	<i>Scaphella junonia curryi</i>	yes			LACM Los Angeles
2020	<i>Paramoria weaveri peterstimpsoni</i>	no		<i>Paramoria weaveri</i>	MMM Cupra Marittima
	<i>Harpulina stimpsonorum</i>	no		<i>Harpulina lapponica</i>	MMM Cupra Marittima
	<i>Amoria thorae</i>	yes			AMS Sydney
	<i>Callipara casaana</i>	yes			NMR Rotterdam
	<i>Callipara festiva</i> var. <i>dobsonae</i>	yes			no holotype
	<i>Callipara festiva</i> var. <i>lizzae</i>	yes			no holotype
	<i>Callipara victoriae</i>	yes			AMNH New York
	<i>Magnavictoria</i>	yes			no holotype
	<i>Cymbiola perplicata ronmoylani</i>	yes			QMMO Brisbane
	<i>Cymbiola perplicata lihouensis</i>	yes			QMMO Brisbane
	<i>Cymbiola perplicata mattiskei</i>	yes			QMMO Brisbane
	<i>Fulgoraria ngai</i>	no		<i>Fulgoraria rupestris ngai</i>	MNHN Paris
	<i>Fulgoraria phanhayi</i>	no		<i>Fulgoraria bailorum</i>	MNHN Paris
	<i>Fulgoraria limpusi</i>	no		<i>Fulgoraria allaryi</i>	MNHN Paris
	<i>Fulgoraria hamillei huberi</i>	no			MNHN Paris

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Description of a new species of *Tenorioconus* (Gastropoda: Conidae): *Tenorioconus granamirabilis*, sp. nov. from Grenada Island, Lesser Antilles.

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ABSTRACT

A new species of *Tenorioconus* from the lesser Antilles is described in this paper.

Tenorioconus granamirabilis sp. nov. from Grenada Island is compared with six species:

- *T. aurantius* (Hwass in Bruguière, 1792) from the Dutch West Indies: Curaçao and Bonaire Islands;
- *T. pseudaurantius* (Vink & von Cosel, 1985) from the southernmost part of the Lesser Antilles: Union Island, Carriacou and Grenada;
- *T. julieandreae* (Cargile, 1995) from offshore of Honduras and Nicaragua: Cayos Caratasca, Honduras to San Andres y Providencia, Colombia;
- *T. dominicanus* (Hwass in Bruguière, 1792) from the Grenadines Islands;
- *T. aff. dominicanus* (Hwass in Bruguière, 1792) from the Grenadines Islands and
- *T. panamicus* (Petuch, 1990) from eastern Panama (Caribbean side).

RESUME

Une nouvelle espèce de *Tenorioconus* des Petites Antilles est décrite ici.

Tenorioconus granamirabilis sp. nov. de l'île de La Grenade est comparée avec six espèces :

- *T. aurantius* (Hwass in Bruguière, 1792) des Antilles Néerlandaises : Îles Curaçao et Bonaire,
- *T. pseudaurantius* (Vink & von Cosel, 1985) de la partie la plus méridionale des Petites Antilles : Union Island, Carriacou et Grenada,
- *T. julieandreae* (Cargile, 1995) du large du Honduras et du Nicaragua : Cayos Caratasca, Honduras à San Andres y Providencia, Colombie,
- *T. dominicanus* (Hwass in Bruguière, 1792) des Îles Grenadines,
- *T. aff. dominicanus* (Hwass in Bruguière, 1792) des Îles Grenadines et
- *T. panamicus* (Petuch, 1990) du Panama Caraïbéen.

MATERIAL AND METHODS

A comparative morphometric study of several *Tenorioconus* species closely related to the new species was carried out using basic shell morphology adapted for Conidae.

Taxonomy follows Monnier, Limpalaër, Robin & Roux (2018). We analyze shell morphology using the terminology defined in Röckel, Korn & Kohn (1995) and modified in Monnier, Limpalaër, Robin & Roux (2018).

Material used in this study come from private collections, primarily, with the exception of one specimen from the American Museum of Natural History, New York City.

Adult shells were measured with digital calipers, most of the time the measurements were rounded to 0.01 millimeter.

Subadult or malformed specimens were excluded from the comparisons.

REPOSITORIES (Museums and private collections)

MNHN: Muséum National d'Histoire Naturelle, Paris, France

AMNH: American Museum of Natural History, New York City, USA

MHNG: Muséum d'Histoire Naturelle, Genève, Switzerland

SBMNH: Santa Barbara Museum of Natural History, Santa Barbara, California, USA

USNM: Smithsonian Institution, United States National Museum, Washington D.C., USA

ZMUC: Zoological Museum, University of Copenhagen, Denmark

EM: Eric Monnier reference collection, Paris, France

LL: Loïc Limpalaër reference collection, Haudivillers, France

WJF: William J. Fenzan reference collection, Norfolk, Virginia, USA

WPC: William P. Cargile reference collection, California, USA

ABBREVIATIONS

RKK: Röckel, Korn & Kohn (1995)

MLRR: Monnier, Limpalaër, Robin & Roux (2018)

Fig: Figure

m: meter(s)

Shell morphometry

SL: maximum shell length

MD: maximum diameter

H: height

SH: Spire height = SL-AH

HMD: height of maximum diameter

W: shell weight

AH: aperture height

RD: relative diameter (= MD/AH)

V: estimated "model" volume (= SL x MD x H)

RSH: relative spire height (= SH/SL = (SL-AH) / SL)

PMD: relative position of the maximum diameter
(= HMD/AH)

RW: relative shell weight 'length' (= W/SL)

RW': relative shell weight 'volume' (= W/V)

SYSTEMATICS**Family Conidae Fleming, 1822****Genus *Tenorioconus* Petuch & Drolshagen, 2011*****Tenorioconus granamirabilis* sp. nov.**

Figure 1: Holotype of *Tenorioconus granamirabilis* sp. nov. MNHN-IM-2000-29215

(Plate 1, Figs. 1-10)

Material examined: Holotype and 9 paratypes of *Tenorioconus granamirabilis* sp. nov. have been studied. The holotype is deposited in the Muséum National d'Histoire Naturelle, Paris, France, under the number MNHN-IM-2000-29215 (ex-Eric Monnier's collection). Paratype 9 is deposited in AMNH, New York, USA. The other 8 paratypes are stored in private collections. (See Table 1 for details).

Synonymy:

2018. *Tenorioconus* sp.1 Monnier, Limpalaër, Robin & Roux. *Taxonomic Iconography of Living Conidae*: 273,

Type	Institution	Dimensions – Weight SL x MD x W (mm x mm x g)
Holotype	MNHN-IM-2000-29215	42.02 x 22.06 x 9.8
Paratype 1	Coll. EM	45.85 x 22.89 x 13.3
Paratype 2	Coll. EM	38.87 x 18.95 x 7.8
Paratype 3	Coll. EM	41.63 x 22.49 x 12.0
Paratype 4	Coll. EM	45.04 x 22.90 x 12.9
Paratype 5	Coll. EM	42.10 x 20.48 x 9.6
Paratype 6	Coll. EM	42.87 x 20.58 x 9.8
Paratype 7	Coll. WJF-09810	41.90 x 21.52 x 10.15
Paratype 8	Coll. WJF-06222	26.10 x 12.53 x 2.52
Paratype 9	AMNH - 318498	31.10 x 15.70 x 4.15

Table 1: Types of *Tenorioconus granamirabilis* sp. nov. figs. 1, 2, 3, 4, 5 & 6.

Type locality: Grenada, Windward Is., Lesser Antilles

Distribution and habitat: *T. granamirabilis* sp. nov. is very probably only found off Grenada Island where five specimens (WPC Collection) were dived in Prickly Bay (L'Anse aux Epines), Grenada (Fig.2).

Almost all the studied shells of the new species have been found in private collections, and their data are either vague or seemingly wrong (Examples: Venezuela, Martinique, Saint Lucia or Tobago). Further research may contribute to a better understanding of the new species' range.



Figure 2 : Distribution map of *Tenorioconus granamirabilis* sp. nov.

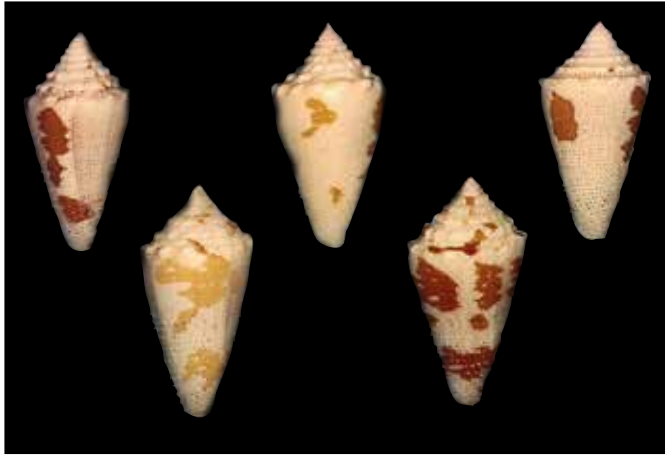


Figure 3: Five specimens of *Tenorioconus granamirabilis* sp. nov., dived by Gary Mackintosh in Prickly Bay, South Grenada, Coll. WPC.

Etymology: The new species is named *T. granamirabilis* in reference to its granulose spiral ribs that look like striking rows of pearls on the last whorl of the shell (Fig. 7).

Description of the *Tenorioconus granamirabilis* sp. nov. shell

Morphometric parameters:

SL = 38 - 46 mm (mean SL = 42.5 mm); RD = 0.63 - 0.73 (mean RD = 0.67); PMD = 0.93 - 0.99 (mean PMD = 0.95); RSH = 0.19 - 0.30 (mean RSH = 0.24); RW = 2.0 - 2.9 g/cm (mean RW = 2.5 g/cm); RW' = 0.51 - 0.59 g/cm³ (mean RW' = 0.57 g/cm³).

Description: The shell is medium-sized, conical in profile, and moderately solid in weight. The protoconch (intact in paratype 2, Fig. 6) is cream and paucispiral with about 2.5 whorls. The shell has about 12 whorls. The spire is rather moderate to high (mean RSH = 0.24) with a very straight outline giving to the shell a quite biconical shape. The spire whorls are nodose to coronate (Fig. 5). The teleoconch sutural ramps are concave in profile and detached with a few obsolete spiral striae and numerous weak radial growth lines and threads (Fig. 4). The suture is narrow and shallow with a strongly undulate sutural line. The shoulder is angulate. All the teleoconch whorls are tuberculate with about 15 strong tubercles per whorl. The profile of the last whorl is straight to slightly convex. The last whorl is covered with 30 to 40 spiral-grained cords that are narrowly spaced (Fig. 7).

The columellar lip is straight in the abapical part, becoming slightly convex in the top. The aperture lip profile is straight becoming slightly convex near the shoulder, and the aperture is very slightly wider at base than near the shoulder. The lip is translucent white with some pale orange flecks near the aperture. The outer lip is straight and the profile of the origin of the lip is rather winged with a U-shaped anal notch.

The ground color of the last whorl is ivory white

overlaid with large orange irregular blotches. Under magnification, spiral orange small dot and (or) dashes lines are observed on each spiral cord and in between them. The color and pattern of the spire is consistent with that of the last whorl.

A rather strong thickening like a bump called an "internal restriction" is present on the anterior part of the outer wall within the aperture (Fig. 8).

With its very consistent orange and white pattern, biconical shape with a straight high knobbed spire, it is quite impossible to confuse this new species with another species of *Tenorioconus*.

Living animal and radula:

The soft parts, radula and DNA of the new species are not known.

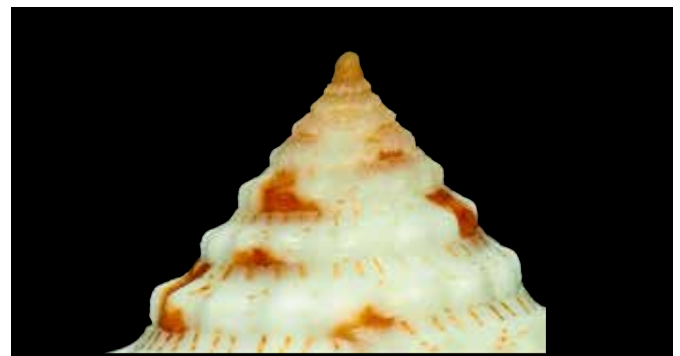


Figure 4: Spire of paratype 2 of *Tenorioconus granamirabilis* sp. nov.

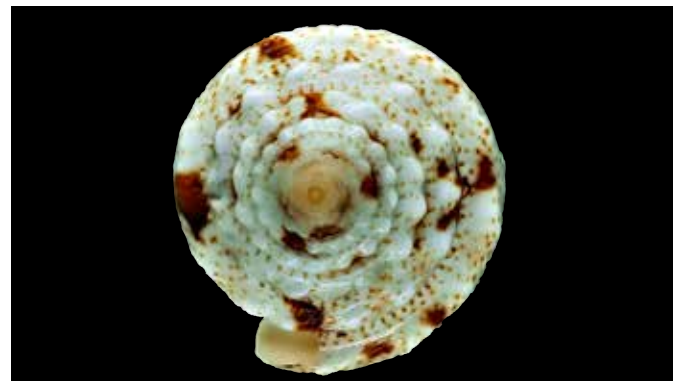


Figure 5: Top view of the spire of paratype 2 of *Tenorioconus granamirabilis* sp. nov.



Figure 6: Apex and protoconch of paratype 2 of *Tenorioconus granamirabilis* sp. nov.



Figure 7: Detail of the last whorl of paratype 2 of *Tenorioconus granamirabilis* sp. nov.



Figure 8: Internal restriction of Holotype of *Tenorioconus granamirabilis* sp. nov.

COMPARISON

Although *Tenorioconus granamirabilis* sp. nov. can be easily distinguished by its shape and pattern from the other *Tenorioconus* species, the new species is compared with the six species that most closely resemble it:

- *T. aurantius* (Hwass in Bruguière, 1792) from the Dutch West Indies: Curaçao and Bonaire Islands;

- *T. pseudaurantius* (Vink & von Cosel, 1985) from the southernmost part of Lesser Antilles: Union Island, Carriacou and Grenada;

- *T. julieandreae* (Cargile, 1995) offshore Honduras and Nicaragua: Cayos Caratasca, Honduras to San Andres y Providencia, Colombia;

- *T. dominicanus* (Hwass in Bruguière, 1792) from the Grenadines Islands;

- *T. aff. dominicanus* (Hwass in Bruguière, 1792) from the Grenadines Islands;

- *T. panamicus* (Petuch, 1990) from Caribbean Panama.

Therefore, we did not deem it necessary to compare the new species with some well-known species of *Tenorioconus* whose pattern is quite different to it, such as *T. mappa* (Lightfoot, 1786), *T. trinitarius* (Hwass in Bruguière, 1792), *T. granarius* (Kiener, 1847) or *T. cedonulli* (Linnaeus, 1767).

Geographical distribution areas of the species compared

Figure 9 shows the geographical repartition of *Tenorioconus granamirabilis* sp. nov., *T. aurantius*, *T. pseudaurantius*, *T. julieandreae*, *T. dominicanus*, *T. aff. dominicanus* and *T. panamicus*.

Morphometric study

1. Morphometric parameters for *T. granamirabilis* sp. nov. & 6 compared species (Table 2)

Species	Values	SL (mm)	RD	PMD	RSH	RW(g/cm)	RW'(g/cm ³)
<i>T. granamirabilis</i> sp. nov.	Extremes	39 - 46	0.63 - 0.68	0.93 - 0.99	0.19 - 0.30	2.0 - 2.9	0.51 - 0.59
	Average	42.2	0.66	0.95	0.23	2.4	0.57
<i>T. aurantius</i>	Extremes	35 - 60	0.56 - 0.63	0.81 - 1.00	0.18 - 0.26	1.2 - 4.2	0.45 - 0.56
	Average	47.9	0.60	0.92	0.23	2.5	0.51
<i>T. pseudaurantius</i>	Extremes	25 - 41	0.58 - 0.66	0.86 - 0.94	0.16 - 0.24	0.9 - 1.8	0.45 - 0.59
	Average	32.2	0.61	0.90	0.19	1.2	0.51
<i>T. julieandreae</i>	Extremes	15 - 46	0.61 - 0.69	0.89 - 0.99	0.23 - 0.32	0.2 - 0.7	0.41 - 0.61
	Average	23.0	0.65	0.95	0.28	0.47	0.55
<i>T. dominicanus</i>	Extremes	46 - 63	0.62 - 0.75	0.84 - 0.99	0.16 - 0.26	3.2 - 6.0	0.54 - 0.63
	Average	51.9	0.70	0.93	0.20	4.8	0.59
<i>T. aff. dominicanus</i>	Extremes	34 - 41	0.64 - 0.65	0.87 - 0.95	0.20 - 0.30	1.7 - 2.2	0.57 - 0.58
	Average	37.2	0.65	0.91	0.22	2.0	0.58
<i>T. panamicus</i>	Extremes	31 - 35	0.64 - 0.68	0.90 - 0.97	0.23 - 0.30	1.0 - 1.4	0.47 - 0.50
	Average	33.3	0.66	0.94	0.28	1.2	0.49

Table 2: Morphometric and weight parameters including SL, RD, PMD, RSH, RW & RW' for specimens of *Tenorioconus granamirabilis* sp. nov., and 6 compared species.

Figure 9 shows the geographical repartition of *Tenorioconus granamirabilis* sp. nov., *T. aurantius*, *T. pseudaurantius*, *T. julieandreae*, *T. dominicanus*, *T. aff. dominicanus* and *T. panamicus*.

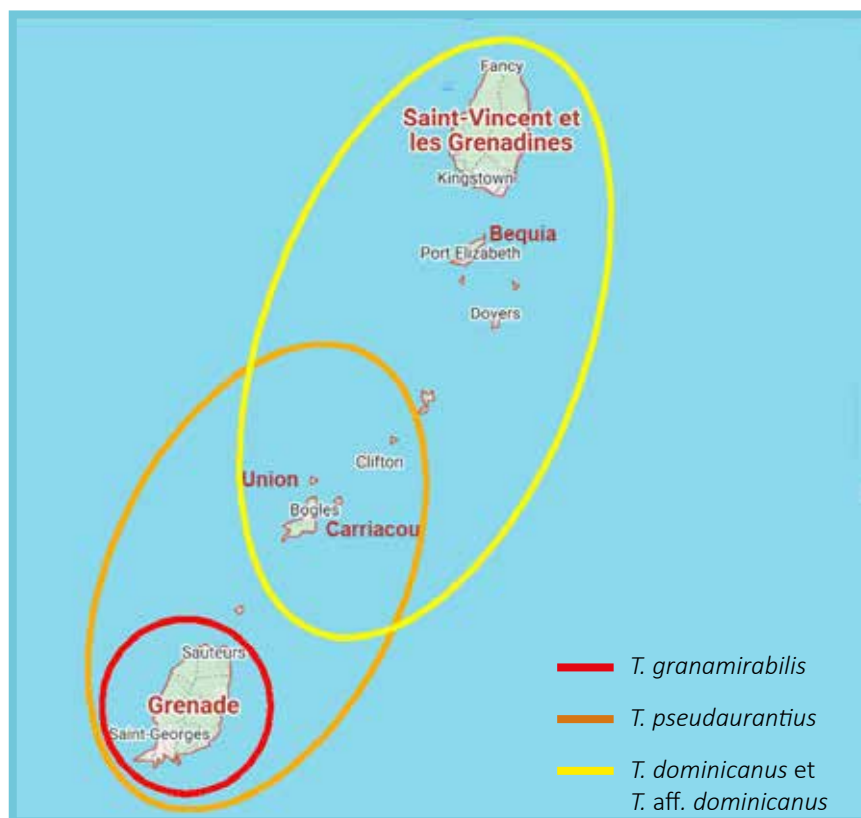


Figure 9: Distribution map of *Tenorioconus granamirabilis* sp. nov. and six compared species.

A-*Tenorioconus aurantius* (Hwass in Bruguière, 1792)



Figure 10: *Tenorioconus aurantius* (Hwass in Bruguière, 1792) Lectotype (MHNG)

from Dutch West Indies: Curacao and Bonaire Islands. (Plate 2, Figs. 1-12)

The Lectotype (Kohn) has a size of 49 x 25 mm and is stored in MHNG. The type locality: Asiatic Ocean to the Philippines Islands (erroneous) was corrected (Clench & Bullock, 1970) to Island of Curacao, Netherlands Antilles.

Tenorioconus granamirabilis, sp. nov. has a slightly smaller size range (average size: 42.2 mm with a maximum size SL= 46 mm instead of an average size of 47.9 mm and a maximum size of 60 mm for *T. aurantius*). The new species appears to be broader and less elongated (average value of the relative diameter RD = 0.66 versus 0.60 for *T. aurantius*). The spire has a similar height (average RSH: 0.23 for both species). The new species is

heavier than *T. aurantius* ($RW' = 0.57 \text{ g/cm}^3$ versus 0.51 g/cm^3).

The pattern and color range give some distinctive characters. The shape of the new species is fairly biconical with a quite straight spire, while *T. aurantius* has a slightly convex last whorl.

Depending on the locality, the coloration of *Tenorioconus aurantius* varies from dark brown to light orange, and those colours are dominant on the last whorl. For the new species, the coloration is very consistent and homogeneous: light orange blotches dominated by the white background.

The geographical range of the new species is, so far, restricted to Grenada Island whereas that of *Tenorioconus aurantius* is quite distinct, and limited to Curacao and Bonaire Islands.

For the new species, an internal restriction is present on the anterior part of the outer wall within the aperture while it is absent in *T. aurantius*.

Both species have, as usual for this genus *Tenorioconus*, a paucispiral protoconch.

B- *Tenorioconus pseudaurantius* (Vink & von Cosel, 1985)

from the Southernmost part of Lesser Antilles: Union Island, Carriacou and Grenada.

(Plate 3, Figs. 1-13)



Figure 11: *Tenorioconus pseudaurantius* Vink & von Cosel, 1985. Holotype (MHNG)

The holotype has a size of $34.5 \times 17.4 \text{ mm}$ and is stored in MHNG. The type locality is Union Island in Saint Vincent and the Grenadines, lesser Antilles, at 3 to 5 m deep on sand or coral rubble.

After careful examination of a large number of specimens of *Tenorioconus brianoi* Cossignani & Allary, 2019 from Grenadines Islands, we believe that this taxon is a junior synonym of *Tenorioconus pseudaurantius* (Vink & von Cosel, 1985) based on eroded and partly subfossil shells.

Tenorioconus granamirabilis, sp. nov. is larger than *T. pseudaurantius*: average shell length (SL) = 32.2 mm for *T. pseudaurantius* and 42.2 mm for the new species.

The new species is broader (average value of the re-

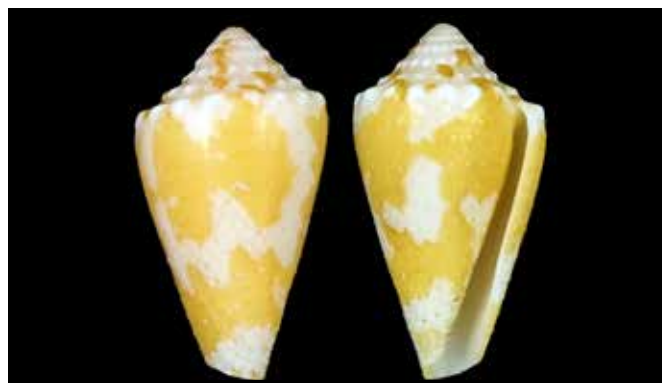


Figure 12: *Tenorioconus brianoi* Cossignani & Allary, 2019, Holotype (MNHN)

lative diameter $RD = 0.66$ versus 0.61 for *T. pseudaurantius*). This last species has a slightly convex last whorl unlike that of the new species, which is almost straight.

The spire of the new species is higher (average RSH: 0.23 for the new species and 0.19 for *T. pseudaurantius*). The new species is slightly heavier than *T. pseudaurantius* (average $RW' = 0.57 \text{ g/cm}^3$ versus 0.51 g/cm^3).

Unlike that of the new species, the last whorl of *T. pseudaurantius* does not have closely set spiral-grained cords, instead it has widely separated low cords.

The pattern and color range of the two species are superficially similar: irregular orange blotches on a white background with a smaller proportion of orange versus white in the new species. Moreover, in the new species the spiral rows of very small dots and dashes observed are orange and more numerous while they are brown and bigger in *T. pseudaurantius*.

No internal restriction is observed in *T. pseudaurantius* unlike the new species.

Both species have a paucispiral protoconch.

-C- *Tenorioconus julieandreae* (Cargile, 1995) from offshore Cayos Caratasca, Honduras to San Andrés and Providencia, Colombia.

(Plate 4, Figs. 1-8)



Figure 13: *Tenorioconus julieandreae* Cargile, 1995. Holotype (SBMNH).

The holotype has a size of $23.0 \times 10.4 \text{ mm}$ and is stored in SBMNH. The type locality is Cayos Caratasca, East coast of Honduras, at 3 to 10 m deep on sand

pockets in rocks and coral. This species is usually small (but some very rare medium sized specimens are in private collections).

Tenorioconus granamirabilis, sp. nov. has a larger size (average size: 42.2 mm for the new species instead of 23.0 mm for *T. julieandreae*).

The new species is rather similar in shape to *T. julieandreae* but is wider (average value of the relative diameter RD = 0.66 versus 0.64 for *T. julieandreae*). The spire is higher in *T. julieandreae* (average RSH: 0.23 for the new species and 0.27 for the other one). The new species is denser in weight than *T. julieandreae* (average RW' for the new species is 0.57 g/cm³ and 0.55 g/cm³ for the other one).

The pattern and color of the two species are quite similar: light orange spots on a white background.

T. julieandreae has a slightly convex last whorl instead of a straight profile in the new species.

In *T. julieandreae*, the internal restriction is present on the anterior part of the outer wall within the aperture as in the new species.

The distribution areas of the two species are very distinct and are distant from one another by more than 2.500 km. It is restricted to Grenada Island for the new species and Caribbean Honduras for *T. julieandreae*.

Both species have a paucispiral protoconch.

-D- *Tenorioconus dominicanus* (Hwass in Bruguière, 1792) from the Grenadines Islands.
(Plate 5, Figs. 1-13)



Figure 14: *Tenorioconus dominicanus* (Hwass in Bruguière, 1792) Lectotype in ZMUC

Tenorioconus granamirabilis, sp. nov. has a smaller size range: average size of 42.2 mm with a maximum of 46 mm for the new species instead of an average size of 51.9 mm and a maximum of 63 mm for *T. dominicanus*. The new species is narrower: average value of the relative diameter RD = 0.66 versus 0.70 for *T. dominicanus*. The spire of the new species is taller: average RSH 0.23 instead of 0.20 for *T. dominicanus*, heavier (RW' = 0.59 g/cm³ versus 0.57 g/cm³ for the new species).

The spire of the new species has straight spire and last whorl while *T. dominicanus* has a concave outline of

the spire and a slightly convex last whorl.

In the new species, all the teleoconch whorls are tuberculate with strong tubercles, unlike *T. dominicanus*.

The new species has always light orange irregular blotches on a white background but the pattern and color of *T. dominicanus* are very variable: from yellow to orange or brown blotches organized in spiral bands.

A major difference between the two species is the presence of internal restriction for the new species and the absence for *T. dominicanus*.

Both species have a paucispiral protoconch.

The geographical range of *T. dominicanus* is Grenadines Islands (from North to South: Bequia, Mustique, Cannouan, Tobago Cays, Union, Carriacou and Grenada (over a distance of approximately 100 km). The new species is, so far, restricted to Grenada Island. They may therefore be almost sympatric in the southern part of the range of *T. dominicanus*.

E- *Tenorioconus* aff. *dominicanus* from Grenadines
(Plate 6, Figs. 1-2)



Figure 15: *Tenorioconus* aff. *dominicanus* Coll. EM

Two specimens of the first author's collection present characters that do not fit with *T. dominicanus*. In this paper they are called: *T. aff. dominicanus*.

Their shape, pattern and colour are rather similar to the new species.

Tenorioconus granamirabilis, sp. nov. has a slightly larger size (average size: 42.2 mm for the new species instead of 34 and 41 mm for *T. aff. dominicanus*). The new species has a similar RD (average value for the new species: RD = 0.66 versus 0.64 and 0.65 for *T. aff. dominicanus*). The spire height of the new species is also similar (average RSH: 0.23) instead of 0.22 for *T. aff. dominicanus*. The latter species is slightly heavier (0.58 g/cm³ versus an average of 0.57 g/cm³ for the new species).

A major difference between the two species is the absence of tubercles on the last teleoconch whorl in *T. aff. dominicanus*.

The last whorl of both species has orange blotches on a white background.

As *T. dominicanus*, *T. aff. dominicanus* has no internal

restriction unlike the new species.

Both species have a paucispiral protoconch.

-F- *Tenorioconus panamicus* (Petuch, 1990) from Caribbean Panama.

(Plate 6, Figs. 3-8)



Figure 16: *Tenorioconus panamicus* (Petuch, 1990) Holotype (24 mm, 53 m), Porto Belo, Panama in USNM

Tenorioconus granamirabilis, sp. nov. has a much bigger average size: 42.2 mm instead of 33.3 mm for *T. panamicus*. The last whorl of the new species has the same relative diameter as *T. panamicus* with an average value of the relative diameter RD = 0.66 for both species and an average value of PMD is 0.95 for the new species and 0.94 for *T. panamicus*. The outline of the last whorl is slightly pyriform in *T. panamicus*. Moreover, the spire is higher and concave for *T. panamicus*: average RSH: 0.23 for the new species and 0.28 for *T. panamicus*. The new species is heavier than *T. panamicus* (RW' = 0.57 g/cm³ versus 0.49 g/cm³).

The geographical range of the new species is, so far, restricted to Grenada Island whereas that of *T. panamicus* is situated around 2000 km away in the Atlantic coast of Panama.

In *T. panamicus*, the internal restriction is present on the anterior part of the outer wall within the aperture as in the new species.

Both species have, as usual for this genus *Tenorioconus*, a paucispiral protoconch.

2. Graphical morphometric comparisons

Figure 17a and 17b shows the plotting area of each species represented on the graph: RD = f (PMD). In figure 17a, it appears that *T. granamirabilis* sp. nov. does not share common morphological points with *T. aurantius*, only a small part with *T. pseudaurantius* and a larger part with *T. julieandreae*.

In figure 17b, it is observed that the plotting area of the new species partially overlaps with each other species and more so with *T. dominicanus* and *T. panamicus*.

Figure 18a and 18b shows the plotting area of each species represented on the graph: PMD = f (SH).

In figure 18a, it appears that *T. granamirabilis* sp. nov. does not share common morphological points with *T. pseudaurantius*, only a small part with *T. julieandreae* and a larger part with *T. aurantius*.

In figure 18b, it could be noted that the plotting area of the new species partially overlaps with each species and especially with *T. dominicanus* and *T. panamicus*.

In conclusion, these graphical morphometric comparisons allow us to clearly distinguish the new species from *T. aurantius*, *T. pseudaurantius* and *T. julieandreae*.

They are not conclusive to separate *T. granamirabilis* from *T. dominicanus*, *T. aff. dominicanus* and *T. panamicus*.

REMARKS

To our knowledge, the new species has never been illustrated in a paper or book except in Monnier & al. (2018) on page 273 as *Tenorioconus* sp.1.

The late William P. Cargile, great collector and expert in Conidae, bought a cone (figure 19) at the Paris shell show in March 2011 and he drew the attention of the first author to the fact that this *Tenorioconus* was a rare new species that was undescribed!

He was supposed to describe it but probably he didn't have time to do it. We had a lot of discussions in recent years with our friend William J. Fenzan who taught us that a specimen of this species was stored with the type collection in New York at AMNH and that W. P. Cargile had corrected the wrong locality (Venezuela) associated with the shell.

It took years to gather sufficient information and specimens to ascertain the shell characters of the species. The identification of the type locality was made difficult because of both the scarcity of specimens and their inaccurate locality data. Finally, a photograph of several specimens collected by Gary Macintosh brought genuine information. However, the exact range of the new species remains to be ascertained with more material.

Some other *Tenorioconus* species from the Caribbean Region such as *T. cedonulli* (Linnaeus, 1767), *T. insularis* (Gmelin, 1791), *T. mappa* (Lightfoot, 1786), *T. trinitarius* (Hwass in Bruguière, 1792), *T. duffyi* (Petuch, 1992), *T. curassaviensis* (Hwass in Bruguière, 1792), *T. monicae* (Petuch & Berschauer, 2015), *T. granarius* (Kiener, 1847) and *T. harlandi* (Petuch, 1987) are not compared with the new species due to more obvious differences.

An internal restriction is present on the anterior part of the outer wall within the aperture in the following species of *Tenorioconus*: *T. mappa* (Lightfoot, 1786), *T. trinitarius* (Hwass in Bruguière, 1792), *T. granarius* (Kiener, 1847), *T. panamicus* (Petuch, 1990), *T. julieandreae* (Cargile, 1995), *T. duffyi* (Petuch, 1992),



Figure 19: *Tenorioconus granamirabilis* sp. nov. Coll. WPC (ex. Coll. Bernard Goudey, Paris)



Figure 20: *Tenorioconus granamirabilis* sp. nov, Paratype 9, AMNH, New York

T. curassaviensis (Hwass in Bruguière, 1792), *T. monicae* Petuch & Berschauer, 2015, *T. harlandi* (Petuch, 1987), *T. peterstimpsoni* Cossignani & Allary, 2021.

To the contrary *T. cedonulli* (Linnaeus, 1767), *T. dominicanus* (Hwass in Bruguière, 1792), *T. insularis* (Gmelin, 1791), *T. aurantius* (Hwass in Bruguière, 1792), *T. pseudaurantius* (Vink & Von Cosel, 1985), *T. sanguineus* (Kiener, 1850), *T. scopulorum* (van Mol, Tursch & Kempf, 1971) and *T. archon* (Broderip, 1833), are species devoid of the internal restriction.

All the species of *Tenorioconus* have a paucispiral protoconch indicating a direct development and consequently they have a restricted geographical range.

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Alain Robin for the photos and graphs, to William J. Fenzan for their great help and to Fabrice Prugnaud for some photos.

Thanks to Manuel Jimenez Tenorio and Laura Rincon-Rodriguez from AMNH (New York) for their help regarding paratype 9 of the new species.

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A: Graphs of $RD = f(PMD)$ for some compared species.

Relative Diameter = f (Position of Maximum Diameter of the last whorl)

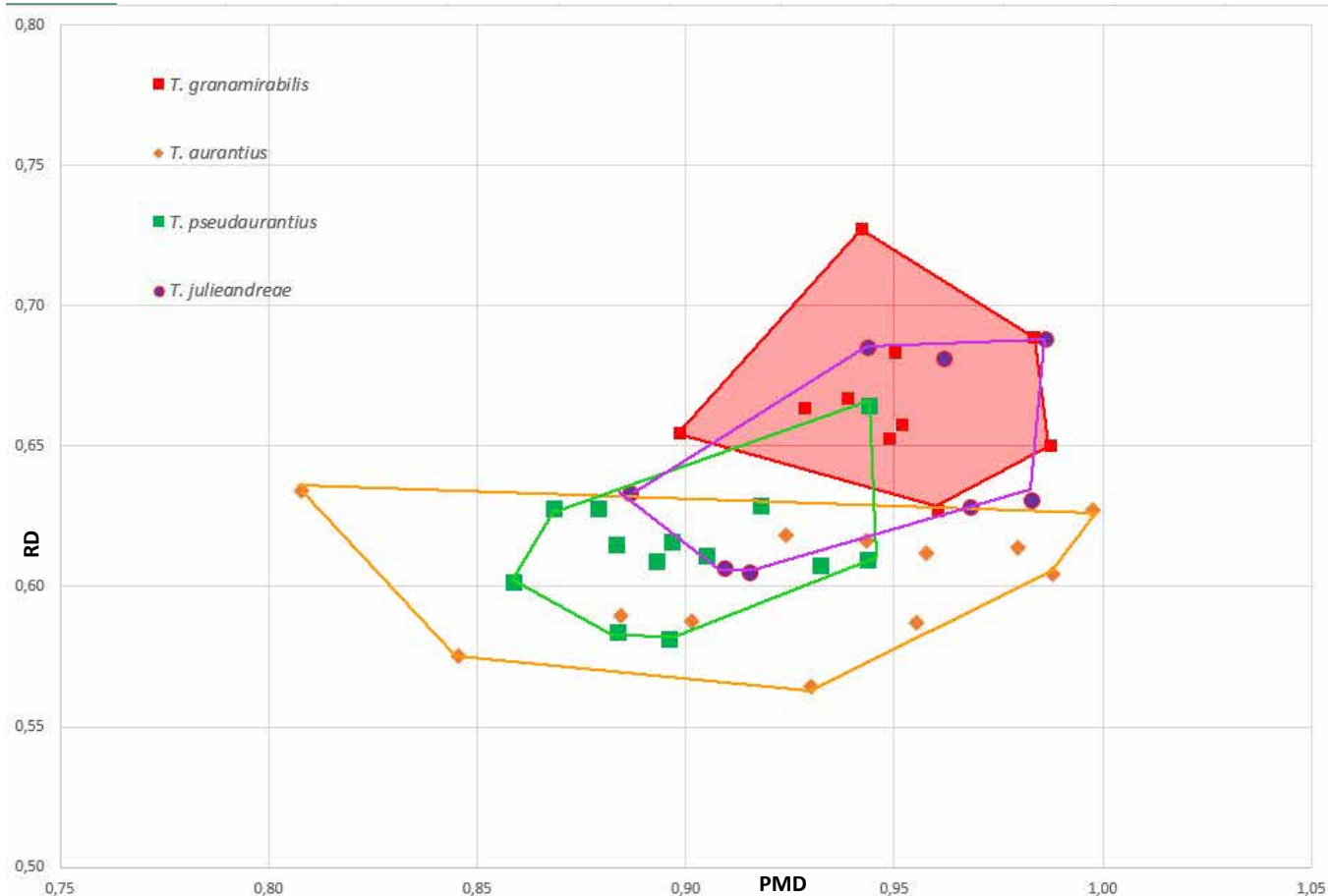


Figure 17a - Comparisons of *T. granamirabilis* sp. nov. with *T. aurantius*, *T. pseudaurantius* and *T. julieandreae*

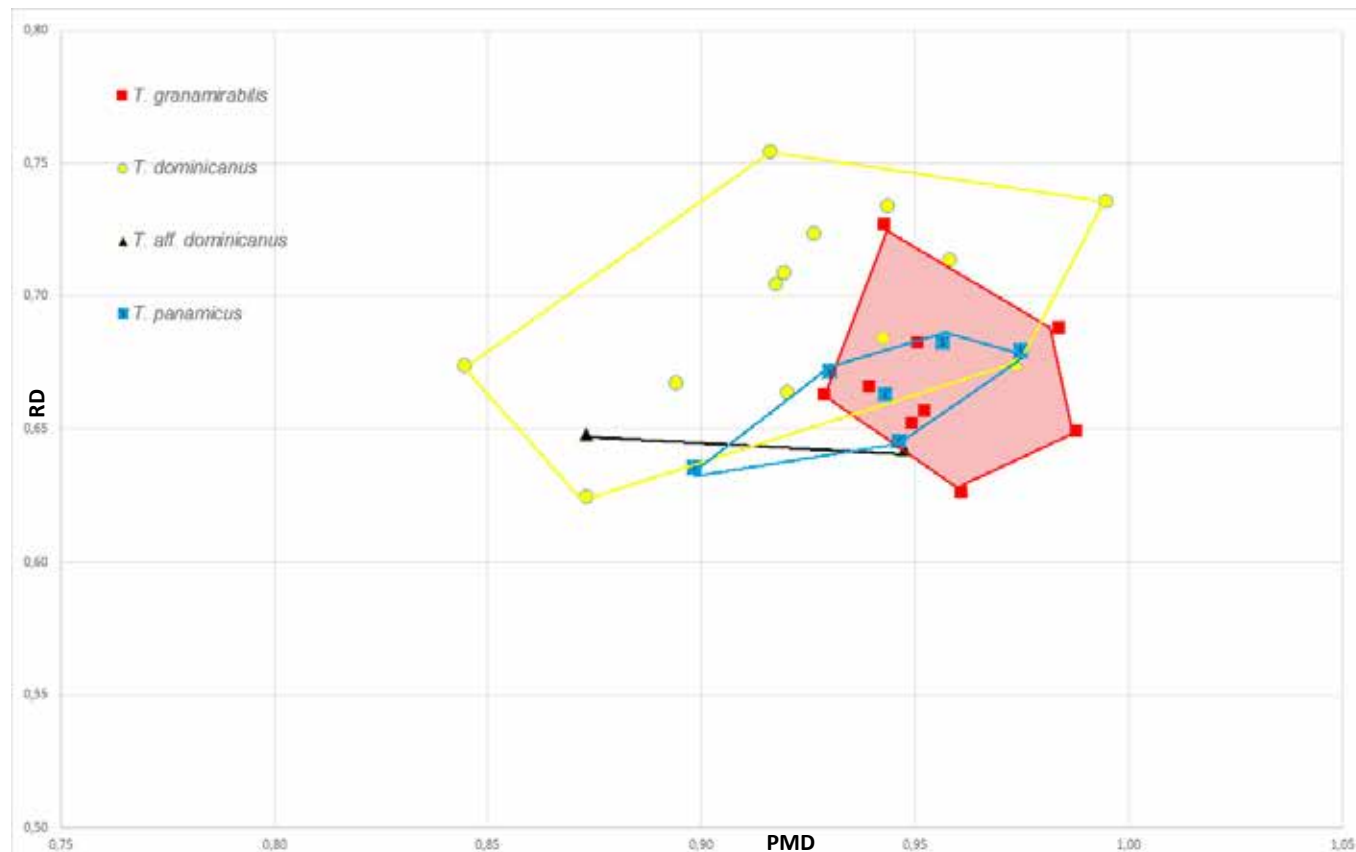


Figure 17b - Comparisons of *T. granamirabilis* sp. new with *T. dominicanus*, *T. aff. dominicanus* and *T. panamicus*.

Figure 17a & 17b: Graphs of $RD = f(PMD)$ for compared species. *Tenorioconus granamirabilis* sp. nov. is figured in red.

B: Graphs of $PMD = f(SH)$ for some compared species.

Position of Maximum Diameter of the last whorl = f (Spire Height)

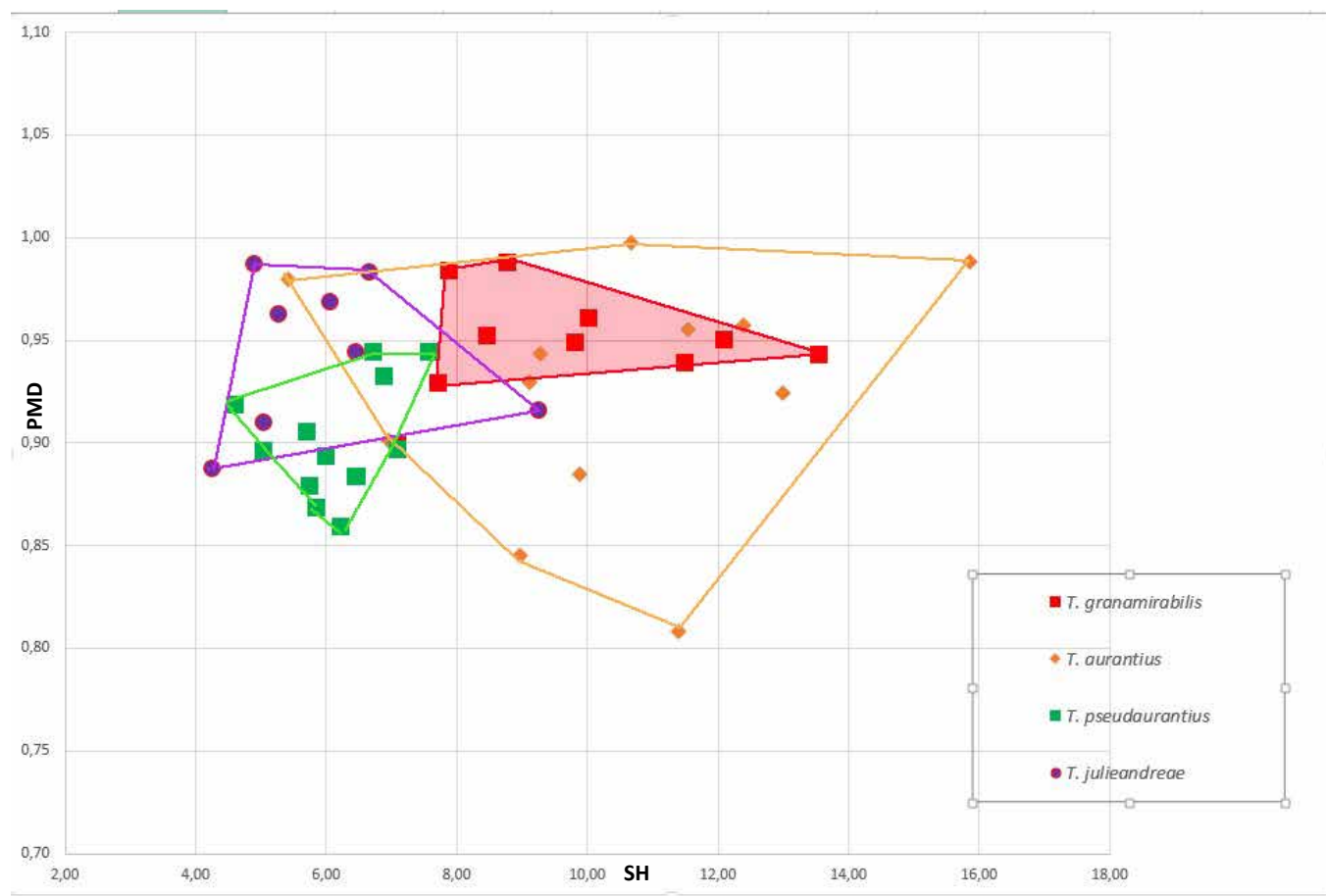


Figure 18a Comparisons of *T. granamirabilis* sp. nov. with *T. aurantius*, *T. pseudaurantius* and *T. julieandreeae*

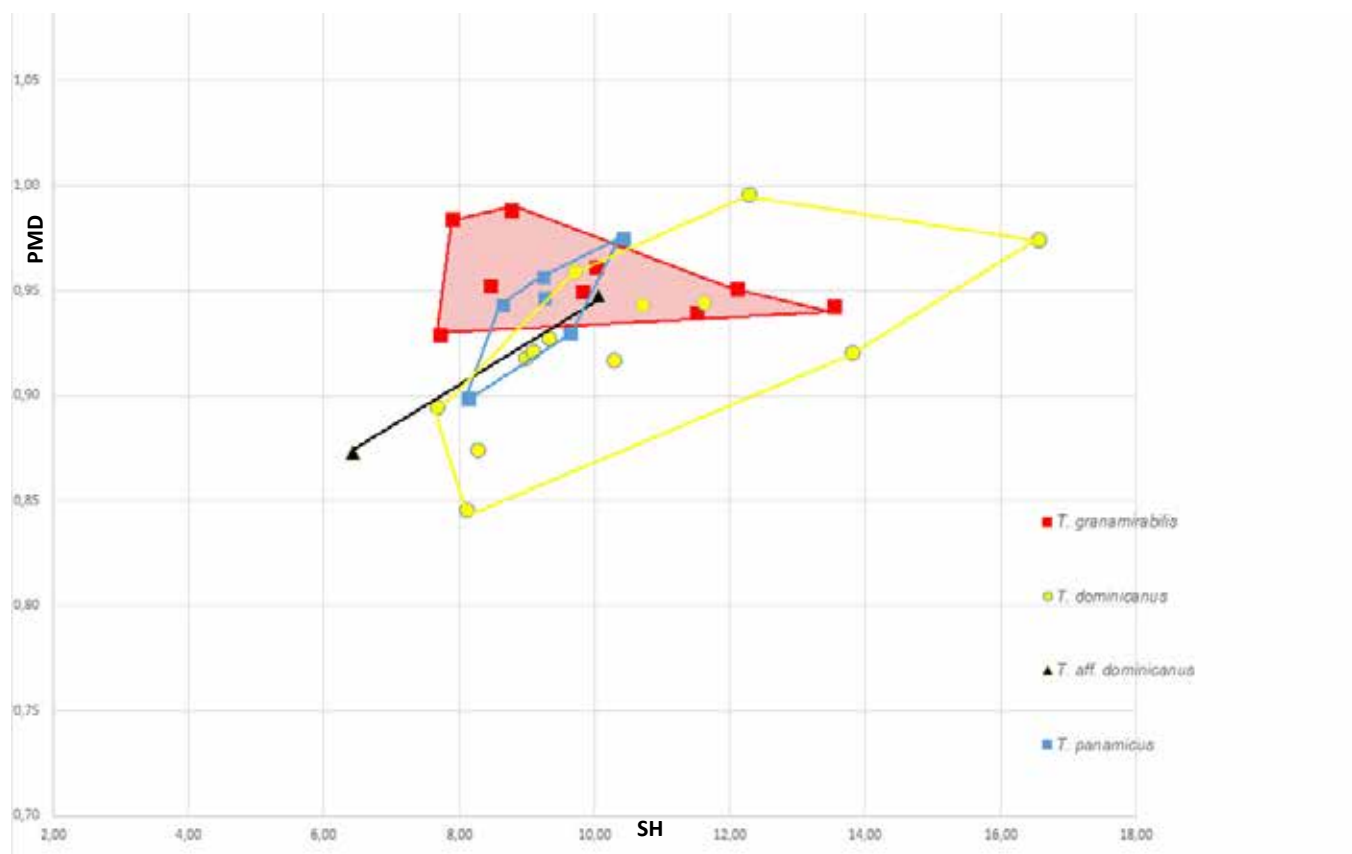


Figure 18b Comparisons of *T. granamirabilis* sp. new with *T. dominicanus*, *T. aff. dominicanus* and *T. panamicus*

Figure 18a & 18b: Graph of $PMD = f(SH)$ for some compared species. *Tenorioconus granamirabilis* sp. nov. is figured in red.

Plate 1



1 *T. granamirabilis* 42.02 mm Grenada
Holotype MNHN-IM-2000-29215

2 *T. granamirabilis* 45.85 mm Grenada Paratype 1 Coll. EM

3 *T. granamirabilis* 38.87 mm Grenada Paratype 2 Coll. EM

4 *T. granamirabilis* 41.63 mm 10-20 m Grenada Paratype 3 Coll. EM

5 *T. granamirabilis* 45.04 mm Grenada 15 m Paratype 4 Coll. EM

6 *T. granamirabilis* 42.10 mm Grenada Paratype 5 Coll. EM

7 *T. granamirabilis* 42.87 mm Grenada Paratype 6 Coll. EM

8 *T. granamirabilis* 41.90 mm Grenada Paratype 7 Coll. WJF

9 *T. granamirabilis* 26.10 mm Grenada Paratype 8 Coll. WJF

10 *T. granamirabilis* 31.10 mm Grenada AMNH 318498

Plate 2



- 1 *T. aurantius* 24.62 mm Kralendijk, Bonaire 4 m Coll. EM
- 2 *T. aurantius* 42.17 mm Curaçao Coll. EM
- 3 *T. aurantius* 51.57 mm Curaçao or Bonaire Coll. EM
- 4 *T. aurantius* 52.79 mm Curaçao Coll. EM
- 5 *T. aurantius* 59.97 mm Curaçao Coll. EM
- 6 *T. aurantius* 58.62 mm Curaçao Coll. EM
- 7 *T. aurantius* 52.11 mm Curaçao or Bonaire Coll. EM

- 8 *T. aurantius* 48.77 mm Curaçao or Bonaire Coll. EM
- 9 *T. aurantius* 44.78 mm Flamingo Beach, Bonaire 2-3 m Coll. EM
- 10 *T. aurantius* 34.78 mm Curaçao Coll. EM
- 11 *T. aurantius* 35.03 mm Kralendijk, Bonaire 3-6 m Coll. EM
- 12 *T. aurantius* 46.01 mm Curaçao or Bonaire Coll. EM

Plate 3



- 1 *T. pseudaurantius* 41.44 mm Union, Grenadines 15 m Coll. EM
- 2 *T. pseudaurantius* 36.48 mm South Grenadines Coll. EM
- 3 *T. pseudaurantius* 30.12 mm Half Moon Reef, Tobago Cays, Grenadines 2 m Coll. EM
- 4 *T. pseudaurantius* 37.32 mm Saline Bay, Carriacou Isl., Grenadines 2 m Coll. EM
- 5 *T. pseudaurantius* 30.85 mm Carriacou Isl., Grenadines Coll. EM
- 6 *T. pseudaurantius* 35.66 mm South Grenada Coll. EM

- 7 *T. pseudaurantius* 27.63 mm Grenadines Coll. EM
- 8 *T. pseudaurantius* 30.09 mm Grenadines Coll. EM
- 9 *T. pseudaurantius* 27.92 mm Grenadines Coll. EM
- 10 *T. pseudaurantius* 31.41 mm Calliste, Grenada Coll. EM
- 11 *T. pseudaurantius* 24.91 mm Glover, Grenada Coll. EM
- 12 *T. pseudaurantius* 32.35 mm Saint George, Grenada Coll. EM
- 13 *T. pseudaurantius* 31.94 mm Grenada Coll. EM

Plate 4



- 1 *T. julieandreae* 23.76 mm Honduras Coll. EM
 2 *T. julieandreae* 25.49 mm Honduras Coll. EM
 3 *T. julieandreae* 20.76 mm Gorda Bank, Honduras 18 m Coll. EM
 4 *T. julieandreae* 15.23 mm Honduras Coll. EM

- 5 *T. julieandreae* 16.68 mm Honduras Coll. EM
 6 *T. julieandreae* 20.58 mm Gorda Bank, Honduras 20 m Coll. EM
 7 *T. julieandreae* 15.85 mm Honduras Coll. EM
 8 *T. julieandreae* 45.96 mm Roatan Island, Honduras 40-60 m Coll. WJF

Plate 5



- 1 *T. dominicanus* 47.68 mm Grenadines Coll. EM
- 2 *T. dominicanus* 50.83 mm Tobago Cayes, Grenadines Coll. EM
- 3 *T. dominicanus* 51.43 mm Grenadines Coll. EM
- 4 *T. dominicanus* 50.09 mm Union Isl., Grenadines Coll. EM
- 5 *T. dominicanus* 58.26 mm South Grenadines Coll. EM
- 6 *T. dominicanus* 56.25 mm Union Isl., Grenadines Coll. EM
- 7 *T. dominicanus* 49.20 mm Grenadines Coll. EM

- 8 *T. dominicanus* 50.82 mm South Grenadines Coll. EM
- 9 *T. dominicanus* 56.02 mm Grenadines Coll. EM
- 10 *T. dominicanus* 46.00 mm Grenadines Coll. EM
- 11 *T. dominicanus* 62.97 mm Bequia, Grenadines Coll. EM
- 12 *T. dominicanus* 45.86 mm Carriacou Isl. 10 m Coll. EM
- 13 *T. dominicanus* 49.77 mm Union Isl., Grenadines Coll. EM

Plate 6



1 *T. aff. dominicanus* 40.78 mm Union Isl., Grenadines 18 m Coll. EM

2 *T. aff. dominicanus* 33.52 mm Grenadines Coll. EM

3 *T. panamicus* 31.64 mm Portobelo, Panama 73 m Coll. EM

4 *T. panamicus* 36.35 mm Panama Coll. EM

5 *T. panamicus* 31.09 mm Panama Coll. EM

6 *T. panamicus* 35.22 mm Panama 30-60 m Coll. EM

7 *T. panamicus* 33.61 mm Portobelo, Panama Coll. EM

8 *T. panamicus* 32.17 mm Portobelo, Panama Coll. LL

op.: with olperculum

* subadult
 ** freak spire
 *** not examined

Measured values
 Estimated values
 Calculated values

N°	SL	MD	H Height	AH	HMD	RD	PMD	RSH	W	RW = W/SL	V Volume	RW' = W/V	Repository	Locality
	mm	mm	mm	mm	mm				g	g/cm	cm3	g/cm3		
<i>Tenorioconus granamirabilis</i> sp. nov.														
H	42,02	22,06	20,55	33,55	31,94	0,66	0,95	0,20	9,8	2,33	19,0	0,51	Holotype MNHN IM-2000-29215 (ex. Coll. EM)	Martinique, corrected to Grenada
1	45,85	22,89	22,15	34,34	32,25	0,67	0,94	0,25	13,3	2,90	23,2	0,57	Paratype 1 Coll. EM	no data, corrected to Grenada
2	38,87	18,95	18,17	29,04	27,56	0,65	0,95	0,25	7,8	2,01	13,4	0,58	Paratype 2 Coll. EM	Saint Vincent, corrected to Grenada
3	41,63	22,49	21,65	33,90	31,48	0,66	0,93	0,19	12,0	2,88	20,3	0,59	Paratype 3 Coll. EM	Saint Lucia, Leeward Coast, 10-20 m, corrected in Grenada
4**	45,04	22,90	21,80	31,49	29,68	0,73	0,94	0,30	12,9	2,86	22,5	0,57	Paratype 4 Coll. EM (ex. Coll. John Avery)	Martinique, 15 m in sand corrected to Grenada
5	42,10	20,48	19,58	29,99	28,50	0,68	0,95	0,30	9,6	2,28	16,9	0,57	Paratype 5 Coll. EM	Curacao corrected to Grenada
6	42,87	20,58	20,21	32,84	31,55	0,63	0,96	0,23	9,8	2,29	17,8	0,55	Paratype 6 Coll. EM (ex. Coll. A. Fontaine)	Antilles corrected to Grenada
7	41,90	21,52	20,19	33,12	32,71	0,65	0,99	0,21	10,15	2,42	18,2	0,56	Paratype 7 Coll. WJF-09810	Lesser Antilles
8*	26,10	12,53	12,10	18,20	17,90	0,69	0,98	0,30	2,52	0,97	4,0	0,64	Paratype 8 Coll. WJF-06222	Lesser Antilles
9*	31,10	15,70	15,0	24,00	21,57	0,65	0,90	0,23	4,15	1,33	7,3	0,57	Paratype 9 AMNH 318498	Venezuela, corrected to Prickly Bay, Grenada by WPC
10***	-	-	-	-	-	-	-	-	-	-	-	-	Coll. WPC (ex Coll. B. Goudey)	Tobago or Curacao, corrected to Grenada
11-15***	-	-	-	-	-	-	-	-	-	-	-	-	Coll. WPC	Prickly Bay, S. Grenada
Average	42,2					0,66	0,95	0,23		2,4		0,57		
Extremes	39 - 46					0,63 - 0,68	0,93 - 0,99	0,19 - 0,30		2,0 - 2,9		0,51 - 0,59		
<i>T. aurantius</i> (Hwass in Bruguière, 1792)														
1*	24,62	11,78	11,43	19,19	18,80	0,61	0,98	0,22	2,0	0,81	3,3	0,60	Coll. EM	Kralendijk, Bonaire, 4 m
2	42,17	19,76	18,82	31,50	31,42	0,63	1,00	0,25	8,6	2,04	15,7	0,55	Coll. EM	Curacao
3	51,57	25,47	24,55	40,17	32,46	0,63	0,81	0,22	16,5	3,20	32,2	0,51	Coll. EM	Curacao - Bonaire
4	52,79	24,22	23,71	41,25	39,41	0,59	0,96	0,22	15,0	2,84	30,3	0,49	Coll. EM	Curacao
5	59,97	26,67	25,87	44,12	43,59	0,60	0,99	0,26	20,7	3,45	41,4	0,50	Coll. EM	Curacao
6	58,62	28,27	27,18	46,22	44,26	0,61	0,96	0,21	24,3	4,15	45,0	0,54	Coll. EM	Curacao
7	52,11	24,18	22,42	39,12	36,15	0,62	0,92	0,25	15,9	3,05	28,2	0,56	Coll. EM	Curacao - Bonaire
8	48,77	22,89	22,05	39,80	33,65	0,58	0,85	0,18	12,3	2,52	24,6	0,50	Coll. EM	Curacao - Bonaire
9	44,78	20,12	19,32	35,66	33,16	0,56	0,93	0,20	8,8	1,97	17,4	0,51	Coll. EM	Flamingo Beach, Bonaire, 2-3 m

10	34,78	16,35	15,71	27,83	25,09	0,59	0,90	0,20	4,5	1,29	8,9	0,50	Coll. EM	Curacao
11	35,03	15,87	15,39	25,75	24,29	0,62	0,94	0,26	4,3	1,23	8,6	0,50	Coll. EM	Kralendijk, Bonaire, sand, 3 - 6 m
12	46,01	21,30	20,51	36,13	31,96	0,59	0,88	0,21	9,1	1,98	20,1	0,45	Coll. EM	Curacao - Bonaire
Average	47,9					0,60	0,92	0,23		2,52		0,51		
Extremes	35 - 60					0,56 - 0,63	0,81 - 1,00	0,18 - 0,26		1,2 - 4,2		0,45 - 0,56		
<i>T. pseudaurantius</i> (Vink & von Cosel, 1985)														
1	41,44	20,41	19,54	34,98	30,91	0,58	0,88	0,16	7,6	1,83	16,5	0,46	Coll. EM	Union Isl., 15 m
2	36,48	18,19	17,26	30,24	25,97	0,60	0,86	0,17	5,1	1,40	11,5	0,45	Coll. EM	South Grenadines
3	30,12	14,91	14,18	24,41	22,09	0,61	0,90	0,19	3,2	1,06	6,4	0,50	Coll. EM	Half Moon Reef, Tobago Cays, Grenadines, 2 m, rocks
4	37,32	18,60	17,86	30,21	27,09	0,62	0,90	0,19	5,9	1,58	12,4	0,48	Coll. EM	Saline Bay, Saline Isl., Carriacou Isl., Grenadines, 2 m
5	30,85	15,00	14,51	25,81	23,13	0,58	0,90	0,16	3,4	1,10	6,71	0,51	Coll. EM	Carriacou Isl.
6	35,66	17,47	16,27	28,76	26,82	0,61	0,93	0,19	5,0	1,40	10,14	0,49	Coll. EM	South Grenada
7	27,63	13,17	12,51	21,63	19,32	0,61	0,89	0,22	2,4	0,87	4,55	0,53	Coll. EM	Grenadines
8	30,09	14,52	13,75	23,62	20,87	0,61	0,88	0,22	3,1	1,03	6,01	0,52	Coll. EM	Grenadines
9	27,92	13,91	12,85	22,16	19,48	0,63	0,88	0,21	2,4	0,86	4,99	0,48	Coll. EM	Grenadines
10	31,41	16,04	15,24	25,55	22,19	0,63	0,87	0,19	4,3	1,37	7,68	0,56	Coll. EM	Calliste, Grenada
11	24,91	12,76	11,80	20,30	18,64	0,63	0,92	0,19	2,2	0,88	3,75	0,59	Coll. EM	Glover Isl., Grenada
12	32,35	15,62	14,73	25,63	24,19	0,61	0,94	0,21	4,0	1,24	7,44	0,54	Coll. EM	Saint George, Grenada
13	31,94	16,19	15,24	24,37	23,01	0,66	0,94	0,24	3,9	1,22	7,88	0,49	Coll. EM	Grenada
Average	32,2					0,61	0,90	0,19		1,22		0,51		
Extremes	28 - 41					0,58 - 0,66	0,86 - 0,94	0,16 - 0,24		0,9 - 1,8		0,45 - 0,59		
<i>T. julieandreae</i> (Cargile, 1995)														
1	23,76	11,11	10,71	17,69	17,13	0,63	0,97	0,26	1,50	0,63	2,8	0,53	Coll. EM	Honduras
2	25,49	11,86	11,43	18,82	18,50	0,63	0,98	0,26	1,90	0,75	3,5	0,55	Coll. EM	off shore banks, Honduras
3	20,76	9,52	9,22	15,70	14,28	0,61	0,91	0,24	1,10	0,53	1,8	0,60	Coll. EM	Gorda bank, Honduras, 18 m
4*	15,23	7,09	6,74	10,31	10,17	0,69	0,99	0,32	0,30	0,20	0,7	0,41	Coll. EM	Honduras
5*	16,68	7,76	7,61	11,40	10,97	0,68	0,96	0,32	0,60	0,36	1,0	0,61	Coll. EM	Honduras
6	20,58	9,66	9,30	14,11	13,32	0,68	0,94	0,31	1,10	0,53	1,8	0,59	Coll. EM	Gorda bank, Honduras, 20 m, sand
7	15,85	7,33	7,00	11,58	10,27	0,63	0,89	0,27	0,50	0,32	0,8	0,61	Coll. LL 7106	East Honduras
8	45,96	22,20	21,08	36,70	33,60	0,60	0,92	0,20	11,08	2,41	21,5	0,52	Coll. WJF 09480	Roatan Isl., Bay Isl., Honduras, 40-60 m
Average	23,0					0,64	0,94	0,27		0,72		0,55		
Extremes	15 - 46					0,60 - 0,69	0,89 - 0,99	0,20 - 0,32		0,2 - 2,4		0,41 - 0,61		

New first records of marine Gastropods for the Mediterranean and the Hellenic Seas

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Keywords

Greece, Mediterranean Sea, mollusca, new records.

Abstract

The work is part of an ongoing study on the marine malacofauna of Greece by June 2026, and reports with image documentation the presence of *Iothia* cf. *emarginuloides* (R. A. Philippi, 1868), *Littorina saxatilis* (Olivi, 1792), *Muricopsis vilhenae* Cachia, 2025 and *Spiralina alpinoligustica* (Sacco, 1892) in the Hellenic waters. Certain second image documented records are also included. Main taxonomic characteristics and ecological data, such as habitat, distribution and origin, are presented and discussed.

Introduction

The recent faunistic works on the Hellenic marine malacofauna has been recently presented in GALINO-MITSOUDI *et al.* (2023) and the relevant biodiversity was last included in an annotated catalogue by MANOUSIS (2025). At present, the modern life under new conditions, such as mobility, technology and climate change, affect and modify the aquatic life including its biodiversity. Attentive search based on material management and multifaceted research activity in the field continues to produce and present new records for the area of minute or of bigger size species, while international efforts supply the scientific community with new information on taxonomy and ecology. Consequently, this work presents some new species for the area with details for easier taxonomy.

Methods

Sampling, handling and species recognition were conducted according to MANOUSIS & GALINO-MITSOUDI (2014) and MBAZIOS *et al.* (2020) in certain locations of the Hellenic Seas. Live individuals were documented by night photography using an Olympus

TG 6 camera, macro setting and flash. All 1st and 2nd documented records for the Hellenic Seas are listed below with collection data. Findings are presented in Figures 1 and 2. Specimens are deposited in the premises of G. Zaminos. Scientists are welcome to access the biological material for inspection by appointment.

Results and Discussion

Results

Abbreviations: **G1, G2, G3** – First, second or third record for Greece; **MB** - Mixed Bottom; **MS1** – First documented record for the Mediterranean Sea;

Gastropoda

Iothia cf. *emarginuloides* (R. A. Philippi, 1868) (Fig. 1a). One shell, MB, 12 m, Gytheio, (36°45'58N, 22°33'53E), 30/4/26, MS1, description of *Iothia emarginuloides* in WARÉN *et al.* (2011). Our specimen is thin and fragile, semitransparent white, ovoid, resembling with the smooth valve, SMNH 102837, from Chile (WARÉN *et al.*, 2011), and of an *emarginula* without the fissure. The rather bulky apex is situated close to the frontal margin of the shell and turns slightly to the right. Height/length ratio 0.39. The sculptural decoration consists of fine, numerous radial ribs, crossed by much weaker comarginal cords that form tubercles as they pass over the ribs.

Littorina saxatilis (Olivi, 1792) (Fig. 1b). One shell, MB, 3 m, Agioi Apostoloi, Gulf of Chania, (35°30'50N, 23°58'30E), 15/5/26, G1, description in GOFAS *et al.* (2011).

Muricopsis vilhenae Cachia, 2025 (Fig. 1c and d). Two fresh shells, MB, 3 m, Agioi Apostoloi, Gulf of Chania, (35°30'50N, 23°58'30E), 15/5/26, G1, description in CACHIA (2025, page: 135, pl. 2 figs A-G).

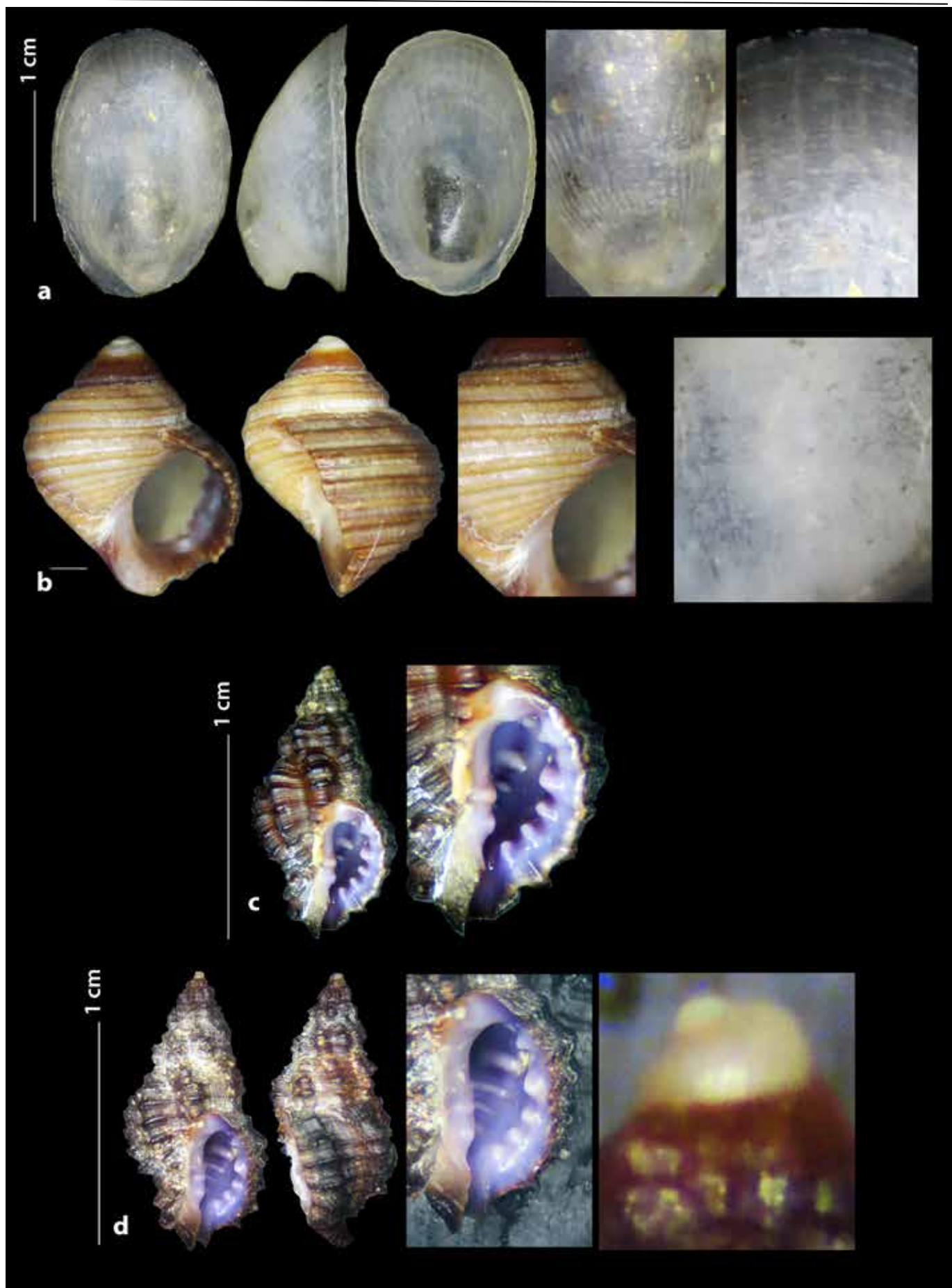


Figure 1: a. *Iothia cf. emarginuloides* (R. A. Philippi, 1868); b. *Littorina saxatilis* (Olivi, 1792); c and d. *Muricopsis vilhenae* Cachia, 2025. Barr = 1 mm, unless otherwise indicated.

Ividella ghisottii (van Aartsen, 1984) (Fig. 2a). One shell, MB, 12 m, Gytheio, (36°45'58N, 22°33'53E), 30/4/26, G1 MANOUSIS (2021), G2, description in GIANNUZZI-SAVELLI *et al.* (2014).

Spiralina alpinoligustica (Sacco, 1892) (Fig. 2b). One shell, MB, 12 m, Gytheio, (36°45'58N, 22°33'53E), 30/4/26, G1, description in GIANNUZZI-SAVELLI *et al.* (2014).

Trapania lineata Haefelfinger, 1960 (Fig. 2c and d). One live individual, on sponge, 10 m, Paligremnos Wall, Plakias, Crete, (35°10'44N, 24°33'23E), 23/5/2026, G1 (https://www.naturagraeca.com/ws/#_), G2, description in GOFAS *et al.* (2011)

Caloria elegans (Alder & Hancock, 1845) (Fig. 2e and f). One live individual, on sponge, 15 m, Paligremnos Wall, Plakias, Crete, (35°10'44N, 24°33'23E), 23/5/2026, G1 (POURSANIDIS *et al.*, 2009), G2 (https://www.naturagraeca.com/ws/#_), G3, description in GOFAS *et al.* (2011)

Discussion

Iothia cf. *emarginuloides*. Our specimen strongly resembles that of *I. emarginuloides* (R. A. Philippi, 1868), a rather recently described species from Beagle Channel, Argentine, South Chile and the Antarctic, that exhibits a sculptural variability of its shell from strongly to almost smoothly sculptured specimens, knobs on the crossings of the axial with the growth lines, a characteristically “emarginuloides” elliptical shell with dense axial decoration, and height/length ratio 0.33 (WARÉN *et al.* 2011, page 5, Figures 5 and 6; page 7, Figures 16-18). Its miniature and fragile shell can easily be overlooked or broken, or mistaken for a juvenile of some kind of *Emarginulla*, or even members of the family Lepetidae like *Iothia fulva* (O. F. Müller, 1776) which bears a less bulky apex, a wider shell and is fulvous in colour (see also, WARÉN *et al.* 2011, page 5, Figure 9). As the identity of *I. emarginuloides* is decisively determined by means of anatomical and morphological studies we refrain from omitting “cf.”. *Littorina saxatilis* is an already known from the central Mediterranean species. *M. vilhenae* is a rather recently described species that differs from the sympatric *M. cristata* (Brocchi, 1814) by its bolder sculpture, a pale violet aperture, and a non-projecting siphonal canal. CACHIA (2025) simply reports differences in the living animals of *M. vilhenae* and *M. cristata* but he shows as discriminative characters only those of the shell, especially of the internal lip of the aperture by the columella that it is supposed not to bear protruding teeth, though these are present in his images. Consequently, we tend to accept that this last characteristic shows some diversity in terms of its intensity. *Ividella ghisottii* and *Spiralina alpinoligustica* are long known species from all over the Mediterranean

but the Hellenic Seas. The goniodoridid *Trapania lineata* has exhibited a very limited variability and can be observed in almost all months of the year (FURFARO *et al.*, 2020).

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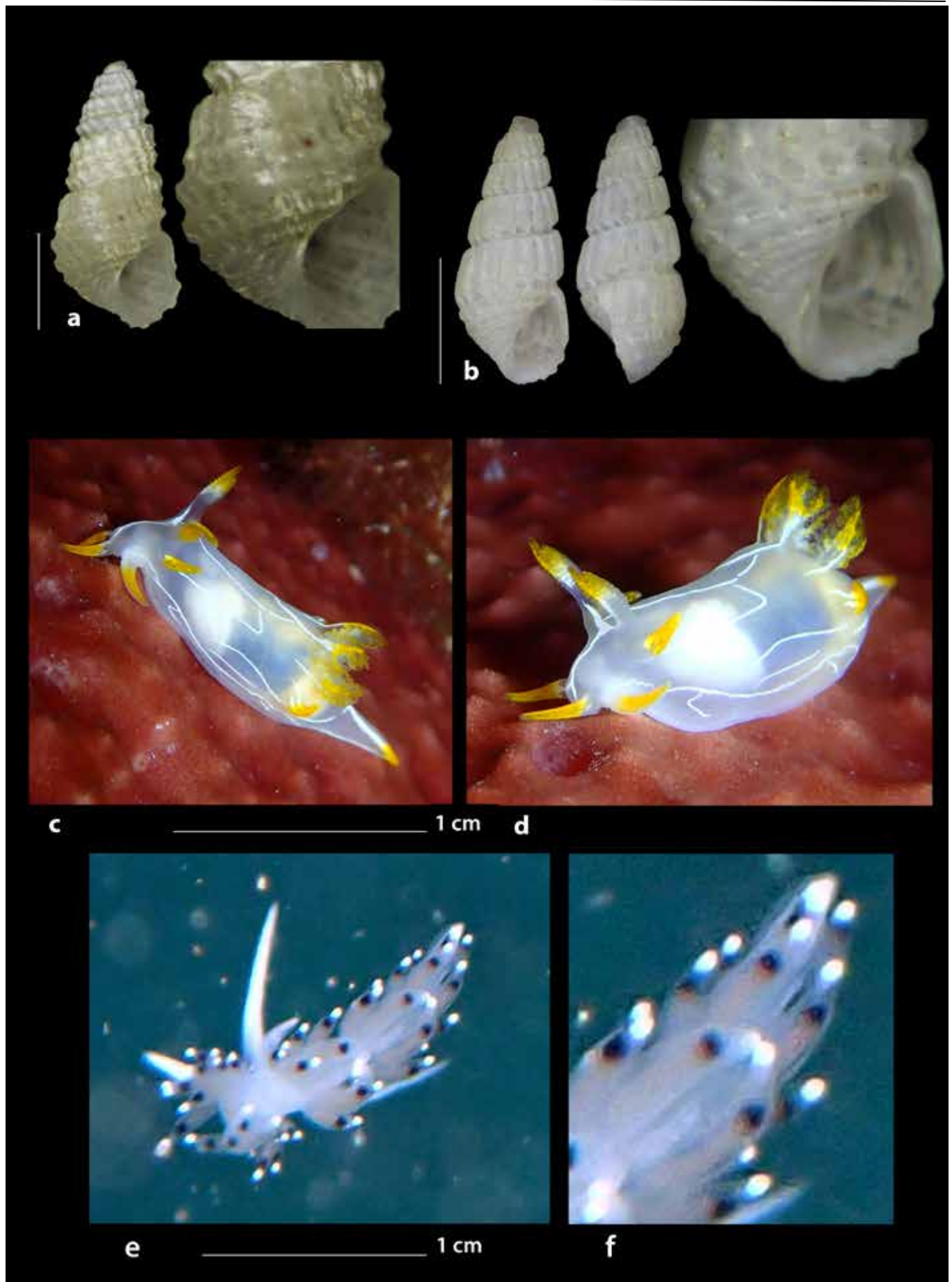


Figure 2: a. *Ividella ghisottii* (van Aartsen, 1984); b. *Spiralina alpinoligustica* (Sacco, 1892); c and d. *Trapania lineata* Haefelfinger, 1960; e and f. *Caloria elegans* (Alder & Hancock, 1845). Barr = 1 mm, unless otherwise indicated.



Barycypraea fultoni (G. B. Sowerby III, 1903) sur sa ponte, Mozambique. Photo J. Rosado