

## Important editorial note

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After a period of twelve years of publishing papers and carrying out the difficult and troublesome task being the responsible editor of '*Neptunea*', I now feel some reflections on the past and the future are needed. The section '*Coast*' of the Belgian Society for Conchology originally thought there was an urgent necessity to establish a full-colour, A4-sized magazine for the Belgian shell collector in Dutch at an affordable price. The plan was to write papers with practical hints, book reviews, travel stories and possibly records of new species. From 2002 to 2005 papers were mainly published in Dutch (some papers have also been translated into French) but after receiving many positive reactions from foreign countries, initially from Germany, the Netherlands, France and Spain, later on from the USA (several institutes are now a regular customer), the board of our society decided to use only English as a current language. This allowed us to increase the scientific character of the papers and to publish descriptions of new species.

Although travel stories by Belgian globetrotters such as Jean-Etienne Ghyoot, Johan Moerman and Jacques Senders were fascinating, shell collectors on the other hand proved to be mainly interested in the identification of unknown shells and above all the description of new species. The series about '*Deep-water molluscs in the Mozambique Channel*' was a real hit and we are at present still overwhelmed with inquiries for copies. Many interesting and new species were mentioned without formal descriptions. This was really the go-ahead to start publishing papers on new species. Although the first one – *Bolma christianeae* – later on proved to be only a form of *Bolma jacquelineae*, a considerable number of new species have been described in the past ten years, mainly by me or with Johan Verstraeten as the second author: *Bolma madagascariensis* (confirmed as valid after molecular study by the MNHN), *Anacithara biscoitoides*, *Clavatula christiana*, *Clavatula congoensis*, *Clavatula delphinae*, *Clavatula hattenbergeri*, *Clavatula knudseni*, *Clavatula matthiasi*, *Clavatula nathaliae*, *Clavatula pseudomystica*, *Clavatula quinteni*, *Clavatula xanteni*, *Conus trencarti*, *Crassisipira pseudocarbonaria*, *Diodora canariensis*, *Distorsio globosa*, *Drillia annielonae*, *Drillia ghyooti*, *Drillia katiae*, *Glycymeris rafaelmesai*, *Nucula mariae*, *Phenacovolva patriciae*, *Pugilina dirki* and many others by authors like Rolán, Horro and Fehse (CERITHIOPSIDAE, TRIVIIDAE, ...). A keen observer will remark that most of these shells occur along West African coasts. The high frequency of publishing those new species within a time span of a few years was remarkable, but could be explained by our vigilant attitude during about 20-30 years until enough material and data could be gathered.

Our project has never been subsidised by any person nor organisation at the local or federal level or by a substantial fund. There are no gains from advertisements and cooperation is a honorary task. Even the board of the Belgian Society for Conchology (headquarters at Antwerp) did not suggest any financial help and '*Neptunea*' even became considered as a kind of an annoying antagonist.

Of course nobody could understand how it was possible to issue a magazine of 30-36 pages with at least three quarters of every issue featuring high quality colour plates at a low price.

During the first eleven years a laser printer or an inkjet printer was used, but last year (2013) we finally made the switch to professional printing with stapled pages instead of the previous loose-leaf editions with a plastic binder as a result. The whole project was made possible by prudent financial management. There is no obligation for a yearly subscription and each issue can be separately obtained at the price of € 12 (unchanged for the past twelve years!).

Like many other magazines, the editorial office of '*Neptunea*' is suffering from a poor offer of papers to be published. Many authors and non-professional conchologists drop out for several reasons: passing away, illness, the fear of making the wrong decisions in describing a new species and countering the critical opinions of colleagues (?) or in revising known species or genera, lack of time or any other personal reason.

In fact, our situation is still more acute. During the past few years the responsible editor became more and more a jack-of-all-trades: the different tasks such as writing and correcting papers, making thousands of photographs to edit with Photoshop, printing and organising the financial administration in particular, the sales management of the issues became really more than a normal person is able to carry.

**So, time has come to change the frequency of the edition of issues. '*Neptunea*' will still be published in volumes but each volume will not cover one year but will contain four issues spread over an undetermined period. The quality of the papers will be improved as from now on we no longer accept photographs of bad quality (low resolution, unusual colours by using the wrong white balance). The number of approached referees will be increased and if necessary the price of the issues will be decreased. Moreover, we will offer PDF-versions of single papers published in sold-out issues free of charge on special demand.**

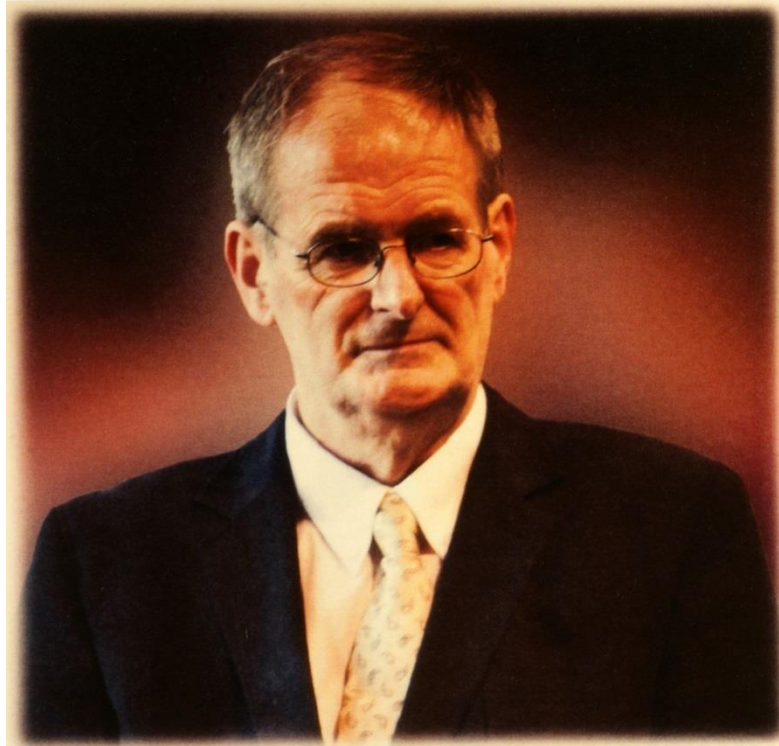


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## In memory of Jean-Paul Kreps

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### J.-P. Kreps

° Knokke (Belgium) 17-02-1952 - † Knokke 11-04-2013

Last year J.-P. Kreps passed away at the age of 61. He was above all an employee with the ACV (Algemeen Christelijk Vakverbond – General Christian Labour Union). Thanks to his work he was able to contact many fishermen in Zeebrugge and Oostende (Belgium). Jean-Paul already became interested in collecting shells at a very early age. Nearly his whole life was dedicated to shell collecting with the aim to gather a nearly complete collection of southern North Sea shells and even all European shells in general, although he knew quite well this was only a dream which could never be realised by any amateur collector as many shells from deeper waters only belong to museum collections as the result of dredgings by special expeditions. Nevertheless, Jean-Paul was very persistent and he tried to obtain rare shells from scientific institutes and museums by exchanges. He transferred - for an unknown reason - his

collection to the RBINS (Royal Belgian Institute for Natural Sciences (RBINS, Brussels, Belgium) a decade ago. However, less than ten years later he managed to establish a new fantastic collection of more than 2,000 different European and NW African species. As he possessed an enormous stock of shells from the North Sea, the English Channel, the Celtic Sea and especially from the Bay of Biscay he was able to make exchanges with foreign shell collectors mainly in the Netherlands, France, Spain, Greece and Italy.

Thirty years ago he became a member of the Belgian Society for Conchology and the daughter association in Bruges. We remember him as an enthusiastic narrator of his trips to Denmark, the Netherlands and especially Brittany (France). He was often blamed to lack an academic degree. Indeed, he missed the real scientific knowhow to publish his own papers but he was of

indispensable help to Belgian and Spanish authors treating European and especially North Atlantic molluscs due to his knowledge of the habitat of many molluscs and his contacts with fishermen and local shell collectors in Brittany (France). Many authors of scientific papers and monographs expressed their gratitude towards Jean-Paul.

After the screening of his first collection by Jan Mees and Jan Haspelslagh (VLIZ)<sup>1</sup> he was blamed to practice 'a sort of carelessness' in the use of his labels of the shells brought up by fishermen from Zeebrugge. Labels from these shells proved to be incomplete in his shell cabinet but complete additional data were kept in the stock. Fortunately, Jean-Paul had taken into account the remarks of the screening people and later on he managed to keep the different samples in separate bags. At present, the second collection of J.-P. Kreps, has found a resting place in the F. Nolf-collection in expectation of a definitive place in a museum where it will be accessible to other investigators. It is really incredible that Jean-Paul managed to compile a new – and even larger and better - collection in less than ten years. The shells of the whole collection and the accompanying stock have now

thoroughly been cleaned and the name labels have been reviewed or adjusted based on the latest reviews in monographs and scientific literature. The complete collection has been computerised in the Nolf-collection and marked with a 'Kreps'-code. So, researchers or collectors will be able to make use of the labels later on.

The second collection contains more than 2,000 different sea shells from the NE Atlantic (from the Barents Sea in the north to NW Africa in the south) and from the Mediterranean Sea (from Gibraltar in the west to Israel in the east). Each species is represented by several samples from different localities. A large number of high quality specimens in each sample is present so as to display the phenotypic variability of each locality supported with very detailed data.

We are thankful to Jean-Paul for bringing together so much material from his own trips to Brittany and from fishermen trawling in the North Sea, the Celtic Sea and the Bay of Biscay. We will always remember him as a dedicated shell collector who talked with great passion about his hobby.

The following list is an overview of his most important publications in chronological order:

- Kreps, J.-P., 2001. An annotated checklist of Northsea marine Bivalve Molluscs. 18 pp.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part I. *Neptunea*, **7**(3): 1-35.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part II. *Neptunea*, **8**(3): 1-28.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part III. *Neptunea*, **9**(1): 1-34.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part IV. *Neptunea*, **10**(1): 1-32.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part V. *Neptunea*, **10**(3): 1-32.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part VI. *Neptunea*, **10**(4): 1-34.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part VII. *Neptunea*, **11**(1): 1-32.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay with similar representatives from adjacent waters: Part VIII. *Neptunea*, **11**(2): 1-34.

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<sup>1</sup> Mees, J. & Haspelslagh, J., 2001. Verslag bezoek schelpencollectie J.-P., Kreps (6 september 2001): in manuscript (screening and report of the J.-P. Kreps collection)

# ***Distorsio globosa* (Mollusca: Gastropoda: Personidae) a new species from West Africa**

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**Keywords:** *Distorsio globosa*, Mollusca, Gastropoda, PERSONIDAE, new species, Angola, Guinea-Bissau.

**Abstract:** After thirty years of thorough investigation on the identity of all *Distorsio* species - especially along the West African coasts - we came across specimens from Angola which were similar to *Distorsio perdistorta* Fulton, 1938, but which differed by the brown colouration of the parietal shield, the external globular outline, the extreme distortion of the whorls and the smaller number of axial plicae. The presence of this new species was already perceived by other authors (Kronenberg, 1999) and Alan Beu (pers. communication). However, both authorities in this matter were very cautious and emphasised that examination of more material would be necessary before concluding that an unknown *Distorsio* had escaped the look of earlier researchers. At present, more specimens from Guinea-Bissau have been studied confirming the differences with *Distorsio perdistorta* Fulton, 1938, a species with a nearly worldwide distribution, from which specimens could be gathered from Transkei (South Africa) and Guinea-Bissau.

## **Abbreviations:**

CFN: Private collection of Frank Nolf (Oostende, Belgium)

CJV: Private collection of Johan Verstraeten (Oostende, Belgium)

CSH: Private collection of Steve Hubrecht (Heverlee, Belgium)

IGNS: Institute of Geological and Nuclear Sciences, Lower Hutt, New Zealand

PEMARCO: Pêche Maritime du Congo

RBINS: Royal Belgian Institute for Natural Sciences, Brussels, Belgium.

**Introduction:** Hundreds of interesting shells were gathered by A. Coenye, a Belgian navigating officer of PEMARCO, operating off the coasts of Congo and Angola in the years 1960-1973. The late Mrs. Kermarrec-Labisse (1908-1992) obtained most of his collecting efforts which are now part of the author's collection. Between Cabinda (Angola) and Walvis Bay (Namibia, SW Africa) a lot of new or uncommon

species were dredged: *Acesta angolensis* Adam & Knudsen, 1955; *Adinopsis skoogi* Odhner, 1923; *Aporrhais senegalensis* Gray, 1838, spectacular specimens of *Aporrhais pesgallinae* Barnard, 1963; *Bolma jacquelineae* var. *christianeae* Nolf, 2005; *Clavatula quinteni* Nolf & Verstraeten, 2006; *Clavatula xanteni* Nolf & Verstraeten, 2006; *Cymbium patulum* (Broderip, 1830); *Cymbium* nov. sp.; *Europocardium nolfi* Swinnen, 2010; *Fusinus albinus* A. Adams, 1856; giant specimens of *Fusinus caparti* Adam & Knudsen, 1955; *Glycymeris rafaelmesai* Nolf & Swinnen, 2013; large specimens of *Latirus mollis* G.B. Sowerby III, 1913; *Nucula mariae* Nolf, 2005; *Phenacovolva patriciae* Nolf 2008; *Pteropurpura dearmatus fairiana* (Houart, 1979); *Xenophora testigera digitata* von Martens, 1878 and many others. Among them also a few specimens of a strange and confusing *Distorsio* sp., characterised by its globular outline, the extreme distortion of the whorls and the brown colouration of the parietal shield. However, thirty years ago not enough material was available to ensure this was a new species. The shells were sent to Gijs Kronenberg (the Netherlands), a specialist in the matter of PERSONIDAE, who in turn asked the opinion of Alan Beu (IGNS). Both assumed that this may represent a new species but stated that examination of more Atlantic material would be necessary. Some years ago, I was finally able to gather more specimens from Guinea-Bissau, an area far beyond the type locality, Angola. No material was obtained from the Gulf of Guinea (Gabon, Nigeria, Benin, Ghana, Ivory Coast, ...) but on the other hand I managed to collect specimens of *Distorsio perdistorta* from the same area as *Distorsio globosa* nov. sp.. Other specimens of this species from South Africa, Japan and the Philippines have been compared with the new species.

## **Type material:**

**Holotype:** Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 65.95 mm. RBINS (IG 32817, MT 3166) (Pl. III, Figs 7-10).

## **Paratypes**

**Paratype 1:** Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a

depth of 110 m. 1964. 54.82 mm. CFN. (Pl. I, Figs 1-3).

**Paratype 2:** Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 65.05 mm. CFN. (Pl. II, Figs 4-6).

**Paratype 3:** Guinea-Bissau. 11°39' N/ 17°05' W. Trawled by fishermen at -35 m. 1996. 76.14 mm. CFN. (Pl. VI, Figs 18-20).

**Paratype 4:** Guinea-Bissau. 11°39' N/ 17°05' W. Trawled by fishermen at -35 m. 1996. 78.85 mm. CFN. (Pl. VII, Figs 21-23).

**Paratype 5:** Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 61.28 mm. CSH. (Pl. IV, Figs 11-13).

**Paratype 6:** Soyo, N Angola. Trawled at a depth of 90 m. 12 April 2013. 56.74 mm. CJV. (Pl. V, Figs 14-15).

**Paratype 7:** Soyo, N Angola. Trawled at a depth of 90 m. 12 April 2013. 54.61 mm. CJV. (Pl. V, Fig. 16).

**Paratype 8:** Ambriz, Angola. Trawled at a depth of 95 m. 9 May 2012. 42.34 mm. CJV. (Pl. V, Fig. 17).

**Type locality:** Ambriz, Angola. 07°50' S/ 12°30' E.

**Measurements:** The length of the specimens varies between 54 and 80 mm.

**Description:** Shells of medium to large size (max. 80 mm). Protoconch (text Fig. A) small, partly sunken, multispiral with about 2-2.5 whorls, smooth and polished. Number of teleoconch whorls: 9-10, separated by a clear suture and a rather wide concave subsutural ramp. Sculpture with 13-22 (specimens from North Angola) or 26-27 (specimens from Guinea-Bissau) poorly developed axial cords from penultimate varix to the last one. Body whorl with eight major spiral cords and four narrower ones on the siphonal canal, each alternating with 2-3 secondary spiral cords, the transition between the siphonal canal and the dorsum is well defined. The transection of the spiral and the axial sculpture causes a reticulated network with granular nodules, which are small, clear, strong and angular. Outer lip is expanded, rounded, sometimes slightly serrated abapically, bearing more or less developed ridges which run towards the apertural teeth.

First postnuclear whorls show an apical angle of an average of 43°20' causing an elongate outline (especially when compared with *D. perdistorta*). Last 3-4 whorls, especially the body whorl inclined over 45 degrees in relation to previous whorls, resulting in a very distorted outlook of the whole shell. Moreover, as these last whorls are

very globular and extremely coiled over a relatively short distance, a rounded bulge arises at the left of the aperture (in a conventional apertural view) showing a sunken collapsed mouth, a unique feature among all known personids. The eccentric coiling is stronger than in *D. perdistorta* and sometimes the penultimate whorl even extends above the last whorl.

Aperture narrow and small, with eight denticles. Columellar nearly straight, with about 16-17 tiny denticles decreasing in size anteriorly, columellar cavity narrow with one relatively poorly developed granular ridge. Siphonal canal rather short. Parietal shield large, with spiral sculpture of the previous whorl visible, nearly completely brown except for the white blotch in the aperture. The brown colouration extends into the columellar part, which is totally brown coloured except for the white denticles. The ultimate varix is very prominent, inclined by an angle of about 45° downwards in relation to the margin of the parietal shield. On the other hand the adapical part of the outer lip extends upwards as a flat flange with an angle of about 150° relative to the varix. The margin of the outer lip always shows brown streaks. All the whorls are brown coloured, subsutural and shoulder cords often slightly darker. The tip of the siphonal canal is pale cream. The periostracum is velvety brownish with fine long hairs in fresh specimens, otherwise bristled. The operculum is triangular with a submarginal nucleus (Pl. III, Fig. 10).

**Etymology:** The species name "*globosa*" derives from the Latin word "*globosus*" which means "*globular, spherical*" referring to the very swollen shell. This is the most turgid and most distorted species in the genus *Distorsio*, even more than *Distorsio perdistorta* Fulton, 1938.

**Habitat:** The new species lives at a depth of 35 m (Guinea-Bissau) to 110 m (North Angola), but no information is available on the kind of bottom it inhabits.

**Geographic range:** Most of the known specimens were trawled in northern Angola (Pl. I, Figs 1-3; Pl. II, Figs 4-6; Pl. III, Figs 7-10; Pl. IV, Figs 11-13; Pl. V, Figs 14-17). As two specimens from off Guinea-Bissau were also obtained (Pl. VI, Figs 18-20; Pl. VII, Figs 21-23) we can presume this species has a distribution range all over the Gulf of Guinea. As not enough shells are available from the West African fisheries at depths from 50 to 150 m it is impossible to have a clear view on the geographic range. Specimens of other West African *Distorsio* species, probably living in the Gulf of Guinea, were also difficult to obtain from that area.

**Discussion:** The new species appears to be rather unique among all personids concerning general outline, colouration of parietal shield and columellar part and the extreme distortion of the last 3-4 whorls. Two other personids occur along the West African coasts and archipelagos (Canary Islands, Cape Verde Islands, São Tomé and Príncipe): *Distorsio perdistorta* Fulton, 1938 and *Distorsio smithi* (von Maltzan, 1884):

- *D. perdistorta* (Pl. VIII, Figs 24-26; Pl. IX, Figs 27-29; Pl. X, Figs 30-34; Pl. XI, Figs 35-37; Pl. XII, Figs 38-40; Pl. XIII, Figs 41-43; Pl. XIV, Figs 44-46) shows a great similarity in several aspects, but differs from the new species as follows:

- 8-9 teleoconch whorls instead of 9-10;
- the subsutural ramp is poorly developed, whereas slightly concave in *D. globosa*;
- the first postnuclear whorls of the teleoconch show an average angle of 55°40' causing a wider appearance compared with *D. globosa*, of which the early whorls have a slenderer form (apical angle: ca. 43°): this is a very constant feature in both species;
- the last whorls are less humped compared with *D. globosa*;
- the aperture is less narrow and not collapsed;
- number of axial cords: 22-30 instead of 13-27;
- the nodules created by the intersection of axial and spiral cords are rounded instead of angular;
- the columella bears 12-14 denticles instead of 16-17;
- only the adapical part of the parietal shield has a brownish glaze; *D. globosa* shows a completely brown coloured parietal and columellar shield, with white denticles;
- the general colour of the whorls is white, instead of brown in the new species;
- olive to greenish periostracum with sometimes very long fine dark green hairs, reaching 11-12 mm in length.

- *Distorsio smithi* (von Maltzan, 1884). (Pl. XV, Figs 47-51; Pl. XVI, Figs 52-54; Pl. XVII, Figs 55-57; Pl. XVIII, Figs 58-62; Pl. XIX, Figs 63-65; Pl. XX, Figs 66-70):

- becomes much larger, to about 110 mm (coll. F. Nolf; Henning & Hemmen, 1993);
- very little distorted;
- slightly concave subsutural ramp;
- on the body whorl there are about ten primary cords and about seven secondary cords with seven more cords on the siphonal canal;

- subsutural ramp with two secondary subsutural cords, abapically followed by three primary cords, shoulder with two primary cords and a secondary cord in between;
- number of axial cords: 13;
- outer lip with five single denticles abapically, followed by five to seven double denticles;
- inside of outer lip: 10-11 teeth, most adapical one relatively large, often bifid, second one very small, third one broadened towards the lip;
- adapical part of the outer lip typically constricted, abapical part slightly expanded;
- siphonal canal long, nearly straight;
- columella strongly sinuous, with 18 denticles;
- an elongated parietal ridge opposite of the first abapical tooth runs into the aperture, with nearly next to it another one or two ridges;
- colour creamy white to pale brown, parietal shield and callus mottled with streaks of pale to dark brown, teeth and aperture white;
- tip of siphonal canal brown;
- olive-brown velvety periostracum.

Despite all these differences *D. smithi* was figured as '*Distorsio perdistorta* Fulton, 1938' by Hernández, Rolán & Swinnen (2011) (fig. 56A) and treated as '*Distorsio cf. perdistorta* Fulton, 1938' (sic) in the text. A similar confusion was made by Nordsieck & Garcia-Talavera (1979) in pl. 25, fig. 15 where the correct figure (*D. perdistorta*) was provided with the caption '*D. decussatus*'.

**Conclusion:** There are enough characteristics to differentiate *Distorsio globosa* from *Distorsio perdistorta* occurring in the same geographic area:

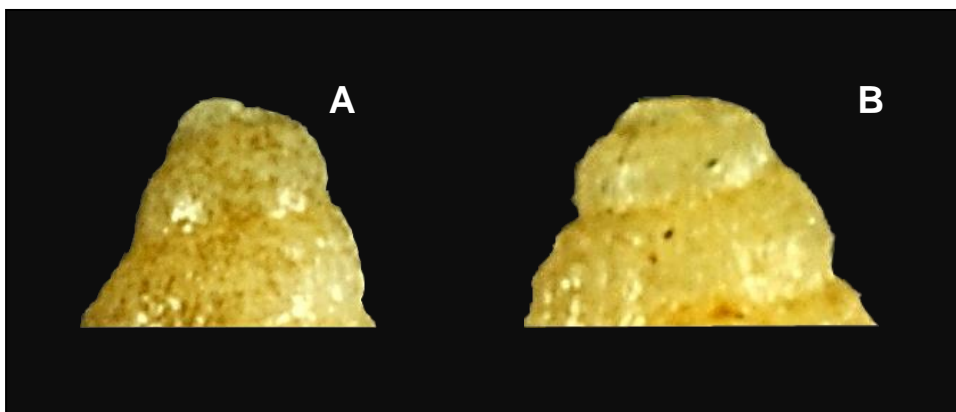
- one more whorl;
- smaller apical angle (ca. 43° instead of ca. 55°);
- slightly concave subsutural ramp;
- extreme distortion of the last 3-4 whorls giving the shell a globular appearance;
- collapsed mouth;
- smaller number of axial cords (13-27 instead of 22-30);
- larger number of tiny denticles on the columella (16-17 instead of 12-14);
- angular nodules at the intersection of axial and spiral cords;
- brown coloured parietal shield and columellar part;
- brown colour of the whorls, especially of the spiral cords.



**Acknowledgements:** I want to thank Gijs Kronenberg from Eindhoven, the Netherlands and Alan Beu (IGNS, New Zealand) for their cooperation in the search for the validity of the new species. Thierry Backeljau, Yves Samyn and Rose Sablon (all from the RBINS) were so kind as to give me the opportunity to study the different collections in the museum in Brussels. Johan Verstraeten (Oostende, Belgium) made critical notes as did David Monsecour (Aarschot, Belgium) who carefully corrected the English text. I am very grateful to both referees for their punctual revising.

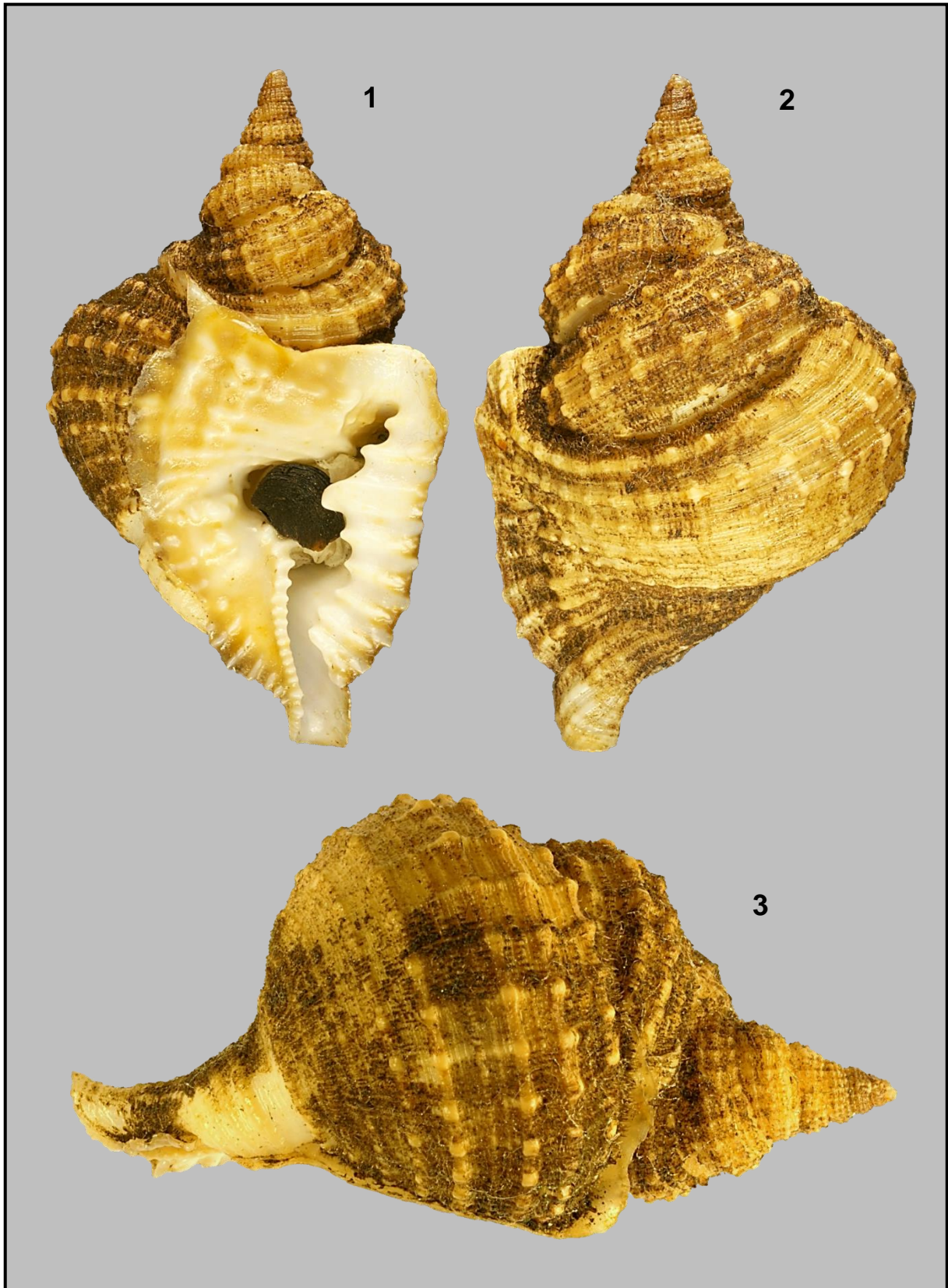
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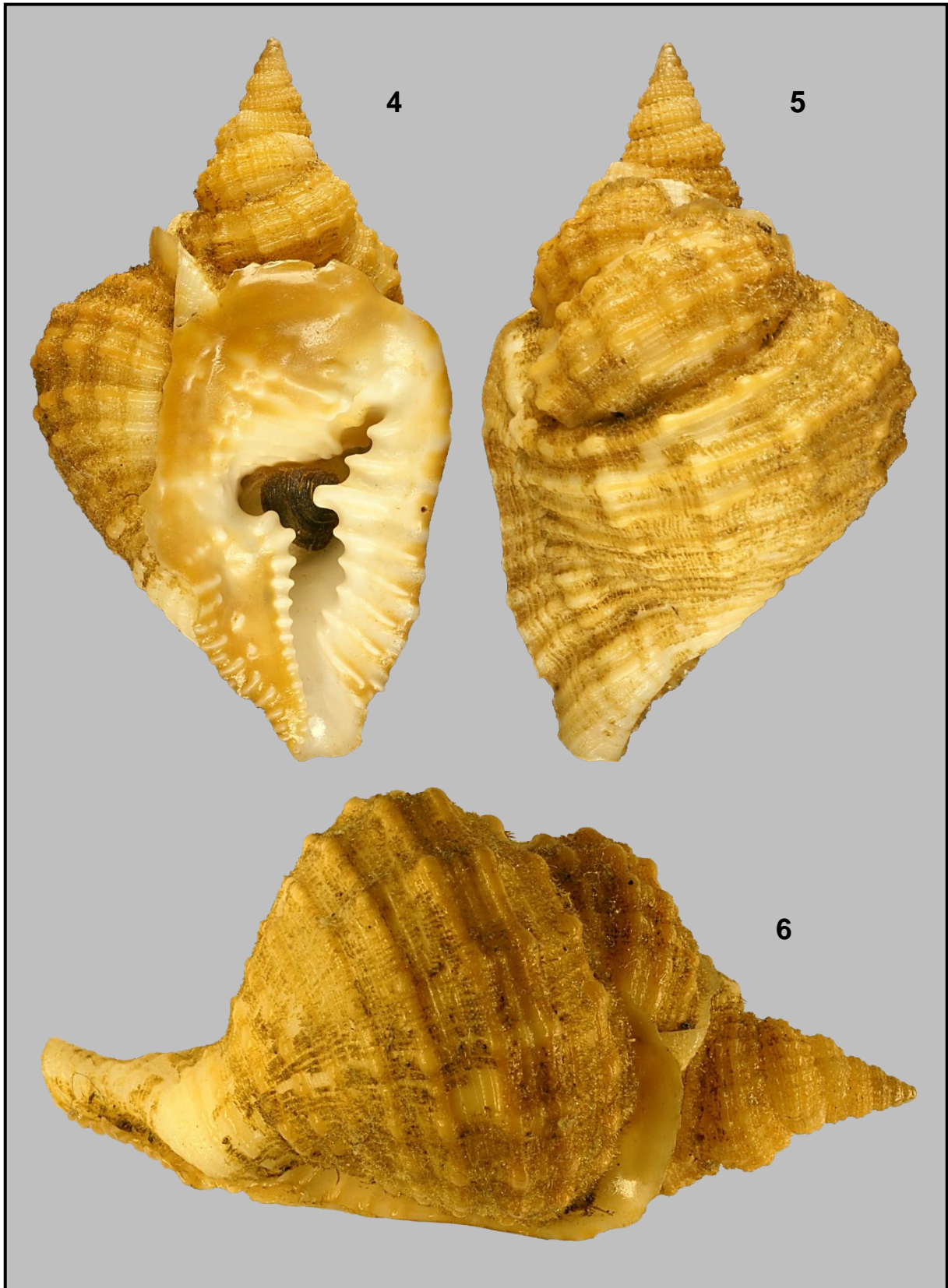


**Comparison between the protoconchs of  
*Distorsio globosa* (A) and *Distorsio perdistorta* (B)**



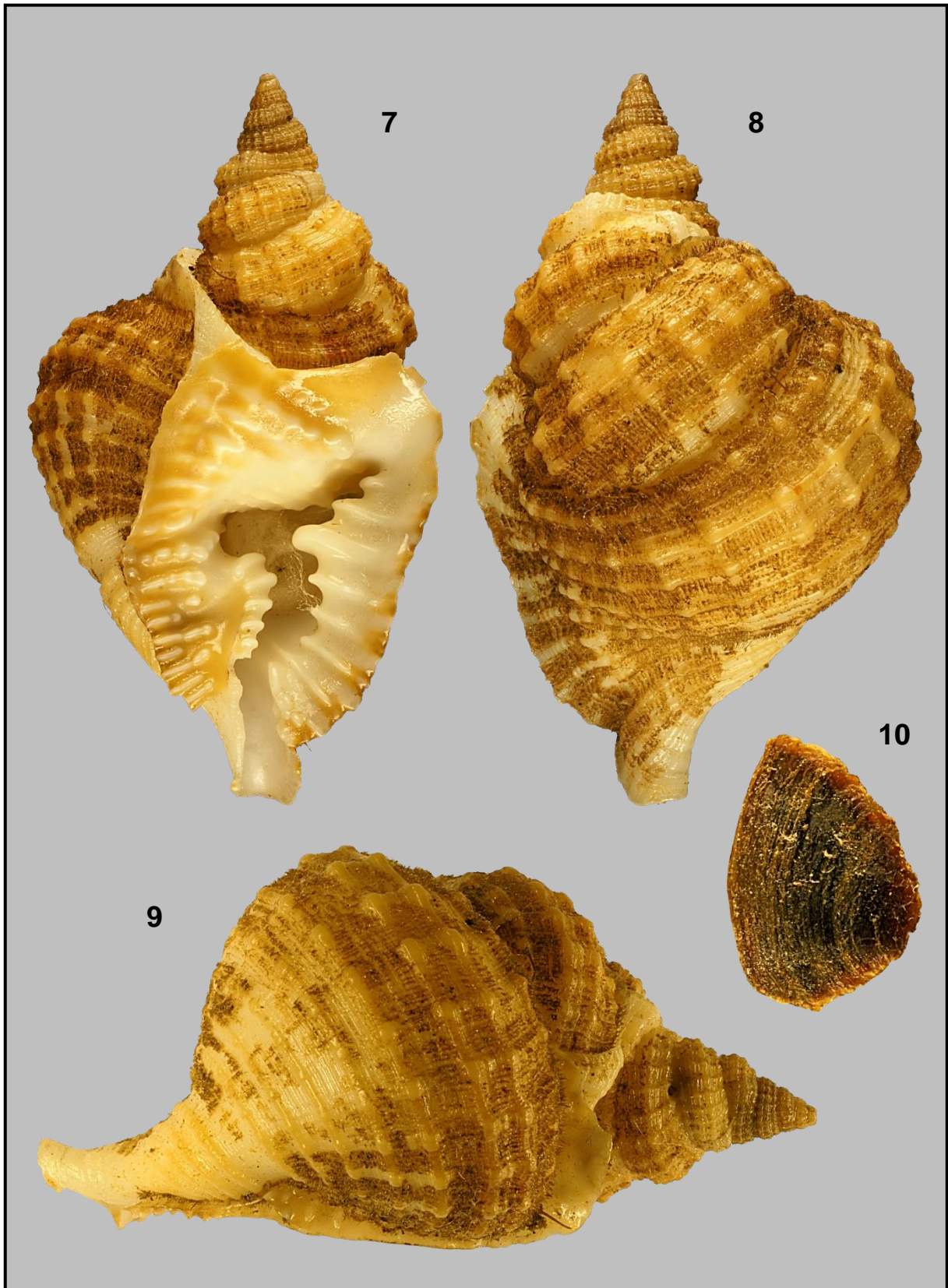


**Plate I.** Figs 1-3: *Distorsio globosa* nov. sp. Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 54.82 mm. Paratype 1. CFN.

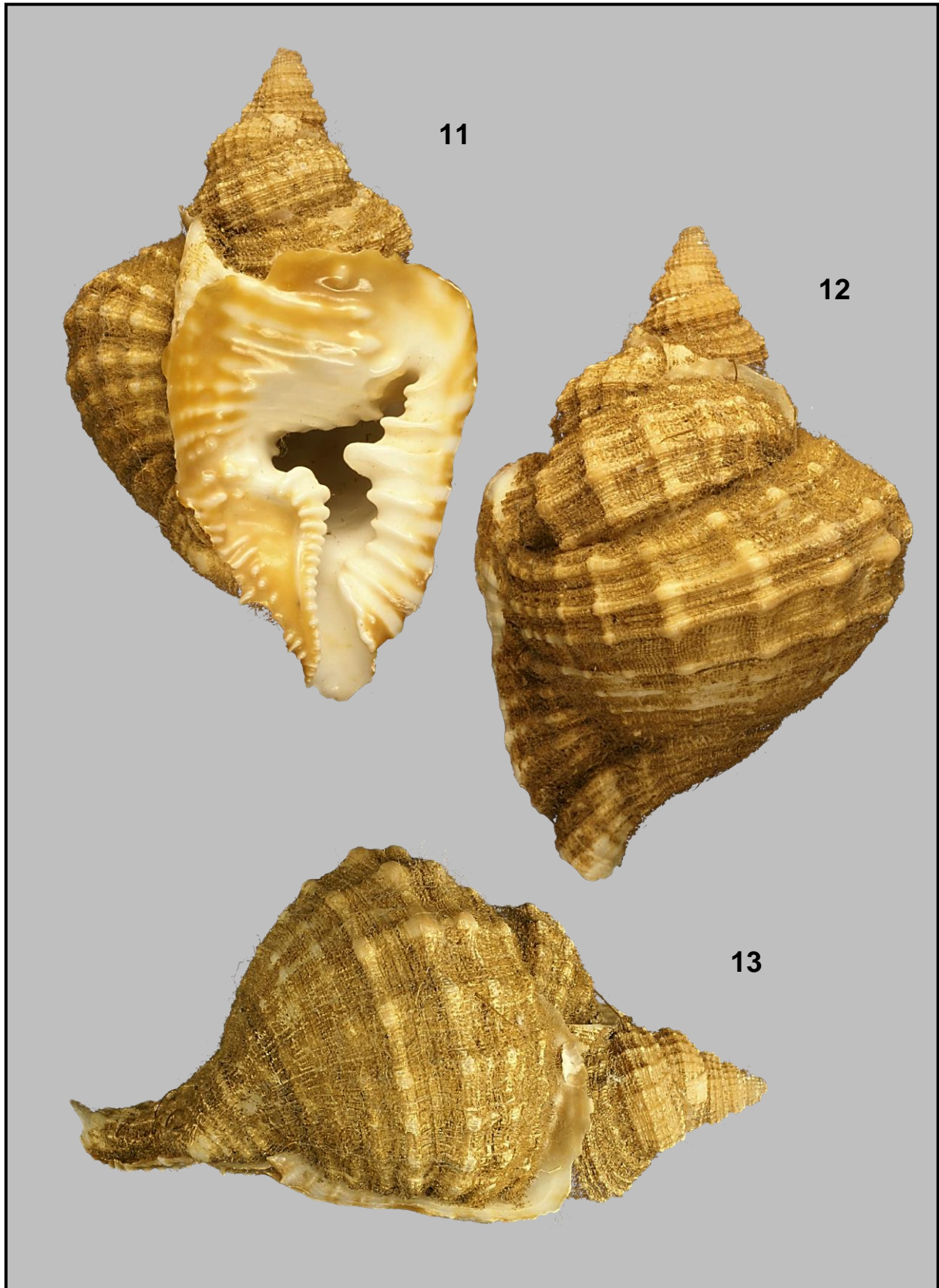


**Plate II.** Figs 4-6: *Distorsio globosa* nov. sp. Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 65.05 mm. Paratype 2. CFN.



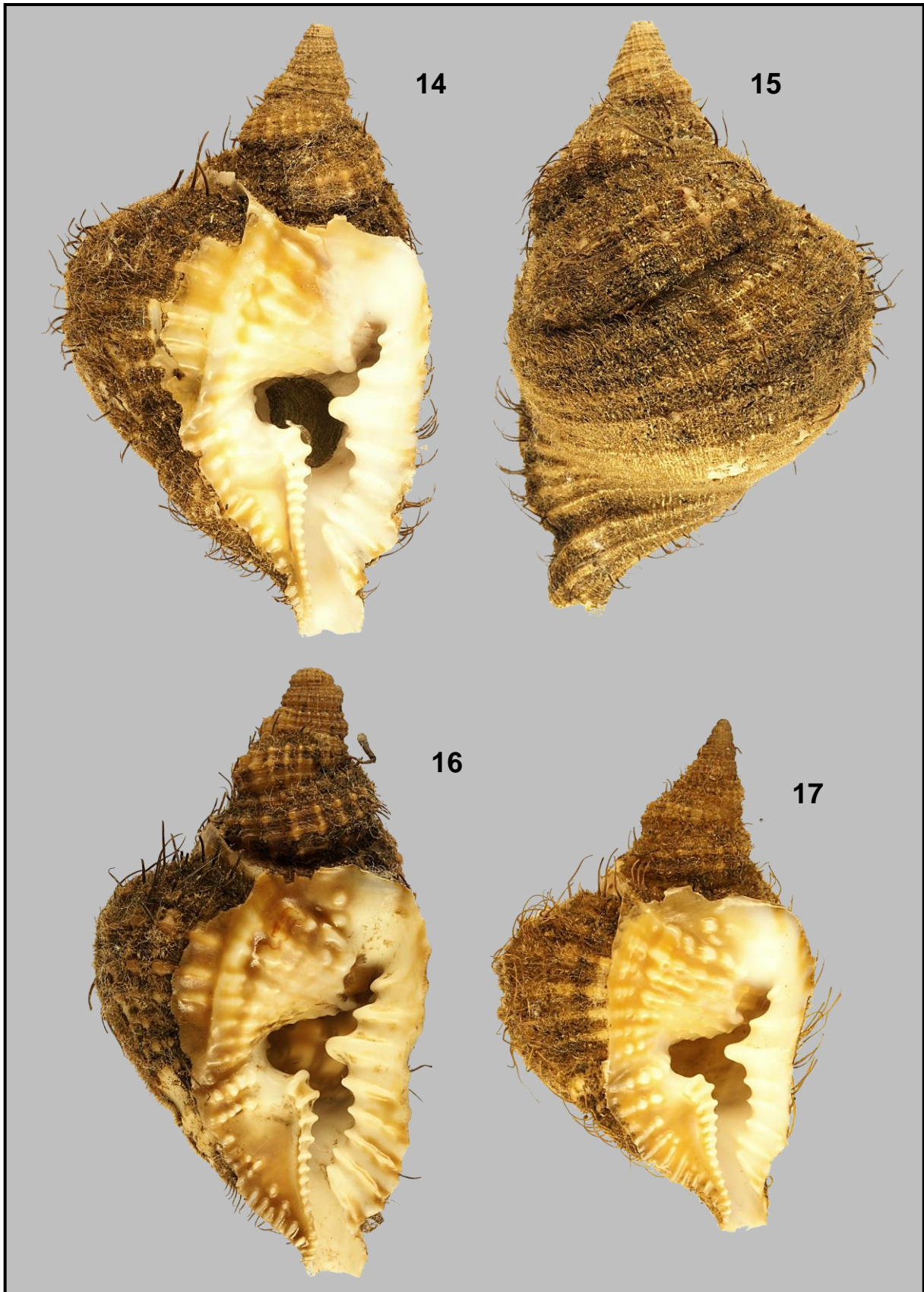


**Plate III.** Figs 7-9: *Distorsio globosa* nov. sp. Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 65.05 mm. Holotype. CFN; Fig. 10: operculum.

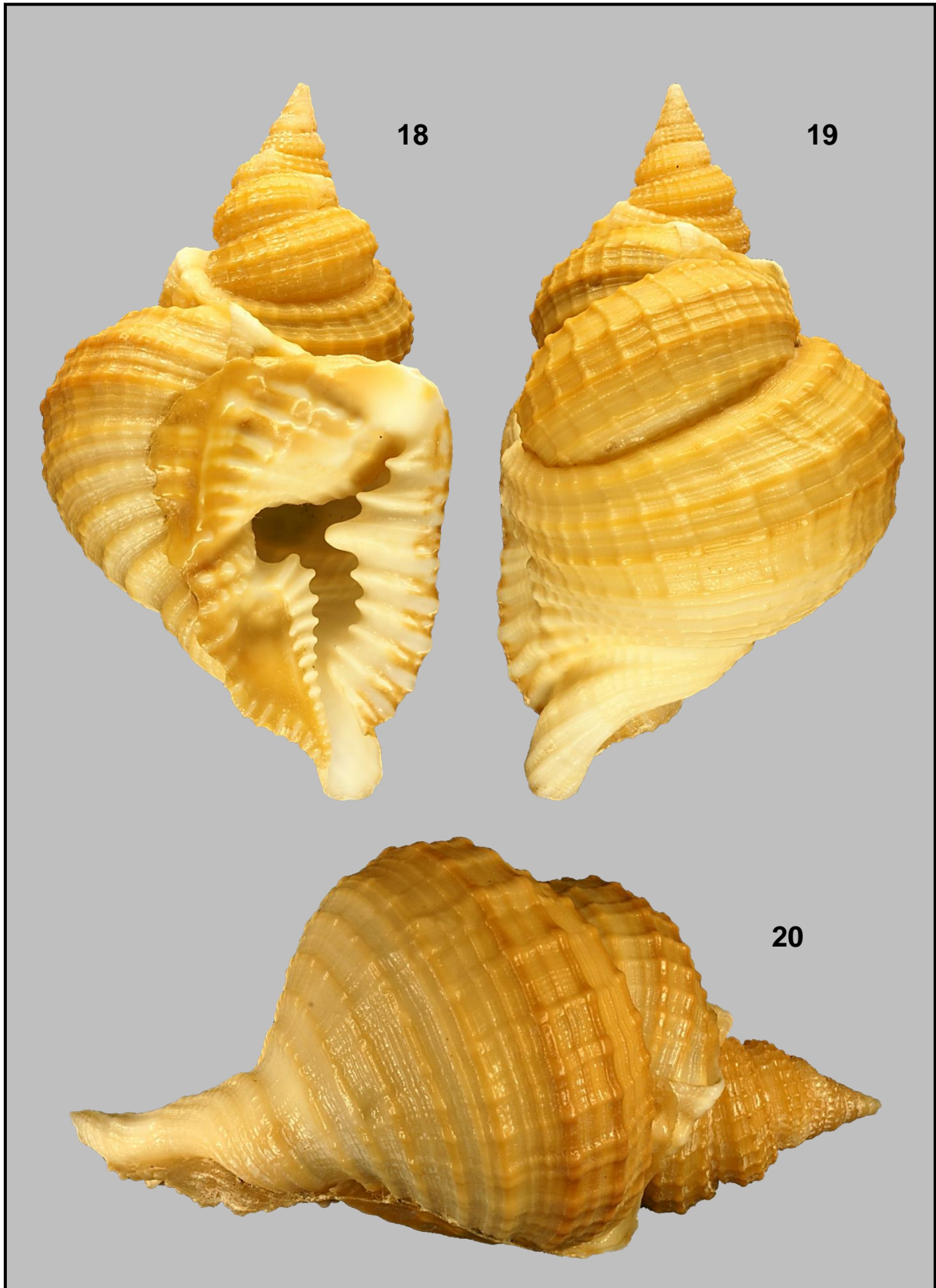


**Plate IV.** Figs 11-13: *Distorsio globosa* nov. sp. Ambriz, Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 1964. 65.05 mm. Paratype 5. CSH.

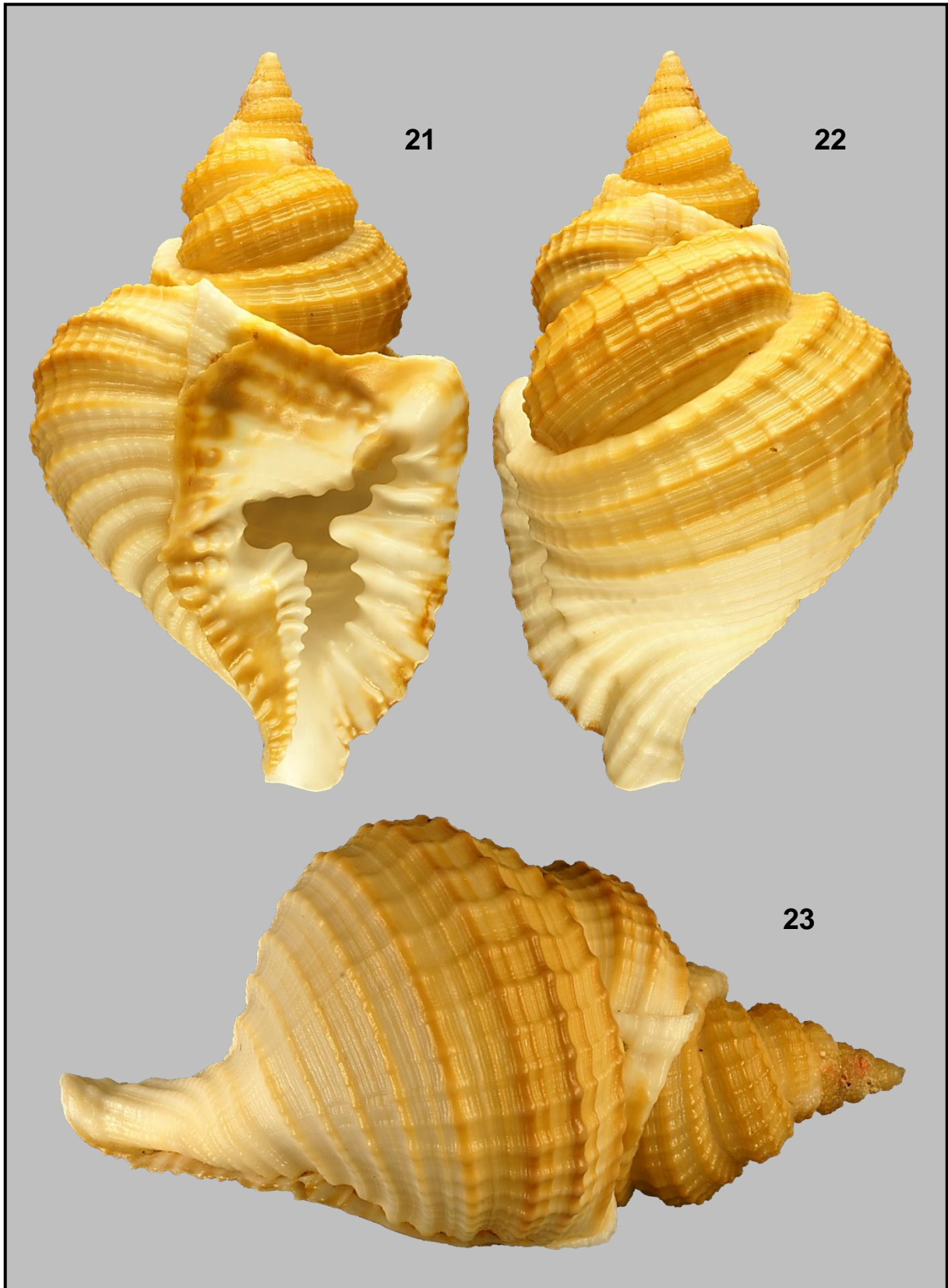




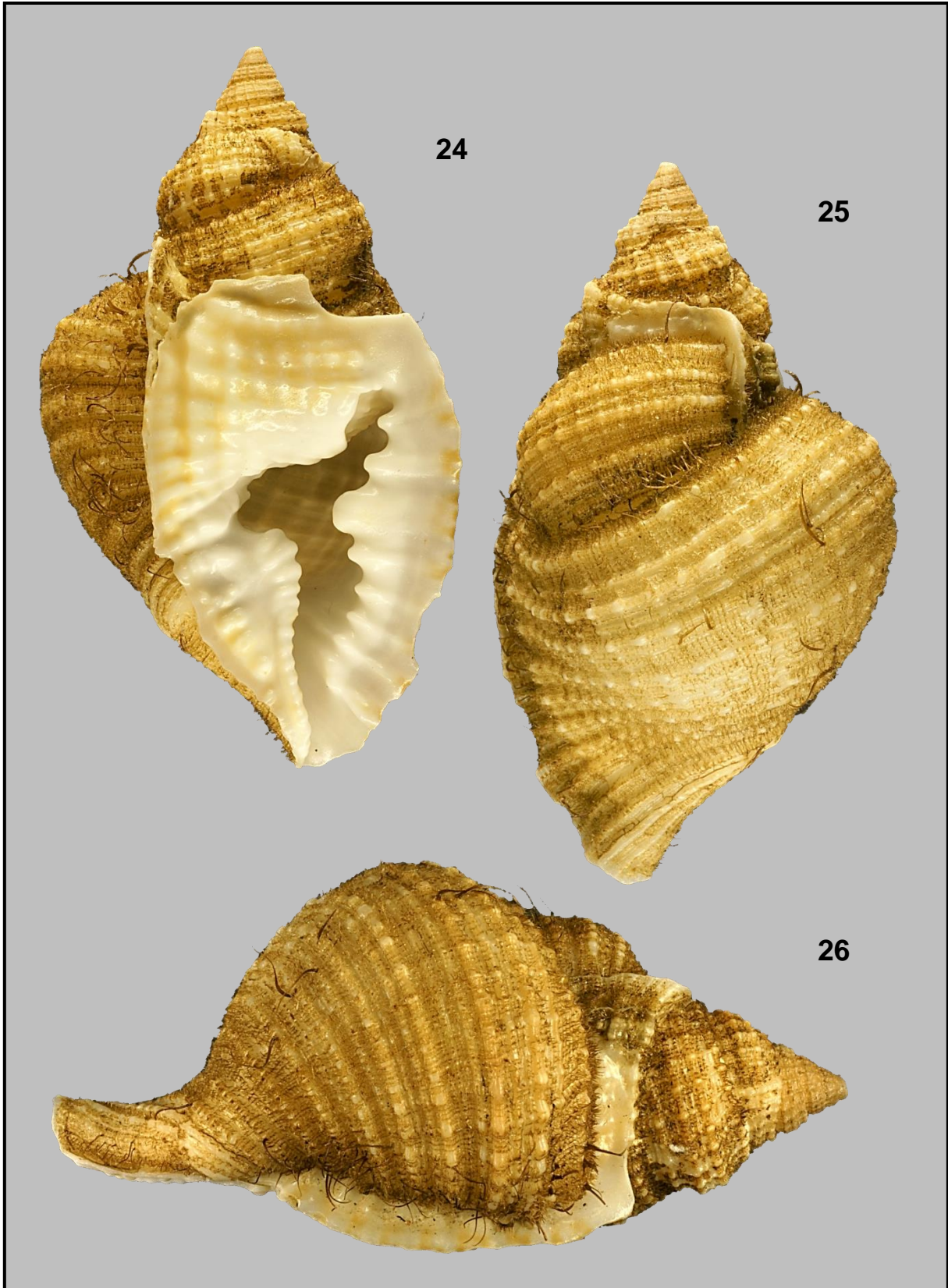
**Plate V.** Figs 14-16: *Distorsio globosa* nov. sp. CJV; 14-16: Soyo, N Angola. Trawled at a depth of 90 m. 12 April 2013; 14-15: 56.74 mm. Paratype 6; 16: 54.61 mm. Paratype 7; 17: Ambriz, Angola. Trawled at a depth of 95 m. 9 May 2012. 42.34 mm. Paratype 8.





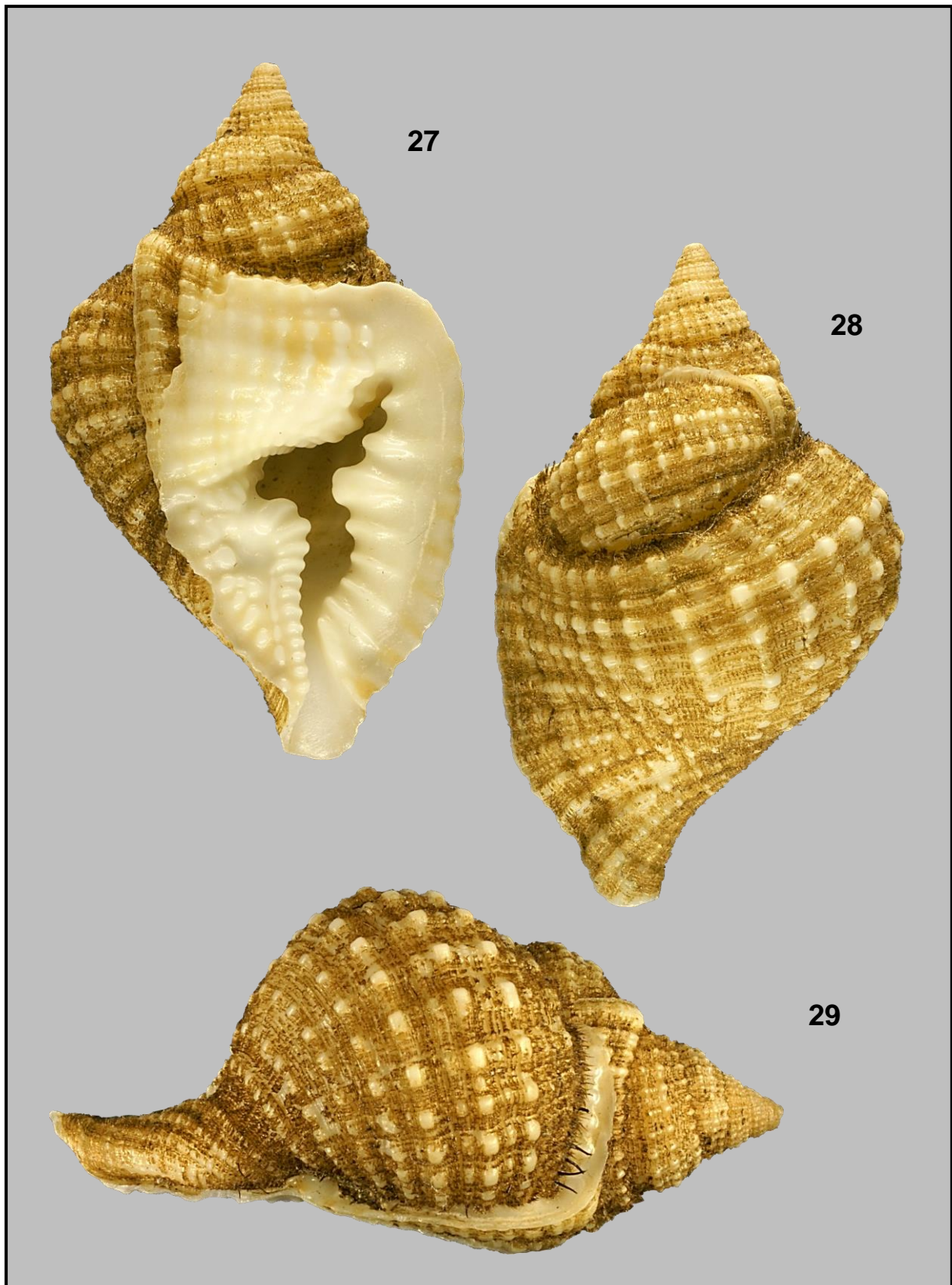


**Plate VII.** Figs 21-23: *Distorsio globosa* nov. sp. Guinea-Bissau, W Africa. 11°39' N/ 17°05' W. Trawled at a depth of 35 m. 1996. 78.85 mm. Paratype 4. CFN.

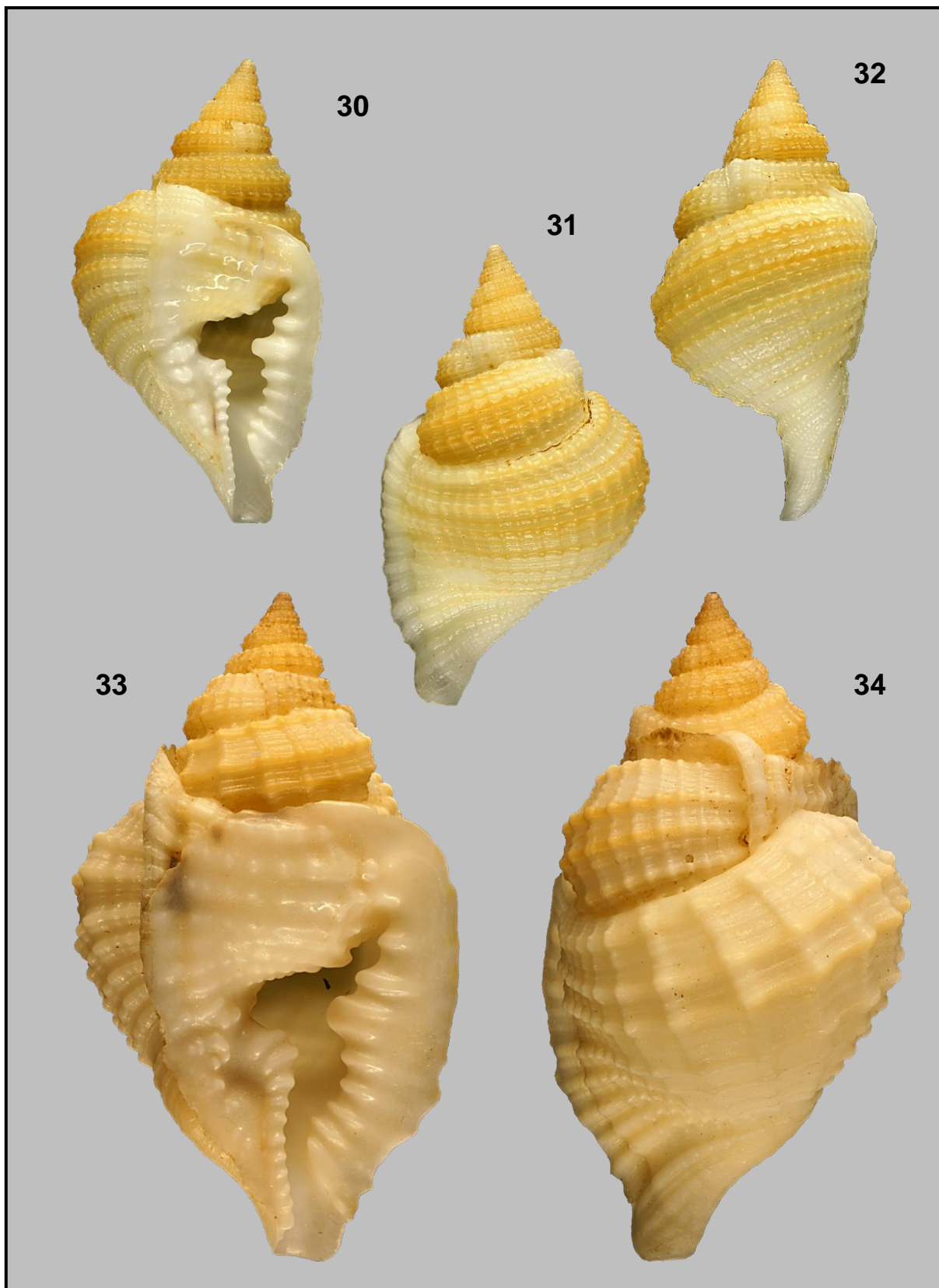


**Plate VIII.** Figs 24-26: *Distorsio perdistorta* Fulton, 1938. Off Conakry, Guinea-Bissau. Trawled by fishermen at a depth of 12 m. 64.94 mm. CFN.



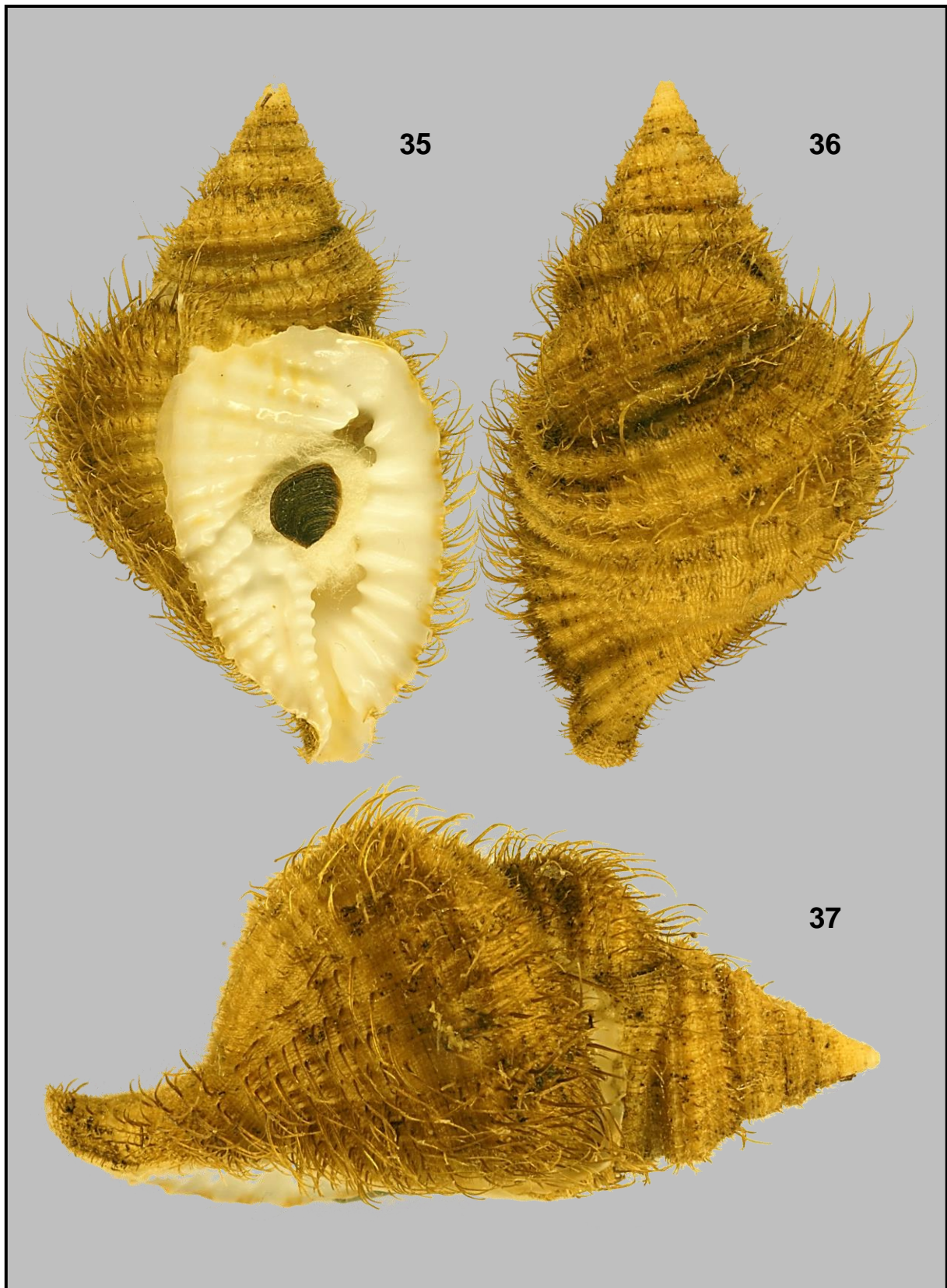


**Plate IX.** Figs 27-29: *Distorsio perdistorta* Fulton, 1938. Off Conakry, Guinea-Bissau. Trawled by fishermen at a depth of 12 m. 53.55 mm. CFN.

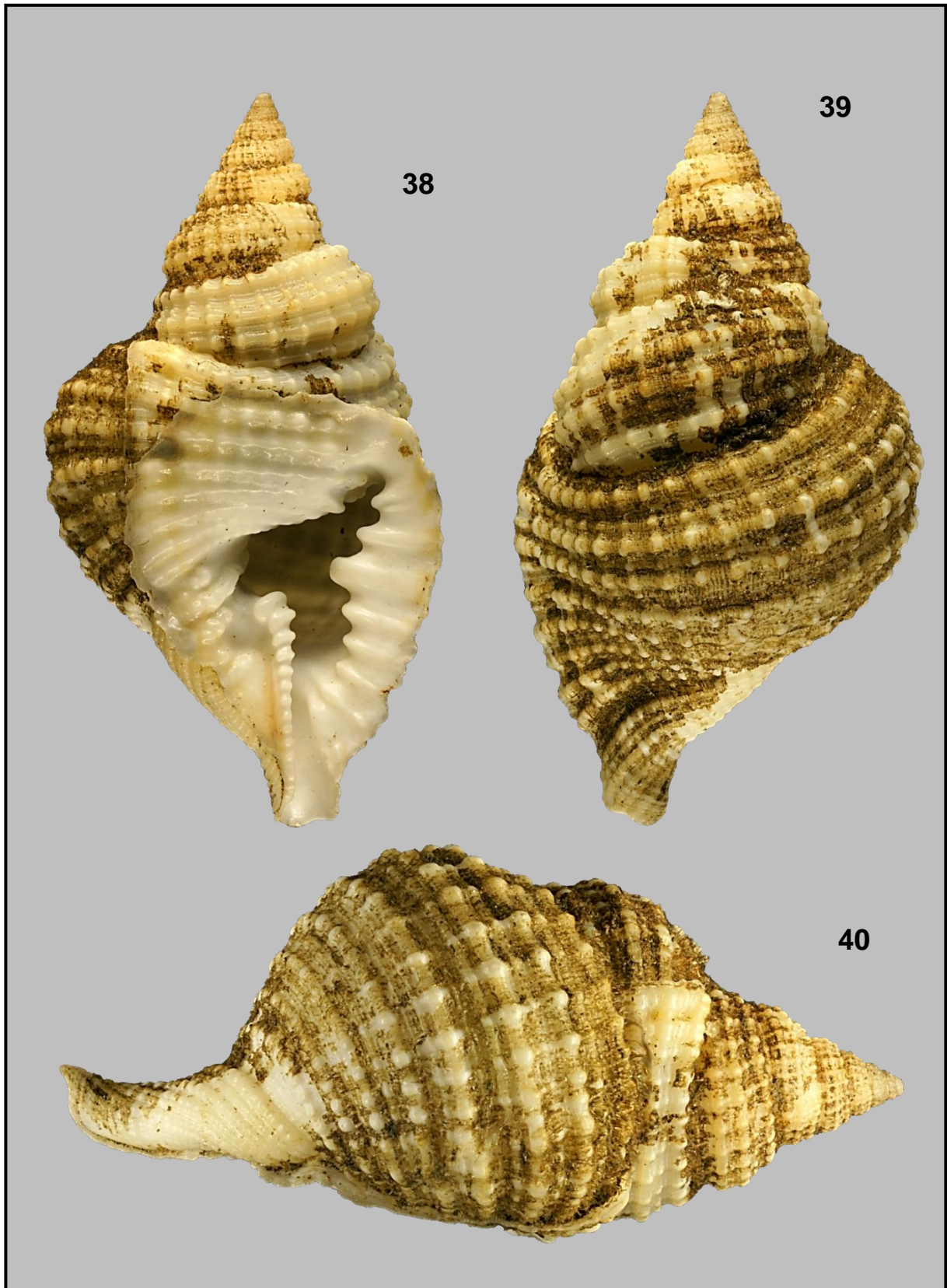


**Plate X.** Figs 30-34: *Distorsio perdistorta* Fulton, 1938. Coffee Bay, Northern Transkei, South Africa. Dredged at a depth of 80 m. June 2002. CFN; 30-32: 33.99 mm; 33-34: 48.83 mm.



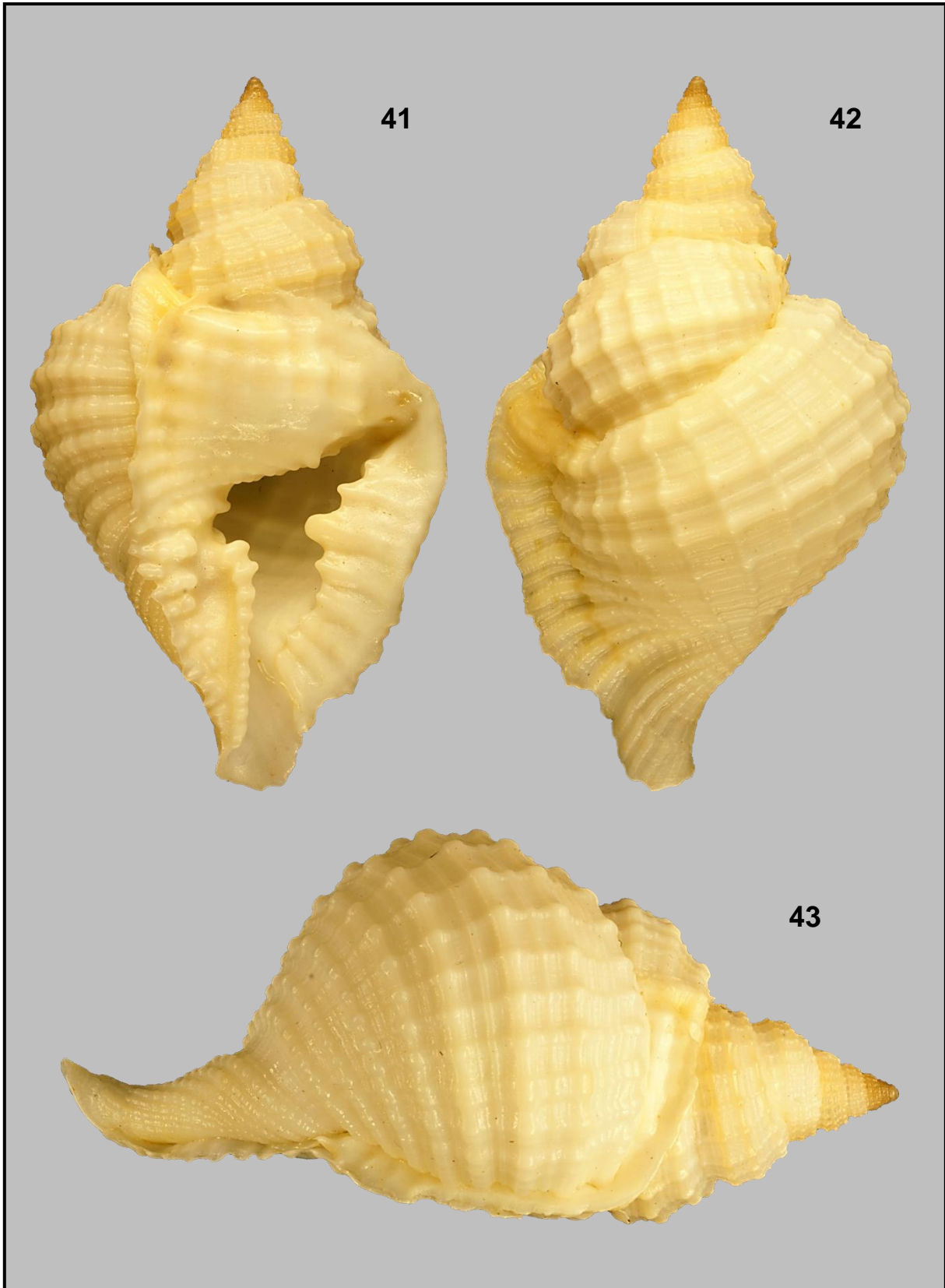


**Plate XI.** Figs 35-37: *Distorsio perdistorta* Fulton, 1938. Coffee Bay, Northern Transkei, South Africa. Dredged at a depth of 80 m. June 2002. CFN.



**Plate XII.** Figs 38-40: *Distorsio perdistorta* Fulton, 1938. Tosa Bay, Japan. Dredged at a depth of 10 m. 60.01 mm. CFN.



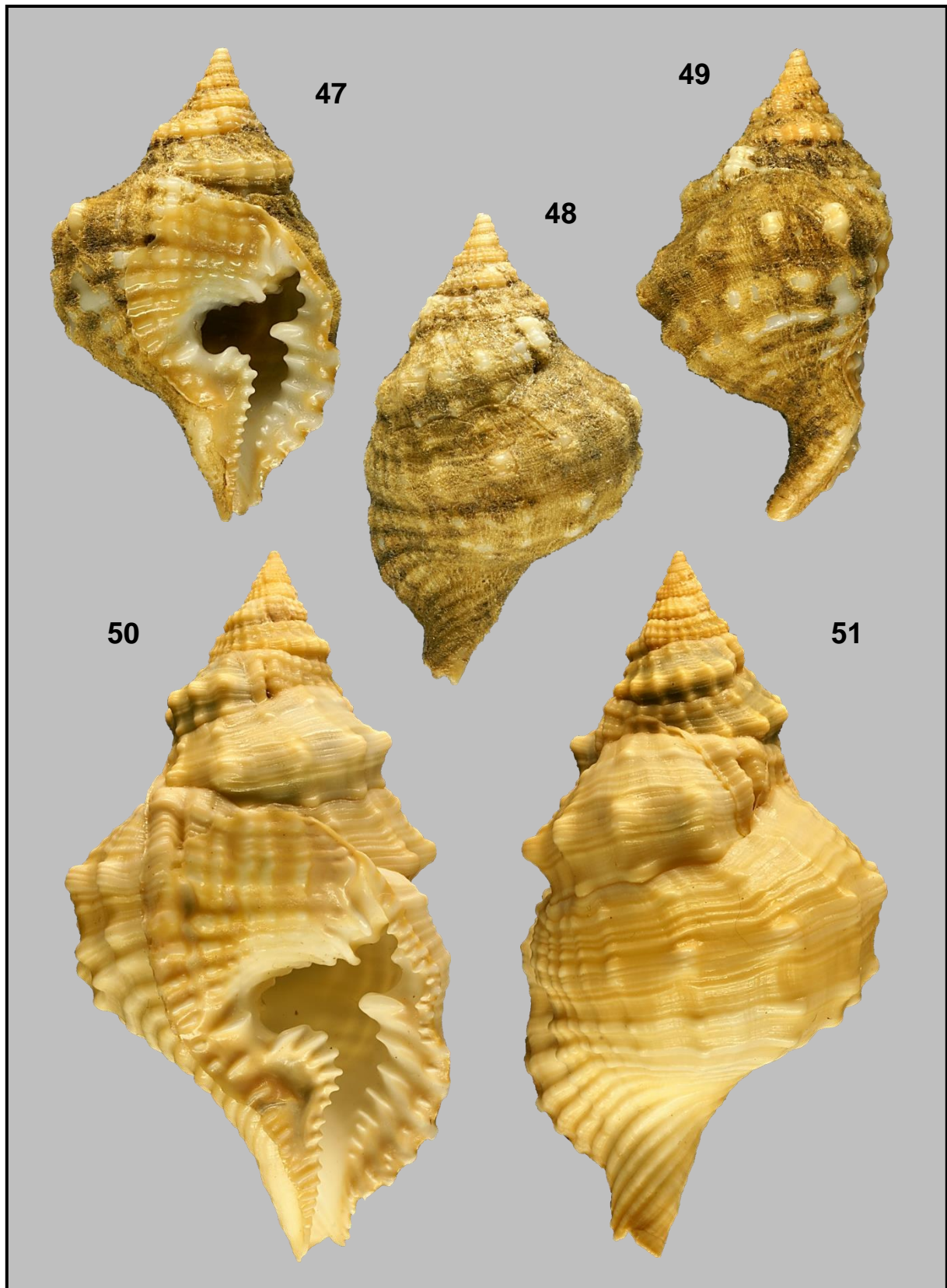


**Plate XIII.** Figs 41-43: *Distorsio perdistorta* Fulton, 1938. Balicasag Island, Bohol, Philippines. From tangle net at a depth of 180 m. November 1998. 63.56 mm. CFN.

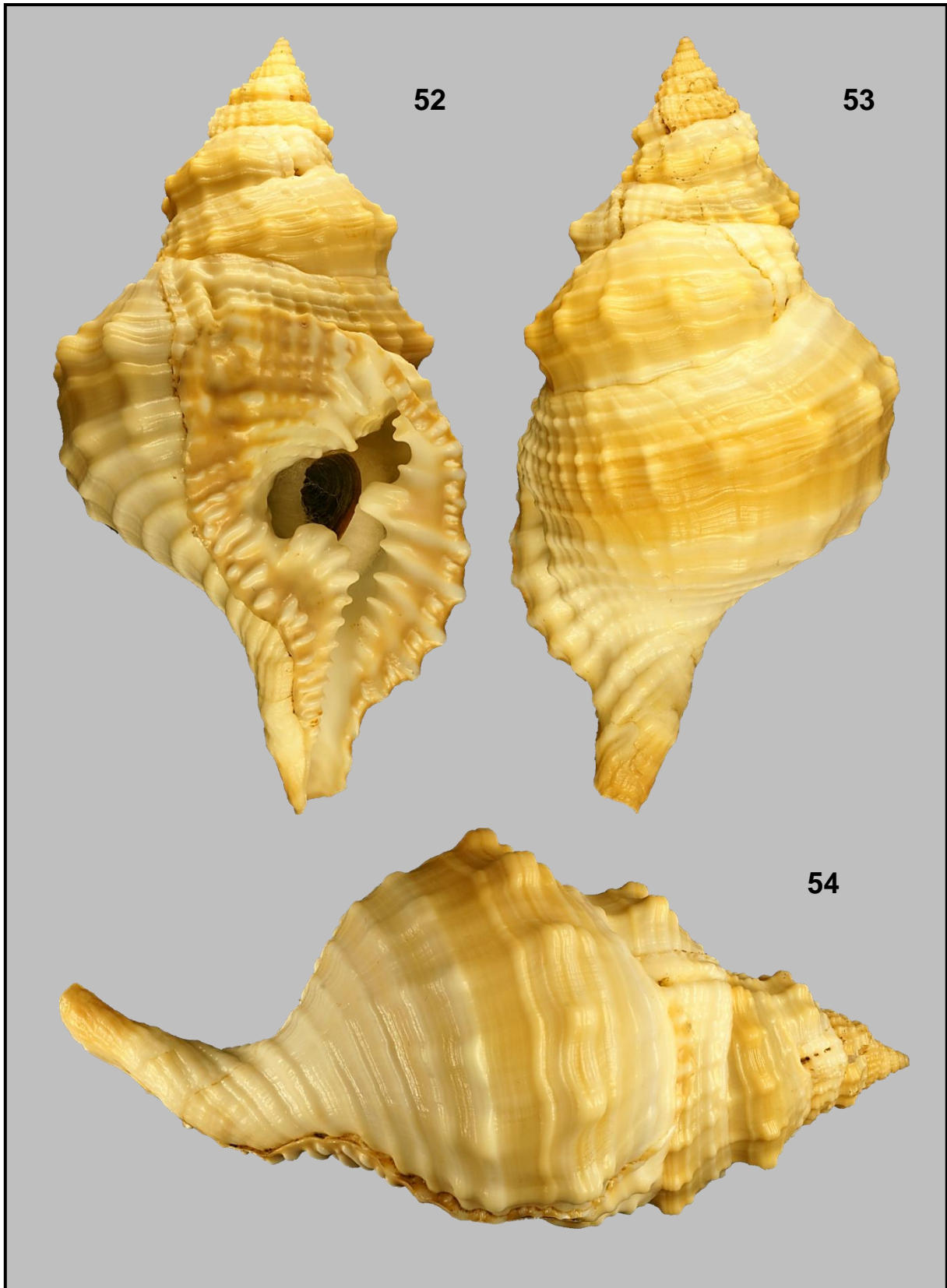


**Plate XIV.** Figs 44-46: *Distorsio perdistorta* Fulton, 1938. Balicasag Island, Bohol, Philippines. From tangle net at a depth of 180 m. November 1998. 51.11 mm. CFN.

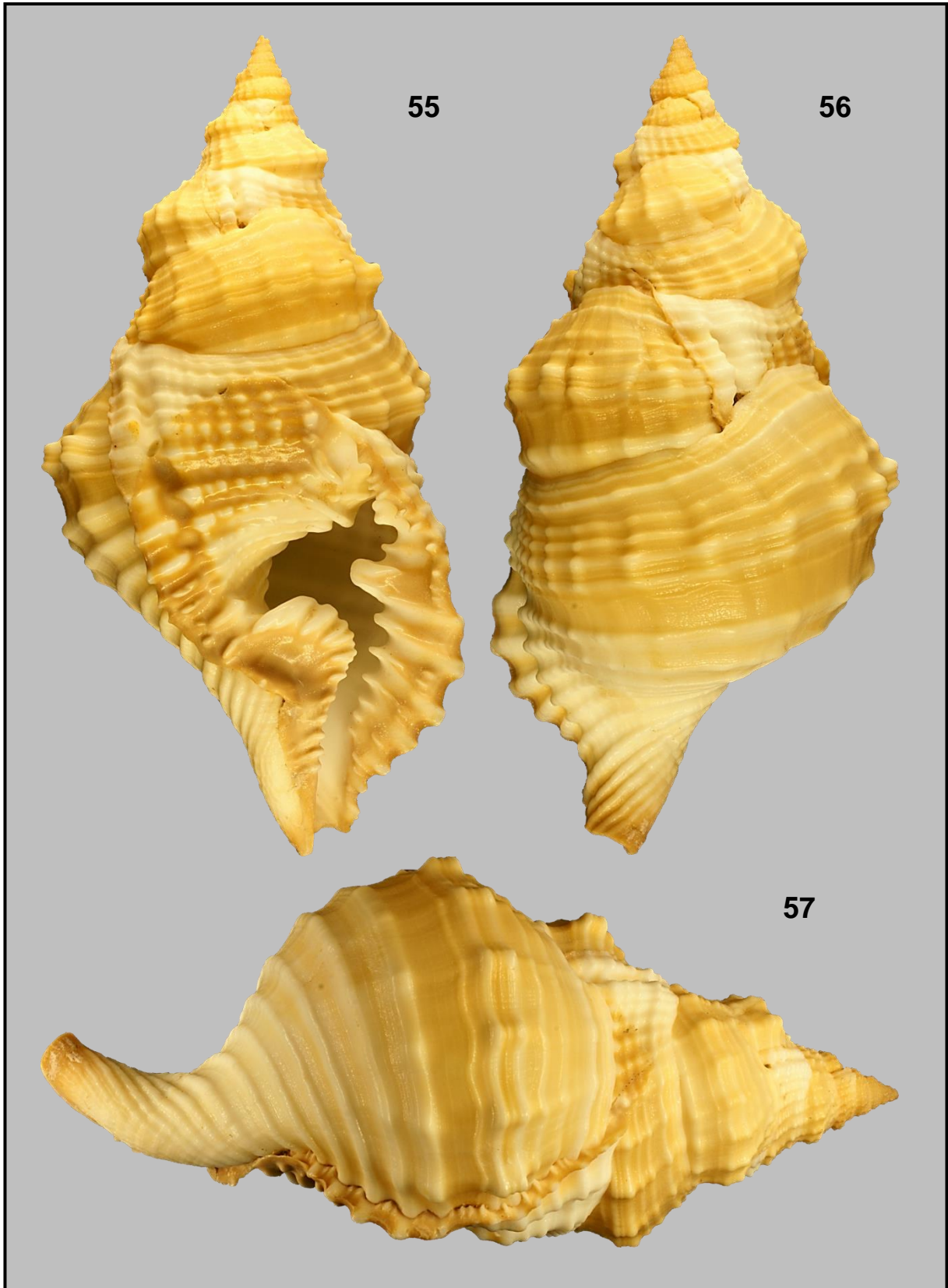




**Plate XV.** Figs 47-51 *Distorsio smithi* (von Maltzan, 1884). Casamance, Senegal. Trawled by local fishermen. CFN; 47-49: 49.53 mm; 50-51: 86.13 mm.

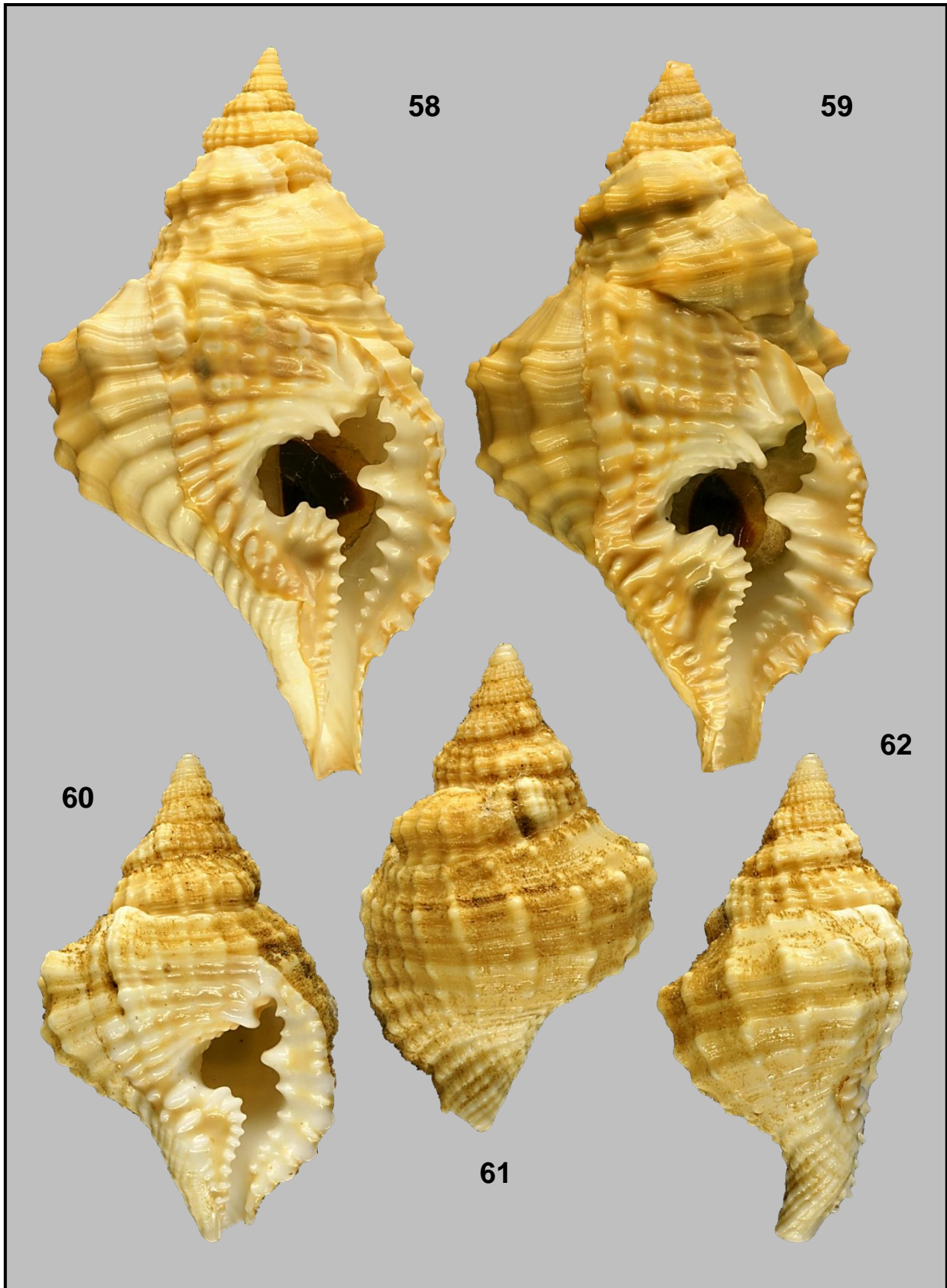


**Plate XVI.** Figs 52-54: *Distorsio smithi* (von Maltzan, 1884). Off Freetown, Western area, Sierra Leone. 08°28' N/ 14°08' W. Trawled by local fishermen. 1997. 102.69 mm. CFN.



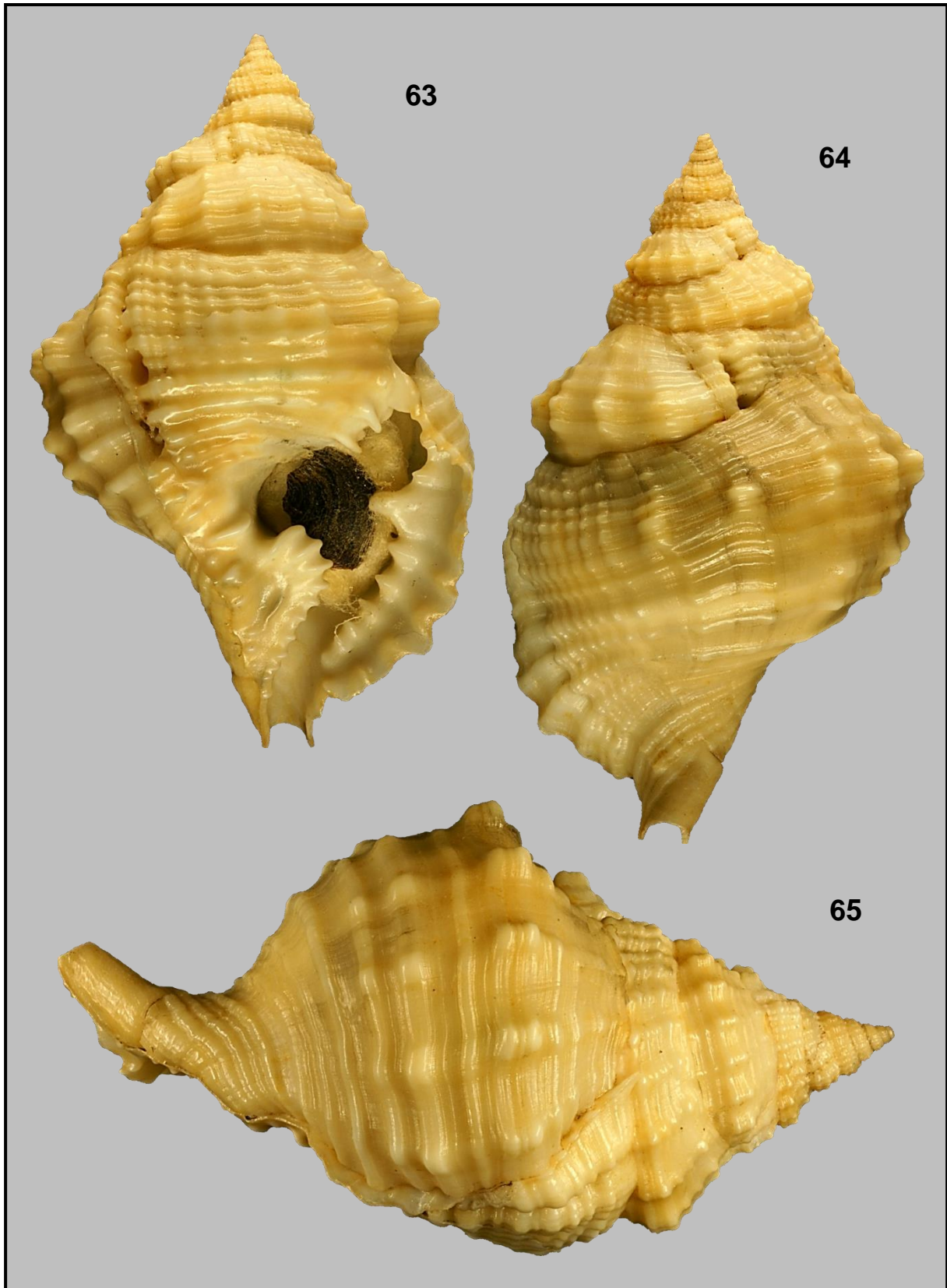
**Plate XVII.** Figs 55-57: *Distorsio smithi* (von Maltzan, 1884). Off Freetown, Western area, Sierra Leone. 08°28' N/ 14°08' W. Trawled by local fishermen. 1997. 118.65 mm. CFN.



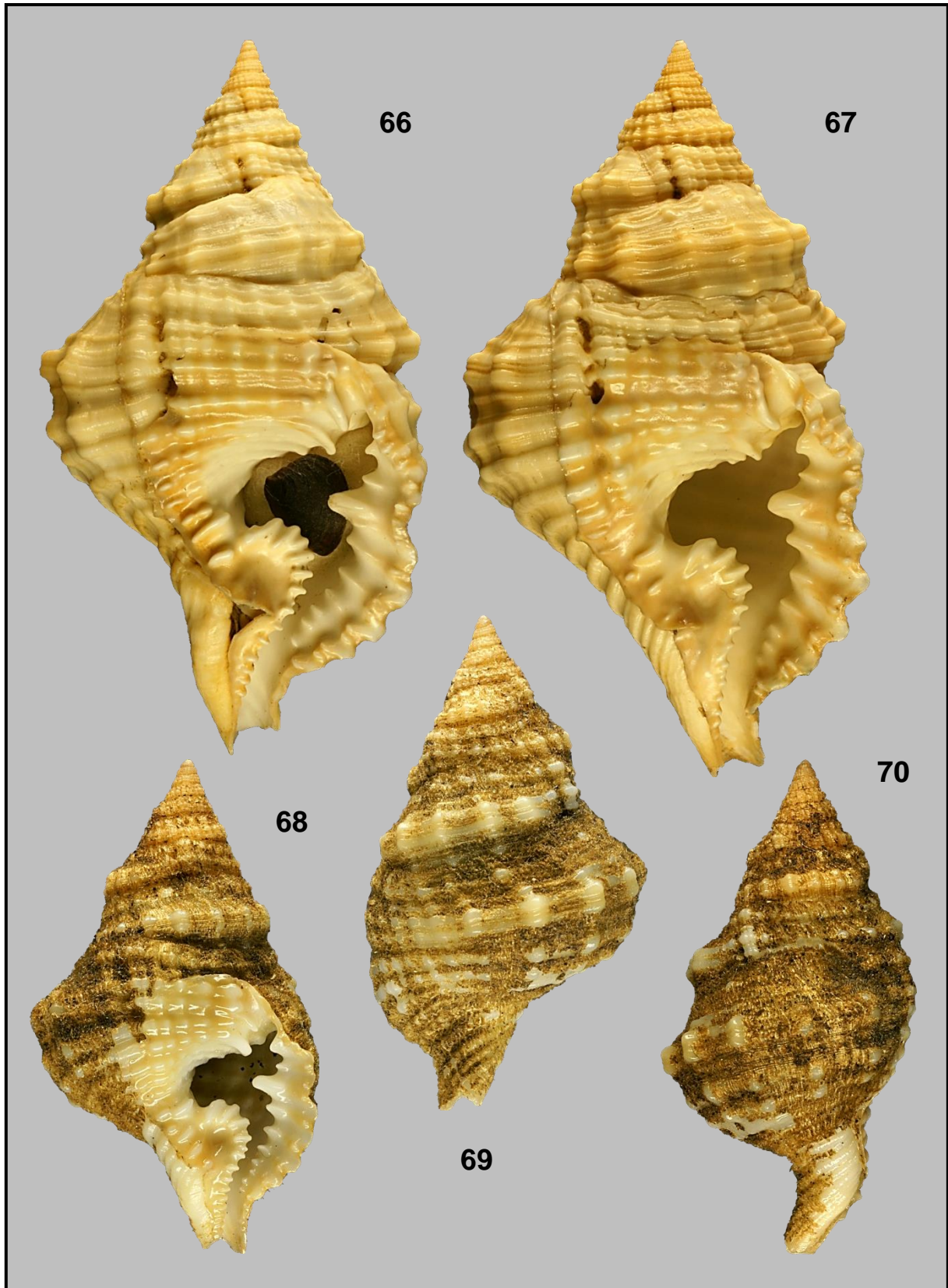


**Plate XVIII.** Figs 58-62: *Distorsio smithi* (von Maltzan, 1884). CFN; 54-55: off Libreville, Gabon. Dredged at 60 km offshore at a depth of 35 m. 73.85 mm; 58: 73.85 mm; 59: 73.19 mm; 60-62: Luanda Bay, Angola. Dredged at a depth of 10 m. 27.33 mm (dwarf form).





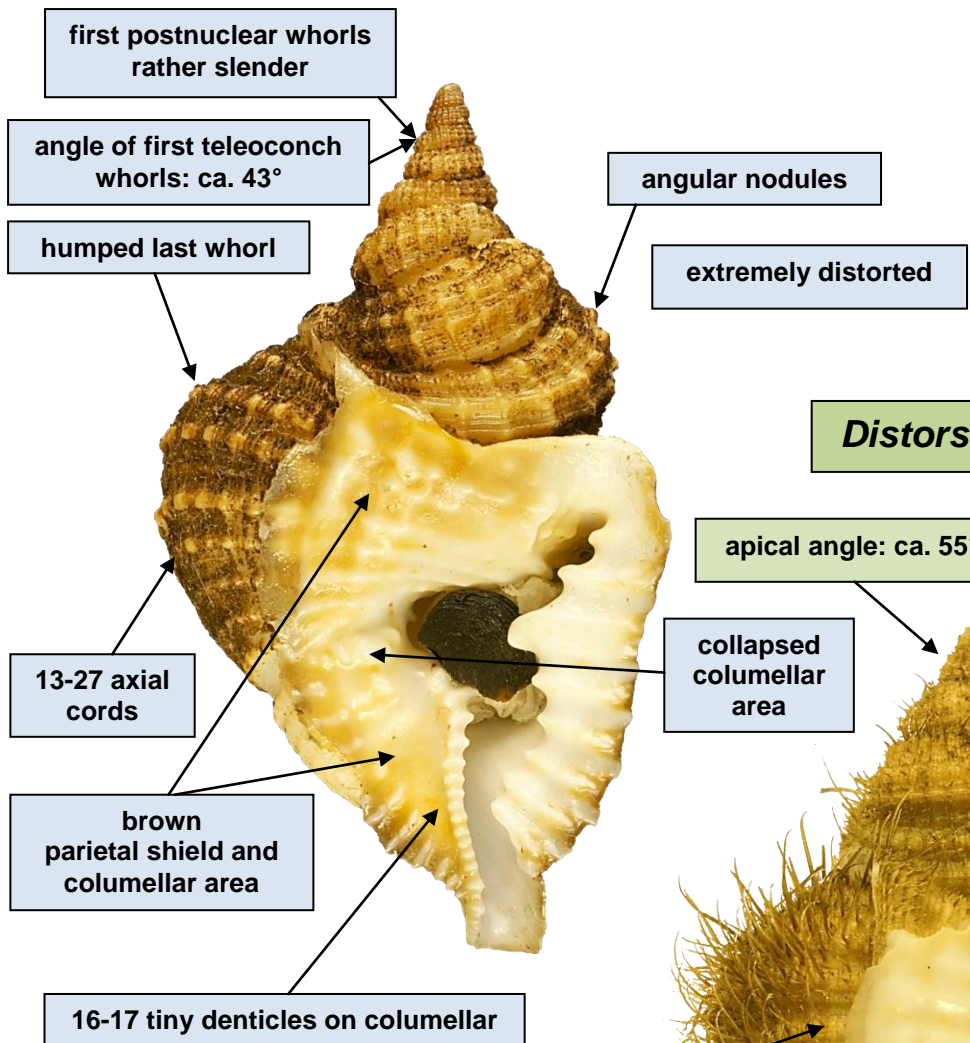
**Plate XIX.** Figs 63-65: *Distorsio smithi* (von Maltzan, 1884). Ambriz, North Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 27.33 mm (dwarf form).



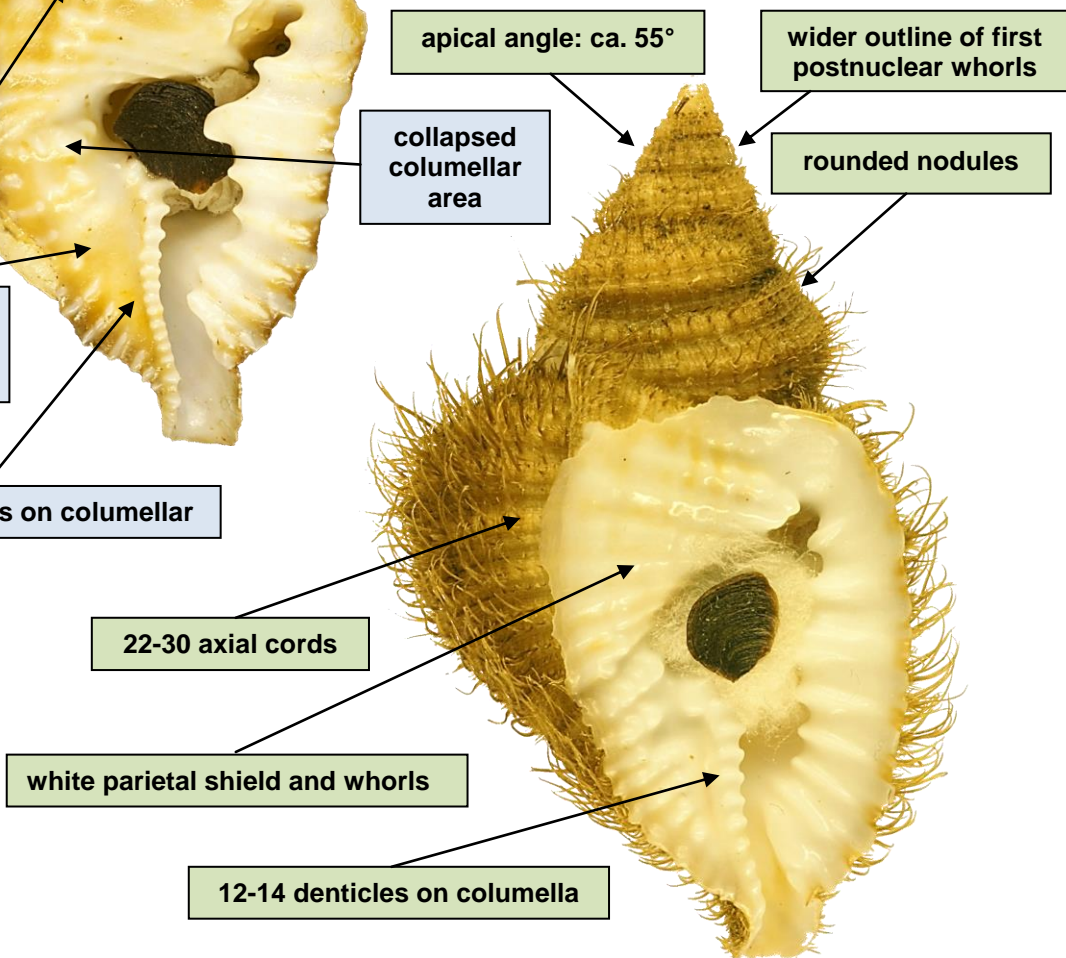
**Plate XX.** Figs 66-70: *Distorsio smithi* (von Maltzan, 1884). CFN; 66-67: Ambriz, North Angola. 07°50' S/ 12°30' E. Trawled by Belgian fishermen (PEMARCO). 1966; 66: 78.51 mm; 67: 83.32 mm; 68-70: Moita Seca, North Angola. 06°15' S/ 12°11' E. Trawled by Belgian fishermen (PEMARCO) at a depth of 110 m. 52.55 mm.



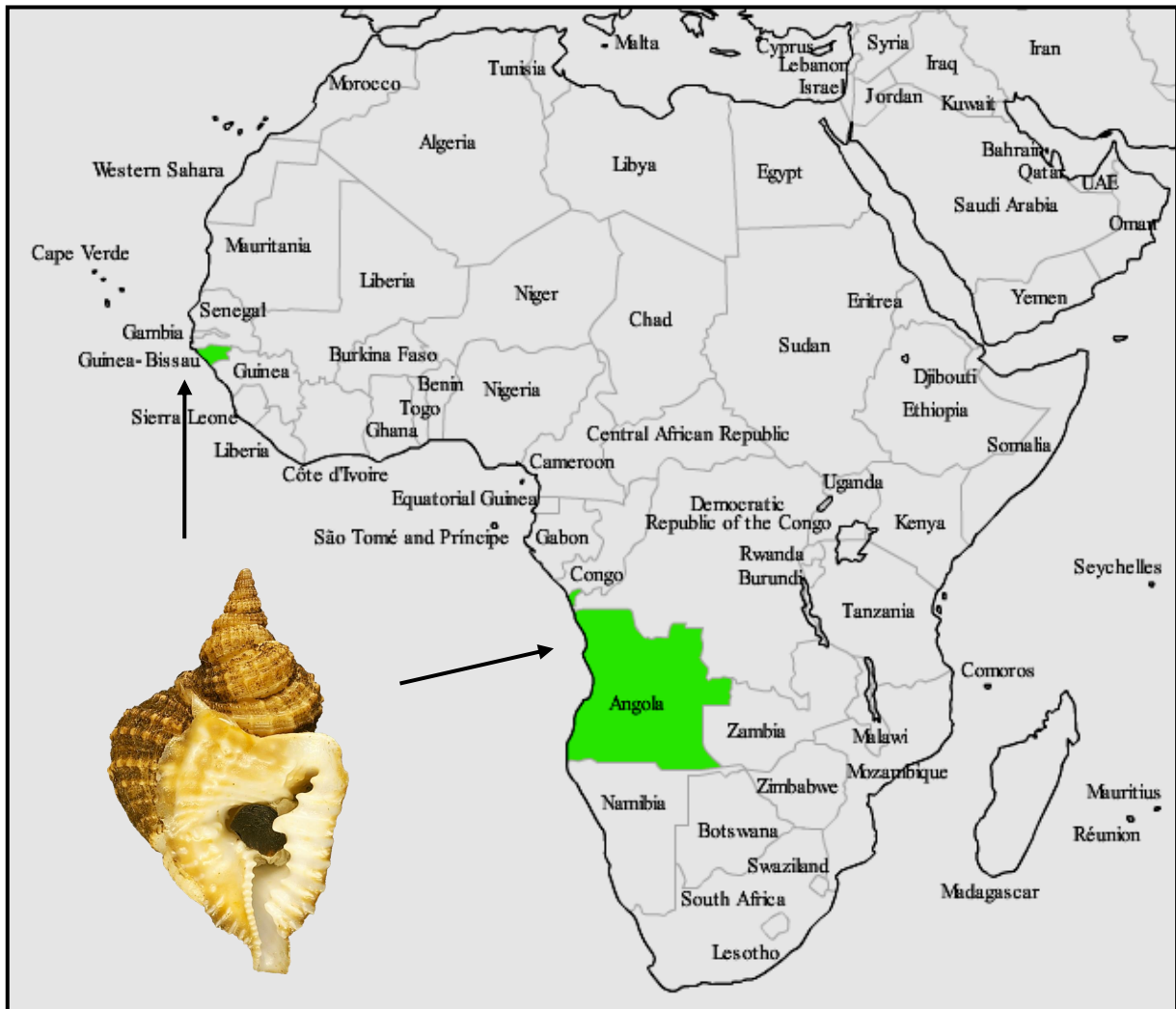
***Distorsio globosa***



***Distorsio perdistorta***



**Comparison between *Distorsio globosa* and *Distorsio perdistorta***



**Geographic distribution of *Distorsio globosa* nov. sp.**

# A northern range extension for *Anacithara maltzani* (Knudsen, 1952) (Mollusca: Conoidea: Horaiclavidae),

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**Keywords:** Mollusca, Gastropoda, HORAICLAVIDAE, *Anacithara maltzani*, The Western Sahara, West Africa.

**Abstract:** This paper reports a northern range extension for *Anacithara maltzani* (Knudsen, 1952) in Western Saharan waters. This species lives there together with *Anacithara biscoitoi* Nolf & Swinnen, 2011. It is now known to occur along the entire West African coast from the waters off Western Sahara to very south in Angola.

## Abbreviations:

**CFN:** Private collection of Frank Nolf.  
**CFS:** Private collection of Frank Swinnen.  
**CPD:** Private collection of Paco Déniz (Tenerife, Canary Islands, Spain).  
**MMF:** Museu Municipal do Funchal, Madeira, Portugal.

**Introduction:** The genus *Anacithara* Hedley, 1922 belongs to the superfamily Conoidea and the family HORAICLAVIDAE Bouchet, Kantor, Sysoev & Puillandre, 2011. Originally, no representatives of the genus *Anacithara* were located neither in South Africa nor in West Africa. Knudsen (1994) attributed this genus to three species from South Africa whereas Horro *et al.* (2010) transferred two species from West Africa *A. angulosa* (E.A. Smith, 1871) (from *Cythara*) and *A. maltzani* (Knudsen, 1952) (from *Haedropleura*) to *Anacithara*. This decision was based on the shape, the protoconch and the microsculpture, which are very similar to *A. angulicostata* Kilburn, 1994. A third species *Anacithara biscoitoi* Nolf & Swinnen, 2011 was described from Western Sahara.

The genus *Anacithara* is used for species with a small shell (3.5-9 mm) and a rather widely open aperture without denticles within the outer lip or on the columella. The protoconch is bluntly rounded comprising 2-3 smooth whorls, followed by a stage of curved axial riblets. The adult sculpture is of long bluntly rounded axial folds, overridden by dense spiral lirae. Recent species are mostly known from the Indo-Pacific (northern Queensland, Loyalty Islands, New Caledonia

and the Arabian Sea). Fossil representatives are known from Tasmania (Oligocene), New Zealand (Oligocene to Miocene) and probably from the Pliocene of Java to Japan.

**Material and methods:** The material was found by some dredging performed by dredging boats working in the Canary-Saharan fishing bank and deposited in the collections of both authors. The shells were collected in a area off Western Sahara that extends from Cap Boujdour (Cabo Bojador: 22°18' N/ 14°40' W) to Cap Barbas (Cabo Barbas: 26°07' N/ 14°29' W) at 50-80 m deep on sandy bottoms in October 2002.

Among them seven specimens of *Anacithara maltzani* (Knudsen, 1952) (Pl. I, Figs 1-6; Pl. II, Figs 7-12) were discovered :

1. 7.68 mm (CFN). (Pl. I, Fig. 1)
2. 7.78 mm (CFN). (Pl. I, Figs 2-3)
3. 9.06 mm (CFN). (Pl. I, Figs 4-5)
4. 6.27 mm (CFS). (Pl. I, Fig. 6)
5. 6.76 mm (CFS). (Pl. II, Figs 7)
6. 7.06 mm (CFS). (Pl. II, Figs 8-9)
7. 7.25 mm (CPD). (Pl. II, Figs 10-12)

## Diagnosis of *A. maltzani* (Knudsen, 1952)

(Pl. I, Figs 1-6; Pl. II, Figs 7-12 ; Pl. III, Figs 13-16)

Turritiform shell, with a protoconch of about 2.5 smooth whorls and a teleoconch of about 7.5 whorls. Strongly undulate sutures. The axial sculpture of the adult shell consists of rounded and regular ribs. These ribs are distinct at the suture and gradually increase in size further downwards. On the last whorl 8 prominent and curved axial ribs are present, alternating with close-set growth lines. Under high magnification small irregular pits are visible.

The spiral structure consists of fine, regularly incised lines. On the body whorl 32-34 spiral lines are present. The aperture is rather small but wider than in *A. biscoitoi* and *A. angulosa*. The columella is straight with a reflected edge. A callus is developed under the insertion of the outer lip. The sinus is only slightly present and the prominent external lip is sharp and curved. The siphonal canal is broad and very short. The protoconch and the upper part of the adult shell

are greyish white, changing gradually to pale brown. The colour of live-collected specimens is darker than in any other West African *Anacithara* species. At some distance from the lower suture a whitish spiral band is present across the most prominent part of the ribs.

The inside of the outer lip is purplish brown. However, dead collected and discoloured specimens can readily be confused with *A. biscoitoi*. The shell measures between 5.5-7.5 mm.

Originally only known from Guinea to Ghana. A southern range extension to Luanda (Angola) has already previously been reported by Nolf & Swinnen [*Neptunea*, **10**(2) : 16-19].

#### Comparison:

° *Anacithara biscoitoi* Nolf & Swinnen, 2011 (Pl. IV, Figs 19-25) is readily distinguishable by its larger size (8-10 mm), the translucent white shell and the pale brown dots between the axial ribs below the suture, poorly visible in earlier whorls. Its slender and rather columbelliform shape makes it readily distinguishable from other representatives. It is sculptured by axial ribs continuously running from whorl to whorl, 10-12 on the penultimate whorl, but the 9-10 ribs on the last whorl become weaker towards the base. Overridden by very fine equally spaced shallow spiral threads (20-23 on the penultimate whorl), approximately some 50 on the body whorl. Siphonal canal squarely truncate and short, tip not shallowly indented, fasciole not differentiated. Stromboid notch distinct. Aperture rather rhomboidal, with columella and outer lip almost parallel.

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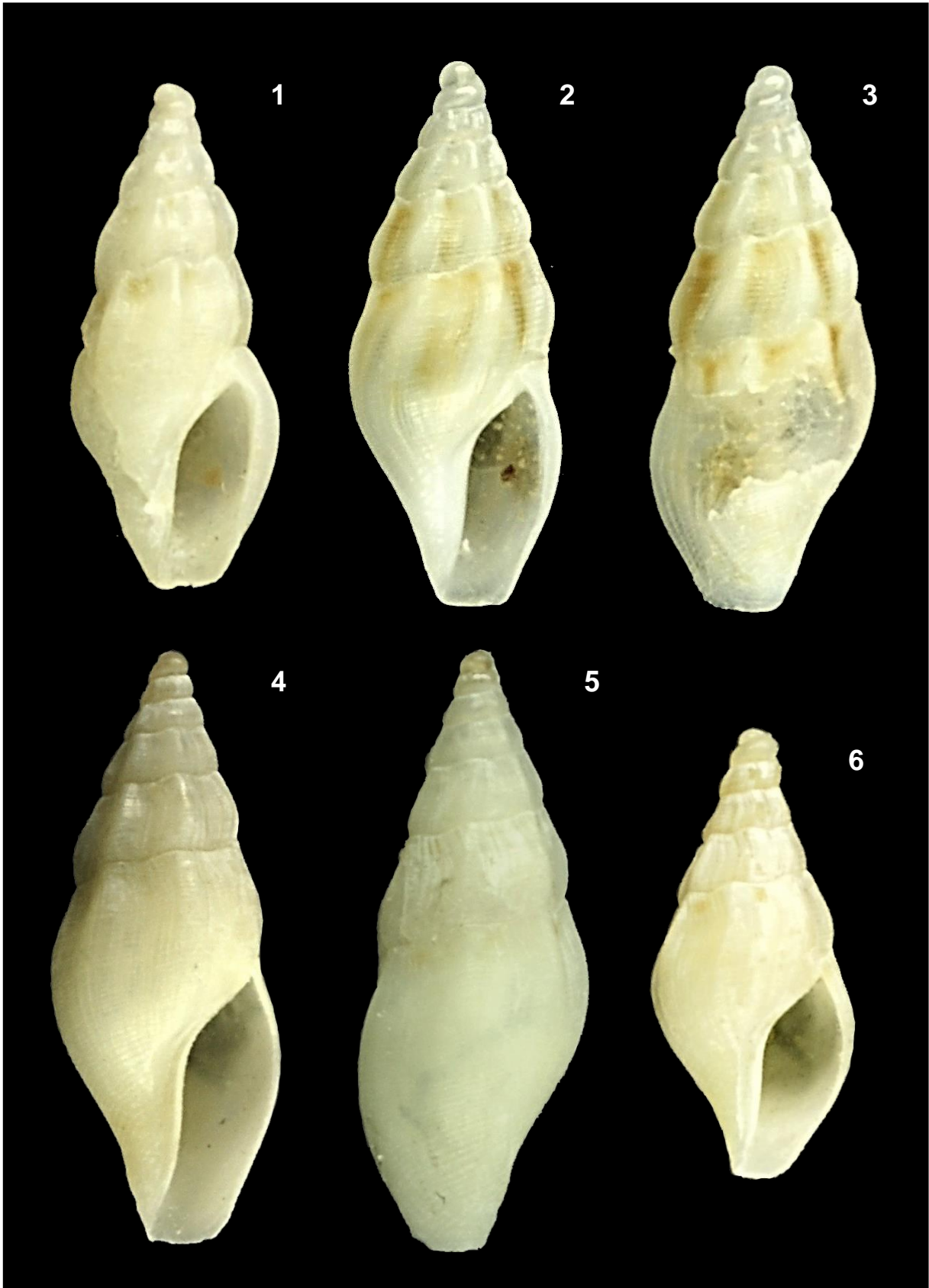
° *Anacithara angulosa* (E.A. Smith, 1871) (Pl. III, Figs 17-18) from Ivory Coast to Angola, has a lower number of narrow grooves: 5-6 on first whorls, 13-14 on the penultimate whorl and about 30 on the last whorl. Moreover, under high magnification a dense microsculpture of pits with a lower number of axial ribs (7-8 ribs on the first two whorls and only 7 on the body whorl) can be observed on the interspace. The aperture is ovoidly elongate with a short and very wide siphonal canal. The colour is almost uniformly pinkish with darker bands, visible on the axial ribs.

° *Anacithara simplex* (Turton, 1932) from Port Alfred (Republic of South Africa) differs by the moderately deep suture, rendered crenulate by rib terminations of a higher number of ribs (11-14 per whorl). It has a lower number of spiral threads (10-15 on the penultimate whorl), which are more incised than in *A. biscoitoi*.

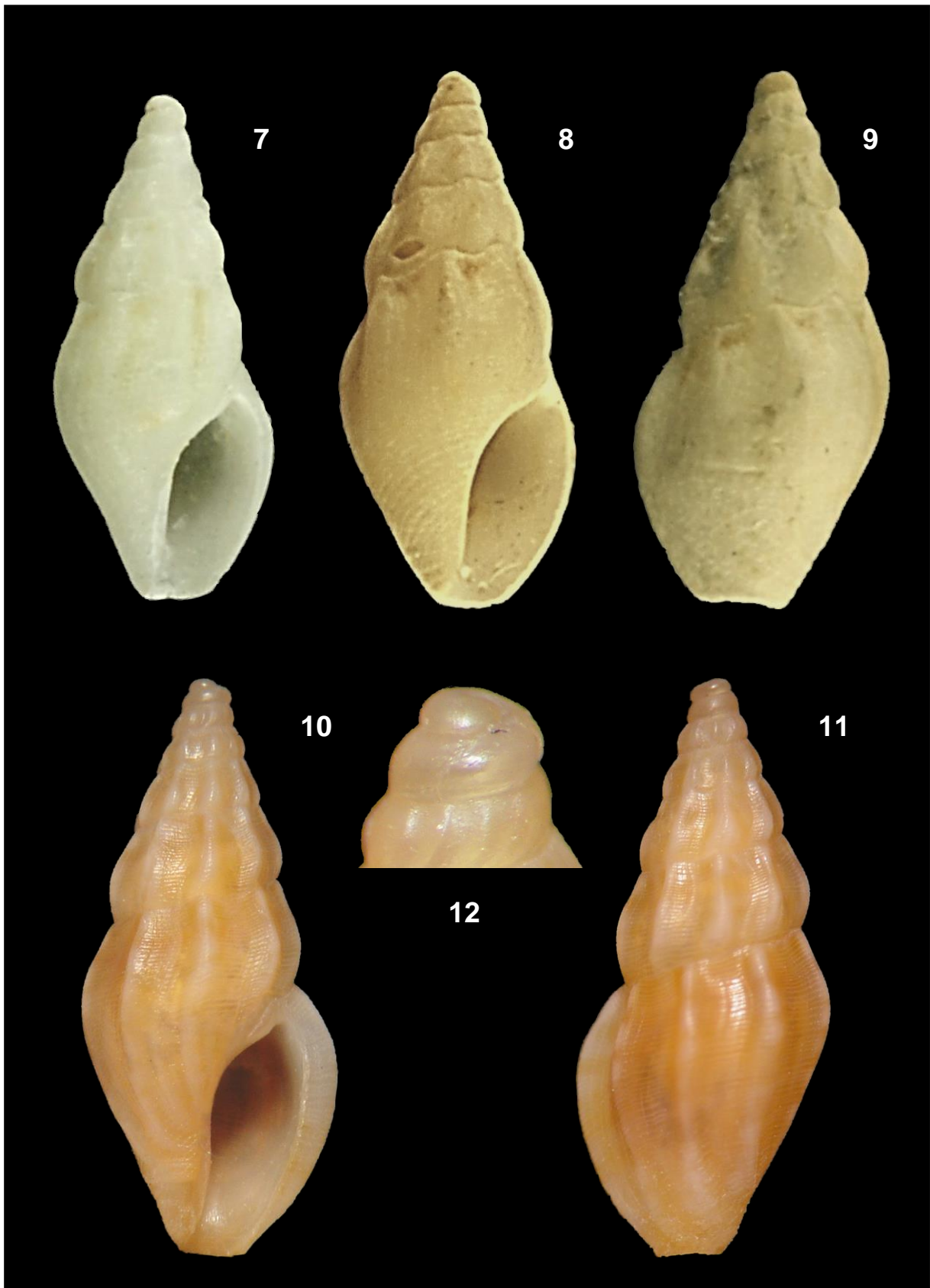
**Remark:** With regard to the use of the genus *Anacithara* and the relationship with the genus *Haedropleura*, more molecular and DNA data from live taken animals are needed to settle the status of the treated species with certainty.

**Acknowledgements:** We are indebted to Paco Déniz (Canary Islands, Spain) for kindly providing specimens and photographs. We also wish to thank David Monsecour (Aarschot, Belgium) and Johan Verstraeten (Oostende, Belgium) for carefully correcting the manuscript and for providing us with many interesting comments.

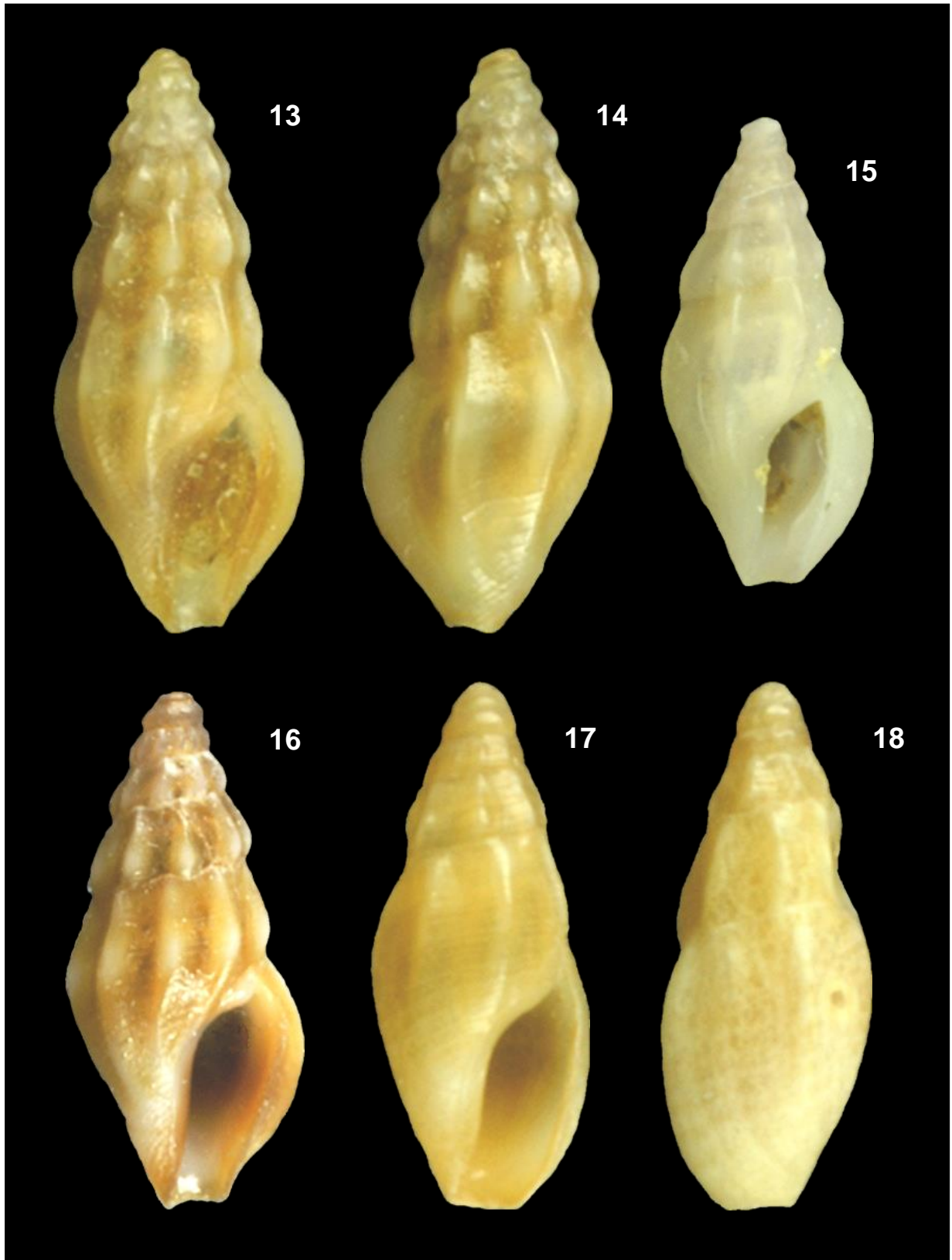




**Plate I.** Figs 1-6: *Anacithara maltzani* (Knudsen, 1952). From boats working in the Canary-Saharan fishing bank between Cap Boujdour (Cabo Bojador: 22°18' N/ 14°40' W) and Cap Barbas (Cabo Barbas: 26°07' N/ 14°29' W), Western Sahara on sandy bottom at 50-80 m. October 2002; 1-5: CFN; 1: 7.68 mm; 2-3: 7.78 mm; 4-5: 9.06 mm; 6: 6.27 mm. CFS.

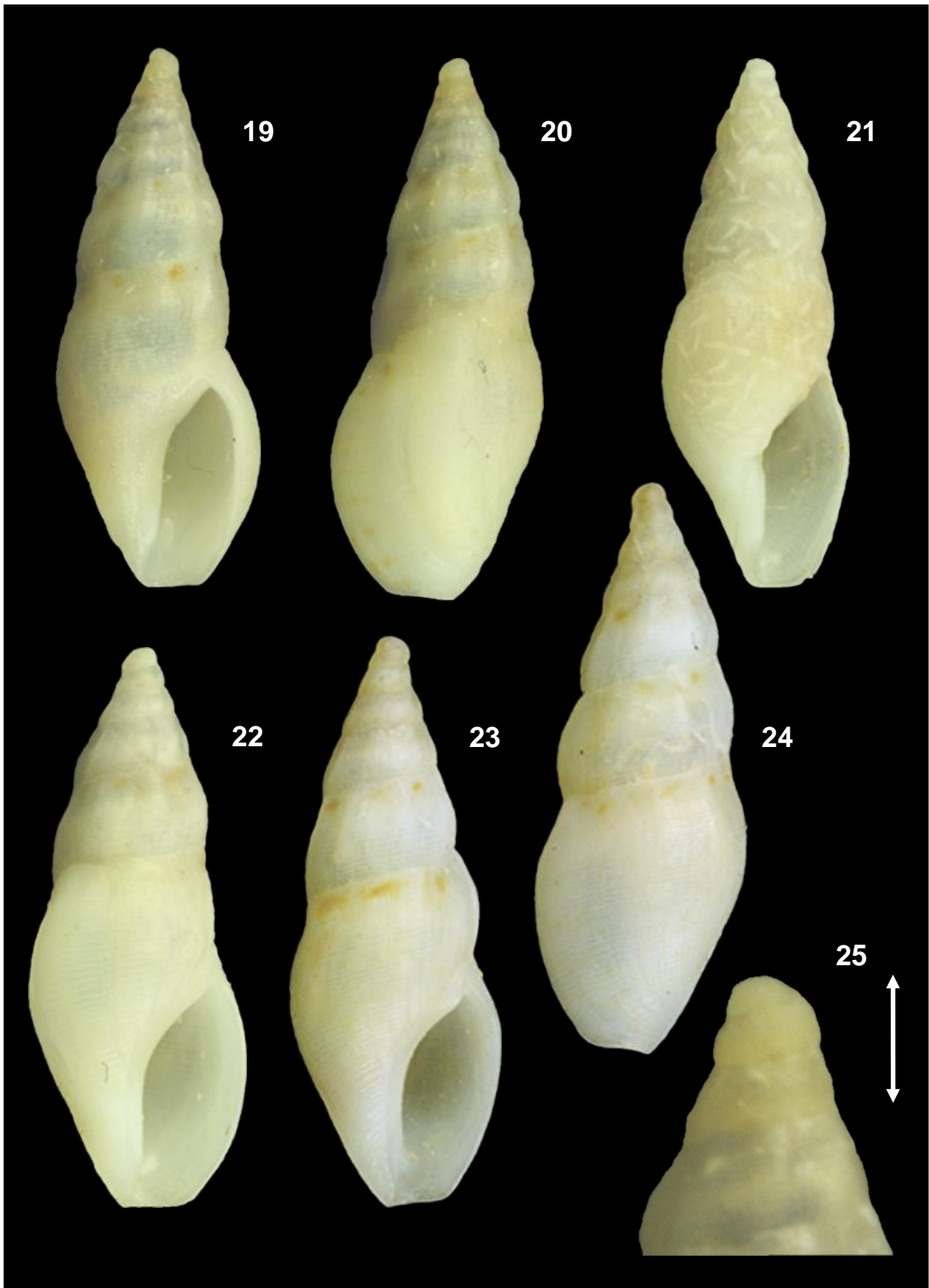


**Plate II.** Figs 7-12: *Anacithara maltzani* (Knudsen, 1952). From boats working in the Canary-Saharan fishing bank between Cap Boujdour (Cabo Bojador: 22°18' N/ 14°40' W) and Cap Barbas (Cabo Barbas: 26°07' N/ 14°29' W), Western Sahara on sandy bottom at 50-80 m. October 2002; 7-9: CFS; 7: 6.76 mm; 8-9: 7.06 mm; 10-12: CPD; 10-11: 7.25 mm; 12: protoconch.



**Plate III.** Figs 13-16: *Anacithara maltzani* (Knudsen, 1952). CFN; 13-16: Dredged among shell grit at a depth of 43 m off Gorée Island, Dakar, Senegal. December 1980; 13: 5.89 mm; 14-15: Live collected/ with operculum. 6.73 mm; 13: Ilha de Luanda, Angola. Dredged at a depth of 40-60 m. 5.39 mm; Figs 17-18: *Anacithara angulosa* (E.A. Smith, 1871). Dredged off Abidjan, Ivory Coast. CFN. 5.04 mm.





**Plate IV.** Figs 19-25: *Anacithara biscoitoi* Nolf & Swinnen, 2011. From boats working in the Canary-Saharan fishing bank between Cap Boujdour (Cabo Bojador: 22°18' N/ 14°40' W) and Cap Barbas (Cabo Barbas: 26°07' N/ 14°29' W), Western Sahara on sandy bottom at 50-60 m. July 2001; 19-20: 9.98 mm. Holotype. MMF 41587; 21: 9.08 mm. Juvenile specimen. Paratype 2. CFD; 22: 8.57 mm. Paratype 3. CFS; 23-24: 8.88 mm. Paratype 1. CFN; 25: protoconch of the holotype.